

**IARPA**  
**BROAD AGENCY ANNOUNCEMENT**  
**IARPA-BAA-22-02**



**Space debris Identification and Tracking (SINTRA) Program**

**IARPA-BAA-22-02**

**Release Date:**

**September 9, 2022**

**Amendment 002: October 14, 2022**

**ALL CHANGES FOR AMENDMENT 001 ARE HIGHLIGHTED IN YELLOW.**

**Amendment 002: October 21, 2022**

**ALL CHANGES FOR AMENDMENT 002 ARE HIGHLIGHTED IN GREEN.**

**BROAD AGENCY ANNOUNCEMENT: IARPA-BAA-22-02**

**SINTRA Program**

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## GENERAL INFORMATION

This notice constitutes a Broad Agency Announcement (BAA) and sets forth research of interest in the area of space debris detection, tracking, and characterization. The solicitation process will follow Federal Acquisition Regulation (FAR) Part 35, Research and Development Contracting, as supplemented with additional information included in this notice. Awards based on responses to this BAA will be considered the result of full and open competition.

1. **Federal Agency Name** – Office of the Director of National Intelligence (ODNI)/Intelligence Advanced Research Projects Activity (IARPA)
2. **Funding Opportunity Title** – Space debris Identification and Tracking (SINTRA) Program
3. **Announcement Type** – Initial
4. **Funding Opportunity Number** – IARPA-BAA-22-02
5. **Catalog of Federal Domestic Assistance Numbers (CFDA)** – Not applicable

6. **Questions**

Submit questions on administrative, technical, or contractual issues by email to [DNI-IARPA-BAA-22-02@iarpa.gov](mailto:DNI-IARPA-BAA-22-02@iarpa.gov). All requests must include the full name and affiliation of a point of contact. Do not send questions with proprietary content. A consolidated Question and Answer response will be posted on SAM.gov for Contract Opportunities website (<https://SAM.gov/>) and linked from the IARPA website (<https://www.iarpa.gov/index.php/research-programs/sintra>). No answer will go directly to the submitter. **IARPA will accept questions until October 21, 2022 @ 5:00 PM EST.**

7. **Dates**

7.1 **Posting Date:** September 9, 2022

**7.2 Proposal Due Date for Initial Round of Selections: November 14, 2022 @ 4:00 PM EST**

**7.3 BAA Closing Date: November 22, 2022, 4:00 PM EST**

8. **Anticipated individual awards** – Multiple awards anticipated
9. **Types of instruments that may be awarded** – Procurement Contracts and Other Transactions <sup>1</sup>

10. **Agency Points of Contact**

ATTN: IARPA-BAA-22-02  
Office of the Director of National Intelligence  
Intelligence Advanced Research Projects Activity  
Washington, DC 20511  
Electronic mail: [DNI-IARPA-BAA-22-02@iarpa.gov](mailto:DNI-IARPA-BAA-22-02@iarpa.gov)

11. **Program Manager (PM)** – Dr. Alexis Truitt

12. **Program Website** – <http://www.iarpa.gov/index.php/research-programs/sintra>

13. **BAA Summary** –The SINTRA program seeks to develop novel, innovative techniques to detect, track, and characterize non-trackable orbital space debris. The detection of non-trackable orbital debris

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<sup>1</sup> **Procurement Contract:** This is a standard government contract that follows the processes, format and terms and conditions as outlined in the Federal Acquisition Regulations (FAR) and supplementing Agency specific regulations.

**Other Transaction Authority:** Agreements generally are not subject to the federal laws and regulations governing procurement contracts and thus are not required to comply with the Federal Acquisition Regulation (FAR), its supplements, or laws that are limited in applicability to procurement contracts. They may be used with non-traditional contractors under certain circumstances.

would enable safer operation of valuable government and commercial space assets. SINTRA performers will focus on two task areas (TAs): developing novel methods to identify debris signatures (TA1) and; establishing techniques for the persistent monitoring of the debris distribution (TA2).

## **SECTION 1: FUNDING OPPORTUNITY DESCRIPTION**

IARPA often selects its research efforts through the BAA process. The use of a BAA solicitation allows a wide range of innovative ideas and concepts. The BAA will appear under Contract Opportunities on <https://sam.gov> as well as the IARPA website at <http://www.iarpa.gov>. The following information is for those wishing to respond to this Program BAA.

This BAA (IARPA-BAA-22-02) is for the Space debris Identification and Tracking (SINTRA) Program. IARPA seeks innovative solutions for the SINTRA Program, which is envisioned to be a 48-month effort, beginning approximately May 1, 2023, through April 30, 2027.

### **1.A. Program Overview**

Orbital debris is defined as any human-made space object orbiting Earth that no longer serves any useful purpose.<sup>1</sup> Orbital debris poses a risk to all space missions, including those of the Intelligence Community (IC). With an average low Earth orbit (LEO) impact velocity of 22,500 MPH, even the smallest of debris can cause significant damage, as demonstrated by the 3.8 mm diameter pit produced by the impact of a 0.2 mm paint chip on STS-71.<sup>2</sup> Currently, there are over 100 million objects greater than 1 mm orbiting the Earth,<sup>3,4</sup> however, less than 1 percent of debris that can cause mission-ending damage are currently tracked.<sup>5</sup> Due to the dynamic nature of the near-Earth space environment, predicting the trajectory of the debris is extremely difficult, necessitating persistent monitoring.<sup>6</sup> While debris larger than 10 cm can be detected and tracked, smaller debris cannot be tracked using current capabilities.<sup>7</sup> Debris that is too small to track, often termed “lethal non-trackable debris” (LNT),<sup>8</sup> can create significant damage to spacecraft and jeopardize space missions. The detection, tracking, and characterization of lethal non-trackable space debris would support the safe operation of valuable space assets worldwide.<sup>9</sup>

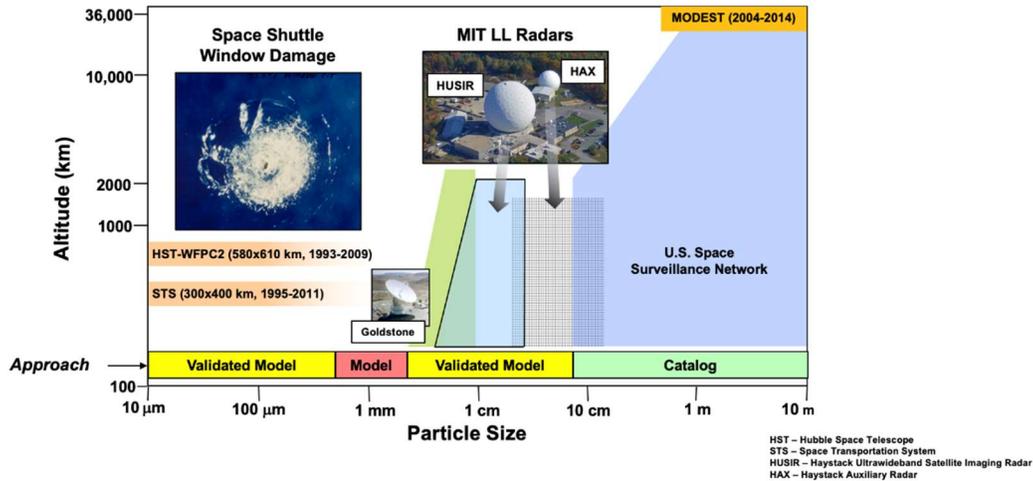
SINTRA is planned as a 48-month multi-phase program which will drive the state-of-the-art for exploitation of data capable of detecting orbital debris signatures, demonstrate signature detection, and develop automated methods for signature analysis, debris tracking, and debris characterization. If successful, SINTRA would enable the first tracking capability for the small debris population, reducing risk to space operations.

SINTRA will aim to develop innovative technologies to: (a) improve orbital debris detection and tracking; (b) reduce uncertainties of debris data in orbit propagation and prediction; and (c) characterize orbital debris size, density, and mass.

SINTRA will address the limitations in current assessments of the orbital debris population. NASA estimates that there are over 100 million particles greater than 1 mm orbiting the Earth.<sup>3</sup> However, estimates for small debris are largely based on collisional detections during the US space shuttle mission, which has now been retired.<sup>10</sup> These collisional detections were restricted to measuring debris strikes at altitudes below 600 km, the upper limit of space shuttle operations, and were then used to estimate the small debris population at a range of altitudes.<sup>11</sup>

While ground-based sensors continue to improve their detection capabilities, the ground sensor detection sensitivity rapidly decreases with increasing altitude and is limited to observing high latitudes. The ground sensors in the United States Space Surveillance Network (SSN) can detect 10 cm objects at 2,000 km altitude in LEO and 1 m objects at 35,786 km altitude in GEO. Unfortunately, ground-based sensors are not able to track small objects due to the debris’ relatively high angular velocity and must remain in staring mode to count the number of objects passing through their small fields of view. The largest source of uncertainty exists in the ability to interpret the signal strength to determine the size or mass of the object passing through the field of view.<sup>7</sup>

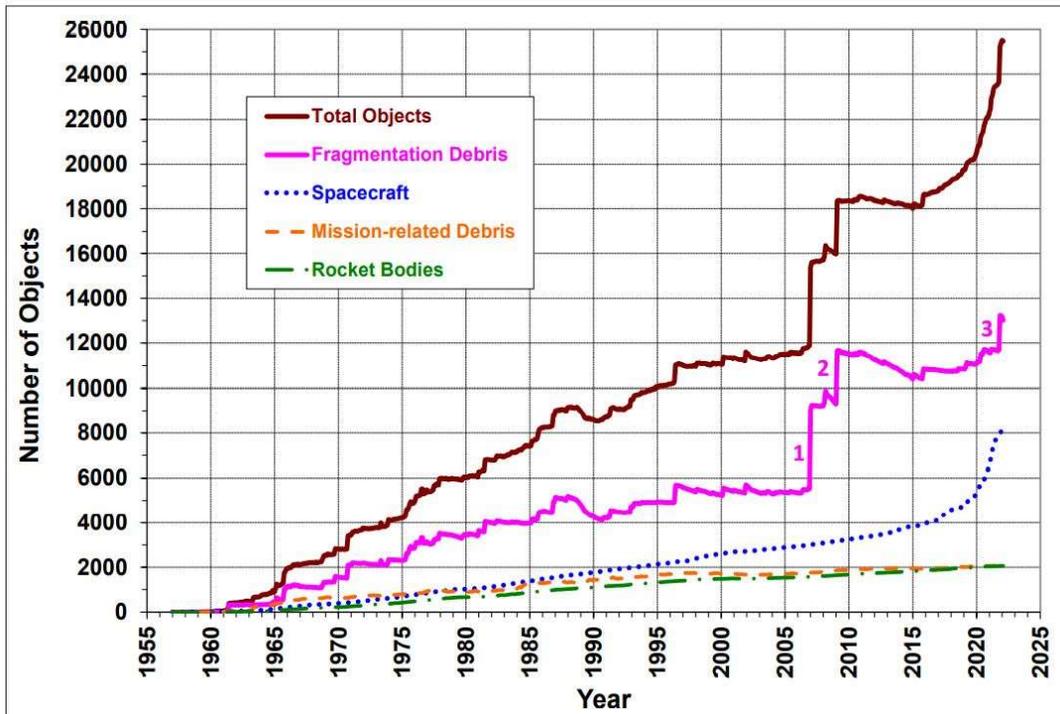
The orbital debris models developed at NASA are based on either impact data from on-orbit experiments or remote detection using a variety of optical telescopes and radar systems, as illustrated in Figure 1. There is, however, a gap between these measurement types that has yet to be constrained by actual data, a problem that SINTRA hopes to solve. Much of the contributions for radar measurements are the Haystack Ultrawideband Satellite Imaging Radar (HUSIR) and the Haystack Auxiliary radar (HAX) systems operated by MIT Lincoln Laboratory. Additional information regarding contributing sensors can be found on the NASA Orbital Debris Office website.<sup>12</sup>



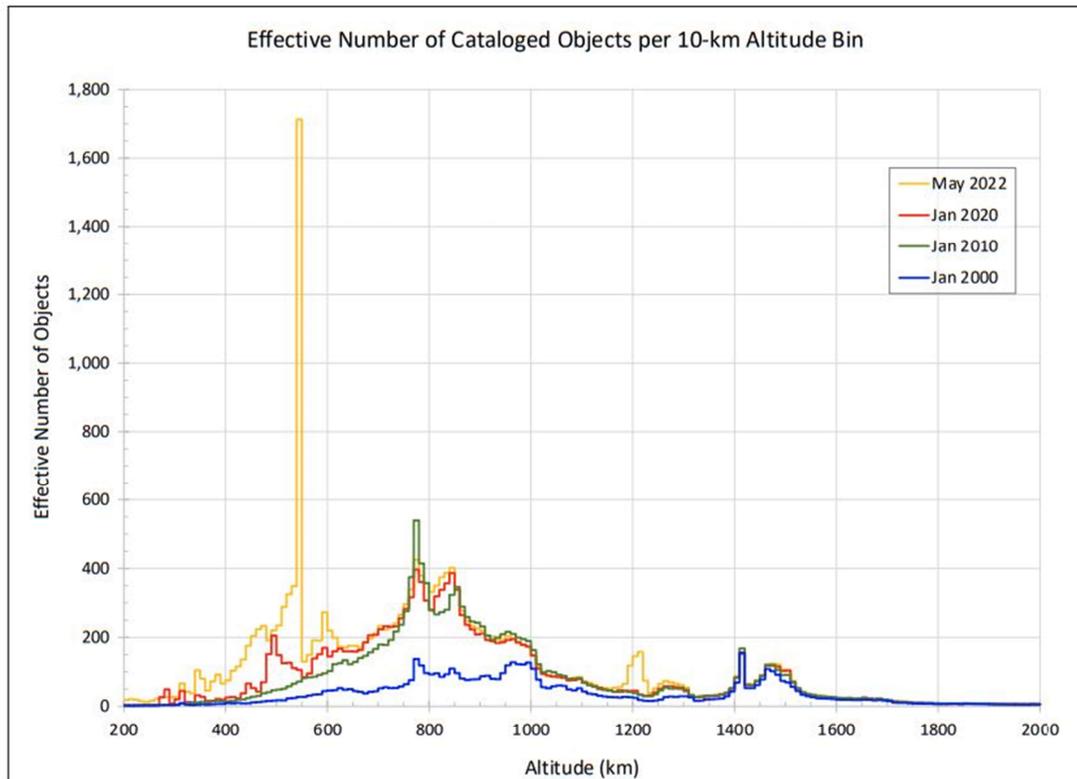
**Figure 1: Measurement data used by the NASA Orbital Debris Program Office to describe orbital debris about Earth. Figure from NASA/ODPO.<sup>12</sup>**

Most of the small orbital debris population resides in high LEO, with a mean altitude of 850 km.<sup>3</sup> More orbital debris is created than removed due to the diminished atmospheric drag at high altitudes, making current orbit characterization for small debris even more uncertain.<sup>5</sup>

An estimate from the SSN for the number of debris particles greater than 10 cm is displayed in Figure 2, published by the NASA Orbital Debris Program office. Prior to 2010, two events are responsible for adding 40% to the LEO debris estimates:<sup>13</sup> the Chinese Anti-satellite Test (ASAT) in 2007<sup>14</sup> and the collision of the Cosmos-Iridium satellites in 2009.<sup>15</sup> These two events significantly increased the challenges of operating in LEO. More recently, the ASAT test conducted by the Russian Federation in November 2021 has caused a substantial increase in catalogued debris.<sup>16</sup>



**Figure 2:** Space Surveillance Network estimate of the number of objects greater than 10 cm as a function of time, based on data available on 1 March 2022. The three annotated increases debris correspond to (1) the Chinese ASAT test conducted in 2007, (2) the accidental collision between Iridium 33 and Cosmos 2251 in 2009, and (3) the Russian ASAT test conducted in November 2021. Image from NASA/ODPO.<sup>16</sup>



**Figure 3: Space Surveillance Network estimate of the number of objects greater than 10 cm as a function of altitude. Image from NASA/ODPO.<sup>17</sup>**

Figure 3 shows the increase in catalogued objects as a function of altitude, also published by the NASA Orbital Debris Program Office. Again, the Cosmos-Iridium collision and Chinese ASAT test debris fragments dominate the increase in objects from 2000 to 2010. The increase objects from 2010 to 2020 is due to the initial build-up of the Starlink large constellation and by the proliferation of CubeSats below about 650 km altitude. The increase from 2020 to 2022 is due to the Russian ASAT test, and also continues to be driven by proliferation of large constellations by commercial and government entities.<sup>17</sup>

With the increase in the number of satellites launched over time, there is potential for rapid growth of the debris population. Therefore, active means are necessary for quickly characterizing the dynamic orbital debris environment, allowing for the ability to prevent satellite damage through orbit selection, and collision mitigation and remediation. A non-collisional capability to detect small debris from the ground, and in situ with existing sensor technology, would provide the most immediate contribution for understanding the small debris population.

The successful completion of the SINTRA program would provide the world with the first collision-free detection method for small orbital debris, supporting the safe operation of our valuable space assets.

A robust data collection effort will be executed as part of the SINTRA program to assemble diverse debris datasets for use in Research and Development (R&D) for algorithm training, and in Test and Evaluation (T&E) for comparing the algorithm performance against ground truth. As described in Section 1.E, the T&E Team will conduct dataset development activities throughout the life of the program. A portion of these data will be made available to Performers for R&D. In addition, Performers will have the ability to conduct their own supplemental dataset collections. At the conclusion of each program phase, Performers shall make all datasets used for system development available to the T&E Team for the purpose of distribution to other Performers. The sharing of datasets across Performers will help ensure that improvement in performance attributable to a team's superior technical approach rather than a greater accrual of development data resources. Public release of proprietary datasets is not a requirement; however,

release for use within the SINTRA program is required. Additional details on program data can be found in section 1.D. Program Data below.

The SINTRA program will pursue rigorous and comprehensive independent T&E to ensure that research outcomes are well characterized, deliverables are aligned with program objectives, and algorithm performance is measured across the full range of data conditions. T&E activities will not only inform Government stakeholders on SINTRA research progress but will also serve as valuable feedback to the Performers to improve their research approaches, algorithm training practices, and system development. The SINTRA program will work closely with Government leaders in the fields of orbital debris and space situational awareness to continually refine and improve T&E methodologies.

### 1.A.1. Technical Challenges and Objectives

Offerors shall address two task areas (TAs) to meet the goal of SINTRA to exploit data for the detection, tracking, and characterization of space debris 0.1 – 10 cm in size. Offerors will determine the threshold at which to track debris clouds instead of individual debris objects. Offerors must propose novel approaches to each of these TAs, and if selected as a Performer, will be required to create an end-to-end technology that incorporates software components from each TA.

**Debris Detection, Tracking, and Characterization (TA1):** The goal of TA1 is to research and develop novel, innovative techniques to detect, track, and characterize the size, mass, and density of space debris 0.1 – 10 cm in size, traveling in any orbital plane around the Earth.

During **Task Area 1.A (TA1.A)**, the Performer will be assessed against known tracked debris objects 10 – 40 cm in size in Low Earth Orbit (LEO), with orbital trajectories on publicly accessible databases (e.g., space-track.org).

During **Task Area 1.B (TA1.B)**, the program metrics will extend to debris 0.1 – 40 cm in size, from LEO to Geosynchronous Orbit (GEO). Offerors must propose novel, explainable, techniques to establish accurate detection, tracking, and characterization of currently untracked debris and/or debris clouds to address this goal. It is assumed that there is an increased number of smaller debris traveling with the larger tracked debris, due to the power law size distribution. It is also assumed that larger debris can collide and create smaller debris objects. Additionally, smaller debris can travel independently of larger debris objects. Since debris less than 10 cm in size is not currently tracked and characterized with existing capabilities, Offerors must propose methods to evaluate this approach that are potentially generalizable to other Performer approaches. T&E Teams will finalize protocol for evaluating explanations in Phase 1 and implement this protocol in evaluations during subsequent phases.

**Persistent Monitoring of the Debris Population (TA2):** The goal of TA2 is to demonstrate the capability to persistently monitor the orbital debris population for objects 0.1 – 10 cm in size. The TA2 deliverable must incorporate the variations in orbital trajectory due to gravitational perturbations from the Sun and Moon, and non-gravitational forces, including solar radiation and atmospheric drag.

Similar to TA1, the Performer will be assessed against known tracked debris objects 10 – 40 cm in size in LEO during **Task Area 2.A (TA2.A)**, and debris 0.1 – 40 cm in size from LEO – GEO during **Task Area 2.B (TA2.B)**.

### 1.A.2. Program Phases

The SINTRA program is anticipated to be a 4-year (48 month) effort, comprised of two (2) Phases. Both Phases are being solicited under this BAA. Each Phase will be 24 months in duration. Phase 1, **Contract Line Item (CLIN) 0001**, will encompass Task Area 1, and Phase 2 **(CLIN 0002)** will encompass Task Area 2, as described above.

**Offerors are required to propose to both Phases and Task Areas of the Program under this BAA. Proposals that submit to one Task Area or Phase will be considered non-compliant.**

SINTRA aims to develop new techniques to detect, track, and characterize debris and debris clouds of varying physical characteristics that influence the risk assessment decisions for potential impact damage, including debris size, shape, density, and orbital regime. Program phases are designed to test Performer systems against increasingly challenging risk scenarios.

Within each program phase, there are three evaluation milestones at which Performers submit software deliverables to the T&E team for evaluation against sequestered datasets. The Phase 1 milestones are: (1) debris signature detection; (2) debris tracking; and (3) debris characterization. The Phase 2 milestones are: (1) debris detection time; (2) detection rate; and (3) revisit rate. Additionally, regression testing will be conducted during Phase 2 to ensure that the Phase 1 performance of Performer software deliverables is maintained during Phase 2 development.

The contract will have two contract line items (CLINs): CLIN 0001 for the Base period – Phase 1 TA1. CLIN 0002 (option) for Phase 2 TA2. Each CLIN will have a separate period of performance. However, as outlined in Table 1, a low level of work is anticipated for TA2 during Phase 1. For example, the debris detection time metric is aligned with TA2, and will be evaluated during Phase 2 Milestone 1, but a relaxed metric is provided in Phase 1 to allow for investigation. Therefore, minor exploration of TA2 work and associated costs for this minor work are acceptable during Phase 1 (CLIN 0001). Please ensure this work is clearly identified in the proposal.

Each evaluation will be performed on sequestered datasets using Performer-submitted containerized software components. Aspects of evaluation that involve human adjudication or feedback will be performed by the T&E Team.

In Phase 1 and Phase 2, IARPA will provide development datasets and an evaluation harness developed by the T&E team. The same harness will be used for testing and evaluation of Performer-submitted software components at each subsequent evaluation milestone.<sup>2</sup> The purpose of the evaluation harness is to enable Performer-site training, testing, and competition between debris algorithm components. IARPA will also furnish to Performers documentation of the program Application Programming Interface (API) developed by the SINTRA T&E Team. This Government Furnished Information (GFI) will facilitate productive and useful research in a consistent and standardized manner. The first version of the SINTRA API will be provided to Performers at the Phase 1 Kick-off Meeting and updated periodically thereafter.

Datasets developed by the T&E Team for each program phase will be partitioned into development and evaluation datasets. In addition to the T&E development data, Performers are expected to create their own development datasets aggregated from open source or self-generated and using creative techniques and heuristics to infer debris population distributions. These datasets must be submitted to the T&E Team at the conclusion of each phase. The T&E team will combine all Performer datasets into a single dataset, such that it is releasable to all Performers as discussed in section 1.D.1.2.

Evaluation of Performer progress towards program metrics will primarily utilize evaluation datasets that are sequestered. A portion of these datasets will be shared with Performers after each evaluation to enable Performers to conduct error analyses. The baseline API provided in Phase 1 will standardize system and subcomponent design and streamline comparative evaluations. More details on the datasets are available in section 1.D. and more details on the API are available in section 1.G.3.1. Program API

In addition to the development datasets and evaluation harness provided by the T&E team, IARPA will also furnish to Performers the use of the Naval Research Laboratory (NRL) Space Physics Simulation Chamber (SPSC). Scaled near-Earth space-like plasmas are created in the SPSC's 5-m long by 1.8-m diameter main chamber and 2-m long by 0.55-m diameter source chamber. Independently controllable electromagnets allow for control of the shape of the axial magnetic field. As requested, each Performer will have the opportunity to conduct two separate two-week experiments per Program Phase. An overview of the NRL

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<sup>2</sup> Systems developed by one performer will not be shared with other performers, only submitted to T&E for official evaluations.

SPSC facility will be provided at the SINTRA Program Kick-off. Performers must coordinate the scheduling of experiments with NRL.

Documentation from the Army Research Laboratory describing the current and predicted sensitivity spectrum of Rydberg sensors will be provided as GFI. Sensitivity spectra is provided in units of electric field (volts/meter) and/or effective noise temperature (kelvin) as a function of frequency from 0 Hz to 1 THz. Further, ARL has developed a Rydberg sensor-modeling suite (called Rydiqule). This suite is expected to be publicly released by the end of CY 2022. The ARL information will include a brief document describing potential use cases of Rydiqule for the SINTRA program, and instructions for accessing the code and finding the documentation.

Additional GFI provided by IARPA to SINTRA Performers will include several weeks of curated high-resolution ionospheric measurements made over the southern portion of the Mountain Time Zone and one year of lower resolution ionospheric measurements made along the East Coast of the Continental United States during the IARPA HFGeo Program. The HFGeo data will be included in the development datasets provided by the T&E team.

### 1.B. Team Expertise

Collaborative efforts and teaming among Offerors are highly encouraged. It is anticipated that teams will be multidisciplinary and should include expertise in one or more of the disciplines listed below. This list is included only to provide guidance for the Offerors; satisfying all the areas of technical expertise below is not a requirement for selection and unconventional or innovative team expertise may be needed based on the proposed research. Proposals should include a description and the mix of skills and staffing that the Offeror determines will be necessary to carry out the proposed research and achieve program metrics.

- Adaptive optics
- Aerodynamic drag
- Astrodynamics
- Classical mechanics
- Data visualization
- Distributed processing
- Machine learning
- Materials science
- Modeling and simulation
- Multi-scale analysis
- Plasma physics
- Radar theory and operation
- Signal processing
- Software engineering
- Systems engineering
- Systems integration
- Thermodynamics

### 1.C. Program Scope and Limitations

Proposals shall explicitly address all the following:

- **Underlying theory:** Proposed strategies to meet program-specified metrics must have firm theoretical bases that are described with enough detail that reviewers will be able to assess the viability of the approaches. Proposals shall properly describe and reference previous work upon which their approach is founded.
- **Research & Development approach:** Proposals shall describe the technical approach to meeting program metrics.

- **Technical risks:** Proposals shall identify technical risks and proposed mitigation strategies for each identified risk.
- **Software development:** Proposals shall describe the approach to software architecture, modularization, and integration.

The following areas of research are **out of scope** for the SINTRA program:

- Research that does not have strong theoretical and experimental foundations.
- Approaches that do not pursue the detection, tracking, and characterization of debris.
- Approaches that aim at debris removal or debris damage mitigation.
- Approaches dependent on the currently unfunded development and launch of new satellites with debris detection sensors.
- Trade studies for the development of new satellites with debris detection sensors.
- Research that utilizes proprietary data that are not made available to other Performers.

US-based Offerors proposing to use existing space-based sensors must adhere to USG regulation. IARPA requires that all US-based Offerors proposing to use existing space-based sensors contact the NOAA Commercial Remote Sensing Regulatory Affairs (CRSRA) Office to determine if a license is required. If selected, a Performer must obtain the required license. The Performer must provide IARPA a copy of the NOAA CRSRA determination before the end of Year 1. The NOAA CRSRA Office contact form can be found here: <https://www.nesdis.noaa.gov/about/our-offices/commercial-remote-sensing-regulatory-affairs>.

Delivered software will be evaluated by the T&E Team on sequestered evaluation datasets. During each performance period, Performers will build software systems that will be run and evaluated by the T&E Team. Testing protocols do not allow for expert operators, but limited human-in-the-loop operation is permitted and will be carried out by the T&E Team. Notwithstanding testing and evaluation tasks that explicitly require human feedback, systems must be fully automated. Systems or algorithms that have been trained using human-in-the-loop methods may be submitted, provided they run autonomously.

## **1.D. Program Data**

The SINTRA dataset will contain data from multiple sensor types, sensor locations, data formats, and data fidelity. To ensure sufficient data are provided for system development and statistically reliable evaluations, the program T&E Team will implement a robust and explicit data collection workflow.

The program will include two types of data – Development Data and Evaluation Data. Development data will be utilized by Performers, as they see fit, to conduct research, development, error analysis, and algorithm training. Evaluation data will be explicitly excluded from any algorithm training approaches and will be used by the T&E Team for performance evaluations of subcomponents, modules, and systems measured against the SINTRA program metrics.

Offerors shall include in their proposals the cost and resources to acquire, implement, and maintain the computing infrastructure necessary to carry out all work described in their proposals, including dataset development.

### **1.D.1. Development Data**

Development data will be utilized by Performers, as they see fit, to conduct internal research, development, error analysis, and algorithm training. Each Performer is anticipated to have a unique technical solution to the SINTRA challenge, and accordingly may require different development data depending on their approach.

Proposals must specify the development data needed to carry out the proposed research and what data characteristics are necessary for the Offeror's approach(es) to be successful at meeting program objectives. Proposals must specify how the Offer plans to obtain the development data.

Additionally, as part of Volume 1 (Technical & Management Proposal) Section 3 (Detailed Proposal), Offerors should present a dataset development plan detailing how the Offeror intends to obtain these data. Offerors' unique data needs in a particular technical area should not be interpreted as requirements input into the program's T&E data collections, but part of a comprehensive research approach that communicates a possible path towards meeting SINTRA program objectives.

There will be three types of development data used in the SINTRA program, as illustrated in Figure 4:

- **Government Research and Test Sets** – Datasets collected, annotated, and curated by the T&E Team. Most of these data will be sequestered, but a small portion will be provided to Performers for R&D (prior to evaluation) and error analysis (following evaluation).
- **Researcher Collections** – Datasets collected, annotated, and curated by R&D Performers. These datasets shall be delivered with a minimum of Government Purpose Rights, in accordance with FAR 52.227-14.
- **External Data Sources** – Data obtained by Performers that are available from third parties or that have been collected by a Performer outside of SINTRA shall be delivered with sufficient rights to allow the United States Government (USG) and the T&E Team to share this data with all Performers for their use in connection with the SINTRA Program.

**Figure 4: Types of development data used in the SINTRA program.**

#### 1.D.1.1. Government Research and Test Sets

The T&E Team will develop SINTRA Research Sets (SRS) and SINTRA Test Sets (STS) throughout the program. The Government will release SRS to Performers to facilitate system development. STS will be sequestered for the purpose of blind testing and evaluation, though small portions of this dataset may be released for the purpose of error analysis following official evaluation milestones. The volume of data in the STS is anticipated to be much larger than the SRS.

The SRS datasets will include new collections from the radar and optical systems currently used to develop debris models, as detailed in Figure 1, to validate measurements by proposed systems. The new collections will be dependent on proposed solutions and may be coordinated across multiple sensors to ensure maximum utility to the performers.

The SRS datasets will also include collections of sensor data publicly accessible on the OpenMadrigal website. Led by the MIT Haystack Observatory since 1980, the OpenMadrigal project maintains and develops the Madrigal database, which is an open resource for geospace data. Madrigal is a robust, World Wide Web based system capable of managing and serving archival and real-time data, in a variety of formats, from a wide range of ground-based and some space-based instruments. An overview of Madrigal data can be found in material from the Boston University Incoherent Scatter Radar Summer School, publicly accessible at <https://wikis.mit.edu/confluence/display/ASGScience/2022+ISR+School>.

The T&E Team will augment the data collected with auxiliary sensors not included in the Madrigal database. The T&E Team will vet the quality of the auxiliary sensor data to verify contributions are appropriate to and not otherwise aberrant to Madrigal data. There will be no overlap between known tracked debris objects in the SRS and STS datasets.

The T&E Team will continuously develop SRS and STS database throughout the program, curating the database they develop to meet evaluation goals. The specifics of these collections will be determined by the T&E Team during the program.

#### 1.D.1.2. Researcher Collections

As indicated in the previous section, the Government will provide limited datasets (SRS) to Performers for system development. Each Performer is required to plan and carry out debris dataset development efforts. To minimize the risk of system biases, Performers must plan and implement steps to ensure that datasets include debris objects of varying size, shape, mass, density, and surface charge, and orbital regimes of varying altitude and inclination. Datasets assembled by Performers are referred to as SINTRA Researcher Collections (SRC). Performers are required to submit their most current SRC to the Government in a standard format at each evaluation milestone. Performers are permitted to withhold their internal SRC from other Performers until the end of each program milestone. At the conclusion of **each milestone**, the T&E Team will combine each Performer's SRC into a unified collection and will release this collection to all Performers. Sharing of the combined SRC helps ensure that improvement in performance on evaluation tasks is attributable to a team's superior technical approach rather than a greater accrual of development data resources.

As part of their proposal, each Offeror should provide a data collection plan and describe how their SRC will be used in R&D. Performers cannot control the quality and depth of data from other teams' collections, but they can ensure their own collections meet or exceed their own research needs.

Performers will be responsible for annotating all SRC data for their R&D needs. All annotation data are to be delivered to the Government regardless of whether they are developed after the collection or after initial delivery of the SRC dataset. Annotation methodologies should be consistent with current research best practices to facilitate algorithm development.

All data collected, curated, annotated, synthesized, or generated by Performers created under the SINTRA program for R&D or any other purpose will be provided to the Government as Deliverables. Software tools or algorithms created for the purpose of data annotation, synthesis, or generation under the SINTRA program for R&D purposes or otherwise shall also be provided to the Government as Deliverables with Government Purpose Rights in accordance with FAR 52.227-14, to allow use by the USG. IARPA reserves the right to require delivery of incomplete or partially annotated versions of SRC datasets with 30 days' advance notice.

### **1.D.1.3. External Data Sources**

Performers may utilize external datasets in addition to SRS and SRC datasets. External data are data obtained by Performers that are available from third parties or that have been collected by the Performer outside of the SINTRA program. An example of a third-party dataset would be sensor data from the amateur astronomy community or a university-sponsored space-based platform that has been approved by the dataset owner for release to the research community. Data collected by a Performer under a different program are considered external data, even if the other program's data collection was Government-sponsored.

All external datasets must be approved for use in the SINTRA program by IARPA during contract performance, in accordance with applicable policies, statutes, and regulations.

Performers may not use proprietary datasets unless these datasets are made available to all R&D Performers and the T&E Team in the SINTRA program. Public release of proprietary datasets is not a requirement; however, release for use within the SINTRA program is required. Moreover, for any dataset not collected under the scope of the SINTRA program, Performers must provide the Government with an accounting of all resources used and sources from which data are drawn and describe how the data will be used for development, testing, and training of algorithms.

### **1.D.2. Evaluation Data**

SINTRA will utilize distinct test data to evaluate Performer subcomponents, modules, and systems against program goals, objectives, and metrics. Each SINTRA Test Set (STS) will consist of diverse debris object physical characteristics and orbital regimes. These data are constructed to evaluate program metrics in a balanced and intentional manner. The set of known tracked debris objects appearing in this collection will

not overlap with that of the SRS dataset. This ensures that no known debris objects used for system development will be included in the testing set, and that systems performance generalizes.

Intended uses of the STS evaluation datasets include both use by the T&E Team for independent evaluation of program Deliverables against target metrics and use by Performers to refine and improve their algorithms. Small portions of the evaluation datasets will be provided to Performers to enable internal T&E and exploratory error analysis by Performers and to improve the consistency and communication between Performers and the T&E Team. Additional sequestered or external datasets may be used to supplement performance evaluations at the discretion of the SINTRA PM.

### **1.E. Test and Evaluation (T&E)**

T&E will be conducted by an independent team of Government and contractor staff carrying out evaluation and analyses of Performer research Deliverables using program test datasets and protocols. The STS data and test protocols (see 1.D.2. Evaluation Data) will be the primary mechanism by which the T&E Team carries out their evaluations.

The SINTRA Program will pursue rigorous and comprehensive independent T&E to ensure that research outcomes are well characterized, deliverables are aligned with program objectives, and that algorithm performance is measured across the full range of conditions. Such T&E activities will not only inform IARPA and Government stakeholders on SINTRA research progress but will also serve as invaluable feedback to the Performers to improve their research approaches, algorithm training practices, and system development. The SINTRA Program will work closely with Government leaders in space situational awareness (SSA) and orbital debris to continually refine and improve T&E methodologies.

Performers will have specific Deliverable Milestones at which all subcomponent and system algorithms and software will be delivered to IARPA and its designated T&E Team. The T&E Team will then conduct evaluations at the direction of the SINTRA Program Manager (PM) and with the objective of characterizing the quality, functionality, and performance of the SINTRA Deliverables. In addition to quantitative measurements, T&E will be carried out to establish a thorough understanding of the progress, status, and limitations of the Performer's research.

T&E results and feedback will be provided to Performers at regular intervals to keep them abreast of current independent performance measurements and to inform and improve their R&D approaches and methods. T&E results from all Performers will be shared with all teams to establish an understanding of the current state and progress of SINTRA research; T&E results will also be shared with USG external stakeholders, including their contractors, for Government purposes (see 4. A. Proposal Information). For example, a Principal Investigator (PI) Review Meeting will be held annually to share research ideas, progress, and results across the SINTRA program (see 1.H.1. Workshops).

IARPA may conduct other supplemental evaluations or measurements in its sole discretion to evaluate the Performers' research and Deliverables.

### **1.F. Program Metrics**

Achievement of metrics is a performance indicator under IARPA research programs. IARPA has defined SINTRA program metrics to evaluate effectiveness of the proposed solutions in achieving the stated program goal and objectives, and to determine whether satisfactory progress is being made. The metrics described in this BAA are shared with the intent to scope the effort, while affording maximum flexibility, creativity, and innovation to Offerors proposing solutions to the stated problem.

The final SINTRA T&E protocols and evaluation methodology are currently under development; further details will be provided at program kickoff. Program metrics may be refined during the various phases of the SINTRA program; if metrics change, revised metrics will be communicated in a timely manner to Performers. The evaluation methodology may be revised by the Government at any time during the program lifecycle to better meet program needs.

SINTRA program target metrics were selected based on three factors:

1. What is technically achievable but challenging based on current state-of-the-art in orbital debris detection, tracking, and characterization;
2. What is statistically measurable based on the planned program evaluation data; and
3. What is useful to mission partners based on USG stakeholder needs and use cases.

The following is a description of primary program metrics and target scores. Score targets will increase for each successive program phase. Targets scores account for orbital regimes since the detection of debris size is a function of distance for existing capabilities.

SINTRA performance metrics are designed to evaluate the software components deliverables for each of the two program tasks areas: debris detection, tracking, and characterization (TA1), persistent monitoring of the debris population (TA2). There may exist other metrics that have not been contemplated by IARPA. It is acceptable for Offerors to propose alternative approaches in addition to the required program metrics, so long as such approaches are described in their proposal and are of a similarly challenging nature to those proposed in this BAA. Such alternate approaches will be evaluated in tandem with proposed techniques.

A summary of metric targets by Phase is shown in Table 1; these metrics are subject to change over the course of the program. Accuracy targets are defined as aggregated statistical measures for a given phases' STS evaluation datasets, which contain a diverse set of debris physical characteristics and orbital regimes. These targets are estimates informed by current capabilities and use case requirements. To mitigate risk and better inform the Government regarding the appropriateness of phase-over-phase performance targets, the T&E Team will compare performance against baseline systems for each task approximating the current state-of-the-art. Further information about baseline models will be furnished to Performers at program kickoff.

SINTRA Program Target Metrics and associated units are defined as follows:

- Debris detection (h): Time to detect new debris after a debris-generating event.
- Detection rate (%): Percentage of positive detections.
- Coverage (sr/km): The coverage metric is given in steradians per kilometer. A steradian (sr) is a solid angle unit. The surface area of a sphere is  $4\pi$  steradians. Each orbital altitude, given in kilometers, can be represented by a sphere with a surface area of  $4\pi$  steradians.
- Revisit rate (h): Time to revisit a previously detected debris object.
- False alarm rate (%): Percentage of false positive detections.
- Debris cloud: Multiple debris objects. Offerors will determine the threshold at which to define and track debris clouds instead of individual debris objects.
- Space sensor size (cm<sup>3</sup>): Maximum size for a new space-based sensor.
- Space sensor power (W): Maximum power for a new space-based sensor.

**Table 1: SINTRA Program Target Metrics**

	Phase 1				Phase 2			
	Task Area 1.A (TA1.A): Debris detection, tracking, and characterization		Task Area 1.B (TA1.B): Debris detection, tracking, and characterization		Task Area 2.A (TA2.A): Persistent debris population monitoring		Task Area 2.B (TA2.B): Persistent debris population monitoring	
	Range	+/-	Range	+/-	Range	+/-	Range	+/-
Debris diameter (cm)	10-40	0.25	0.1-40	0.05	10-40	0.25	0.1-40	0.05

	Phase 1				Phase 2			
	Task Area 1.A (TA1.A): Debris detection, tracking, and characterization		Task Area 1.B (TA1.B): Debris detection, tracking, and characterization		Task Area 2.A (TA2.A): Persistent debris population monitoring		Task Area 2.B (TA2.B): Persistent debris population monitoring	
	Range	+/-	Range	+/-	Range	+/-	Range	+/-
Debris/cloud speed (km/s)	1.4-10.2	0.25	1.4-10.2	0.1	1.4-10.2	0.1	1.4-10.2	0.1
Debris/cloud position (km)	200-4,000	5 (LEO)	200-40,000	5 (LEO) 50 (GEO)	200-4,000	2 (LEO)	200-40,000	2 (LEO) 10 (GEO)
Debris particle density (kg/m <sup>3</sup> )	0 - 22000	2000	0 - 22000	1000	0 - 22000	1000	0 - 22000	1000
Debris detection (h)	< 168	8	< 60	5	< 2	0.5	< 0.083	0.0167
Detection rate	> 70%	5%	> 80%	5%	> 80%	5%	> 95%	2%
False alarm rate	< 10%	2%	< 5%	1%	< 5%	1%	< 2%	0.5%
Coverage (sr/km)	> 1 pi	0.5 pi	> 2 pi	0.5 pi	> 3 pi	0.5 pi	> 4 pi	0.25 pi
Revisit rate (h)	< 168	8	< 48	5	< 2	0.5	< 0.083	0.0167
Space Sensor Size (cm <sup>3</sup> )	N/A	N/A	< 700	50	N/A	N/A	< 500	50
Space Sensor Power (W)	N/A	N/A	< 150	10	N/A	N/A	< 50	5

## 1.G. Program Waypoints, Milestones, and Deliverables

Waypoints, Milestones, and Deliverables are established from the program’s onset to ensure alignment with SINTRA objectives, organize research activities in a logical and reportable manner, and facilitate consistent and efficient communication among all stakeholders – IARPA, the SINTRA T&E Team, USG Stakeholders, and Research Performers.

### 1.G.1. Program Waypoints

Waypoints are the means by which the Performer clearly demonstrates the quantitative and timely progress that must be made for the overall concept to meet end-of-phase Milestones. In other words, the intent of Waypoints is to provide a clear measure of progress towards meeting the program Milestones so the PM and advisors can provide more effective guidance and assistance to the Performers. Performance against these Waypoints will be reviewed throughout the program, and the PM and advisors will use performance against the Waypoints to assess whether course corrections are needed to ensure program success.

The Government has defined Waypoints for all Performers that are included in the Program Milestones and Deliverables (see 1.G.2. Program Milestone, Waypoint, and Deliverables Timeline). Progress against these Waypoints will be reviewed during site visits.

### 1.G.2. Program Milestone, Waypoint, and Deliverables Timeline

Table 2 and Table 3 show a timeline for the program with defined Milestones, Waypoints and Deliverables. The Offeror may add other Waypoints in addition to the minimum set listed in the table.

**Table 2: Program Phase 1 Milestone, Waypoint and Deliverables Timeline**

Phase	Month	Event	Description	Comments	Deliverables
1-2	All	Waypoint	Monthly Status Report (MSR)	Due on 10th of each month; Technical and cost	MSR
1-2	All	Waypoint	Progress and Status Meeting	Bi-weekly teleconference with SINTRA PM	N/A
1	1	Waypoint	SRS1 datasets	Provided as GFI	N/A
1	1	Waypoint	Kick-off Meeting	Location TBD; information about GFI/GFE furnished to Performers; T&E presents guidelines performance evaluation	N/A
1	2	Waypoint	Site Visit	At Performer site	N/A
1	8	Waypoint	Site Visit	At Performer site	N/A
1	9	Deliverable	System submission for Milestone 1.1	All subcomponents and systems	TA1 System; SRC; Software should be delivered at the beginning of evaluation. Updated software may be requested if deficiencies are identified during evaluation
1	10-11	Milestone	Evaluation Milestone 1.1	T&E reports scores to Performers	N/A
1	12	Deliverable	Technical report describing methods for evaluating unknown debris	Delivered by Performers to T&E Team and other Performers	Document
1	14	Waypoint	Site Visit	At Performer site	N/A
1	15	Deliverable	System submission for Milestone 1.2	All subcomponents and systems	TA1 System; SRC (updated); Software should be delivered at the beginning of evaluation. Updated software may be requested if deficiencies are identified during evaluation
1	16-17	Milestone	Evaluation Milestone 1.2	T&E reports scores to Performers	N/A
1	18	Waypoint	Review of combined framework for evaluating unknown debris	T&E Team presents tentative evaluation framework to Performers; Performers present work on evaluating unknown debris	Meeting
1	20	Waypoint	Site Visit	At Performer site	N/A

Phase	Month	Event	Description	Comments	Deliverables
1	21	Deliverable	System submission for Milestone 1.3	All subcomponents and systems	TA1 System; SRC (updated); Software should be delivered at the beginning of evaluation. Updated software may be requested if deficiencies are identified during evaluation
1	22-23	Milestone	Evaluation Milestone 1.3	T&E reports scores to Performers	N/A
1	24	Waypoint	SRC datasets combined and released to Performers; evaluation protocol for evaluating unknown debris finalized and released	Provided as GFI	N/A
1	24	Waypoint	PI Meeting	Location TBD	N/A
1	24	Deliverable	Phase 1 final report	Any updated or additional data or software also due	Report

**Table 3: Program Phase 2 Milestone, Waypoint and Deliverables Timeline**

Phase	Month	Event	Description	Comments	Deliverables
2	25	Waypoint	SRS2 datasets	Provided as GFI	N/A
2	25	Waypoint	Kick-off	Location TBD	N/A
2	26	Waypoint	Site Visit	At Performer site	N/A
2	32	Waypoint	Site Visit	At Performer site	N/A
2	33	Deliverable	System submission for Milestone 2.1	All subcomponents and systems	TA2 System; SRC (updated); Software should be delivered at the beginning of evaluation. Updated software may be requested if deficiencies are identified during evaluation
2	34-35	Milestone	Evaluation Milestone 2.1	T&E reports scores to Performers	N/A
2	38	Waypoint	Site Visit	At Performer site	N/A
2	39	Deliverable	System submission for Milestone 2.2	All subcomponents and systems	TA2 System; SRC (updated); Software should be delivered at the beginning of evaluation. Updated software may be requested if deficiencies are identified during evaluation
2	40-41	Milestone	Evaluation Milestone 2.2	T&E reports scores to Performers	N/A
2	44	Waypoint	Site Visit	At Performer site	N/A
2	45	Deliverable	System submission for Milestone 2.3	All subcomponents and systems	TA2 System; SRC (updated); Software should be delivered at the beginning of evaluation. Updated software may be

Phase	Month	Event	Description	Comments	Deliverables
					requested if deficiencies are identified during evaluation
2	46-47	Milestone	Evaluation Milestone 2.3	T&E reports scores to Performers	N/A
2	48	Waypoint	PI Meeting	Location TBD	N/A
2	48	Deliverable	Final report	Any updated or additional data or software also due	Report

### 1.G.3. Software Deliverable Formatting

Performers will be required to provide algorithm and software Deliverables in a manner that conforms to a standardized industrial method or methods that will be provided at program Kickoff. To facilitate planning, Offerors may assume that the standardized configuration will require the use of software containerization technology. This means that the entirety of a Performer’s system, including pre- and post-processing, must be included within the delivered software container. For models that require training, the expectation is for the initial model training to occur on Performer systems, with the ability for the T&E Team to re-train and test the model with the same and/or other data. Performers shall also provide source code at the Government’s request to enable modification of Performer containers to suit deployment constraints. Performer teams are expected to have the requisite expertise to conduct software development and support.

Each team is required to include among their key personnel a Lead System Integrator (LSI) who shall be responsible for preparing software Deliverable subcomponents, modules, and systems, performing quality control of Deliverable, and integrating key components into the primary SINTRA system(s). The LSI will also oversee communication and coordination across a Performer’s research teams including subcontractors, if applicable, to ensure research products are functional and following software coding best practices (e.g., inline comments, documentation). Additional team members and roles are dependent on the proposed research, as such, there is no predetermined or required skill mix.

#### 1.G.3.1. Program API

The SINTRA Program will utilize a standardized Application Programming Interface (API) for all software Deliverables and evaluations. The first version of the SINTRA API will be provided to Performers at the Phase 1 Kick-off Meeting and updated periodically thereafter. The API will define function calls, data structures, and display creation and management for operating and evaluating SINTRA software in a standardized manner. The API will accommodate common Madrigal geospace data formats and human-in-the-loop interactions. All Performer solutions must be compatible with the SINTRA API. Performers have a requirement to provide sufficient documentation and training for T&E partners to adequately evaluate their systems.

### 1.H. Meeting and Travel Requirements

Offerors are expected to assume responsibility for administration of their projects and to comply with contractual and program requirements for reporting, attendance at program workshops, and availability for site visits. The following paragraphs describe typical expectations for meetings and travel for IARPA programs as well as the contemplated frequency and locations of such meetings. In addition to ensuring that all necessary details of developed software, algorithm, and operational instructions are clear and complete, each Performer will be required to be available for questions and troubleshooting from the T&E Team in Performer status meetings.

#### 1.H.1. Workshops

All Performer teams are expected to attend workshops, including key personnel from prime and subcontractor organizations.

The SINTRA program intends to hold a program Kick-off Meeting workshop in the first month of the program and the first month of each subsequent program phase. In addition, the program will hold a PI Review Meeting starting in Phase 1 and then similar workshops annually thereafter. Kick-off Meetings and PI Review Meetings may be combined for logistical convenience. The dates and locations of these meetings are to be specified at a later date by the Government, but for planning purposes, Offerors should use the approximate times and locations listed in Tables 4-5. Both types of meetings will likely be held in the Washington, D.C. metropolitan area, but IARPA may opt to co-locate the meeting with a relevant external conference or workshop to increase synergy with stakeholders. IARPA reserves the right to hold the meeting virtually for logistical or health and safety reasons.

Kick-off Meetings will typically be one day in duration and will focus on plans for the coming Phase, Performer planned research, and internal program discussions. PI Review Meetings will typically be two days in duration and will have a greater focus on communicating program progress and plans to USG stakeholders. These meetings will include additional time allocated to presentation and discussion of research accomplishments as well as interactive system demonstrations for Government stakeholders.

In both cases, the workshops will focus on technical aspects of the program and on facilitating open technical exchanges, interaction, and sharing among the various program participants. Program participants will be expected to present the technical status and progress of their projects to other participants and invited guests. Individual sessions for each Performer team with the SINTRA PM and T&E Team may be scheduled to coincide with these workshops. Non-proprietary information will be shared by Performers in the open meeting sessions; proprietary information sharing shall occur during individual breakout sessions with the SINTRA PM and the T&E Team.

#### **1.H.2. Site Visits**

Site visits by the Government Team will generally take place semiannually during the life of the program. These visits will occur at the Performer's facility. Reports on technical progress, details of successes and issues, contributions to the program goals, and technology demonstrations will be expected at such site visits. Performers shall participate and provide final meeting documents, to include captured action items, within 15 calendar days following the meeting. Draft materials, for any presentations, are due 5 workdays prior to the meeting. IARPA reserves the right to conduct additional site visits on an as-needed basis.

#### **1.I. Period of Performance**

The SINTRA program is envisioned as a 48-month effort that is intended to kickoff in May 2023. Phase 1 (i.e., Base Period) of the Program will last 24 months; Phase 2 (i.e., Option Period) will last 24 months. Offerors are required to submit a proposal that addresses both phases.

#### **1.J. Place of Performance**

Performance will be conducted at the Performers' sites.

### **SECTION 2: AWARD INFORMATION**

The Government intends to award contracts encompassing all Phases of the program from this BAA. Exercise of the Option Periods shall depend upon performance during Phase 1 - Base Period and subsequent Option Periods, **if any**, as well as program goals, the availability of funding, and IARPA priorities. Exercising of Phase 2 – Option Period is at the sole discretion of the Government.

Multiple awards are anticipated. The resources made available under this BAA shall depend on the quality of the proposals received and the availability of funds.

The Government reserves the right to select for negotiation all, some, or none of the proposals received in response to this solicitation and to make awards without discussions with Offerors. The Government also reserves the right to conduct discussions if determined to be necessary. Additionally, IARPA reserves the right to accept proposals in their entirety or to select only portions of proposals for negotiations for award. Evaluation and award of proposals will follow FAR 35 processes as described herein.

Awards under this BAA shall be made to Offerors on the basis of the Evaluation Factors listed in Section 5 of the BAA, as well as successful completion of negotiations. Proposals selected for negotiation may result in a procurement contract or other transaction. The Government reserves the right to negotiate the type of award instrument (e.g., procurement contract or other transaction) it determines appropriate under the circumstances.

The Government shall contact Offerors whose proposals are selected for negotiations to obtain additional information required for award. The Government may establish a deadline for the close of fact-finding and negotiations that allows a reasonable time for the award of a contract. Offerors that are not responsive to Government deadlines established and communicated with the request may be removed from award consideration. Offerors may also be removed from award consideration should the parties fail to reach agreement within a reasonable time on contract terms, conditions, and cost/price.

### **SECTION 3: ELIGIBILITY INFORMATION**

#### **3.A. Eligible Applicants**

All responsible sources capable of satisfying the Government's needs may submit a proposal. Historically Black Colleges and Universities, Small Businesses, Small Disadvantaged Businesses and Minority Institutions are encouraged to submit proposals and team with others to submit proposals; however, no portion of this announcement shall be set aside for these organizations' participation due to the impracticality of reserving discrete or severable areas of this R&D effort for exclusive competition among these entities. Other Government Agencies, Federally Funded Research and Development Centers, University Affiliated Research Centers, Government-Owned, Contractor-Operated facilities, Government Military Academies, and any other similar type of organization<sup>3</sup> that have a special relationship with the Government, that gives them access to privileged and/or proprietary information or access to Government equipment or real property, are not eligible to submit proposals under this BAA or participate as team members under proposals submitted by eligible entities. An entity of which only a portion has been designated as a UARC may be eligible to submit a proposal or participate as a team member, subject to an organizational conflict of interest review.

Foreign entities and/or individuals may participate, but only as a part of a U.S. based team. The prime contractor must be a U.S. organization. Foreign entities and individuals may participate as subcontractors or employees of a U.S. organization; however, all foreign participation must comply with any necessary Non-Disclosure Agreements, Security Regulations, Export Control Laws, and other governing statutes applicable under the circumstances. Offerors are expected to ensure that the efforts of foreign participants do not either directly or indirectly compromise the laws of the United States, nor its security interests. As such, both foreign and domestic Offerors should carefully consider the roles and responsibilities of foreign participants as they pursue teaming arrangements.

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<sup>3</sup> There are instances when these types of entities provide a unique facility, specialized equipment or technical service that is not otherwise obtainable. In such cases, Offerors can request use and the Government will determine if the resource can be made available to all Offerors as Government Furnished Property/Equipment/Information/Service. If the resource requested cannot be provided directly by the Government, the Government may consider an Offeror's request for limited use as a procured service not otherwise available only after an OCI review and determination. It is advised that the Offeror have an alternate plan in its proposal in case the Government does not accept the proposed participation. Requests for such resources can be submitted during the Q&A period.

### **3.A.1 Organizational Conflicts of Interest (OCI)**

According to FAR 2.101 “*Organizational Conflict of Interest*” means that because of other activities or relationships with other persons, a person is unable or potentially unable to render impartial assistance or advice to the Government, or the person’s objectivity in performing the contract work is or might be otherwise impaired, or a person has an unfair competitive advantage.

In accordance with FAR 9.5, Offerors are required to identify and disclose all facts relevant to potential OCIs involving the Offeror’s organization and any proposed team member (sub awardee, consultant). Under this Section, the Offeror is responsible for providing this disclosure with each proposal submitted pursuant to the BAA. The disclosure must include the Offeror’s, and as applicable, proposed team member’s OCI mitigation plan. The OCI mitigation plan must include a description of the actions the Offeror has taken, or intends to take, to prevent the existence of conflicting roles that might bias the Offeror’s judgment and to prevent the Offeror from having an unfair competitive advantage. The OCI mitigation plan will specifically discuss the disclosed OCI in the context of each of the OCI limitations outlined in FAR 9.505-1 through FAR 9.505-4.

IARPA generally prohibits contractors/Performers from concurrently providing Scientific Engineering Technical Assistance (SETA), Advisory and Assistance Services (A&AS) or similar support services and being a technical Performer. Therefore, as part of the FAR 9.5 disclosure requirement above, address whether an Offeror or an Offeror’s team member (e.g., sub awardee, consultant) is providing SETA, A&AS, or similar support (e.g., T&E services) to IARPA under: (a) a current award or subaward; or (b) a past award or subaward.

If SETA, A&AS, or similar support is or was being provided to IARPA, the proposal must include:

- The name of the IARPA program or office receiving the support;
- The prime contract number;
- Identification of proposed team member (sub awardee, consultant) providing the support.

As part of their proposal, Offerors shall include either (a) a copy of their OCI notification including mitigation plan or (b) a written certification that neither they nor their subcontractor teammates have any potential conflicts of interest, real or perceived. A sample certification is provided in Appendix A.

The Government will evaluate OCIs and potential OCIs to determine whether they can be avoided, neutralized or mitigated and/or whether it is in the Government’s interest to grant a waiver. The Government will make OCI determinations, as applicable, for proposals that are otherwise selectable under the BAA Evaluation Factors.

The Government may require Offerors to provide additional information to assist the Government in evaluating OCIs and OCI mitigation plans.

If the Government determines that an Offeror failed to fully disclose an OCI; or failed to provide the affirmation of IARPA support as described above; or failed to reasonably provide additional information requested by the Government to assist in evaluating the Offeror’s OCI and proposed OCI mitigation plan, the Government may reject the proposal and withdraw it from consideration for award.

### **3. A.2 Multiple Submissions to the BAA**

Organizations may participate as a prime or subcontractor in more than one submission to the BAA. However, if multiple submissions to the BAA which include a common team member are selected, such common team members shall not receive duplicative funding (i.e., no one entity can be paid twice to perform the same task).

### **3. B. U.S. Academic Institutions**

According to Executive Order 12333, as amended, paragraph 2.7, “Elements of the Intelligence Community are authorized to enter into contracts or arrangements for the provision of goods or services with private companies or institutions in the United States and need not reveal the sponsorship of such contracts or arrangements for authorized intelligence purposes. Contracts or arrangements with academic institutions may be undertaken only with the consent of appropriate officials of the institution.”

Offerors must submit a completed and signed Academic Institution Acknowledgement Letter for each U.S. academic institution that is a part of their team, whether the academic institution is serving in the role of a prime, or a subcontractor or a consultant at any tier of their team with their technical proposal. Each Letter must be signed by a senior official from the institution (e.g., President, Chancellor, Provost, or other appropriately designated official). A template of the Academic Institution Acknowledgement Letter is enclosed in APPENDIX A of this BAA. Note that IARPA shall not enter into negotiations with an Offeror whose team includes a U.S. academic institution until all required Academic Institution Acknowledgment Letters are received.

### **3. C. Other Eligibility Criteria**

#### **3. C.1 Collaboration Efforts**

Collaborative efforts and teaming arrangements among potential Offerors are strongly encouraged. Specific content, communications, networking and team formations are the sole responsibility of the participants.

## **SECTION 4: PROPOSAL AND SUBMISSION INFORMATION**

This notice constitutes the total BAA and contains all information required to submit a proposal. No additional forms, kits, or other materials are required.

### **4. A. Proposal Information**

Interested Offerors are required to submit full proposals (Volume I, initially and Volume 2, if requested) in order to receive consideration for an award. Compliant proposals shall be received by the time and date specified in the BAA, General Information, item 7.2, **Proposal Due Date for Initial Round of Selections**, in order to be considered in the initial round. It is within IARPA’s sole discretion whether to evaluate any proposals received after this date but prior to the **BAA Closing Date** set forth in General Information, item 7.3. Selection for award remains contingent on the technical and funding availability evaluation factors. Proposals received after the BAA Closing Date are deemed to be late and will not be evaluated.

**The Government intends to use Booz Allen Hamilton, Bluemont Technology & Research, and Navstar Inc. to provide expert advice, regarding portions of the proposals submitted to the Government and/or to provide logistical support in carrying out the evaluation process.**

In addition to supporting evaluations, the following entities: Massachusetts Institute of Technology – Lincoln Laboratory, the Naval Research Laboratory, Los Alamos National Laboratory, and the Johns Hopkins University – Applied Physics Laboratory will be supporting T&E activities for contracts awarded under this program and should also be considered as part of an Offeror’s OCI disclosure.

All Government and Contractor personnel shall have signed and be subject to the terms and conditions of non-disclosure agreements. By submission of its proposal, an Offeror agrees that its proposal information may be disclosed to employees of these organizations for the limited purposes stated above. Offerors who object to this arrangement shall provide clear notice of their objection as part of their transmittal letter. If Offerors do not send notice of objection to this arrangement in their transmittal letter, the Government shall assume consent to the use of contractor support personnel in assisting the review of submittal(s) under this BAA.

Only Government personnel will make evaluation and award determinations under this BAA.

All administrative correspondence and questions regarding this solicitation shall be directed by email to [DNI-IARPA-BAA-22-02@iarpa.gov](mailto:DNI-IARPA-BAA-22-02@iarpa.gov). Proposals shall be submitted in accordance with the procedures stated in the BAA.

#### **4. B. Proposal Format and Content**

To facilitate the evaluation of the proposal, the government encourages Offerors to submit proposals which: are clear and concise; are limited to essential matters sufficient to demonstrate a complete understanding of the Government's requirements; include sufficient detail for effective evaluation; and provide a convincing rationale to address how the Offeror intends to meet these requirements and objectives, rather than simply rephrasing or restating the Government's requirements and objectives.

All proposals shall be in the format outlined below. Non-compliant proposals may be rejected without review. Proposals shall consist of "Volume 1 - Technical and Management Proposal" and, **only if requested** (see BAA sections 4.B.2 and 5.B.), "Volume 2 - Cost Proposal." All proposals shall be written in English.

Additionally, text should be black and paper size 8-1/2 by 11-inch, white in color with 1" margins from paper edge to text or graphic on all sides. IARPA desires Times New Roman font with font size not smaller than 11 point. IARPA desires that the font size for figures, tables and charts not be smaller than 10 point. All contents shall be clearly legible with the unaided eye. Excessive use of small font, for other than figures, tables, and charts, or unnecessary use of figures, tables, and charts to present information may render the proposal non-compliant. Text and graphics, if applicable, may be printed on both sides of a sheet (double-sided). Front and backside of a single sheet are counted as two (2) pages if both sides are printed upon. Foldout pages are not permitted. The page limitation for full proposals includes all figures, tables, and charts. All pages should be numbered. No other materials may be incorporated in any portion of the proposal by reference, as a means to circumvent page count limitations. All information pertaining to a volume shall be contained within that volume. Any information beyond the page limitations will not be considered in the evaluation of Offerors.

The Government anticipates proposals submitted under this BAA will be UNCLASSIFIED.

Each proposal submitted in response to this BAA shall consist of the following:

#### **Volume 1 – Technical & Management Proposal (See Section 4.B.1 below)**

Section 1 - Cover Sheet (see Appendix A) & Transmittal Letter (A Table of Contents is not required but if included, will not be considered in the page count)

Section 2 – Summary of Proposal

Section 3 – Detailed Proposal

Section 4 – Attachments (Not included in page count, but number appropriately for elements included. Templates are in the Appendices of this BAA)

- 1 – Academic Institution Acknowledgment Letter, if required
- 2 – Intellectual Property (IP) Rights, estimated not to exceed 4 pages
- 3 – OCI Notification or Certification
- 4 – Bibliography
- 5 – Relevant Papers (up to three)
- 6 – Consultant Letters of Commitment
- 7 – Human Use Documentation (see Section 6) - **Not applicable**
- 8 – Animal Use Documentation (see Section 6) - **Not applicable**
- 9 – A Three Chart Summary of the Proposal
- 10 – Security Plan, estimated not to exceed 5 pages - **Not applicable**
- 11 – Research Data Management Plan, estimated not to exceed 3 pages (see Section 4 and Template under Appendix A)

12 – Privacy Plan, (See Section 1.D.3, **if applicable**) no page limit- **Not applicable**

## **Volume 2 – Cost Proposal**

*(To be submitted only upon request of the Contracting Officer (CO), See BAA Sections 4.B.2 and 5.B)*

Section 1 – Cover Sheet (see Appendix B)

Section 2 – Estimated Cost Breakdown

Section 3 – Supporting Information

### **4. B.1 Volume 1: Technical and Management Proposal**

Volume 1, Technical and Management Proposal, may include an attached bibliography of relevant technical papers or research notes (published and unpublished) which document the technical ideas and approach on which the proposal is based. Copies of not more than three relevant papers can be included with the submission. Other supporting materials will not be reviewed. Except for the cover sheet, transmittal letter, table of contents (optional), and the required attachments stated in the BAA, the allowable page limits are as follows:

- **Not to exceed 30 pages**

Any pages exceeding these limits will not be considered during the evaluation process. Proposals shall be accompanied by an official transmittal letter, using contractor format.

#### **4. B.1.a Section 1: Cover Sheet & Transmittal Letter**

A. Cover sheet: (See Appendix A for template)

B. Transmittal Letter

The transmittal letter shall include the following (**not to exceed one page**):

Introduction of Offeror and team (subcontractors and consultants), the BAA number, IARPA program name, Offerors' Program name, the proposal validity period, the type contract vehicle being requested (procurement contract or other transaction) with a short rationale, any non-negotiable conditions on which the offer is based such as contract type (cost type, FFP), IP restrictions, etc., and the Offeror's points of contact information including: name, email and phone number for both technical and administrative issues.

**Note:** Any information required elsewhere in the proposal must be included in the appropriate section of the proposal (i.e., including the information in the transmittal letter alone may not be sufficient). If there is a conflict between the transmittal letter and the proposal the proposal shall control.

#### **4. B.1.b Section 2: Summary of Proposal (see below for page limit)**

Section 2 shall provide an overview of the proposed work as well as introduce associated technical and management issues. This section shall contain a technical description of technical approach to the research as well as a succinct portrayal of the uniqueness and benefits of the proposed work. It shall make the technical objectives clear and quantifiable and shall provide a project schedule with definite decision points and endpoints.

- **Not to exceed 5 pages**

The Summary shall include the elements specified in the sections below:

A. A technical overview of the proposed research and plan. This section is the centerpiece of the proposal and shall succinctly describe the proposed approach and research. The overview shall clearly articulate the approach and design, technical rationale, and constructive plan for accomplishment of technical objectives and deliverable production. The approach will be supported by basic, clear calculations. Additionally, proposals shall clearly explain the innovative claims and technical approaches that will

be employed to meet or exceed each program metric along with an explanation outlining why the proposed approaches are feasible. Proposals must also clearly identify any technical uncertainties and potential mitigations. The use of non-standard terms and acronyms should be avoided. This section shall be supplemented with a more detailed plan in Volume 1, Section 3 of the proposal.

- B. Summary of the products, transferable technology and deliverables associated with the proposed research results. Define measurable deliverables that show progress toward achieving the stated program milestones. All proprietary claims to the results, prototypes, IP, or systems supporting and/or necessary for the use of the research, results, and/or prototype shall be detailed in Attachment 2. Government assumes that all deliverables will be delivered to the USG with Unlimited Rights in accordance with FAR 52.227-14.
- C. Schedule and milestones for the proposed research. Summarize, in table form the schedule and milestones for the proposed research. Do not include proprietary information with the milestone chart.
- D. Related research. Include a general discussion of other research in this area, comparing the significance and plausibility of the proposed innovations against competitive approaches to achieve Program objectives.
- E. Project contributors. Include a clearly defined organizational chart of all anticipated project participants and affiliations (e.g., subcontractor, consultant), organized under functional roles for the effort, along with the associated task number responsibilities for each individual.
- F. Technical Resource Summary: (NOTE: The full Cost Volume is not required unless requested by the Contracting Officer (CO); therefore, it is critical that Offerors address the items below in their technical proposal so the Government can evaluate Resource Realism.)
- Summarize the total level of effort by labor category/technical discipline (e.g., Research scientist/chemist/physicist/engineer/administrative) and affiliation (e.g., prime/subcontractor/consultant). All Key Personnel and significant contributors shall be identified by name. Provide a brief description of the qualifications for each labor category/technical discipline (e.g., education, certifications, years of experience).
  - Summarize level of effort by labor category/technical discipline for each major task.
  - Identify software and IP required for performance, by affiliation. List each item separately, identifying the task number for which the software or IP is required and the Performer team requiring it.
  - Identify materials or equipment (such as IT) required for performance. List each item separately, identifying the task number for which the material or equipment is required and the Performer team requiring it.
  - Identify any other resources required to perform (e.g., services, data sets, data set repository, facilities, Government furnished property). List each item separately, identifying the task number for these other resources are required and the Performer team requiring it.
  - Estimated travel, including purpose of travel and number of personnel per trip, by affiliation. (See Appendix B.4 for sample template)

The above information shall cross reference to the tasks set forth in the Offeror's statement of work, and shall be supported by the detailed cost and pricing information provided in the Offeror's Volume 2 Cost Proposal, the latter of which shall be submitted only if requested.

#### **4. B.1.c. Section 3: Detailed Proposal Information**

This section of the proposal shall provide the detailed, in-depth discussion of the proposed research as well as supporting information about the Offeror's capabilities and resources. Specific attention shall be given

to addressing both the risks and payoffs of the proposed research and why the proposed research will achieve the goals, objectives, metrics, and milestones in this BAA. The Government reserves the right to reject a proposal if the information requested below is not adequately addressed. This part shall provide:

- A. Statement of Work (SOW) - Clearly define the technical tasks and sub-tasks to be performed, their durations and the dependencies among them. For each task and sub-task, provide:
- A general description of the objective;
  - A detailed description of the approach to be taken, developed in an orderly progression and in enough detail to establish the feasibility of accomplishing the goals of the task;
  - Identification of the primary organization responsible for task execution (prime, sub-contractor, team member, etc.) by name;
  - The exit criteria for each task/activity (i.e., a product, event or milestone that defines its completion); and
  - Identification of all deliverables (e.g., data rights, reports, software) to be provided to the Government.

**Note: Do not include any proprietary information in the SOW**

At the end of this section of the proposal, provide a Gantt chart, showing all the tasks and sub-tasks on the left (grouped by research thrust, if applicable) with the performance period (in years/quarters) on the right. All milestones shall be clearly labeled on the chart. If necessary, use multiple pages to ensure legibility of all information.

- B. A detailed description of the objectives, scientific relevance, technical approach and expected significance of the work. Clearly identify the key elements of the proposed work and how they relate to each other. Describe the technical methods or approaches that will be used to meet or exceed each program milestone along with an explanation outlining why the proposed methods/approaches are feasible. Additionally, describe any anticipated risks along with possible mitigations. Proposals containing only a general discussion of the problem without detailed description of approaches, plausibility of implementation, and critical metrics may be deemed not selectable.
- C. State-of-the-art. Compare with the proposed approach to other on-going research, highlighting the uniqueness of the proposed approach and differences between the proposed effort and the current state-of-the-art. Identify advantages and disadvantages of the proposed work with respect to potential alternative approaches.
- D. Data sources. Identify and describe data sources to be utilized in pursuit of the stated research goals.

Offerors proposing to use existing data sets shall provide written verification that said data sets were obtained in accordance with U.S. laws and, where applicable, use will be in compliance with End User License Agreements, Copyright Laws, Terms of Service, and laws and policies regarding privacy protection of U.S. Persons. Offerors proposing to obtain new data sets shall ensure that their plan for obtaining the data complies with U.S. Laws and, where applicable, with End User License Agreement, Copyright Laws, Terms of Service, and laws and policies regarding privacy protection of U.S. Persons. Offeror's shall also address IP restrictions on the use or transfer of such data sets, in Attachment 2 of the Offeror's proposal, as described in Section 4.B.1.d.

Offerors shall also include the documentation required in 6.B.3 (Human Use) in Attachment 7.

Documentation must be well written and logical; claims for exemptions from Federal regulations for human subject protection must be accompanied by a strong defense of the claims. The Human Use documentation and the written verification are not included in the total page count.

- E. Deliverables. Based on the required deliverables identified in Section 1 of the BAA, clearly identify the data to be delivered, including technical data and computer software. In Attachment 2 to Offeror’s proposal, Offerors shall address IP rights in such data, as described in Section 4.B.1.d.
- F. Cost, schedule, milestones. Describe the cost, schedule, and milestones for the proposed research, including cost estimates by cost element for base period, the option period(s) and the total program summary, and company cost share, if any, as well as, costs by technical area(s) and tasks (see tables below for sample format). The milestones shall not include proprietary information (Offeror can use their own format for milestones).

**(Note: The full Volume 2 - Cost Proposal is not required unless requested by the CO; therefore, it is critical that Offerors address this element in their technical proposal so the Government can evaluate funding availability. See BAA Sections 4.B.2, 5.A., and 5.B).**

**SAMPLE FORMAT**

Cost Element (burdened)	Phase 1- Base (24 Months)	Phase 2 –Option (24 Months)	Total Program Summary
Labor			
Subcontracts/Consultant			
Materials & Equipment			
Travel			
Other Direct Costs			
(Cost Share, if any)			
Total			

- G. Offeror’s previous accomplishments. Discuss previous accomplishments and work in this or closely related research areas and how these will contribute to and influence the current work.
- H. Facilities. Describe the facilities that shall be used for the proposed effort, including computational and experimental resources.
- I. Detailed Management Plan. Provide the Management Plan that clearly identifies both organizations and individuals within organizations that make up the team, and delineate the expected duties, relevant capabilities, and task responsibilities of team members and expected relationships among team members. Identify the expected levels of effort (percentage time, or fraction of an FTE) for all Key Personnel and significant contributors. Additionally, include a description of the technical, administrative, and business structure of the team along with an internal communications plan. Describe project/function/sub-contractor relationships (including formal teaming agreements), Government research interfaces, and planning, scheduling, and control practices utilized, as well as the team leadership structure. Provide a brief biography of all Key Personnel (including alternates, if desired) and significant contributors who shall be involved in the research along with the amount of effort to be expended by each person during the year. Participation by all Key Personnel and significant contributors is expected to exceed 25% of their time. A compelling explanation is required for any variation from this figure.

If the team intends to use consultants, they shall also be included in the organizational chart with an indication of whether the person shall be an “individual” or “organizational” consultant (i.e., representing themselves or their organization), and organizational affiliation.

See Table 4 below for the recommended format.

**Table 4: Team Organization (Example)**

Participants	Org	Role	Unique, Relevant Capabilities	Role: Tasks	Time
Jane Wake	LMN Univ.	PI/Key Personnel	Electrical Engineering	Program Mgr & Electronics: 10	100%
John Weck, Jr.	OPQ Univ.	Key Personnel	Mathematical Physics	Programming: 1-5	50%
Dan Wind	RST Univ.	Key Personnel	Physics	Design, Fab, and Integration: 6-8	90%
Katie Wool	UVW Univ.	Contributor	Quantum Physics	Enhancement witness design: 4	25%
Rachel Wade	XYZ Corp.	Co-PI/Key Personnel	Graph theory	Architecture design: 6	55%
Chris West	XYZ Corp.	Significant Contributor	EE & Signal Processing	Implementation & Testing: 8-9	60%
Julie Will	JW Cons.	Consultant (Individual)	Computer science	Interface design: 10	200 hours
David Word	A Corp.	Consultant (A. Corp.)	Operations Research	Applications Programming: 2-3	200 hours

- J. Resource Share. Include the type of support, if any, the Offeror might request from the Government, such as facilities, equipment, materials, or any such resources the Offeror is willing to provide at no additional cost to the Government to support the research effort. Cost sharing is not required from Offerors and is not an evaluation criterion but is encouraged where there is a reasonable probability of a potential commercial application related to the proposed research and development effort.
- K. The names of other federal, state or local agencies or other parties receiving the proposal and/or funding the proposed effort. If none, state “None”. Concurrent submission of the proposal to other organizations will not prejudice its review but may impact IARPA’s decision to fund the effort. See 5.A.2.a.
- L. Research Data Management Plan. (RDMP). Submit a RDMP that outlines how they will manage and preserve the Research Data, as defined below, collected or produced through the course of performance. The RDMP need not require the preservation of all Research Data: Offerors shall consider the cost and benefits of managing and preserving the Research Data in determining whether to preserve it. At a minimum, all Research Data associated with a peer-reviewed manuscript or final published article (hereinafter “Publications”) must be made publicly accessible by the award recipient before, on or at a reasonable time after the publication date. The Publications whose associated data must be covered by the RDMP are deliverables as described in Section 1.

Research Data is defined herein as the digital recorded factual material commonly accepted in the scientific community as necessary to validate research findings including data sets used to support scholarly publications, but does not include laboratory notebooks, preliminary analyses, drafts of scientific papers, plans for future research, peer review reports, communications with colleagues, or physical objects, such as laboratory specimens.

The RDMP must address the following:

- Describe the types of Research Data collected or produced in the course of the project. Include standards to be used for Research Data and metadata content and format.
- A plan for making the Research Data that underlie Publications digitally accessible to the public before or, at the time of publication or conference presentation, or within a reasonable time after publication. The requirement could be met by including the data as supplementary information to the Publication or by depositing the Research Data in a searchable, machine-

readable and digitally accessible form suitable for repositories available to the public free of charge. Such repositories could be discipline-specific repositories, general purpose research data repositories or institutional repositories. The published article or conference paper should indicate how the public may access Research Data underlying the paper's results and findings. Offerors should attempt to make the Research Data available for at least three years after published article or conference. (NOTE: Offerors shall make a best effort in identifying research data sets that may be used for Publications that occur after contract end. The Offeror shall deliver these data sets to the Government and make them available in repositories available to the public prior to the end of the period of performance, if not included as supplementary information to Publications.)

- Policies and provisions for sharing and preservation, including a) policies and provisions for appropriate protection of privacy, confidentiality, security, and IP, b) descriptions of tools, including software, needed to access and interpret the Research Data, and c) policies and provisions for re-use, re-distribution, and production of derivatives.
- If, for legitimate reasons (e.g., privacy, confidentiality, security, IP rights considerations; size of data sets, cost; time), the Research Data underlying the results of peer-reviewed publications or conference papers cannot be shared and preserved, the plan must include a justification citing such reasons.

In addressing these elements (e.g., types of data to be shared and preserved, standards to be used for data and metadata, repositories to be used for archiving data, timeframes for sharing and preservation), the RDMP should reflect the best practices of the relevant scientific discipline and research community. At a minimum, Research Data underlying Publications and associated metadata shall include an acknowledgement of IARPA support and a link to the associated Publication.

#### **4.B.1.d. Section 4: Attachments**

[NOTE: The attachments listed below shall be included with the proposal, if applicable, but do not count against the Volume 1-page limit.]

Attachment 1: Signed Academic Institution Acknowledgement Letter(s) (if applicable). A template is provided in Appendix A.

Attachment 2: IP Rights. A template is provided in Appendix A. This attachment is estimated not to exceed 4 pages and shall address the following:

Representation as to Rights. An Offeror shall provide a good faith representation that they either own or have sufficient licensing rights to all IP that will be utilized under their proposal.

Program-Specific IP Approach. IARPA requires sufficient rights to IP developed or used in the conduct of the proposed research to ensure that IARPA can successfully (a) manage the program and evaluate the technical output and deliverables, (b) communicate program information across Government organizations, and (c) support transition to and further use and development of the program results by IC users and others. IARPA anticipates that achieving these goals for the SINTRA program will necessitate a minimum of Unlimited Rights in all deliverables. However, there may be any number of other approaches to intellectual property rights to achieve IARPA's program goals. As outlined in FAR 52.227-14, "Unlimited rights" means the rights of the Government to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, in any manner and for any purpose, and to have or permit others to do so. In addressing their approach to IP rights, Offerors should (1) describe the intended use of patented invention(s) or data, including, technical data and computer software, in the conduct of the proposed research; (2) describe the rights being offered to the Government along with a justification if less than Unlimited Rights is being offered; (3) explain how IARPA will be able to reach its program goals (including transition) with the rights offered to the Government; (4) identify

the cost to the Government to acquire additional or alternative rights beyond those being offered, if applicable; and (5) provide possible alternatives in any area in which the offered rights may be insufficient for IARPA to achieve its program goals (e.g., the possibility of future licensing of privately-developed software to U.S. Government agencies at a reasonable cost.)

**Patented Inventions.** Offerors shall include documentation using the format provided in **Appendix A**, proving ownership of or sufficient rights to all inventions (or inventions for which a patent application has been filed) that will be utilized under the proposal for the IARPA program. If a patent application has been filed for an invention that the proposal intends to utilize, but the application has not yet been made publicly available and contains proprietary information, the Offeror may provide only the serial number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and a summary of the patent title, together with either: (1) a representation that the Offeror owns the invention, or (2) proof of sufficient licensing rights in the invention. Offerors shall also indicate their intention to incorporate patented technology into any deliverable- i.e., if Offerors intend for any deliverable to embody any invention covered by any patent or patent application the Offerors listed in Volume 1, Attachment 2, Offerors shall also specify in the Attachment the deliverable into which the Offerors expects to incorporate the invention. In doing so, the Government requests that Offerors further specify any rights offered to the Government for inventions that will be utilized in the program (beyond the implied license that accompanies a patent owner's sale of a patented product).

**Noncommercial Data.** Offerors shall identify all noncommercial data, including technical data and computer software, that it plans to generate, develop and/or deliver under any proposed award instrument in which the Government shall acquire less than unlimited rights. In doing so, Offerors must assert (a) the specific restrictions the Government's rights in those deliverables, (b) the basis for such restrictions, (c) the intended use of the technical data and noncommercial computer software in the conduct of the proposed research and development of applicable deliverables, and (d) a supporting rationale of why the proposed approach to data rights is in the Government's best interest (please see program specific goals above). **If no restrictions are intended, then the Offeror shall state "NONE."**

**Commercial Data.** Offerors shall identify all commercial data, including technical data and commercial computer software, that may be included in any deliverables contemplated under the research effort and assert any applicable restrictions on the Government's use of such commercial data (please see program specific goals above). **If no restrictions are intended, then the Proposer shall state "NONE."**

**Data Developed with Mixed Funding.** If mixed funding is anticipated in data generated, developed, and/or delivered under the research effort, the Government seeks at minimum "Government Purpose Rights" (GPR) for all noncommercial data deliverables; offering anything less shall be considered a weakness in the proposal. United States Government purposes include any activity in which the United States Government is a party, including cooperative agreements with international or multi-national defense organizations, or sales or transfers by the United States Government to foreign governments or international organizations. Government purposes include competitive procurement, but do not include the rights to use, modify, reproduce, release, perform, display, or disclose technical data or computer software for commercial purposes or authorize others to do so. Government Purpose Rights continue for a five-year period upon execution of the contract, and upon expiration of the five-year period, the Government obtains Unlimited Rights in the data.

**Open Source.** If Offerors propose the use of any open source data or freeware, any conditions, restrictions or other requirements imposed by that software shall also be addressed. Offerors should leverage the format in **Appendix A** for their response.

**Identification of Relevant Government Contracts.** For all technical data and computer software that an Offeror intends to deliver with other than unlimited rights that are identical or substantially similar to technical data and computer software that the Offeror has produced for, delivered to, or is

obligated to deliver to the Government under any contract or subcontract, the Offeror shall identify (a) the contract number under which the data, software, or documentation was produced; (b) the contract number under which, and the name and address of the organization to whom, the data and software was most recently delivered or shall be delivered; and (c) any limitations on the Government's rights to use or disclose the data and software, including, when applicable, identification of the earliest date the limitations expire.

Definitions. For this solicitation, IARPA recognizes only the definitions of IP rights in accordance with the terms as set forth in the Federal Acquisition Regulation (FAR) part 27 or as defined herein. If Offerors propose IP rights that are not defined in FAR part 27 or herein, Offerors shall clearly define such rights in the "Intellectual Property Rights" Attachment of their proposal. Offerors are reminded of the requirement for prime contractors to acquire sufficient rights from subcontractors to accomplish the program goals.

Evaluation. The Government will use the asserted data rights during the evaluation process to evaluate the impact of any identified restrictions. The technical content of the "Intellectual Property Rights" Attachment shall include only the information necessary to address the proposed approach to IP; any other technical discussion in the attachment shall not be considered during the evaluation process.

Attachment 3: OCI Notification or Certification Template provided in Appendix A.

Attachment 4: Bibliography. A brief bibliography of relevant technical papers and research notes (published and unpublished) which document the technical ideas on which the proposal is based.

Attachment 5: Relevant Papers. Copies of not more than three relevant papers may be included in the submission. The Offerors shall include a one-page technical summary of each paper provided, suitable for individuals who are not experts in the field.

Attachment 6: Consultant Commitment Letters. If needed.

Attachment 7: Human Use Documentation, reference section 6.B.3, **Not Applicable**

Attachment 8: Animal Use Documentation. **Not applicable**

Attachment 9: A Three Chart Summary of the Proposal. A PowerPoint summary that quickly and succinctly indicates the concept overview, key innovations, expected impact, and other unique aspects of the proposal. The format for the summary slides is included in Appendix A to this BAA and does not count against the page limit. Slide 1 should be a self-contained, intuitive description of the technical approach and performance. These slides may be used during the evaluation process to present a summary of the proposal from the Offeror's view.

Attachment 10: Security Plan. (Not to exceed 5 pages). **Not applicable**

Attachment 11: RDMP (estimated as 2 to 3 pages). Template provided in Appendix A.

Attachment 12: Privacy Plan, (reference section 1.D.3, **if applicable**). **Not applicable**

#### **4.B.2. Volume 2: Cost Proposal (No Page Limit)**

**NOTE: This Volume is only required if the Offeror's proposal has been selected for negotiation (see BAA Section 5.B and 5.C). The notification of selection for negotiation will be issued in writing by the CO and will include a request to submit the full Cost Volume within 10 business days or as otherwise authorized by the contracting officer.**

IARPA anticipates awarding cost-type procurement contracts however, Offerors requesting other than a cost-type procurement contract (i.e., Firm Fixed Price (FFP) contract or other transaction) may be directed by the CO to provide "other than certified cost or pricing data" (reference FAR Part 15.4) and/or cost supporting information in a different format than described below. The CO will determine whether to grant the request for other than a cost-type procurement contract. Examples of requests that would be considered for approval

include those from non-traditional contractors such as commercial entities that do not accept FAR- based cost contracts, small businesses, start-up companies, consortia that may include universities and non-profits or foreign companies; where cost-sharing or government participation in the work is appropriate; where flexibility not available under a procurement contract is needed; or where commercialization by industry is deemed advantageous to the Government.

Regardless of the type of instrument determined to be appropriate by the CO, the Offeror's cost proposal shall contain sufficient factual information to establish the Offeror's understanding of the project, the perception of project risks, the ability to organize and perform the work and to support the realism and reasonableness of the proposed cost, to the extent appropriate. IARPA recognizes that undue emphasis on cost may motivate Offerors to offer low-risk ideas with minimum uncertainty and to staff the effort with junior personnel in order to be in a more competitive posture. IARPA discourages such cost strategies. Cost reduction approaches that shall be received favorably include innovative management concepts that maximize direct funding for technology and limit diversion of funds into overhead.

#### **4. B.2.a Section 1: Cover Sheet.**

See Appendix B for the Cover Sheet Template

#### **4. B.2.b. Section 2: Estimated Cost Breakdown.**

Offerors shall submit numerical cost and pricing data using Microsoft Excel. The Excel document, in the format provided in Appendix B, shall include intact formulas and shall not be hard numbered. The base and option period cost data should roll up into a total cost summary. The Excel files may be write-protected but shall not be password protected. The Cost/Price Volume shall include the following:

- A. Completed Cost/Price Template - Offerors shall submit a cost element breakdown for the base period, each option period and the total program summary in the format provided in Appendix B.
- B. Total cost broken down by major task.
- C. Major program tasks by fiscal year.
- D. A summary of projected funding requirements by month.
- E. A summary table listing all labor categories used in the proposal and their associated direct labor rates, along with escalation factors used for each base year and option year.
- F. A summary table listing all indirect rates used in the proposal for each base year and option year.

#### **4. B.2.c. Section 3: Supporting Information**

In addition to the above, supporting cost and pricing information shall be provided in sufficient detail to substantiate the Offeror's cost estimates. Include a description of the basis of estimate (BOE) in a narrative for each cost element and provide supporting documentation, as applicable:

Direct Labor – Provide a complete cost breakout by labor category, hours and rates (template available in Appendix B). Specify all Key Personnel by name and clearly state their labor category and proposed rate. Describe the basis of the proposed rates and provide a copy of the most recent Forward Pricing Rate Agreement (FPRA) and/or Forward Pricing Rate Recommendation (FPRR) with the Government. If Offerors do not have a current FPRA with the Government, provide payroll records or contingency hire letters with salary data to support each proposed labor category, including those for key individuals, and the most recent Forward Pricing Rate Proposal Submission, if applicable. Offeror should also address whether any portion of their labor rates is attributable to uncompensated overtime.

Labor Escalation Factor – State the proposed escalation rate and the basis for that rate (e.g., based upon Global Insight indices, Cost Index or historical data). If the escalation rate is based upon historical data,

provide data to demonstrate the labor escalation trend. Provide a sample calculation demonstrating application of the factor to direct labor.

Subcontracts (to include consultants and Inter-organizational Transfers (IOTs) – The Offeror is responsible for compiling and providing full subcontractor proposals with the Cost Volume. Subcontractor cost element sheets shall be completed for the base period, each option period and the total summary using the same format required for the prime contractor (See Appendix B). If available, provide a copy of the most recent Forward Pricing Rate Agreement (FPRA ) and/or Forward Pricing Rate Recommendation (FPRR) with the Government. Consultant letter(s) of commitment shall also be attached.

Information shall be presented in Excel with intact formulas using the format provided in Appendix B and addressing the supporting cost information as outlined in Section 4 of the BAA. In addition to the full and complete subcontractor cost proposals, the Offeror shall also provide its analysis of each subcontractor's proposal including justification for why the subcontractor was selected and its determination that the cost/price is fair and reasonable (Reference FAR Part 44 and FAR clause 52.244-2). **If subcontractors have concerns about proprietary cost information, subcontractors can submit their detailed cost proposals directly to the CO.**

Materials and Equipment – Provide copies of quotes, bill of materials, historical data or any other information including Offeror's analysis to support proposed costs.

Travel – The proposed travel supporting detail shall include destination and purpose of the trip, number of trips, number of travelers and days per trip and price per traveler in sufficient detail to verify the BOE. Proposed travel costs shall comply with the limitations set forth in FAR Part 31. (See Appendix B.4 for sample format).

Proposed conference travel must have an immediate, direct, and tangible benefit to the Government such as providing a deliverable at the conference (e.g., gives a presentation, presents a paper or research findings that are sponsored in whole or in part by IARPA). Travel for personnel to simply attend a conference will not be approved as a direct charge to the contract.

Other Direct Costs (ODCs) – ODCs shall be listed separately and supported by quotes, historical data or any other information including the Offeror's analysis.

Indirect Costs – The Offeror shall show indirect cost calculations, identify the proposed indirect rate by contractor fiscal year and program period (base, option period) and provide information on indirect cost pools and allocation bases for each year and program period involved. If a Government agency recently audited the Offeror's indirect rates, the Offeror shall identify the agency that conducted the audit, when the rates were approved and the period for which they are effective. Include a copy of this rate agreement. Absent current Government rate recommendations, it is incumbent on the Offeror to provide some other means of demonstrating indirect rate realism (e.g., 3 years of historical actual costs with applicable pools and bases). If proposed rates vary significantly from historical experience, the Offeror shall explain of the variance.

Cost sharing – Describe the source, nature and amount of cost-sharing, if any. Reference Resource Share from Section 4 of the BAA.

Other Pricing Assumptions – Identify all pricing assumptions that should be incorporated into the resulting award instrument (e.g., use of Government Furnished Property/Facilities/Information, access to Government Subject Matter Experts, etc.). Reference Resource Share from Section 4 of the BAA.

Facilities Capital Cost of Money (FCCM) – If proposing FCCM, the Offeror shall show FCCM cost calculations, identify the proposed FCCM factors by contractor fiscal year and program year and provide a copy of the Forward Price Rate Agreement (FPRA), Forward Price Rate System (FPRS) or Forward Pricing Rate Recommendation (FPRR), if available.

Profit/Fee – Identify the proposed profit or fee percentage and the proposed profit/fee base. Provide justification for your proposed profit or fee.

Systems – For the systems listed below, provide a brief description of the cognizant federal agency and audit results. If the system has been determined inadequate, provide a short narrative describing the steps your organization has taken to address the inadequacies and the current status. If a formal audit has been performed by a Government Agency, please provide a complete copy of the audit report or adequacy determination letter. If the system has never received a formal Government review and approval include a statement to that effect. Address whether your organization has contracts that are Cost Accounting Standards (CAS) covered and if so, whether they are subject to full or modified CAS coverage.

- Accounting system
- Purchasing system

Certified “cost or pricing data” may be requested for procurement contract awards that exceed the threshold for submittal as set forth in the FAR, unless the CO approves an exception from the requirement to submit cost or pricing data. (Reference FAR Part 15.403.)

#### 4. C. Submission Details

##### 4. C.1. Due Dates

See BAA General Information Section for proposal due dates and times.

##### 4. C. 2 Proposal Delivery

Proposals (Volume 1 **initially**) shall be submitted electronically through the IARPA Distribution and Evaluation System (IDEAS). Offerors interested in providing a submission in response to this BAA shall first register by electronic means in accordance with the instructions provided on the following web site: <https://iarpa-ideas.gov>. Offerors who plan to submit proposals for evaluation are strongly encouraged to register at least one week prior to the due date for the first round of proposals. Offerors who do not register in advance do so at their own risk, and IARPA shall not extend the due date to accommodate such Offerors. Failure to register as stated shall prevent the Proposer’s submittal of documents.

After registration has been approved, Offeror’s should upload a proposal, (initially Volume 1 **only**), scanned certifications and permitted additional information in ‘pdf’ format, or as otherwise directed (Excel, PowerPoint, etc.). Offerors are responsible for ensuring a compliant and timely submission of their proposals to meet the BAA submittal deadlines. Time management to upload and submit is wholly the responsibility of the Offeror. **Note: IDEAS will require Offerors to complete a proposal cover sheet within IDEAS at the time that the Volume 1 – Technical and Management Proposal is submitted. This is separate and distinct from the Technical and Cost Volume cover sheets referenced in 4.B.1.a. and 4.B.2.a. (also provided in Appendices A and B). Information requested within IDEAS will include basic cost information (Total funds requested from IARPA, proposed costs by option period and validity period). Please complete the requested information but DO NOT upload your Volume 2 – Cost Proposal. Directions for submittal of Volume 2 – Cost Proposal will be provided by the CO when Offerors are notified of selection for negotiations.**

Upon completing the proposal submission, the Offeror shall receive an automated confirmation email from IDEAS. Please forward that automated message to [DNI-IARPA-BAA-22-02@iarpa.gov](mailto:DNI-IARPA-BAA-22-02@iarpa.gov). IARPA strongly suggests that the Offeror document the submission of their proposal package by printing the electronic receipt (time and date stamped) that appears on the final screen following compliant submission of a proposal to the IDEAS website.

Volume 1 submitted by any means other than IDEAS (e.g., hand-carried, postal service, commercial carrier and email) shall not be considered unless the Offeror attempted electronic submittal, but was unsuccessful and notified the Government using the following procedure. The Offeror shall send an e-mail to [DNI-IARPA-BAA-22-02@iarpa.gov](mailto:DNI-IARPA-BAA-22-02@iarpa.gov), prior to the proposal due date and time specified in the BAA and indicate

that an attempt was made to submit electronically, and that the submittal was unsuccessful. This e-mail shall include contact information for the Offeror. Upon receipt of such notification, the Government will provide additional guidance regarding submission.

Volume 1 shall be submitted by the date and time specified in the BAA, General Information section, 7.2 Proposal Due Date for Initial Round of Selections, in order to be considered in the initial round. It is in IARPA's sole discretion whether to evaluate proposals received after this date but before the BAA Closing Date set forth in 7.3. Selection remains contingent on the technical and funding availability evaluation factors. Proposals received after the BAA Closing Date are deemed to be late and will not be reviewed. Failure to comply with the submission procedures may result in the submittal not being evaluated.

Although classified proposals are not anticipated for this program, if an Offeror chooses to submit a classified proposal, the Offeror must first contact IARPA via [DNI-IARPA-BAA-22-02@iarpa.gov](mailto:DNI-IARPA-BAA-22-02@iarpa.gov) for detailed submittal instructions. In no case shall classified information be uploaded into IDEAS.

#### **4. D. Funding Restrictions**

Facility construction costs are not allowable under this activity. Funding may not be used to pay for commercialization of technology.

### **SECTION 5: PROPOSAL REVIEW INFORMATION**

#### **5.A. Technical and Funding Availability Evaluation Factors**

The factors used to evaluate and select proposals for negotiation for this Program BAA are described in the following paragraphs. Because there is no common SOW, each proposal shall be evaluated on its own merits and its relevance to the Program goals rather than against other proposals submitted in response to this BAA. The proposals shall be evaluated based on technical and funding availability factors. These are of equal importance. Within the technical evaluation factor, the specific technical criteria are in descending order of importance, as follows: Overall Scientific and Technical Merit, Effectiveness of Proposed Work Plan, Contribution and Relevance to the IARPA Mission and Program Goal, Relevant Experience and Expertise, and Resource Realism. Specifics about the evaluation criteria are provided below.

Award(s) shall be made to an Offeror based on the technical and funding availability factors listed below, and subject to successful negotiations with the Government. Award shall not be made to Offeror(s) whose proposal(s) are determined not to be selectable. Offerors are cautioned that failure to follow submittal and proposal instructions may negatively impact their proposal evaluation or may result in rejection of the proposal for non-compliance.

##### **5.A.1. Technical Evaluation Factor (technical criteria listed below)**

###### **5. A.1.a. Overall Scientific and Technical Merit**

Overall scientific and technical merit of the proposal is substantiated, including unique and innovative methods, approaches, and/or concepts. The Offeror clearly articulates an understanding of the problem to be solved. The technical approach is credible and includes a clear assessment of primary risks and a means to address them. The proposed research advances the state-of-the-art.

###### **5. A.1.b. Effectiveness of Proposed Work Plan**

The feasibility and likelihood that the proposed approach will satisfy the Program's milestones and metrics are explicitly described and clearly substantiated along with risk mitigation strategies for achieving stated milestones and metrics. The proposal reflects a mature and quantitative understanding of the program milestones and metrics, and the statistical confidence with which they may be measured. Any Offeror proposed milestones and metrics are clear and well-defined, with a logical connection to enabling Offeror decisions and/or Government decisions. The schedule to achieve the milestones is realistic and reasonable.

The roles and relationships of prime and sub-contractors are clearly delineated with all participants fully documented. Work plans shall demonstrate the ability to provide full Government visibility into and interaction with key technical activities and personnel, and a single point of responsibility for contract performance. Work plans shall also demonstrate that all Key Personnel and significant contributors have sufficient time committed to the Program to accomplish their described Program roles.

The requirement and rationale for and the anticipated use or integration of Government resources, including but not limited to all equipment, facilities, information, etc., are fully described including dates when such Government Furnished Property (GFP), Government Furnished Equipment (GFE), GFI or other similar Government-provided resources shall be required.

The Offeror's RDMP is complete, addressing the types of data to be collected or produced, describing how each type of data will be preserved and shared, including plans to provide public access to peer reviewed publications and the underlying Research Data, or provides justifiable rationale for not doing so.

#### **5. A.1.c. Contribution and Relevance to the IARPA Mission and Program Goal**

The proposed solution meets the letter and intent of the stated program goals and all elements within the proposal exhibit a comprehensive understanding of the problem. The Offeror clearly addresses how the proposed effort shall meet and progressively demonstrate the Program goals. The Offeror describes how the proposed solution contributes to IARPA's mission to invest in high-risk/high-payoff research that can provide the U.S. with an overwhelming intelligence advantage.

The Offeror's proposed IP and data rights are consistent with the Government's need to be able to effectively manage the program and evaluate the technical output and deliverables, communicate program information across Government organizations and support transition to and further use and development of the program results by IC users and others at a reasonable cost that is acceptable to the Government. The proposed approach to IP rights is in the Government's best interest.

#### **5. A.1.d Relevant Experience and Expertise**

The Offeror's capabilities, related experience, facilities, techniques, or unique combination of these, which are integral factors for achieving the proposal's objectives, shall be evaluated, as well as qualifications, capabilities, and experience of all Key Personnel and significant contributors critical in achieving the program objectives.

#### **5. A.1.e Resource Realism**

The proposed resources demonstrate a clear understanding of the program, a perception of the risks and the Offeror's ability to organize and perform the work. The labor hours and mix are consistent with the technical approach and are realistic for the work proposed. Material, equipment, software, data collection and management, and travel, especially foreign travel, are well justified, reasonable, and required for successful execution of the proposed work.

#### **5.A.2. Funding Availability Factor**

##### **5. A.2.a. Budget Constraints**

The Government will seek to maximize the likelihood of meeting program objectives within program budget constraints. This may involve awarding one or more contracts. **Note:** If the Offeror has submitted the proposal to other federal, state or local agencies or other parties that may fund the proposed effort, it may impact IARPA's decision to fund the effort.

##### **5. A.2.b. Program Balance**

The Government will consider IARPA's overall mission and program objectives, which may include but are not limited to the following: broadening the variety of technical approaches to enhance program

outcomes, transitioning the technology to Government partners, developing capabilities aligned with the priorities of the IC and national security.

### **5.B. Method of Evaluation and Selection Process**

IARPA's conducts impartial, equitable, comprehensive proposal reviews to select the source (or sources) whose offer meets the Government's technical, policy and programmatic goals. For evaluation purposes, a proposal is the document described in Section 4 of the BAA. Other supporting or background materials submitted with the proposal shall not be considered.

The contract award process for this BAA has two steps. The first step is selection for negotiations and is made based on the review of the technical and funding availability factors (See BAA Section 5.A.). The second step is negotiation and contract award. Contract award is contingent on CO determination of a fair and reasonable cost/price and agreement on terms and conditions.

Selection for negotiation will be conducted through a peer or scientific review process led by the PM. This process entails establishing a Scientific Review Panel (SRP) made up of qualified Government personnel who will review and assess each proposal's strengths, weaknesses and risks<sup>4</sup> against the technical evaluation criteria. If necessary, non-Government technical experts with specialized expertise may advise Government panel members and the PM. However, only Government personnel will make selection recommendations and decisions under this BAA.

Proposals will be reviewed individually and will not be compared against each other as they are not submitted in accordance with a common SOW. When SRP reviews are complete, the PM will prepare a recommendation to the IARPA Scientific Review Official (SRO) identifying proposals as selectable, selectable with modification, or not selectable based on consideration of all stated factors (technical and funding availability factors). The SRO will make the final decision as to selectability for negotiations. At this point, Offerors will be notified in writing as to whether they have been determined selectable, selectable with modification, or not selectable.

### **5.C. Negotiation and Contract Award**

After selection and before award, the CO will contact Offerors whose proposals were selected or selected with modifications to engage in negotiations. At that time, the CO will also request a full cost proposal, as described in BAA Section 4.B.2. The CO will review the cost proposal using the proposal analysis techniques described in FAR 15.404-1, as appropriate, to determine a fair and reasonable cost. The CO's evaluation will include review of proposed anticipated costs/prices of the Proposer and those of associate, participating organizations, to ensure the Offeror has fully analyzed the budget requirements, provided sufficient supporting information, has adequate systems for managing the contract (accounting, purchasing), and that data is traceable and reconcilable. The CO will also determine whether the prospective contractor meets the responsibility standards of FAR Section 9.104. Additional information and supporting data may be requested.

If proposed costs submitted are substantially different than the estimates provided in the technical proposal, then a contract may not be awarded.

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<sup>4</sup> **Strength:** An aspect of an Offeror's proposal that has appreciable merit or appreciably exceeds specified performance or capability requirements in a way that will be advantageous to the Government during contract performance.

**Weakness:** A flaw in the proposal that increases the risk of unsuccessful contract performance.

**Risk:** The potential for unsuccessful contract performance. The consideration of risk assesses the degree to which an Offeror's proposed approach to achieving the technical factor or subfactor may involve risk of disruption of schedule, increased cost or degradation of performance, the need for increased Government oversight, and the likelihood of unsuccessful contract performance.

Procurement contracts or other transactions, as determined by the contracting officer, shall be awarded to those Offerors whose proposals are deemed most advantageous to the Government, all stated evaluation factors considered, and pending the successful conclusion of negotiations.

#### **5.D. Proposal Retention**

Proposals shall not be returned upon completion of the source selection process. The original of each proposal received shall be retained at IARPA and all other non-required copies shall be destroyed. A certification of destruction may be requested, provided that the formal request is sent to IARPA via e-mail to [DNI-IARPA-BAA-22-02@iarpa.gov](mailto:DNI-IARPA-BAA-22-02@iarpa.gov) within 5 days after notification of proposal results.

### **SECTION 6: AWARD ADMINISTRATION INFORMATION**

#### **6.A. Award Notices**

As soon as practicable after the evaluation of a proposal is complete, the Offeror will be notified that: (1) its proposal has been selected for negotiations, or (2) its proposal has not been selected for negotiations.

#### **6.B. Administrative and National Policy Requirements**

##### **6.B.1. Proprietary Data**

IARPA treats all proposals as proprietary information and will disclose their contents only for the purpose of evaluation. All proposals containing proprietary data shall have the cover page and each page containing proprietary data clearly marked as containing proprietary data. It is the Offeror's responsibility to clearly define to the Government what the Offeror considers proprietary data.

##### **6.B.2. Intellectual Property**

General. The Government may request additional information from the Offeror, as may be necessary, to evaluate the Offeror's IP rights assertions. If Offerors do not identify any restrictions with respect to a particular deliverable, the Government shall assume in its review of the proposal that there are no restrictions on the Government's use of such deliverables. Further, failure to provide full information may result in a determination that the proposal is not compliant with the solicitation, and the Government reserves the right to reject a proposal if the Offeror does not appropriately address all required IP rights issues.

IP Ownership. Regardless of the scope of the Government's rights, Offerors may freely use data for their own commercial purposes (unless restricted by the negotiated contract, U.S. export control laws or security classification). Therefore, data including technical data and computer software developed under any contract resulting from this solicitation may remain the property of the Offerors, subject to IARPA's rights as set forth in the contract. IARPA seeks the rights to technical data and/or computer software leveraged, developed, or used for the SINTRA program in accordance with FAR 52.227-14. For inventions first conceived or actually reduced to practice under for this effort, IARPA will obtain a nonexclusive, nontransferable, irrevocable, paid-up license to practice, or have practiced for or on its behalf, such invention throughout the world; Offeror may elect to retain title as described in FAR 52.227-11.

Indemnification. Offerors expecting to use, but not to deliver, data or patentable inventions, including commercial open source tools in implementing their approach shall be required to indemnify the Government against legal liability arising from such use.

Technical Data – Withholding of Payment. If technical data specified to be delivered under a contract awarded under this solicitation is not delivered within the time specified by the contract or is deficient upon delivery (including having restrictive markings not specifically authorized by the contract), the CO is permitted, until such data are accepted by the Government, to withhold payment to the contractor of ten percent (10%) of the total contract price or amount unless a lesser withholding is specified in the contract. Payments may not be withheld, nor any other action taken pursuant to this paragraph when the contractor's

failure to make timely delivery or to deliver such data without deficiencies arises out of causes beyond its control and without fault or negligence of the contractor. The withholding of any amount or subsequent payment to the contractor shall not be construed as a waiver of any rights accruing to the Government under the contract.

### **6.B.3. Human Use**

No research proposals involving human subjects shall be accepted under this BAA.

### **6.B.4. Animal Use**

No research proposals involving animal subjects shall be accepted under this BAA.

### **6.B.5. Publication Approval**

It is anticipated that research funded under this Program shall be unclassified research that shall not require a pre-publication review. However, Offerors should note that pre-publication approval of certain information may be required if it is determined that its release may result in the disclosure of sensitive intelligence information. A courtesy soft copy of any work submitted for publication shall be provided to the IARPA PM and the Contracting Officer's Technical Representative (COTR) a minimum of 5 business days prior to release in any forum.

### **6.B.6. Export Control**

(1) The Offeror shall comply with all U.S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 C.F.R. Parts 120 through 130, and the Export Administration Regulations (EAR), 15 C.F.R. Parts 730 through 799, and any amendments thereto, in the performance of this contract. In the absence of available license exemptions/exceptions, the Offeror shall be responsible for obtaining the appropriate licenses or other approvals, if required, for exports of (including deemed exports) hardware, technical data, and software, or for the provision of technical assistance.

(2) The Offeror shall be responsible for obtaining export licenses, if required, before utilizing non-U.S. persons (as defined in the ITAR and EAR, as applicable) in the performance of this contract, including instances where the work is to be performed on-site at any Government installation (whether in or outside the United States), where the foreign person shall have access to export-controlled technologies, including technical data or software.

(3) The Offeror shall be responsible for all regulatory record keeping requirements associated with the use of licenses and license exemptions/exceptions.

(4) The Offeror shall appropriately mark all contract deliverables controlled by ITAR and/or EAR.

(5) The Offeror shall be responsible for ensuring that the provisions of this section apply to its sub-contractors.

(6) The Offeror may be required to certify knowledge of and intended adherence to these requirements in the representations and certifications of the contract.

### **6.B.7. Subcontracting**

It is the policy of the Government to enable small business and small disadvantaged business concerns to be considered fairly as sub-contractors to contractors performing work or rendering services as prime contractors or sub-contractors under Government contracts and to assure that prime contractors and sub-contractors carry out this policy. Each Offeror that is selected for negotiation for award and is expected to be awarded a contract which exceeds the simplified acquisition threshold may be asked to submit a subcontracting plan before award in accordance with FAR 19.702(a) (1). The plan format is outlined in FAR 19.704.

Offerors shall declare teaming relationships in their Technical and Cost proposals and shall specify the type of teaming arrangement in place, including any exclusive teaming arrangements. IARPA neither promotes nor discourages the establishment of exclusive teaming agreements within Offeror teams. Individuals or organizations associated with multiple teams shall take care not to over-commit those resources being applied.

#### **6.B.8. Reporting**

Fiscal and management responsibility are important to the Program. Although the number and types of reports shall be specified in the award document, all Offerors shall, at a minimum, provide the CO, COTR and PM with monthly technical reports and monthly financial reports. The reports shall be prepared and submitted in accordance with the procedures contained in the award document and mutually agreed upon before award. Technical reports shall describe technical highlights and accomplishments, priorities and plans, issues and concerns, evaluation results, and future plans. Financial reports shall present an on-going financial profile of the project, including total project funding, funds invoiced, funds received, funds expended during the preceding month, and planned expenditures over the remaining period. Additional reports and briefing material may also be required, as appropriate, to document progress in accomplishing program metrics.

The Offeror shall prepare and provide a research report of their work by month 24 for Phases 1 and by month 48 for Phase 2. The reports shall be delivered to the CO, COTR, and the PM. The reports shall include:

- Problem definition
- Findings and approach
- System design
- Possible generalization(s)
- Information on performance limitations and potential mitigation
- Anticipated path ahead
- Final identification of all commercial, third-party, or proprietary hardware, software, or technical data integrated into any deliverable and all applicable use restrictions.
- Any research products, including publications, data, and software, resulting from the project during the reporting period. The final report shall list in-progress scientific manuscripts and other research products.

#### **6.B.9. System for Award Management (SAM)**

Selected Offerors will be required to register in the SAM system prior to any award under this BAA unless otherwise directed by the Contracting Officer. Information on SAM registration is available at <http://www.sam.gov>.

#### **6.B.10. Representations and Certifications**

Selected Offerors will be required to complete electronic representations and certifications at <http://www.sam.gov> and may also be required to complete additional representations and certifications prior to award, unless otherwise directed by the Contracting Officer.

#### **6.B.11. Lawful Use and Privacy Protection Measures**

All data gathered by the Offeror shall be obtained in accordance with U.S. laws and in compliance with the End User License Agreement, Copyright Laws, Terms of Service, and laws and policies regarding privacy protection of U.S. Persons. Before using such data, the Offeror shall provide proof that the data was acquired in accordance with U.S. laws and regulations.

## **6.B.12. Public Access to Results**

IARPA is committed to making the results of this research available and maximally useful to the public, industry, government, and the scientific community, in accordance with the policy set forth in the White House Office of Science and Technology Policy’s memorandum “Increasing Access to the Results of Federally Funded Scientific Research,” dated February 22, 2013, consistent with all other applicable law and policy; agency mission; resource constraints; and U.S. national, homeland, and economic security. ([https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/ostp\\_public\\_access\\_memo\\_2013.pdf](https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf))

Upon acceptance for publication, the author’s final peer-reviewed manuscript(s) or conference paper(s) must be submitted to the IARPA-designated repository for public access, in accordance with the instructions on IARPA’s website at [www.iarpa.gov](http://www.iarpa.gov). The Government will make the Publication available to the public through the repository at no charge, following a one-year embargo to preserve the rights of the publisher. The author must inform the publisher of rights that will be retained by the author and IARPA by including in the publishing/transfer of copyright agreement a provision substantially as follows:

“Journal acknowledges that Author retains the right to provide a copy of the final peer-reviewed manuscript (“Work”) to the Federal agency funding the research on which the Work is based upon acceptance for Journal publication, for public archiving as soon as possible but no later than 12 months after publication by Journal. Journal further acknowledges that the Federal Government, having funded the research upon which the Work is based, has certain irrevocable and non-exclusive contractual rights in the Work, which are not affected or altered in any way by this Agreement.”

Additionally, awardee must deposit the data underlying the results and findings in the publication in a suitable public repository, in accordance with the project’s Data Management Plan. If the metadata describing the underlying or supporting research data is not included in the Publication, the awardee must provide the metadata to the IARPA-designated public access repository, in accordance with the instructions on IARPA’s website at [www.iarpa.gov](http://www.iarpa.gov).

IARPA will accept a final published article in lieu of a final peer-reviewed manuscript, provided the author has the right to provide the article and authorize IARPA to release the article publicly.

Data produced under the program, reports to IARPA, and program-related publications should be consistent with the Transparency and Openness Promotion Guidelines of the Center for Open Science, including preregistration of studies and analysis plans (<https://cos.io/our-services/top-guidelines/>). To the extent possible, all reports to IARPA and all program-related publications should be consistent with statistical best practices described in (Psychological Science (2014) <http://pss.sagepub.com/content/25/1/3>). For example, wherever appropriate, effect sizes and confidence intervals (or the Bayesian equivalents) should be reported, and the data and methodology must be presented so that it is easily used for meta-analysis and independent re-analysis of the data. All Offerors must describe plans to ensure that the above requirements are satisfied.

## **6.B.13. Other Contract Requirements**

### **6.B.13.a. Provisions**

The outline that follows is illustrative of the types of general provisions required by the Federal Acquisition Regulation for Fixed Price and/or Cost Reimbursable Research & Development type contracts and IARPA. This is not a complete list of provisions, nor does it contain specific wording. Copies of complete provisions will be made available prior to award. The Government reserves the right to update this list at time of contract award.

#### **FAR General Provisions applicable to the solicitation:**

FAR 52.204-7 System for Award Management (OCT 2018)

FAR 52.204-24 Representation Regarding Certain Telecommunications and Video Surveillance Services

- or Equipment (NOV 2021)
- FAR 52.225-25 Prohibition on Contracting With Entities Engaging in Certain Activities or Transactions Relating to Iran Representation and Certifications (JUN 2020)
- FAR 52.233-2 Service of Protest Service of Protest (Sept 2006)

- (a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the Government Accountability Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from:

Office of the Director of National Intelligence  
IARPA R&D Contracts  
Erskine Hall, Room 3S-301  
Washington, D.C. 20511

An e-mail shall be sent to: [DNI-IARPA-BAA-22-02@iarpa.gov](mailto:DNI-IARPA-BAA-22-02@iarpa.gov)

- (b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

#### IA52.233-701 (U) Independent Review of Agency Protests

(U) An independent review of protests to the agency, as defined in FAR 33.103(d) (4), is available as an alternative to consideration by the contracting officer. Requests for an independent review shall be submitted directly to the Head of Contracting Activity, along with the protest.

### **6.B.13.b. Clauses**

The outline that follows is illustrative of the types of general clauses required by the Federal Acquisition Regulation for Fixed Price and/or Cost Reimbursable Research & Development type contracts. This is not a complete list of clauses to be included, nor does it contain specific wording. A full list of applicable FAR clauses, to include full text IARPA Clauses, will be made available for review after selection and prior to contract award. The Government reserves the right to update this list at time of contract award.

#### **Examples of Anticipated FAR General Clauses:**

- FAR 52.252-2 Clauses Incorporated by Reference (Feb 1998)
- FAR 52.203-5 Covenant Against Contingent Fees (MAY 2014)
- FAR 52.203-7 Anti-Kickback Procedures (JUN 2020)
- FAR 52.203-17 Contractor Employee Whistleblower Rights and Requirement to Inform Employees of Whistleblower Rights (JUN 2020)
- FAR 52.204-19 Incorporation by Reference of Representations and Certifications (DEC 2014)
- FAR 52.204-21 Basic Safeguarding of Covered Contractor Information Systems (Jun 2016)
- FAR 52.204-23 Prohibition on Contracting for Hardware, software, Services Developed or Provided by Kaspersky Lab and Other Covered Entities (JUL 2018)
- FAR 52.204-25 Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment (AUG 2020)
- FAR 52.216-7 Allowable Cost and Payment (Aug 2018)
- FAR 52.217-8 Option to Extend Services. (Nov 1999)
- FAR 52.222-35 Equal Opportunity for Veterans (JUN 2020)
- FAR 52.222-36 Equal Opportunity for Workers With Disabilities (JUN 2020)
- FAR 52.222-50 Combating Trafficking in Persons (OCT 2020)
- FAR 52.223-18 Encouraging Contractor Policies to Ban Text Messaging While Driving (JUN 2020)

FAR 52.225-13 Restrictions on Certain Foreign Purchases (FEB 2021)  
FAR 52.232-39 Unenforceability of Unauthorized Obligations (JUN 2013)  
FAR 52.232-40 Providing Accelerated Payments to Small Business Subcontractors (DEC 2013)  
FAR 52.233-4 Applicable Law for Breach of Contract Claim (OCT 2004)  
FAR 52.242-15 Alt I Stop-Work Order (Aug 1989)  
FAR 52.244-6 Subcontracts for Commercial Items (JUL 2021)  
FAR 52.246-8 Inspection of Research and Development—Cost-Reimbursement (APR 1984)  
FAR 52.246-7 Inspection of Research and Development-Fixed-Price (AUG 1996)  
FAR 52.247-34 F.o.b. Destination (November 1991)

## Appendix A: Templates for Volume 1: Technical Proposal

### A.1 Cover Sheet for Volume 1: Technical Proposal

(1) BAA Number	IARPA-BAA-22-02
(2) Technical Area(s) – (TA)(s), if applicable	
(3) Lead Organization Submitting Proposal	
(4) Type of Business, Selected Among the Following Categories: “Large Business”, “Small Disadvantaged Business”, “Other Small Business”, “HBCU”, “MI”, “Other Educational”, or “Other Nonprofit”	
(5) Contractor’s Reference Number (if any)	
(6) Other Team Members (if applicable) and Type of Business for Each	
(7) Proposal Title	
(8) Technical Point of Contact to Include: Title, First Name, Last Name, Street Address, City, State, Zip Code, Telephone, Fax (if available), Electronic Mail (if available)	
(9) Administrative Point of Contact to Include: Title, First Name, Last Name, Street Address, City, State, Zip Code, Telephone, Fax (if available), Electronic Mail (if available)	
(10) Volume 1 no more than the specified page limit	Yes/No
(11) Restrictions on Intellectual property rights details provided in Appendix A format?	Yes/No
(12) Research Data Management Plan included?	Yes/No
(13) OCI Waiver Determination, Notification or Certification [see Section 3 of the BAA] Included?	Yes/No
(13a) If No, is written certification included (Appendix A)?	Yes/No
(14) Are one or more U.S. Academic Institutions part of your team?	Yes/No
(14a) If Yes, are you including an Academic Institution Acknowledgment Statement with your proposal for each U.S. Academic Institution that is part of your team (Appendix A)?	Yes/No
(15) Total Funds Requested from IARPA and the Amount of Cost Share (if any)	\$
(16) Date of Proposal Submission	

## Appendix A.2 Academic Institution Acknowledgment Letter

-- Please Place on Official Letterhead --

<Insert date>

To: Contracting Officer  
ODNI/IARPA  
Office of the Director of National Intelligence  
Washington, D.C. 20511

Subject: Academic Institution Acknowledgment Letter Reference: Executive Order 12333, As Amended, Para 2.7

This letter is to acknowledge that the undersigned is the responsible official of <insert name of the academic institution>, authorized to approve the contractual relationship in support of the Office of the Director of National Intelligence's Intelligence Advanced Research Projects Activity and this academic institution.

The undersigned further acknowledges that he/she is aware of the Intelligence Advanced Research Projects Activity's proposed contractual relationship with <insert name of institution> through IARPA-BAA-22-02 and is hereby approved by the undersigned official, serving as the president, vice-president, chancellor, vice-chancellor, or provost of the institution.

<Name>  
<Position>

Date

**Appendix A.3 Intellectual Property Rights**

[Please provide here your good faith representation of ownership or possession of appropriate licensing rights to all IP that shall be utilized under the Program.]

**Patents**

PATENTS				
Patent number (or application number)	Patent name	Inventor name(s)	Patent owner(s) or assignee	Incorporation into deliverable
(LIST)	(LIST)	(LIST)	(LIST)	(Yes/No; applicable deliverable)

- (1) Intended use of the patented invention(s) listed above in the conduct of the proposed research:
- (2) Description of license rights to make, use, offer to sell, or sell, if applicable, that are being offered to the Government in patented inventions listed above:
- (3) How the offered rights will permit the Government to reach its program goals (including transition) with the rights offered:
- (4) Cost to the Government to acquire additional or alternative rights, if applicable:
- (5) Alternatives, if any, that would permit IARPA to achieve program goals:

**Data (Including Technical Data and Computer Software)**

NONCOMMERCIAL ITEMS			
Technical Data, Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

COMMERCIAL ITEMS			
Technical Data, Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

- (1) Intended use of the data, including, technical data and computer software, listed above in the conduct of the proposed research:**
- (2) Description of Asserted Rights Categories, specifying restrictions on Government's ability to use, modify, reproduce, release, perform, display, or disclose technical data, computer software, and deliverables incorporating technical data and computer software listed above:**
- (3) How the offered rights will permit the Government to reach its program goals (including transition) with the rights offered:**
- (4) Cost to the Government to acquire additional or alternative rights, if applicable:**
- (5) Alternatives, if any, that would permit IARPA to achieve program goals:**

## Appendix A.4 Organizational Conflicts of Interest Certification Letter

(Month DD, YYYY)

Office of the Director of National Intelligence  
Intelligence Advanced Research Projects Activity (IARPA)  
SINTRA Program  
ATTN: TBD, Contracting Officer  
Washington, DC 20511

Subject: OCI Certification

Reference: SINTRA, IARPA-BAA-22-02, (Insert assigned proposal ID#, if received)

Dear \_\_\_\_\_,

In accordance with IARPA Broad Agency Announcement IARPA-BAA-22-02, Organizational Conflicts of Interest (OCI), and on behalf of (Offeror name) I certify that neither (Offeror name) nor any of our subcontractor teammates has as a potential conflict of interest, real or perceived, as it pertains to the SINTRA program. Please note the following subcontractors and their proposed roles:

[Please list all proposed contractors by name with a brief description of their proposed involvement.]

If you have any questions, or need any additional information, please contact (Insert name of contact) at (Insert phone number) or (Insert e-mail address).

Sincerely,

(Insert organization name) (Shall be signed by an official that has the authority to bind the organization)

(Insert signature)

(Insert name of signatory)

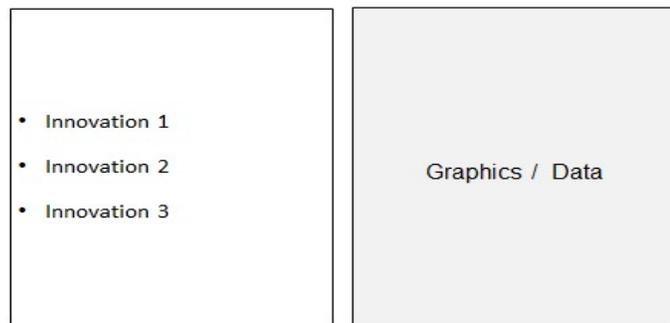
(Insert title of signatory)

## Appendix A.5 Three Chart Summary of the Proposal

### Chart 1: Overview

- Self-contained, intuitive description of the technical approach and performance
  - Avoid acronyms! Especially those that are contractor specific.

### Chart 2: Key Innovations



### Chart 3: Expected Impact

- Deliverable 1; Performance and Impact
- Deliverable 2; Performance and Impact
- Unique aspects of the proposal

## Appendix A.6 Research Data Management Plan (RDMP) BAA 22-02

*The Offeror must address each of the elements noted below.*

*The RDMP shall comply with the requirements stated in Section 4 of the BAA. In doing so, it will support the objectives of the ODNI Public Access Plan at*

<https://www.iarpa.gov/index.php/working-with-iarpa/public-access-to-iarpa-research>

1. **Sponsoring IARPA Program** (required):
2. **Offeror** (i.e., lead organization responding to BAA) (required):
3. **Offeror point of contact** (required):  
*The point of contact is the proposed principal investigator (PI) or his/her Designee.*
  - a. **Name and Position:**
  - b. **Organization:**
  - c. **Email:**
  - d. **Phone:**
4. **Research data types** (required):  
*Provide a brief, high-level description of the types of data to be collected or produced in the course of the project.*
5. **Standards for research data and metadata content and format** (required):  
*Use standards reflecting the best practices of the relevant scientific discipline and research community whenever possible.*
6. **Plans for making the research data that underlie the results in peer-reviewed journal articles and conference papers digitally accessible to the public** at the time of publication/conference or within a reasonable time thereafter (required):  
*The requirement could be met by including the data as supplementary information to a peer reviewed journal article or conference paper or by depositing the data in suitable repositories available to the public.*
  - a. **Anticipated method(s) of making research data publicly accessible:**  
\_\_\_ Provide dataset(s) to publisher as supplementary information (if publishers allow public access)  
\_\_\_ Deposit dataset(s) in Data Repository  
\_\_\_ Other (*specify*) \_\_\_\_\_
  - b. **Proposed research data repository or repositories** (for dataset(s) not provided as supplementary information):  
*Suitable repositories could be discipline-specific repositories, general purpose research data repositories, or institutional repositories, as long as they are publicly accessible.*
  - c. **Retention period, at least three years after publication of associated research results:**  
*State the minimum length of time the data will remain publicly accessible.*
  - d. **Submission of metadata to IARPA:**  
*Offerors are required to make datasets underlying the results published in peer-reviewed journal or conferences digitally accessible to the public to the extent feasible. Here, the Proposer should state a commitment to submit metadata on such datasets to IARPA in a timely manner. Note: This does not supersede any requirements for deliverable data, as the award document may include metadata as a deliverable item.*
7. **Policies and provisions for sharing and preservation** (as applicable):
  - a. Policies and provisions for appropriate protection of privacy, confidentiality, security, and intellectual property:

- b. Descriptions of tools, including software, which may be needed to access and interpret the data:
- c. Policies and provisions for re-use, re-distribution, and production of derivative works:

**8. Justification for not sharing and/or preserving data underlying the results of peer-reviewed publications** (as applicable):

*If, for legitimate reasons, the data cannot be shared and preserved, the plan must include a justification detailing such reasons. Potential reasons may include privacy, confidentiality, security, IP rights considerations; size of data sets; cost of sharing and preservation; time required to prepare the dataset(s) for sharing and preservation.*

**Appendix B: Templates for Volume 2: Cost Proposal**

**Appendix B.1 Cover Sheet for Volume 2: Cost Proposal**

(1) BAA Number	IARPA-BAA-22-02
(2) Technical Area(s) (TA)(s)	
(3) Lead organization submitting proposal	
(4) Type of Business, Selected Among the Following Categories: “Large Business”, “Small Disadvantaged Business”, “Other Small Business”, “HBCU”, “MI”, “Other Educational”, or “Other Nonprofit”	
(5) Contractor’s Reference Number (if any)	
(6) Other Team Members (if applicable) and Type of Business for Each	
(7) Proposal Title	
(8) Technical Point of Contact to Include: Title, First Name, Last Name, Street Address, City, State, Zip Code, Telephone, Fax (if available), Electronic Mail (if available)	
(9) Administrative Point of Contact to Include: Title, First Name, Last Name, Street Address, City, State, Zip Code, Telephone, Fax (if available), Electronic Mail (if available)	
(10) Contract type/award Instrument Requested: specify	
(11) Place(s) and Period(s) of Performance	
(12) Total Proposed Cost Separated by Basic Award and Option(s) (if any)	
(13) Name, Address, Telephone Number of the Offeror’s Defense Contract Management Agency (DCMA) Administration Office or Equivalent Cognizant Contract Administration Entity, if Known	
(14) Name, Address, Telephone Number of the Offeror’s Defense Contract Audit Agency (DCAA) Audit Office or Equivalent Cognizant Contract Audit Entity, if Known	
(15) Date Proposal was Prepared	
(16) DUNS Number or Unique Entity ID, if applicable	
(17) TIN Number	
(18) CAGE Code	
(19) Proposal Validity Period [minimum of 180 days]	
(20) Cost Summaries Provided (Appendix B)	
(21) Size of Business in accordance with NAICS Code 541712	

**Appendix B.2 Prime Contractor/Subcontractor Cost Element Sheet for Volume 2: Cost Proposal**

Prime Contractor/Subcontractor Cost Element Sheet for Volume 2: Cost Proposal					
Complete a Cost Element Sheet for the Base Period and each Option Period					
COST ELEMENT		BASE	RATE	AMT	
DIRECT LABOR (List each labor category separately. Identify all Key Personnel by name.)		# of Hours	\$	\$	
TOTAL DIRECT LABOR				\$	
FRINGE BENEFITS		\$	%	\$	
TOTAL LABOR OVERHEAD		\$	%	\$	
SUBCONTRACTORS, IOTS, CONSULTANTS (List separately. See below table.)				\$	
MATERIALS & EQUIPMENT (List each material and equipment item separately.)		Quantity	\$ unit price	\$	
SOFTWARE & IP (List separately. See table below.)		\$	\$	\$	
TOTAL MATERIALS & EQUIPMENT				\$	
MATERIAL OVERHEAD		\$	%	\$	
TRAVEL (List each trip separately.)		# of travelers	\$ price per traveler	\$	
TOTAL TRAVEL				\$	
OTHER DIRECT COSTS (List each item separately.)		Quantity	\$ unit price	\$	
TOTAL ODCs				\$	
G&A		\$	%	\$	
SUBTOTAL COSTS				\$	
COST OF MONEY		\$	%	\$	
TOTAL COST				\$	
PROFIT/FEE		\$	%	\$	
TOTAL PRICE/COST				\$	
GOVERNMENT SHARE, IF APPLICABLE				\$	
RECIPIENT SHARE, IF APPLICABLE				\$	
SUBCONTRACTORS/IOTs) & CONSULTANTS PRICE SUMMARY					
A	B	C	D	E	F
SUB-CONTRACTOR IOT & CONSULTANT NAME	SOW TASKS PERFORMED*	TYPE OF AWARD	SUB- CONTRACTOR, IOT & CONSULTANT QUOTED PRICE	COST PROPOSED BY PRIME FOR SUBCONTRACTOR, IOT & CONSULTANT	DIFFERENCE (Column D - Column E) IF APPLICABLE
TOTALS					
*Identify Statement of Work, Milestone or Work Breakdown Structure paragraph, or provide a narrative explanation as an addendum to this Table that describes the effort to be performed.					

**Appendix B.3 - Software and IP Costs**

<b>Software and IP Costs</b>		
<b>Item</b>	<b>Cost</b>	<b>Date of Expiration</b>
(List)		

NOTE: Educational institutions and non-profit organizations as defined in FAR part 31.3 and 31.7, respectively, at the prime and subcontractor level may deviate from the cost template in Appendix B when estimating the direct labor portion of the proposal to allow for OMB guided accounting methods (2 CFR 220) that are used by their institutions. The methodology shall be clear and provide sufficient detail to substantiate proposed labor costs. For example, each labor category shall be listed separately; identify all Key Personnel and significant contributors provide hours/rates or salaries and percentage of time allocated to the project.



## Appendix B.6 – Technical References/Footnotes

- 1 Space Policy Directive – 3 (SPD-3), National Space Traffic Management Policy, 83 FR 28969 (June 18, 2018).
- 2 EL Christiansen, JL Hyde, and RP Bernhard. Space shuttle debris and meteoroid impacts. *Advances in Space Research*, 34(5):1097-1103, 2004.
- 3 NASA. NASA Technology Roadmaps: TA 5: Communications, Navigation and Orbital Debris Tracking and Characterization Systems, chapter 5.7 Orbital Debris Tracking and Characterization. NASA, 2015.
- 4 Liou, J.-C. 2020. “Risks from Orbital Debris and Space Situational Awareness.” IAA Conference on Space Situational Awareness, January 14, 2020. Washington, D.C.
- 5 NASA. Office of Inspector General: NASA's Efforts to Mitigate the Risks Posed by Orbital Debris (IG-21-011), January 2021.
- 6 Donald J. Kessler and Burton G. Cour-Palais. Collision frequency of artificial satellites: The creation of a debris belt. *Journal of Geophysical Research*, 83(A6):2637, 1978.
- 7 Limiting Future Collision Risk to Spacecraft. National Academies Press, Nov 2011.
- 8 “3 Debris Population Distribution.” National Research Council. 1995. *Orbital Debris: A Technical Assessment*. Washington, DC: The National Academies Press.
- 9 National Orbital Debris Research and Development Plan, January 2021.
- 10 NASA Orbital Debris Program Office (ODPO): Quarterly News, Aug 2017.
- 11 Michael A. Tsao, Hau T. Ngo, Robert D. Corsaro, and Christopher R. Anderson. An in-situ measurement system for characterizing orbital debris. *IEEE Transactions on Instrumentation and Measurement*, 65(12):2758-2772, Dec 2016.
- 12 NASA Orbital Debris Program Office (ODPO): <https://orbitaldebris.jsc.nasa.gov/measurements/>
- 13 "10 breakups account for 1/3 of catalogued debris". *Space News*. April 25, 2016.
- 14 Kelso, T. S. 2007. “Analysis of the 2007 Chinese ASAT Test and the Impact of its Debris on the Space Environment.” AMOS Conference. September 19, 2007, Maui, HI.
- 15 Iannotta, Becky (February 11, 2009). "U.S. Satellite Destroyed in Space Collision". <https://spacenews.com/u-s-satellite-destroyed-in-space-collision/>.
- 16 NASA Orbital Debris Program Office (ODPO): Quarterly News, March 2022.
- 17 NASA Orbital Debris Program Office (ODPO): Quarterly News, June 2022.