U.S. ARMY RESEARCH OFFICE

In partnership with

The Intelligence Advanced Research Projects Activity (IARPA)

BROAD AGENCY ANNOUNCEMENT FOR

Targeted Evaluation of Ionizing Radiation Exposure (TEI-REX)

Intelligence Advanced Research Projects Activity

IARPA

Creating Advantage through Research and Technology

W911NF-22-S-0002

Issued by:

U.S. Army Contracting Command-Aberdeen Proving Ground

Research Triangle Park Division

P.O. BOX 12211

Research Triangle Park, NC 27709-2211

I. OVERVIEW OF THE FUNDING OPPORTUNITY:

A. Required Overview Content

1. Federal Agency Name(s):
U.S. Army Research Office

Issuing Acquisition Office:
U.S. Army Contracting Command-Aberdeen Proving Ground, Research Triangle Park Division (ACC-APG RTP Division)

2. Funding Opportunity Title: Targeted Evaluation of Ionizing Radiation Exposure (TEI-REX)

3. Announcement Type
Full Announcement

4. Research Opportunity Number: W911NF-22-S-0002

5. Catalog of Federal Domestic Assistance (CFDA) Number:
12.431 – Basic Scientific Research

6. Response Dates:
BAA release: 18 October 2021
Questions must be submitted by: 1 November 2021 5:00 PM EDT to TEI_REX-BAASubmission-2021@iarpa.gov
Response to questions expected by 8 November 2021
Proposals due: 13 December 2021 @ 5:00 PM EDT
Submitted to TEI_REX-BAASubmission-2021@iarpa.gov or via Grants.gov

B. Additional Overview Information

This Broad Agency Announcement (BAA) which sets forth research areas of interest to the Army Research Laboratory-Army Research Office (ARL-ARO) and the Intelligence Advanced Research Projects Activity (IARPA) is issued under paragraph 6.102(d)(2) of the Federal Acquisition Regulation (FAR), and 10 USC 2358 which provides for the competitive selection of basic research proposals. Proposals submitted in response to this BAA and selected for award are considered to be the result of full and open competition and in full compliance with the provision of Public Law 98-369, "The Competition in Contracting Act of 1984" and subsequent amendments.

The Department of Defense agencies involved in this program reserve the right to select for award; all, some, or none of the proposals submitted in response to this announcement. The participating DoD agencies will provide no funding for direct reimbursement of proposal development costs. Technical and cost proposals (or any other material) submitted in response to this BAA will not

be returned. It is the policy of participating DoD agencies to treat all proposals as sensitive, competitive information and to disclose their contents only for the purposes of evaluation.

II. DETAILED INFORMATION ABOUT THE FUNDING OPPORTUNITY:

A Funding Opportunity Description

1 Program Summary

The objective of the Targeted Evaluation of Ionizing Radiation Exposure (TEI-REX) program is to establish novel biodosimetry approaches enabling improved quantification of lower-dose ionizing radiation exposures (<0.75 Gray)[1] from samples that can be collected and/or tested minimally or non-invasively (hereafter known as 'TEI-REX samples'), while also expanding quantitative and qualitative knowledge of the exposure environment. To accomplish this, the TEI-REX program will discover, characterize, and model biomarkers associated with a variety of ionizing radiation events, especially lower-dose exposures, from TEI-REX samples. The new capabilities developed under TEI-REX align with United States Government's mission objectives ranging from investigation of exposure events to ensuring compliance with established dosimetry protocols.

Current biodosimetry approaches, including the gold standard dicentric chromosome assay (DCA), are effective for determining a higher-dose radiation exposure, but suffer from multiple limitations. These constraints include: the need for invasively collected sample(s), such as blood; requiring multiple collections of the sample; a limited period for which a first sample must be collected post-exposure for an accurate prediction of dose exposure; a dependence on transient markers to calculate exposure dose, resulting in a limited period the test is effective following an exposure; and wide standard deviations of dose calculations at lower-dose exposures. The TEI-REX program aims to establish and characterize novel biomarkers, which can overcome many of the limitations that current biodosimetry approaches do not address.

Recently published research has demonstrated that biomarkers associated with ionizing radiation exposure can be detected across numerous biological targets including proteins, peptides, metabolites, and lipids[2]. While recent research has focused on basic targets in simple models, they showcase the potential for expanding biodosimetry techniques to novel tissue and sample types, while overcoming limitations associated with current biodosimetry techniques. As these earlier efforts focused on high dose exposures and/or high dose rates *ex vivo*, TEI-REX is advancing this research by focusing on more complex sample targets in more complex (e.g., *in vitro* and *in vivo*) environments at lower dose exposures, with the hypothesis that irradiation of proteins and other biological targets will demonstrate a minimal- or no-threshold, non-linear sensitivity response to the exposure. This hypothesis should be considered distinct, but potentially overlapping, from the

[1] One Gray (Gy) is **the international system of units (SI) equivalent of 100 rads**, which is equal to an absorbed dose of 1 Joule/kilogram.

[2] (Benjamin B Minkoff, 2019; Jelena Tamuliene, 2020; Merriline M. Satyamitra, 2020; Elisabeth Vicente, 2020; William Blakely, 2010; Younghyun Lee, 2018; Changran Geng, 2020)

linear, no-threshold model used by the EPA to assess the clinical risk associated with lower-dose radiation exposure[3].

2 Scientific Premise for the Program

The concept of the TEI-REX program relies upon the law for the conservation of energy. Ionizing radiation contains energy, which is transferred to the organic and non-organic elements with which it interacts. In biological systems, as cells and intercellular spaces are predominately comprised of water, much of this linear energy transfer (LET) results in the generation of reactive species (e.g., reactive oxygen species (ROS) and reactive nitrogen species (RNS)), but some energy may directly transfer to biological materials, such as: DNA, proteins, metabolites or lipids (Figure 1). LET or reactive species may cause changes, often in the form of damage, to various components of the cell[4]. Most biodosimetry approaches rely upon calculating damage done to DNA or the downstream effects of irradiative damage. TEI-REX is researching the effects done to the other biological components, specifically those which are long lasting and directly attributable to the initial ionizing insult.

Lower doses of ionizing radiation will result in fewer molecular changes compared to higher-dose exposures, making detection even more difficult as lower-dose exposures approach ambient background, but the changes will still be present. Researchers recently demonstrated, when using free amino acids and 3-residue peptides, a consistent order of reactivities exists across amino acids when exposed to higher doses of radiation[5]. Other researchers have also shown that glutamine, for example, has unique electron impact fragmentation patterns based upon variable and high dose exposures[6]. Finally, additional researchers are in the early stages of characterizing irradiated proteins to demonstrate the potential for a biologically informed dosimeter[7].

[3] (United States Environmental Protection Agency, 2021)
[4] (Keisz, Bansal, Qian, Zhao, & Furdui, 2014)
[5] (Benjamin B Minkoff, 2019)
[6] (Jelena Tamuliene, 2020)
[7] (Changran Geng, 2020)

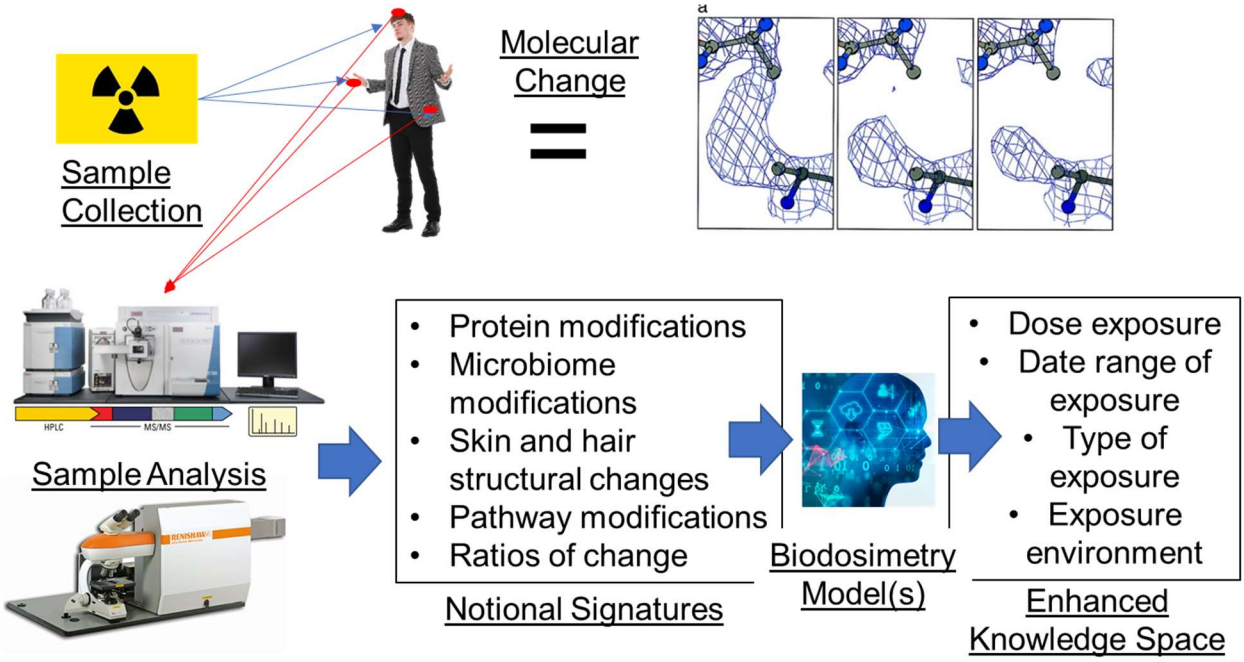

Figure 1: Overarching TEI-REX concept with notional signatures and detection methods.

3 New Methods for Evaluating Lower-Dose Ionizing Radiation Exposure

The TEI-REX program seeks proposals for new methods of quantifying lower-dose (<0.75 Gray) ionizing radiation exposure to an organism, shifting away from methods which are dependent upon invasive sampling and more traditional DNA, RNA, and expression-based signatures. The objectives are to discover robust biomarkers associated with TEI-REX samples, develop methods for enabling the detection of these signatures, and develop computational models to interpret these signatures in relation to the exposure event. Ideally, these biomarkers will be conserved across organisms and/or sample types enabling improved extensibility. Realistically, the program recognizes the significant challenge this research objective represents and that initial steps likely will focus on a limited number of optimal model organisms and sample targets. Offerors are encouraged to describe how extensible their biomarker(s) may be to other samples or models but must focus on how they will apply their proposed research against the primary objectives of this program instead of theorizing towards an ideal objective.

4 Program Structure

The TEI-REX program is anticipated to be a 3.5-year (42 months) effort, comprised of three (3) Phases. All three (3) Phases are being solicited under this BAA. Phase 1 will be 18 months in duration, Phase 2 will be 12 months, and Phase 3 will be 12 months. Each phase will encompass two (2) main technical Focus Areas:

- Focus Area 1 (FA1): Signatures and detection methodologies for characterizing ionizing radiation exposures, within 25 days of the first exposure event, from TEI-REX samples.

- Focus Area 2 (FA2): Signatures and detection methodologies for characterizing ionizing radiation exposures, greater than 90 days from the last exposure event, from TEI-REX samples.

Exposure events should be considered acute or near-acute events (achieving final dose within minutes or hours). Multiple acute events may occur for individual models within the timeframe established under each Focus Area.

Offerors must propose to all three (3) Phases and both Focus Areas of the Program under this BAA. Proposals that submit to only 1 Focus Area or less than 3 Phases per Focus Area will be considered non-compliant.

The goal of Phase 1 is the successful prediction of higher-dose, 1 to 4 Gray, exposure and the timeline of exposure, days to months, from at least one (1) TEI-REX sample. Performers are expected to make these predictions by evaluating and modeling unique biomarkers associated with TEI-REX samples and using them to develop an effective biodosimetry model. These dose ranges were selected as the most likely to enable discovery of radiation induced biomarkers, without being suppressed by the noise associated with severe cellular damage and/or cell apoptosis. To accomplish this, performers are expected to establish a research pipeline for the discovery, characterization, and modeling of robust biomarker signatures, induced by ionizing radiation exposure. **Offerors must propose research approaches that enable evaluation**, aligning to TEI-REX metrics (Table 3) and the Test and Evaluation (T&E) approach (Section II, A, 8), **of radiation dose exposures and the timeline of exposure** through discovery of relevant biomarkers found in or on **skin, hair, or other TEI-REX sample types** (e.g., sweat, sebum, dermal interstitial fluid, hair follicles, etc.). Offerors must propose well-reasoned and supported research approaches for successfully identifying biomarkers from these higher-dose exposures in addition to modeling approaches that will meet Phase 1 metrics and T&E approaches.

The goal of Phase 2 is the successful prediction of lower-dose exposure, defined as ambient background[8] to 0.75 Gray; the timeline of exposure, from days to months; the type of radiation (particulate, electromagnetic, and/or mixed), and; the dose rate of exposure (mGray/min) from at least two (2) TEI-REX samples. Performers are expected to leverage and optimize their efforts from Phase 1 to demonstrate successful analysis of samples at lower dose exposures, a greater variety of exposure time points, and a wider variety of samples/organisms while also improving upon overall confidence and accuracy of these predictions (Table 3). Offerors must propose improvements and optimizations for their research approach and describe why the approach has a high likelihood of success against the lower dose exposures and expanded Phase 2 metrics and T&E approaches.

Across both Phase 1 and 2 offerors may **propose models distinct from those described under the T&E process in section II, A, 8**. Any proposed approach must demonstrate technical strength

[8] The natural radiation that is always present in the environment. It includes cosmic radiation which comes from the sun and stars, terrestrial radiation which comes from the Earth, and internal radiation which exists in all living things. The typical average individual exposure in the United States from natural background sources is about 300 millirems per year (https://www.nrc.gov/reading-rm/basic-ref/glossary/background-radiation.html).

and high likelihood of extensibility to T&E sample types. Offerors should not assume that blinded T&E activities will conform to specific performer unique model systems nor approaches, although adaptation to specific sample types may be feasible. The baseline for reference samples developed and provide by the program will be hair and skin from human-associated or mouse models.

The goal of Phase 3 is the successful evaluation of a range of realistic exposure scenarios across a range of doses, timelines, and organism types. Performers will be expected to integrate and expand the model systems developed under Phase 1 and 2 and apply their research efforts towards identifying the limits of the newly developed TEI-REX capabilities. This Phase will rely upon even more challenging metrics from Phase 2 (Table 3). Offerors will be expected to integrate, improve, and adapt their discovery, detection, modeling, and deductive approaches to evaluate at least 3 sample types. The most likely models and sample types will be discussed throughout Phase 2 and decisions will be released at the Phase 3 kickoff, offerors should plan for sample counts and testing timelines aligning with what is described further below.

5 Research Focus Areas by Phase

Phase 1: Research the discovery, detection, and modeling of signatures associated with higher dose ionizing radiation exposures from samples that can be collected and/or tested minimally- or non-invasively.

Offerors are expected to describe how they will establish the exposure environment and the research efforts that support the discovery and characterization of biomarkers associated with higher dose exposures. Offerors must describe how their research approach aligns with TEI-REX objectives, to include planned radiation exposure environment, model system(s), sample type(s), analytical biomarker discovery and detection pipeline, and the biodosimetry modeling approach with strong and supported scientific reasoning. Offerors should account for the T&E approach described in Section II, 8 and adapt their research plan appropriately so they can evaluate samples or models distinct from the models and sample types used for internal research activities. Offerors must ensure their discovery and detection research proposal aligns with all program metrics in Table 3. Leveraging these systems to generate and discover appropriate biomarkers, offerors will be expected to model the biomarkers and associated data, enabling evaluation across a range of ionizing radiation doses for a given exposure timeline for each FA:

> Phase 1/FA1: Research the discovery, detection, and modeling of signatures associated with **higher dose, 1-4 Gray,** ionizing radiation exposures to TEI-REX samples, within **25 days** of a first exposure event.
>
> Phase 1/FA2: Research the discovery, detection, and modeling of signatures associated with **higher dose, 1-4 Gray,** ionizing radiation exposures to TEI-REX samples, greater than **90 days** from the last exposure event.

For both FA1 and FA2 in Phase 1, offerors will be responsible for describing their proposed model system(s), their research plan to include irradiation of the models(s) and evaluating appropriate TEI-REX sample(s), with the expectation to include biomarker research from **at least one (1) sample type of either skin or hair**. Offerors will develop their own protocols and systems for irradiation of models and samples. Offerors must describe their approach for ensuring lower-dose

exposures across multiple radiation types in a highly consistent and quantitative manner; collection of samples, analysis of samples, discovery of biomarkers, and development of models from biomarkers enabling accurate prediction of exposure dose and dose timeline are all, at least, expected to be described in approach. Offerors will be expected to generate approximately 50 irradiated samples associated with their selected model system(s) and sample types to provide, in appropriate form and in a cost-effective manner, to T&E teams for evaluation of performer develop protocols. Offerors will be expected to evaluate T&E blinded samples, to include at least hair or skin samples, using the models developed throughout their research efforts (Figure 2). Offerors shall consider as deliverables: protocols, selected biomarker panels, irradiated samples, details on model systems, raw/processed/curated analytical data, and final outputs which includes reporting of alignment to program metrics (Table 3).

Phase 2: Research signatures and detection methods for characterizing lower dose ionizing radiation exposures from samples that can be collected and/or tested minimally- or non-invasively.

Offerors are expected to leverage the methods, models, platforms, and overall capabilities developed under Phase 1 to investigate biomarkers associated with lower-dose exposures. Offerors will be expected to improve upon metrics associated with biodosimetry modeling and biomarker detection as detailed under Table 3. Additionally, offerors are expected to research methods for applying biomarker analysis, from a single sample or multiple samples collected from a single model individual, towards assessing the type of radiation exposure (particulate, electromagnetic, or mixed) and the exposure dose-rate. The approaches for detecting biomarkers will be evaluated based upon the same metrics as the blinded T&E activities.

For both FA1 and FA2 in Phase 2, offerors will be responsible for optimizing their proposed model system(s), completing irradiation of the models(s), and evaluating appropriate TEI-REX samples from at least one (1) additional model beyond Phase 1 requirements, with the expectation to include biomarker research from **at least one (1) sample type of either skin or hair**. Submitted approaches should provide technical support describing potential extensibility of biodosimetry capabilities as such extensibility aligns to program objectives. Approaches which propose unsupported or technical unsound support for greater extensibility may be reviewed unfavorably. Offerors will develop their own protocols for irradiation of models to include: collection of samples, analysis of samples and discovery of biomarkers, and development of models from biomarkers enabling accurate prediction of exposure dose and dose timeline. Offerors will be expected to generate approximately 50 irradiated samples associated with their selected model system(s) and sample types to provide, in appropriate form and in a cost-effective manner, to T&E teams for evaluation of performer develop protocols. Offerors will be expected to evaluate T&E blinded samples, to include at least hair or skin samples, using the models developed throughout their research efforts. Offerors shall consider as deliverables their protocols, selected biomarker panels, irradiated samples, details on model systems, raw/processed/curated analytical data, and final outputs which includes reporting of alignment to program metrics (Table 3). The lower dose exposure timeline for each Phase 2 FA is defined as follows:

Phase 2/FA1: Research the discovery, detection, and modeling of signatures associated with **lower dose, background to 0.75 Gray,** ionizing radiation exposures to TEI-REX samples, within **25 days** of a first exposure event.

Phase 2/FA2: Research the discovery, detection, and modeling of signatures associated with **lower dose, background to 0.75 Gray,** ionizing radiation exposures to TEI-REX samples, greater than 90 **days** from the last exposure event.

Phase 3: Research with application of biomarker detection against samples generated to mirror realistic scenarios.

For both FA1 and FA2 in Phase 3, offerors are expected to optimize the capabilities developed under Phases 1 and 2, and integrate their protocols, biomarkers, and models, against a series of realistic and challenging model types, sample types, and/or confounders selected with direct input from program transition partners. Offerors should expect to test the viability and robustness of their biodosimetry pipeline against new model systems, to include the potential for larger mammals, insects, and plants. Additionally, a range of confounders, to include age, gender, UV exposure, chemical exposure, and the presence of natural antioxidants may be tested. Offerors must describe how their platform will adapt to these challenging sample types and propose how these factors may impact previously identified biomarkers. Evaluation of these samples will provide empirical evidence towards overall capability and extensibility, while also pushing offerors to research methods for challenging and niche use cases.

6 Recommended Team Expertise

The research associated with the TEI-REX program is expected to incorporate a collection of diverse technical fields. Offerors are strongly encouraged to ensure all capabilities below are clearly identified with demonstrated expertise within their team. Expertise associated with an ideal TEI-REX program, not ordered by criticality, should include, but are not limited to:

1. Radiation biology
2. *In vitro* and *in vivo* models associated with radiation exposure
3. Analytical biochemistry
4. Biomarker discovery
5. Biodosimetry
6. Machine learning and Artificial Intelligence
7. Radiation dosimetry/health physics
8. Statistics
9. Program management

A recommended structure for reporting Team Expertise and organization is included in Section II, H as a Team Organization Table.

7 Program Scope and Limitations

TEI-REX is focused on signatures enabling evaluation of ionizing radiation exposure, especially at lower-dose ranges, not in deriving or predicting clinical outcomes. While there may be future associations with clinical outcomes, this is not an objective of the program and offerors should maintain awareness of assumptions derived from clinical perspectives.

Proposals shall explicitly address all four (4) of the following:

I. Underlying theory: Proposals shall summarize their proposed models, samples, and methods for likelihood of robust biomarker detection. Detailed support reinforcing the technical approach should be included as referenced papers.

II. Research activities: Proposals shall describe the technical approach(es) being pursued to meet TEI-REX metrics and milestones for all three (3) phases.

III. Technical risks: Proposals shall identify technical risks and proposed mitigation strategies for each.

IV. Software or computational model development: Proposals shall describe the approach for developing software that enables effective and interpretable biodosimetry-based assessment of samples.

The following sample types, biomarkers, and confounders **are out of scope** for this program:

I. Any samples that cannot be collected and/or tested through minimally- or non-invasive means, unobtrusively. Samples which do not fit this category can still be utilized for initial research efforts, but final capabilities and associated biomarkers must align with these minimally- or non-invasive sample types in an offeror's proposal. Types of collected samples that fall outside of scope are:

    a. Drawn blood from vein or finger prick (comparable to blood glucose tests)

    b. Cheek or other mucosal cells collected directly from source by swab

    c. Tooth enamel

The TEI-REX program is not focused on detection of radionuclides absorbed, ingested, or injected into an organism.

The below categories of biomarkers are **out of scope**:

I. DNA damage to include single or double stranded breaks or associated repair signatures

II. Ratiometric expression profiling of DNA, RNA, and/or proteins

III. Biomarkers that require multiple collections from the same biological target (including baselines)

Radiation types **out of scope for research activities under TEI-REX (TEI-REX capabilities can still be applicable)**:

I. Cosmic or heavy ions radiation

Final activities **out of scope**:

I. Manufacture of new equipment for analytical biomarker analysis.

II. Improvements on throughput, scalability, and multiplexing of existing biodosimetry approaches.

    a. Establish approaches or biomarkers may be utilized in controls or confirmatory work only as a means to provide confidence in the model systems.

8 Program Test and Evaluation

TEI-REX will utilize independent T&E teams to assist in evaluating progress and success of TEI-REX approaches. Progress towards these milestones and equally weighted metrics are only one aspect of how program success will be monitored and assessed. The milestones and metrics are intended to focus and drive the TEI-REX program, while permitting flexibility, creativity, and innovation in the proposed solutions to meet the TEI-REX program goals. Proposals with a plan to surpass the listed milestone(s) and metrics are desirable and offerors will need to provide clear justification if their proposed approach will not be able to meet the listed milestones or metrics while still achieving the objectives of the program.

In addition to describing how proposed approaches address government-specific metrics, offerors should provide a detailed description of additional metrics or milestones relevant to their unique technical approaches. IARPA withholds the right to modify, remove, or add new milestones or metrics as the program progresses to ensure the research activities can be appropriately and effectively monitored and evaluated. Expected final Phase 1 metrics (Table 3) will be provided by the Government during the Phase 1 Kickoff Meeting. Any additional changes to milestones or metrics after program kickoff may be provided by the Government following discussions with program stakeholders.

The test and evaluation process includes three primary activities: 1) evaluation of self-reported scoring, against program metrics, by performer teams using their own samples throughout each Phase with progress reported through monthly deliverables; 2) evaluation of performer protocols, identified biomarker panels, and models by the T&E teams to substantiate self-reported scoring; and 3) evaluation of performer biodosimetry and biomarker data outputs by T&E teams when evaluating blinded samples provided to performers by T&E. Dose exposure, timeline, and dose-rate associated with each blinded T&E sample will not be provided (refer to Table 3). Offerors should ensure they account for all described T&E events and processes and detail in their proposal any limitations or risks associated with their approach. All offerors should be aware that awarded proposals will be evaluated based upon how well their models and predictions meet program metrics when the ground truth of the blinded samples is released.

T&E is **limited in the number of models and samples it can generate** and offerors are encouraged to consider this when proposing appropriate model systems and sample types in their research pursuit of robust biomarkers. Proposed approaches which demonstrate very strong technical likelihood to meet the objective of TEI-REX while also falling outside of the model systems described will be considered but offerors must propose viable approaches for third-party test and evaluation approaches, enabling evaluation against program metrics, to account for the deviation.

TEI-REX T&E in Phases 1 and 2 will predominately leverage samples derived from *in vivo* mouse systems and full-thickness 3-D (mouse/human) constructs primarily derived from commercial sources. The Government, through the T&E Team(s), will provide up to 500 samples per T&E event. Events include Phase 1 Round 1, Phase 1 Round 2, and Phase 2 Round 3 (refer to Table 1 and Figure 2 for specific timing on T&E events); note that sample numbers are inclusive of experimental and biological replicates, controls, and standards to each team for each Focus Area.

T&E will include up to 25 unexposed negative controls per sample/model type per FA and up to 50 exposed samples with details of exposure prior to each T&E evaluation event (Table 1 and Figure 2) for performer self-assessment and developmental guidance. Many of these samples will likely be either skin, skin-like, or hair samples. If an offeror's research focuses on additional sample types of interest that can be easily collected from either of these model types, the T&E team will attempt to provide a sufficient number of supporting, blinded samples to enable testing and evaluation, but this is not assured. If these alternative samples cannot be provided by T&E, performers will still be expected to meet program metrics by evaluating the samples provided.

Offerors should plan to receive two (2) sets of predominately blinded T&E samples in Phase 1. The first set of samples, Phase 1 Round 1, will be used to establish a baseline capability of each performer's approach against program metrics, while Phase 1 Round 2 will demonstrate how the teams have progressed across the Phase and their capability to achieve program metrics. Both sets of blinded samples will include at least one (1) sample type from one (1) model type. Each Focus Area will have its own set of samples. Offerors will be given 60 days to analyze all provided samples and submit their raw data and computational outputs from their models following guidelines provided by the Government after receipt of T&E samples. In Phase 1, performers are expected to determine, at least, the exposure dose and exposure timeline, to include error. Biodosimetry model outputs must include error and interpretable association back to the biomarkers which informed towards the biodosimetry predictions. Biomarker detection metrics will align with true positive rate (TRP), false positive rate (FPR), and precision as statistical measurements as well as meeting sample mass/volume and extensibility requirements. Offerors are also expected to identify appropriate industry accepted quality score metrics or propose reasonable scoring approaches, based upon their analytical approach, which can be used to demonstrate successful biomarker detection from the matrix.

Offerors should plan that blinded Phase 2 T&E samples will include additional model or sample types, determined by program progress and performer successes in Phase 1, while still likely leveraging mouse and full-thickness 3-D constructs. Offerors will receive one (1) batch of predominately blinded samples, up to 500 samples, inclusive of blinded experimental and biological replicates, unblinded controls, and unblinded standards for each Focus Area. These samples will include at least two (2) sample types across two (2) model systems. Offerors will be given 60 days to analyze all samples provided and submit their raw data and outputs from their computational models. In Phase 2, metrics will expand from only scoring the prediction of dose exposure and exposure timeline to also evaluating the prediction of radiation exposure type and dose rate. Biodosimetry model outputs must include error and be interpretable, that is providing association to the biomarkers from which biodosimetry predictions were informed. Biomarker Detection metrics will align with true positive rate (TRP), false positive rate (FPR), and precision as statistical measurements as well as meeting sample mass/volume and extensibility requirements. Offerors are also expected to identify appropriate industry accepted quality score metrics or propose reasonable scoring approaches, based upon their analytical approach, which can be used to demonstrate successful biomarker detection from the matrix.

Offerors should plan to receive multiple sets of a limited number of blinded samples across Phase 3, under 100 samples per Round. Phase 3 is aimed at researching and adapting the functional capabilities developed under Phases 1 and 2 to realistic samples. These samples will be directly

informed through IARPA engagement with TEI-REX transition partners. The samples will often be limited in number and provide only empirical evidence of capability without strong statistical confidence, but performers will be expected to meet or exceed the sample metrics as required in Phase 2. These samples may include a wider range of model types, to potentially include samples from the Göttingen minipig, insects, human, and plants. These samples may include a range of confounders including: variations in age, gender, UV exposure, dose rate, and common chemicals typically used on hair or skin. During Phase 3, performers are expected to adapt and optimize their models appropriately throughout the three (3) rounds of the Phase while continuing to improve their platform and achieve Phase 3 metrics (Table 3).

Offerors should be prepared to use a reporting template, provided at the beginning of T&E activities in each Phase, to submit their results. This template will be developed by the T&E team(s) in coordination with performers. All supporting data derived during performer analysis after each T&E event will also be submitted for T&E review and program use.

Biodosimetry models developed by performers will be evaluated by T&E based upon selected metric outputs, interpretability of model outputs, and likelihood to meet overall TEI-REX objectives computed based on nonparametric statistical power studies to predict future model performance as a function of the number of available training samples.

Phase 1 (18 Months)	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18
T&E provide baseline samples for comparison																		
T&E provide unblinded samples for training																		
T&E provide blinded samples for testing																		
T&E deliver controls and standards to support testing																		
Performers send samples and protocols for 3rd party testing																		

Phase 2 (12 Months)	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30
T&E provide baseline samples for comparison												
T&E provide unblinded samples for training												
T&E provide blinded samples for testing												
T&E deliver controls and standards to support testing												
Performers send samples and protocols for 3rd party testing												

Phase 3 (12 Months)	M31	M32	M33	M34	M35	M36	M37	M38	M39	M40	M41	M42
T&E provide blinded samples for testing												
T&E deliver controls and standards to support testing												

Figure 2: Timeline for T&E sample activities across all three Phases

9 Government Provided Equipment and Samples

To support the research and T&E processes, the T&E teams will provide multiple sets of government derived samples, to include unblinded negative control samples which are not irradiated and unblinded positive control standards that have been irradiated with a stepwise increase in dosage, within the relevant dose ranges, to support performer adaptation to T&E samples. Table 1, below, lists and describes these samples along with the expected metadata to be delivered with each sample set. The described metadata will be provided to support performer efforts as appropriate to the blinded samples being provided.

Table 1: Table of TEI-REX Provided Samples

Sample Name	Phase/Activity	Sample Description	Sample Metadata
Baseline (reference) samples	P1/M3 and P2/M20	Unexposed samples aligning with the T&E model systems and sample types to be tested in the respective phase and Focus Area. Up to 25 samples.	• Model (age/gender/strain) • Sample origin (hair/skin) • Sample mass/volume
Unblinded training samples	P1/M7 and P2/M24	Irradiated samples aligning with T&E model systems and sample types provided prior to active T&E to enabled performers to test their biodosimetry approach in advance using 3rd party samples. Up to 50 samples.	• Dose information (exposure/rate/timeline/ environment) • Model (age/gender/strain) • Sample origin (hair/skin) • Sample mass/volume
Blinded T&E samples	P1/M9, P1/M15, and P2/M28	Irradiated samples, primarily aligning with skin and/or hair, from T&E models. Blinded regarding all exposure information. Up to 500 samples.	• Model (age/gender/strain) • Sample origin (hair/skin/etc.) • Sample mass/volume • Spike-in concentrations • Spike-in digestion profiles
T&E controls and standards	P1/M9, P1/M15, and P2/M28	• Irradiated controls with known doses to create a positive control calibration curve. • Process control and platform performance standards spiked into or onto blinded samples to enable evaluation of sample prep by performers.	• Dose information (exposure/rate/timeline/ environment) • Model (age/gender/strain) • Sample origin (hair/skin) • Sample mass/volume • Spike-in concentrations • Spike-in digestion profiles
Blinded realistic samples	P3/M31,35,39	Blinded irradiated samples derived from a variety of model systems aligning with exposure environments informed by transition partners. Up to 100 samples per round.	• Sample origin (hair/skin/etc.) • Model system

10 Models, Software, and Application of Machine Learning/Artificial Intelligences Towards Biodosimetry

Offerors will be required to provide the algorithms, data, models, code, and/or software deliverables via a hosting environment established by the T&E team in a manner that conforms to industrial best practices, including containerized code to automate deployment. Offerors should describe how models will be developed, language(s) used, and expectations of command line or user interface development. Biodosimetry models will not be evaluated by hardware requirements but must be deployable on a cloud environment and packaged in a Docker or Singularity package with pre-identified dependencies. TEI-REX will not be providing an environment to train model systems and software.

The specifics of model and data delivery to the T&E environment will be provided at TEI-REX program Kickoff. Offerors should expect to utilize standardized reporting templates, likely in JSON or similar, with consistent and pre-identified terminology for labeling metadata tags. Biodosimetry models are expected to incorporate both big data training from TEI-REX biomarkers and implicitly programmed elements focusing on known biodosimetry evaluation techniques, radiation physics, and biology. Predictions from the biodosimetry models must be interpretable, enabling review of the specific biomarkers leading towards the output results (Table 3). Biodosimetry models must adhere with industry accepted coding standards and conventions and all models developed using machine learning/deep learning (ML/DL) must be retrainable by end-users.

T&E will leverage software deliverables to evaluate the functionality of the TEI-REX technologies, assess the extensibility of the technologies on different biomarker targets, sample types, and model types, and potentially ensemble multiple approaches and/or training databases developed under TEI-REX. This evaluation will be accomplished by T&E analyzing individual performer model outputs using raw biomarker data inputs generated across the program. Results of T&E verification should align with self-reported data from the performer teams and program metrics, any significant deviations will require further review of technologies by T&E with support from performer teams.

11 Program Waypoints, Milestones, and Metrics

The Government will use the Program Goal (Section II, 1), Metrics (Table 3), and Expected Milestones and Deliverables (Table 4) as a partial means to determine whether satisfactory progress is being made to warrant continued funding for the program. The Government will use Milestones and Metrics to quantitatively track program progress, which for the purposes of this BAA are defined as:

- Waypoint (Table 2): An intermediate performance target, tied to a specific time in the program execution, established by the performer but linked to a Milestone or Metric.
- Milestone (Table 2; Figure 3): A specific Government-provided performance target, tied to a specific time in the program execution (e.g., establishment of irradiation testbed by Month 3). All milestones are required.
- Metrics (Table 3): A quantitative or qualitative measure of program performance (e.g., prediction of exposure dose).

A Waypoint is a performer-specific performance target, tied to a specific time in the Program's Execution (each performer will supply their own system- and approach-specific Waypoints). Waypoints provide evidence that the technical and programmatic risks associated with the proposed approach are being addressed. Waypoints must be clear, well-defined, quantitative, and logically connected to offeror and/or Government decisions. Offerors must include Waypoints in their proposal and provide, as a deliverable, updates to the Program Waypoints at the start of each Phase. Performance against these waypoints will be reviewed throughout the Program to assess whether course corrections are needed to ensure Program success.

Program Milestones and Metrics define the scope and goals of the effort. The Government shall use the Program Milestones and Metrics, summarized in Tables 2 and 3, to evaluate the effectiveness of proposed solutions in achieving the stated program objectives, and in part to determine whether satisfactory progress is being made to warrant continued funding of the program. The offeror may also propose appropriate additional Milestones and Metrics to improve evaluation of progress. Additional Program Milestones should be proposed to provide evidence that the technical and programmatic risks associated with the proposed approach are being addressed. Any such Milestones and Metrics shall be clear and well-defined, with a logical connection to enabling offeror decisions and/or Government decisions.

The Metrics in Table 3 and overall constraints are intended to bound the scope of the effort, while affording maximum flexibility, creativity, and innovation in proposing solutions to the stated research problem. The TEI-REX program metrics are broken into two (2) types: 1) Metrics that are critical for ensuring the robustness of the biomarkers and their associated interpretability 2) Metrics that are critical for evaluation of effectiveness of biodosimetry models to characterize exposure incidents. These metrics may change as the Program progresses to ensure mission objectives are maintained while also continuing to drive innovation and growth within the Program. Most changes to metrics will occur following discussions between the TEI-REX IARPA team, ARO, TEI-REX transition partners, TEI-REX T&E team(s), and the performer(s) impacted by the change.

All Biomarker Detection metrics are associated with the analytical detection of biomarkers following radiation exposure. True positive rate (TPR) is the statistical measure used, as an aggregate across all possible biomarkers being targeted, with the goal of maximizing true detections. False positive rate (FPR) is the statistical measure used, as an aggregate across all possible biomarkers being targeted, with the goal of minimizing false detections. Precision is the statistical measure for measuring repeatability of biomarker detection, in aggregate. Extensibility is a binary call of yes or no, evaluated as achieving at least one (1) appropriate biomarker, used by the biodosimetry model to make predictions, in at least 50% of the new model systems. Finally, while multiplexing is not an objective of the final capabilities developed, we must consider how future applications of this research can be applied. As such, approaches need to develop capabilities which are timely when compared to other biodosimetry approaches, demonstrating continued improvement by decreasing analysis time throughout the program.

All Biodosimetry Model metrics are associated with the computational model developed by performers and its predictions, extensibility, and interpretability when evaluating TEI-REX and performer developed samples. All metrics should provide data associated with samples, based on

the variable being tested, and all samples evaluated as a whole, as appropriate per model and sample type. Accuracy targets are defined as aggregated statistical measures for a given phases' model predictions across dose, timeline, dose-rate, and ionizing radiation type. Median Absolute Error (MAE) is a statistical measure aimed to describe model prediction error. Precision is the statistical measure for measuring repeatability of model predictions across samples. Extensibility is a binary call of yes or no, defined by how well the biodosimetry model is able to predict the variable exposure factors when analyzing a new model type(s) with greater than 50% confidence across all samples. Interpretability is a retrospective correlative requiring the biodosimetry model to correlate predictions back to the biomarkers enabling the prediction to be made.
Waypoints and Milestones, developed by offerors and submitted with the proposal, shall include appropriate corresponding Metrics, and should be captured in a single table or timeline, similar to the structure found in Table 2, below.

Table 2: Template for Milestones and Waypoints, to be Completed by Offeror.

Phase	Month(s)	Event (Milestone or Waypoint)	Description	Comment	Associated Deliverable or Metric

Table 3: Program Metrics Across All Phases and Focus Areas

	Metric (FA1 and 2)	Phase 1	Phase 2	Phase 3
Biomarker Detection	TPR	70%	80%	90%
	FPR	30%	15%	10%
	Precision	60%	70%	80%
	Sample mass/volume analyzed	< 50mg/50µL	< 5mg/5µL	< 5mg/5µL
	Extensibility: Biomarker(s) Detected in at Least X Sample Type(s) from X Model(s)	1 Sample / 1 Model	1 Sample / 2 Models	1 Sample / 3 Models
	Analysis run-time	1 Sample / 24 hours	1 Sample / 10 hours	1 Sample / 3 hours
Biodosimetry Model	**Prediction of Exposed Dose***			
	Accuracy	70%	80%	90%
	MAE	30%	15%	10%
	Precision	60%	70%	80%
	Predicted Timing of Exposure (in days)*			
	Accuracy	70%	80%	90%
	MAE	30%	15%	10%
	Precision	60%	70%	80%
	Prediction of Dose-Rate (mGray/min)*			
	Accuracy	N/A	60%	70%
	MAE	N/A	30%	20%
	Precision	N/A	70%	80%
	Prediction of Ionizing Radiation Type (Particulate and/or Electromagnetic)*			

	Accuracy	N/A	60%	80%
	Precision	N/A	70%	80%
	Extensibility: Exposed Dose Predicted in at Least X Sample Type(s) from X Model(s)	1 Sample / 1 Model	1 Sample / 2 Models	1 Sample / 3 Models
	Model Interpretability: Model identifies X percent of composite biomarkers informing towards predictions	70%	80%	90%

*must be evaluated at the grouped level of sample evaluation (target variable is held constant) as well across the entire collection of samples evaluated

12 Program Period of Performance, Timeline, and Deliverables

IARPA will use the timelines as described in Figure 3 and Table 4 to monitor, evaluate, and maintain overall Program progress and its 42-month Program Schedule. Offerors should plan for a 42-month effort for the Period of Performance over three (3) phases: Phase 1 of TEI-REX shall last 18 months; Phase 2 shall last 12 months, and Phase 3 shall last 12 months. Decisions for Phase 2 and 3 options will be based on successfully meeting program goals in the previous phases and funding availability. Refer to Figure 3 for a more complete capture of Program timeline and activities. Table 3 includes a schedule for the key deliverables the offerors shall provide. In addition to technical oversight of progress, technical reviews will assess programmatic progress against proposed work plans. Offerors may add additional deliverables as needed to the minimum set listed in Table 3.

Table 4: Expected Milestones and Deliverables Associated with TEI-REX

Phase/Month	Milestone/Deliverable
P1/M1, P2/M19, P3/M31	Program/Phase kickoff meetings, likely in the Washington DC Metropolitan area. Drafts of presentation material are due 5 workdays prior to kickoff. Final materials due 15 calendar days following meeting date.
P1/M1, P2/M19, P3/M31	Processed approvals, as appropriate for Phase 1 activities, to include IRB and IACUC review. These approvals shall be updated annually or as appropriate.
P1/M1	Updated Phase 1 research plan to include waypoints and relevant non-Program Metrics/Milestones.
P1/M3	Comprehensive irradiation testbed design and biomarker discovery research plan
P1/M3	T&E provides limited number of unexposed samples to performers.
P1/M3 (and roughly every 6 months following)	Site visits, refer to program timeline for projected events. 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.
P1/M7	T&E provide limited number of irradiated samples, to include standards, to performers.
P1/M8	Finalized template for T&E reporting (developed in coordination with T&E teams)

Phase/Month	Milestone/Deliverable
P1/M8	Summary of discovered biomarkers, to include self-reported scores aligning to Program Metrics, protocols used for discovery and detection, and requested deviations or unique needs associated with upcoming T&E blinded samples. Raw analytical data to be included as well.
P1/M9	T&E provide blinded samples to performers for Round 1 T&E
P1/M10	Results from Round 1 T&E to include completion of the reporting template and supporting raw data.
P1/M10	Upload of early version of software and models used to evaluate biomarkers and provide relevant biodosimetry outputs.
P1/M12, P1/M18, P2/M29, P3/M41	PI meetings with other performers, T&E, and USG transition partners present. Likely to occur within the DC metro area. Performers shall participate and provide final meeting documents, to include captured action items, within 15 calendar days following the meeting. Draft slides, for any presentations, are due 5 workdays prior to the meeting.
P1/M12	Performers provide limited, up to 100, number of samples from in-house models to T&E for 3rd party evaluation of protocols and biomarkers.
P1/M15	Report summarizing the updated biomarker list, optimized protocols for discovery/detection, self-assessment against Program Metrics and requested deviations or unique needs associated with upcoming T&E blinded samples. Raw analytical data to be included as well.
P1/M15	Finalized template for T&E reporting (developed in coordination with T&E teams).
P1/M15	T&E provide blinded samples to performers for Round 2 T&E
P1/M17	Results from Round 2 T&E to include completion of the reporting template and supporting raw data. Summary elements may be included in the Final Phase 1 report as an alternative to a separate deliverable.
P1/M17	Upload of working version of software and models used to evaluate biomarkers and provide relevant biodosimetry outputs.
P1/M17	Final Phase 1 summary report to include: executive summary, accomplishments (testbed, methods/protocol development, results – specific to Program Metrics and performer specific elements, and lessons learned), and Phase 2 research plans.
P2/M19	Updated Phase 2 research plan to include waypoints and relevant non-Program Metrics/Milestones.
P2/M20	T&E provides limited number of unexposed samples to performers.
P2/M24	T&E provides limited number of irradiated samples, to include standards, to performers.
P2/M26	Performers provide limited, up to 100, number of samples from in-house models to T&E for 3rd party evaluation of protocols and biomarkers.
P2/M27	Finalized template for T&E reporting (developed in coordination with T&E teams)
P2/M27	Summary of discovered biomarkers, to include self-reported scores aligning to Program Metrics, protocols used for discovery and detection, and requested deviations or unique needs associated with upcoming T&E blinded samples. Raw analytical data to be included as well.

Phase/Month	Milestone/Deliverable
P2/M28	T&E provided samples for Round 3 T&E
P2/M29	Upload of updated, working version of software and models used to evaluate biomarkers and provide relevant biodosimetry outputs.
P2/M29	Results from Round 3 T&E to include completion of the reporting template and supporting raw data. Summary elements may be included in the Final Phase 2 report as an alternative to a separate deliverable.
P2/M29	Final Phase 2 summary report to include executive summary, accomplishments (testbed, methods/protocol development, results – specific to Program Metrics and performer specific elements, and lessons learned), and Phase 3 research plans.
P3/M31	Updated Phase 3 research plan to include waypoints and relevant non-Program Metrics/Milestones.
P3/M31	Finalized template for T&E reporting (developed in coordination with T&E teams)
P3/M34, P3/M38	Results from Round 4 and 5 T&E to include completion of the reporting template and supporting raw data.
P3/M41	Results from Round 6 T&E to include completion of the reporting template and supporting raw data. Summary elements may be included in the Final Phase 2 report as an alternative to a separate deliverable.
P3/M41	Upload of final version of software and models used to evaluate biomarkers and provide relevant biodosimetry outputs.
P3/M41	Final Program report to include executive summary, accomplishments (testbed, methods/protocol development, results – specific to Program Metrics and performer specific elements, future research directions, lessons learned, and transition requirements).
Monthly, by the 15th day of the following month	Monthly technical and financial reports and PDFs of invoices due to the Government. Templates provided by the Government.

Figure 3: Significant Program Events by Phase.

13 Meetings and Travel Requirements

Performers are expected to assume responsibility for administration of their project and to comply with contractual and Program requirements for reporting, including attendance at Program workshops and availability for site visits.

Program Meetings

All Performer teams are expected to attend workshops, to include key personnel from prime and subcontractor organizations. The TEI-REX program intends to hold a program Kick-off Meeting workshop in the first month of the program and Phase kick off meetings in the first month of each subsequent program phase. In addition, the program will hold a PI Review Meeting starting in Month 12 of 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 Figure 3. 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 (2) 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. 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 TEI-REX PM and T&E Team may be scheduled to coincide with these workshops. All research and data presented at these meetings should be considered non-proprietary information as they will be open meetings with other performers and partners.

Site visits by the Government Team will generally take place during the life of the program as outlined in Figure 3. 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. IARPA reserves the right to conduct additional site visits on an as-needed basis or reduce the number of site visits for logistical or health and safety reasons.

Remote monthly meetings will be established at the TEI-REX kickoff wherein performers will present the previous month's research activities, review open action items, discuss upcoming research, and identify any concerns or issues which could impact the program. IARPA may establish remote meetings every two (2) weeks if, during contract negotiation or at program kickoff, it is determined by IARPA or, at the request of a performer, that bi-weekly meetings would be beneficial at any time during the program.

Research Conferences and Publications

Performers may plan to publish their research to academic journals or present their research at appropriate research conferences and may include in their proposal an expectation to participate in these events. During the program, a request to travel must be submitted to the contracting officer (CO), contracting officer's technical representative (COTR), and IARPA technical team. IARPA will expect a courtesy copy of publications, posters or presentations associated with TEI-REX research at least ten (10) days in advance of the submission deadline. All published material shall include the proper acknowledgement to IARPA and ARO, including contract information. IARPA and/or the Contracting Agent will provide appropriate language to use for acknowledgement of papers, presentations, and/or posters.

14 Place of Performance

Performance will be conducted at the performer's site(s) as described in the proposal submitted to this BAA.

B. Federal Award Information

Anticipated awards will be made in the form of procurement contracts or cooperative agreements, and are subject to the availability of appropriations. Multiple awards are anticipated. Funding for the Option years will be contingent upon satisfactory performance and the availability of funds.

The BAA shall result in selection of proposals addressing all phases of TEI-REX and awarding of funds aligning with Phase 1 research activities. Funding for the Option Period(s) shall depend upon performance during the Base Period (and succeeding Option Periods), as well as program goals, the availability of funding, and IARPA priorities. Funding of Option Periods is at the sole discretion of the Government.

The Government reserves the right to select for negotiation all, some, one, 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 it is deemed necessary. Additionally, IARPA reserves the right to accept proposals in their entirety or to select only portions of proposals for negotiations of award, in the event that IARPA desires to award only portions of a proposal.

Awards under this BAA shall be made to offerors on the basis of the Evaluation Criteria listed in Section II, E, 1 of the BAA, as well as program balance, and availability of funds. Proposals selected for negotiation may result in a procurement contract or cooperative agreement. However, the Government reserves the right to negotiate the type of award instrument it determines appropriate under the circumstances.

The Government shall contact offerors whose proposals are selected for negotiations to obtain additional information 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 will be removed from award consideration. Offerors will also be removed from award consideration should the parties fail to reach agreement within a reasonable time on contract terms, conditions, and cost/price.

The ACC-APG RTP Division has the authority to award a variety of instruments on behalf of ARL-ARO. The ACC-APG RTP Division reserves the right to use the type of instrument most appropriate for the effort proposed. Applicants should familiarize themselves with these instrument types and the applicable regulations before submitting a proposal. Following are brief descriptions of the possible award instruments.

1. Procurement Contract. A legal instrument, consistent with 31 U.S.C. 6303, which reflects a relationship between the Federal Government and a State Government, a local government, or other entity/contractor when the principal purpose of the instrument is to acquire property or services for the direct benefit or use of the Federal Government.

Contracts are primary governed by the following regulations:

   a. Federal Acquisition Regulation (FAR) https://www.acquisition.gov/browse/index/far

b. Defense Federal Acquisition Regulation Supplement (DFARS) https://www.federalregister.gov/defense-federal-acquisition-regulation-supplement-dfars-
c. Army Federal Acquisition Regulation Supplement (AFARS) https://www.acquisition.gov/afars

2. Cooperative Agreement. A legal instrument which, consistent with 31 U.S.C. 6305, is used to enter into the same kind of relationship as a grant (see definition "grant"), except that substantial involvement is expected between the DoD and the recipient when carrying out the activity contemplated by the cooperative agreement. The term does not include "cooperative research and development agreements" as defined in 15 U.S.C. 3710a. No fee or profit is allowed.

3. Cooperative agreements for Institutions of Higher Education and nonprofit organizations are primary governed by the following:

    a. Federal statutes
    b. Federal regulations
    c. 2 CFR part 200, as modified and supplemented by DoD's interim Implementation found in 2 CFR part 1103
    d. 32 CFR Parts 21, 22, 26, and 28.
    e. DoD R&D General Terms and Conditions dated September 2021
    f. ACC-APG-RTP Division Assistance, Research General Terms and Conditions dated December 2020, hereinafter referred to as “Agency Specific Requirements”
    g. Award-specific terms and conditions

4. Cooperative agreements for for-profit and nonprofit organizations exempted from Subpart E—cost principles of part 200, are primary governed by the following:
    a. Federal statutes
    b. Federal regulations
    c. 32 CFR Parts 21, 22, 26, and 28.
    d. DOD 3210.6-R, Part 34 - Administrative Requirements for Grants and Agreements with For-Profit Organizations

Copies of OMB regulations may be obtained from:

Executive Office of the President
Publications Service
New Executive Office Building
725 17th Street, N.W., Room 2200
Washington, DC 20503

Telephone: (202) 395-7332
FAX Requests: (202) 395-9068
https://www.whitehouse.gov/omb/information-for-agencies/circulars/

The following websites may be accessed to obtain an electronic copy of the governing regulations and terms and conditions:

a) FAR, DFARS, and AFARS: https://acquisition.gov

b) Code of Federal Regulations (CFR): http://www.ecfr.gov
c) DoD Research and Development General Terms and Conditions: https://www.onr.navy.mil/work-with-us/manage-your-award/manage-grant-award/grants-terms-conditions
d) Agency-specific Research Terms and Conditions: http://www.arl.army.mil/www/default.cfm?page=8

C. Eligibility Information

1. Eligible Applicants:

Eligible applicants under this BAA include Institutions of higher education (foreign and domestic), nonprofit organizations, and for-profit concerns (large and small businesses). Proposals are encouraged from Historically Black Colleges and Universities (as determined by the Secretary of Education to meet requirements of Title III of the Higher Education Act of 1965, as amended (20 U.S.C. §1061)) and from Minority Institutions defined as institutions "whose enrollment of a single minority or a combination of minorities exceeds 50 percent of the total enrollment." [20 U.S.C. § 1067k(3) and 10 U.S.C. § 2362]. However, no funds are specifically allocated for HBCU/MI participation.

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. entity. Foreign entities and individuals may participate as subcontractors or employees of a U.S. based entity 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.

Proposals will be evaluated only if they are for fundamental scientific study and experimentation directed toward advancing the scientific state of the art or increasing basic knowledge and understanding. Proposals focused on specific devices or components are beyond the scope of this BAA.

2. Cost Sharing or Matching:

There is no requirement for cost sharing, matching, or cost participation to be eligible for award under this BAA. Cost sharing and matching is not an evaluation factor used under this BAA.

In addition, if cost sharing is proposed on a cooperative agreement proposal submitted by a nonprofit or institution of higher education, the award will be subject to the restrictions at 2 CFR 200.306. If cost sharing is proposed on a contract proposal, the awardwill be subject to the restrictions at FAR 35.003.

3. Federally Funded Research and Development Centers and University Affiliated Research Centers:
Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, and University Affiliated Research Centers (UARCs) are not eligible to receive awards, as primes or sub-awardees, under this BAA.

D. Application and Submission Information

1. Addresses to View Broad Agency Announcement

This BAA may be accessed from the following:

1) Grants.gov (www.grants.gov)
2) Beta SAM (https://beta.sam.gov)
3) ARL website (https://www.arl.army.mil/business/broad-agency-announcements/)
4) IARPA website (https://www.iarpa.gov)

Amendments, if any, to this BAA will be posted to these websites when they occur. Interested parties are encouraged to periodically check these websites for updates and amendments.

The following information is for those wishing to respond to the BAA:

2. Content and Form of Application Submission

a. General Information

A proposal submitted under this BAA must address unclassified fundamental research. Proposal submissions will be protected from unauthorized disclosure in accordance with applicable laws and DoD regulations. Applicants are expected to appropriately mark each page of their submission that contains proprietary information. The participating DoD and other USG agencies will provide no funding for direct reimbursement of proposal development costs. Technical and cost proposals (or any other material) submitted in response to this BAA will not be returned. It is the policy of participating DoD agencies to treat all proposals as sensitive, competitive information and to disclose their contents only for the purposes of evaluation.

Post-Employment Conflict of Interest: There are certain post-employment restrictions on former federal officers and employees, including special government employees (Section 207 of Title 18, U.S.C.). If an applicant believes a conflict of interest may exist, the situation should be discussed with Point of Contact listed in Section II, G: Agency Contacts, who will then coordinate with appropriate ARO/ARL legal personnel prior to having applicant expend time and effort in preparing a proposal.

Statement of Disclosure Preference: Please complete ARO Form 52 or 52A stating your preference for release of information contained in your proposal. Copies of these forms are available at http://www.arl.army.mil/www/default.cfm?page=218#baaforms

Equipment: Normally, title to equipment or other tangible property purchased with Government funds vests with nonprofit institutions of higher education or with nonprofit research organizations if vesting will facilitate scientific research performed for the Government. For profit organizations are expected to possess the necessary plant and equipment to conduct the proposed research. Deviations may be made on a case-by-case basis to allow commercial organizations to purchase equipment but disposition instructions must be followed.

b. Proposal Format

To facilitate the evaluation of the proposal, the government encourages the offerors to submit proposals which: are clear and concise; limited to essential matters sufficient to demonstrate a complete understanding of the Government's requirements; include sufficient detail for effective evaluation; and provide 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 given below. Non-compliant proposals may be rejected without review. Proposals shall consist of "Volume 1 - Technical and Management Proposal" and "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 12-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. 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

Section 1 - Cover Sheet - Technical (see Section II, H) & Transmittal Letter (not included in page count)
Section 2 – Summary of Proposal, not to exceed 5 pages
Section 3 – Detailed Proposal, not to exceed 15 pages

Section 4 – Attachments (Not included in page count of Volume 1, but number appropriately for elements included. Templates are in Section II, H of this BAA.)

i. Academic Institution Acknowledgment Letter, if required
ii. IP Rights, estimated not to exceed 4 pages
iii. OCI Notification or Certification
iv. Bibliography
v. Relevant Papers (up to three)
vi. Consultant Letters of Commitment
vii. Human Use Documentation
viii. Animal Use Documentation
ix. Health and Safety for Radiation Research Approval Plan
x. A Three Chart Summary of the Proposal
xi. Research Data Management Plan (RDMP), estimated not to exceed 3 pages
xii. Privacy Plan, no page limit

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. The submission of other supporting materials along with the proposal is strongly discouraged and shall not be considered for review. Except for the cover sheet, transmittal letter, table of contents (optional), and the required attachments stated in the BAA, Volume 1 shall not exceed 21 pages. Any pages exceeding this limit shall be removed and not considered during the evaluation process. Full proposals should be accompanied by an official transmittal letter, using contractor format. All full proposals shall be written in English.

Section 1: Cover Sheet & Transmittal Letter

a. Cover Sheet: (See Section II, H for template)
b. Official 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 of contract vehicle being requested (procurement contract or cooperative agreement) 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.

Section 2: Summary of Proposal (not to exceed 5 pages)

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. Offerors shall address:

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 provide an intuitive understanding of the approach and design, technical rationale, and constructive plan for accomplishment of technical objectives and deliverable production. The approach shall be supported by basic, clear calculations. Additionally, proposals shall clearly explain the innovative claims and technical approaches that shall be employed to meet or exceed each program metric and provide ample justification as to why approaches are feasible. 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, intellectual property, or systems supporting and/or necessary for the use of the research, results, and/or prototype shall be detailed in Volume 1 - Section 4 - IP Rights. If there are no proprietary claims, this should be stated. Should no proprietary claims be made, Government rights shall be unlimited to any resultant IP.
C. Schedule and milestones for the proposed research. Summarize, in table form and clearly legible for all activity, the schedule and milestones for the proposed research. Do not include proprietary information with the milestones. If designed as a Gantt chart or large table, a representative image of the information can be embedded as a small image, referencing an appendix excel file of the entire schedule and milestones list.
D. Related research. 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 and clearly legible organizational chart of all anticipated project participants, organized under functional roles for the effort, and also indicating associated task number responsibilities with individuals.
F. Technical Resource Summary:
    - Summarize total level of effort by labor category and technical discipline (i.e., research scientist/chemist/physicist/engineer/administrative, etc.) and affiliation (prime/ subcontractor/consultant). Key Personnel shall be identified by name. Provide a brief description of the qualifications for each labor category (i.e., education, certifications, years of experience, etc.)
    - Summarize level of effort by labor category and technical discipline for each major task.
    - Identify software and intellectual property required to perform, by affiliation (list each item separately)

- Identify materials and equipment (such as IT) required to perform, by affiliation (list each item separately)
- Identify any other resources required to perform (i.e., services, data sets, data set repository, facilities, government furnished property, etc.), by affiliation (list each item separately)
- Summarize level of effort required to prepare research data for public access.
- Estimated travel, including purpose of travel and number of personnel per trip, by affiliation.
- The above information shall cross reference to the tasks set forth in the offerors statement of work, and shall be supported by the detailed cost and pricing information provided in the offeror's Volume 2 Cost Proposal.

Section 3: Detailed Proposal Information (Up to 15 pages)

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 is desirable for IARPA to pursue. This part shall provide:

A. Statement of Work (SOW) - In plain English, clearly define the technical tasks and subtasks to be performed, their durations and the dependencies among them. A template will be provided to assist in the development of consistent SOWs for all proposals (See Section II, H for an example). 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, subcontractor, team member, etc.) by name;
   - The exit criteria for each task/activity (i.e., a product, waypoint or milestone that defines its completion); and
   - Definition of all deliverables (e.g., data (including public access), reports, software, etc.) to be provided to the Government in support of the proposed research tasks/activities.

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 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. The key elements of the proposed work should be clearly identified and related to each other. Proposals should clearly detail the technical methods and/or approaches that shall be used to meet or exceed each program milestone, and should provide ample justification as to why the proposed methods/approaches are

feasible. Any anticipated risks should be described and possible mitigations proposed. General discussion of the problem without detailed description of approaches, plausibility of implementation, and critical metrics shall result in an unacceptable rating.

C. State-of-the-art. Comparison with other on-going research, highlighting the uniqueness of the proposed effort/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. Identification and description of data sources to be utilized in pursuit of the project research goals.

Offerors proposing to use existing data sets shall provide written verification that all data were obtained in accordance with U.S. laws and, where applicable, are in compliance with End User License Agreements, Copyright Laws, Terms of Service, and laws and policies regarding privacy protection of U.S. Persons. Offerors shall identify any restrictions on the use or transfer of data sets being used, and, if there are any restrictions, the potential cost to the Government to obtain at least Government Purpose Rights in such data sets.

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.

While not necessary, if offerors propose using human samples they must include the documentation required for Institutional Review Board (IRB) approval for use of Human samples or declaration of why IRB approval is not necessary. 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.

The Government reserves the right to reject a proposal if it does not appropriately address all data issues.

E. Deliverables: Deliverables are identified in Section II, 11 of the BAA.
The Government requires, at a minimum, Government Purpose Rights for all deliverables developed with mixed funding or that incorporate technical data or computer software developed at private expense; anything less shall be considered a weakness in the proposal. However, if limited or restricted rights are asserted by the offeror in any deliverable or component of a deliverable, the proposal shall identify the potential cost associated with the Government obtaining Government Purpose Rights in such deliverables developed at private expense or with mixed funding. Proposals that do not include this information shall be considered non-compliant and may not be reviewed by the Government. All other deliverables shall be delivered with unlimited rights in accordance with FAR clause 52.227-14.

In the "Restrictions on Intellectual Property Rights" attachment of the proposal, offerors shall describe the proposed approach to intellectual property for all deliverables, together with a supporting rationale of why this approach is in the Government's best interest. This shall include all proprietary claims to the results, prototypes, intellectual property or systems supporting and/or necessary for the use of the research, results and/or prototype, and a brief explanation of how the offerors may use these materials in their program. To the greatest extent feasible, offerors should not include background proprietary technical data and computer software as the basis of their proposed technical approach.

If offerors (including their proposed teammates) desire to use in their proposed approach, in whole or in part, technical data or computer software or both that is proprietary to the offeror, any of its teammates, or any third party, in the "Restrictions on Intellectual Property Rights" attachment they should: (1) clearly identify such data/software and its proposed particular use(s); (2) identify and explain any and all restrictions on the Government's ability to use, modify, reproduce, release, perform, display, or disclose technical data, computer software, and deliverables incorporating such technical data and computer software; (3) identify the potential cost to the Government to acquire GPR in all deliverables that use the proprietary technical data or computer software the offeror intends to use; (4) explain how the Government shall be able to reach its program goals (including transition) within the proprietary model offered; and (5) provide possible nonproprietary alternatives in any area in which a Government entity would have insufficient rights to transfer, within the Government or to Government contractors in support of a Government purpose, deliverables incorporating proprietary technical data or computer software, or that might cause increased risk or cost to the Government under the proposed proprietary solutions.

Offerors also shall identify all commercial technical data and/or computer software that may be embedded in any noncommercial deliverables contemplated under the research effort, along with any applicable restrictions on the Government's use of such commercial technical data and/or computer software. If offerors do not identify any restrictions, the Government shall assume that there are no restrictions on the Government's use of such deliverables. Offerors shall also identify all noncommercial technical data and/or 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. If the offeror does not submit such information, the Government shall assume that it has unlimited rights to all such noncommercial technical data and/or computer software. Offerors shall provide a short summary for each item (commercial and noncommercial) asserted with less than unlimited rights that describes the nature of the restriction and the intended use of the intellectual property in the conduct of the proposed research.

Additionally, if offerors propose the use of any open source or freeware, any conditions, restrictions or other requirements imposed by that software shall also be addressed in the "Restrictions on Intellectual Property Rights" attachment. Offerors should review the example format, found in Section II, H for their response. (See also the "Intellectual Property" details stated in Section II, B, 3 of the BAA) The technical content of the "Restrictions on Intellectual Property Rights" attachment shall include only the

information necessary to address the proposed approach to intellectual property; any other technical discussion in the attachment shall not be considered during the evaluation process. The attachment is estimated not to exceed 4 pages.

For this solicitation, IARPA recognizes only the definitions of intellectual property rights in accordance with the terms as set forth in the Federal Acquisition Regulation (FAR) part 27, or as defined herein. If offerors propose intellectual property rights that are not defined in FAR part 27 or herein, offerors shall clearly define such rights in the "Restrictions on 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.

"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."

Section 4: Attachments
[Note: The attachments listed below shall be included with the proposal, under Volume 1, if applicable, but do not count against the Volume 1-page limit. For attachments which are not applicable, Offerors must still include a statement of Attachment X: Not applicable]

A. Attachment 1: Signed Academic Institution Acknowledgement Letter(s) (if applicable). A template is provided in Section II, H.
B. Attachment 2: IP Rights. A template is provided in Section II, H. 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 Intelligence community (IC) users and others. IARPA anticipates that achieving these goals for the TEI-REX program may 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. "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 Section II, H, 6, 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 utilizes, 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 should 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 shall 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 multinational 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 Section II, H 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 may 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.

C. Attachment 3: OCI Notification or Certification Template provided in Section II, H.
D. 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.
E. 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.
F. Attachment 6: Consultant Commitment Letters.
G. Attachment 7: Human Use Documentation.
H. Attachment 8: Animal Use Documentation.
I. Attachment 9: Health and Safety for Radiation Research Approval Plan.

J. Attachment 10: 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 Section II, H 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.
K. Attachment 11: RDMP (estimated as 2 to 3 pages). Template provided in Section II, H.
L. Attachment 12: Privacy Plan.

Volume 2 – Cost Proposal

Below are the outlines of the informational requirements for a cost proposal.
Cost Proposal – (No Page Limit). The 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 work, 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.

Reasoning for Submitting a Strong Cost Proposal
The ultimate responsibility of the Contracting Officer is to ensure that all prices offered in a proposal are fair and reasonable before contract award [FAR 15.4]. To establish the reasonableness of the offered prices, the Contracting Officer may ask the offeror to provide various supporting documentation that assists in this determination. The offeror's ability to be responsive to the Contracting Officer's requests can expedite contract award. As specified in Section 808 of Public Law 105-261, an offeror who does not comply with a requirement to submit information for a contract or subcontract in accordance with paragraph (a)(1) of FAR 15.403-3 may be ineligible for award.

DCAA-Accepted Accounting System
Before a contract can be awarded, the Contracting Officer must confirm that the offeror has a DCAA-accepted accounting system in place for accumulating and billing costs under Government contracts [FAR 53.209-1(f)]. If the offeror has DCAA correspondence, which documents the acceptance of their accounting system, this should be provided to the Contracting Officer (i.e. attached or referenced in the proposal). Otherwise, the Contracting Officer will submit an inquiry directly to the appropriate DCAA office and request a review of the offeror's accounting system.
If an offeror does not have a DCAA-accepted accounting system in place, the DCAA review process can take several months depending upon the availability of the DCAA auditors and the offeror's internal processes. This will cause a delay in contract award.
For more information about cost proposals and accounting standards, view the link title "Information for Contractors" on the main menu on their website.

Field Pricing Assistance

During the pre-award cost audit process, the Contracting Officer will solicit support from DCAA to determine commerciality and price reasonableness of the proposal [FAR 15.404-2]. Any proprietary information or reports obtained from DCAA field audits will be appropriately identified and protected within the Government.

The cost proposal has two (2) sections:

A. Section 1: Cover Sheet – Cost Proposal

The cover sheet shall include (see Section II, H for an example):

1. BAA number;
2. Technical area;
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: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available);
9. Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), and electronic mail (if available);
10. Award instrument requested: cost-plus-fixed-free (CPFF), cost-contract—no fee, cost sharing contract – no fee, or other type of procurement contract (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, and telephone number of the proposer's cognizant Defense Contract Management Agency (DCMA) administration office (if known);
14. Name, address, and telephone number of the proposer's cognizant Defense Contract Audit Agency (DCAA) audit office (if known);
15. Date proposal was prepared;
16. DUNS number;
17. TIN number; and
18. Cage Code;
19. Subcontractor Information; and
20. Proposal validity period
21. Any Forward Pricing Rate Agreement, other such approved rate information, or such other documentation that may assist in expediting negotiations (if available).

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 Section II, H, 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:

i. 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 Section II, H.
ii. Total cost broken down by major task.
iii. Major program tasks by fiscal year.
iv. A summary of projected funding requirements by month.
v. 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.
vi. A summary table listing all indirect rates used in the proposal for each base year and option year

Additional details regarding the cost proposal, including samples tables, can be found further in this section.

Sample Elements of a Cost Proposal

To help guide offerors through the pre-award cost audit process, a sample cost proposal is detailed below. This sample also allows the offeror to see exactly what the Government is looking for; therefore, all cost and pricing back-up data can be provided to the Government in the first cost proposal submission. Review each cost element within the proposal, and take note of the types of documentation that the Contracting Officer will require from the offeror.

A. Direct Labor

The first cost element included in the cost proposal is Direct Labor. The DoD requires each proposed employee to be listed by name and labor category.

Table 5: Example of Direct Labor Table Proposed by Sample Offeror

DIRECT LABOR		YEAR 1			YEAR 2		
Employee Name	**Labor Category**	**Direct Hourly Rate**	**Hours**	**Total Direct Labor**	**Direct Hourly Rate**	**Hours**	**Total Direct Labor**
Andy Smith	Program Manager	$55.00	720.00	$39,600.00	$56.65	720.00	$40,788.00
Bryan Andrew	Senior Engineer	$40.00	672.00	$26,880.00	$41.20	672.00	$27,686.40
Cindy Thomas	Principal Engineer	$50.00	512.00	$25,600.00	$51.50	512.00	$26,368.00
David Porter	Entry Level Engineer	$10.00	400.00	$4,000.00	$10.30	400.00	$4,120.00
Edward Bean	Project Administrator	$25.00	48.00	$1,200.00	$25.75	48.00	$1,236.00
Subtotal Direct Labor (DL)				$97,280.00			$100,198.40

For this cost element, the Contracting Officer requires the offeror to provide adequate documentation in order to determine that each labor rate for each employee/labor category is fair and reasonable. The documentation will need to explain how these labor rates were derived. For example, if the rates are DCAA- approved labor rates, provide the Contracting Officer with copies of the DCAA documents stating the approval. This is the most acceptable means of documentation to determine the rates fair and reasonable. Other types of supporting documentation may include General Service Administration (GSA) contract price lists, actual payroll journals, or Salary.com research. If an employee listed in a cost proposal is not a current employee (maybe a new employee, or one contingent upon the award of this contract), a copy of the offer letter stating the hourly rate - signed and accepted by the employee - may be provided as adequate documentation. Sometimes the hourly rates listed in a proposal are derived through subjective processes, i.e., blending of multiple employees in one labor category, or averaged over the course of the year to include scheduled payroll increases, etc. These situations should be clearly documented for the Contracting Officer.

Another cost element in Direct Labor is labor escalation, or the increase in labor rates from Year 1 to Year 2. In the example above, the proposed labor escalation is 3% (ex., Andy Smith increased from $55.00/hr in Year 1, by 3% to $56.65/hr in Year 2). Often times, an offeror may not propose escalation on labor rates during a 24-month period. Whatever the proposed escalation rate is, please be prepared to explain why it is fair and reasonable [ex., A sufficient explanation for our sample escalation rate would be the Government's General Schedule Increase and Locality Pay for the same time period (name FY) in the same location (name location) was published as 3.5%, therefore a 3% increase is fair and reasonable]

B. Other Direct Costs (ODCs)

This section of the cost proposal includes all other directly related costs required in support of the effort i.e., materials, subcontractors, consultants, travel, etc. Any cost element that includes various items will need to be detailed in a cost breakdown to the Contracting Officer.

1. Direct Material Costs: This subsection of the cost proposal will include any special tooling, test equipment, and material costs necessary to perform the project. Items included in this section will be carefully reviewed relative to need and appropriateness for the work proposed, and must, in the opinion of the Contracting Officer, be advantageous to the Government and directly related to the specific topic.

   The Contracting Officer will require adequate documentation from the offeror to determine the cost reasonableness for each material cost proposed. The following methods are ways in which the Contracting Officer can determine this [FAR 15.403-1].

   a. Adequate Price Competition. A price is based on adequate price competition when the offeror solicits and receives quotes from two or more responsible vendors for the same or similar items or services. Based on these quotes, the offeror selects the vendor who represents the best value to the Government. The offeror will be required to provide copies of all vendor quotes received to the Contracting Officer. Note: Price competition is not required for items at or below the micropurchase threshold ($10,000) [FAR 15.403-1]. If an item's unit cost is less than or equal to $10,000, price competition is not necessary. However, if an item's total cost over the period of performance (unit cost * quantity is higher than $10,000, two or more quotes must be obtained by the offeror.

b. Commercial Prices. Commercial prices are those published on current price lists, catalogs, or market prices. This includes vendors who have prices published on a GSA-schedule contract. The offeror will be required to provide copies of such price lists to the Contracting Officer.
c. Prices set by law or regulation. If a price is mandated by the Government (i.e. pronouncements in the form of periodic rulings, reviews, or similar actions of a governmental body, or embodied in the laws) that is sufficient to set a price.

Table 6: Example of Direct Material Costs as Proposed by Sample Offeror

DIRECT MATERIAL COSTS:	YEAR 1	YEAR 2
Raw Materials	$35,000.00	$12,000.00
Computer for experiments	$4,215.00	$0.00
Cable (item #12-3657, 300 ft)	$1,275.00	$0.00
Software	$1,825.00	$1,825.00
Subtotal Direct Materials Costs (DM):	$42,315.00	$13,825.00

Raw Materials: This is a generic label used to group many material items into one cost item within the proposal. The Contracts Officer will require a detailed breakout of all the items that make up this cost. For each separate item over $10,000 (total for Year 1 + Year 2), the offeror must be able to provide either competitive quotes received, or show that published pricing was used.

Computer for experiments: Again, this item is most likely a grouping of several components that make up one system. The Contracts Officer will require a detailed breakout of all the items that make up this cost. For each separate item over $10,000 (total for Year 1 + Year 2), the offeror must be able to provide either competitive quotes received, or show that published pricing was used.

Cable: Since this item is under the simplified acquisition threshold of $10,000, competitive quotes or published pricing are not required. Simply provide documentation to show the Contracting Officer where this price came from.

Software: This cost item could include either one software product, or multiple products. If this includes a price for multiple items, please provide the detailed cost breakdown. Note: The price for Year 1 ($1,825) is below the simplified acquisition threshold; however, in total (Year 1 + Year 2) the price is over $10,000, so competitive quotes or published pricing documentation must be provided

Due to the specialized types of products and services necessary to perform these projects, it may not always be possible to obtain competitive quotes from more than one reliable source. Each cost element over the simplified acquisition threshold ($10,000) must be substantiated. There is always an explanation for HOW the cost of an item was derived; show us how you came up with that price!

When it is not possible for an offeror to obtain a vendor price through competitive quotes or published price lists, a Contracting Officer may accept other methods to determine cost

reasonableness. Below are some examples of other documentation, which the Contracting Officer may accept to substantiate costs:

a. Evidence that a vendor/supplier charged another offeror a similar price for similar services. Has the vendor charged someone else for the same product? (Two (2) to three (3) invoices from that vendor to different customers may be used as evidence.)
b. Previous contract prices. Has the offeror charged the Government a similar price under another Government contract for similar services? If the Government has already paid a certain price for services, then that price may already be considered fair and reasonable. (Provide the contract number, and billing rates for reference.)
c. DCAA approved. Has DCAA already accepted or verified specific cost items included in your proposal? (Provide a copy of DCAA correspondence that addressed these costs.)

Table 7: Example of ODCs, Including Equipment, as Proposed by Example Offeror

OTHER DIRECT COSTS:	YEAR 1	YEAR 2
Equipment Rental for Analysis	$5,500.00	$5,600.00
Subcontractor – Widget, Inc.	$25,000.00	$0.00
Consultant: John Bowers	$0.00	$12,000.00
Travel	$1,250.00	$1,250.00
Subtotal ODCs:	$31,750.00	$18,850.00

Equipment Rental for Analysis: The offeror explains that the Year 1 cost of $5,500 is based upon 250 hours of equipment rental at an hourly rate of $22.00/hr. One (1) invoice from the vendor charging another vendor the same price for the same service is provided to the Contracting Officer as evidence. Since this cost is over the simplified acquisition threshold, further documentation to determine cost reasonableness is required. The offeror is able to furnish another invoice charging a second vendor the same price for the same service.

Subcontractor – Widget, Inc.: The offeror provides a copy of the subcontractor quote to the Contracting Officer in support of the $25,000 cost. This subcontractor quote must include sufficient detailed information (equivalent to the data included in the prime's proposal to the Government), so that the Contracting Officer can make a determination of cost reasonableness.

a. As stated in Section 3.5(c)(6) of the DoD Cost Proposal guidance, "All subcontractor costs and consultant costs must be detailed at the same level as prime contractor costs in regards to labor, travel, equipment, etc. Provide detailed substantiation of subcontractor costs in your cost proposal."
b. In accordance with FAR 15.404-3, "the Contracting Officer is responsible for the determination of price reasonableness for the prime contract, including subcontracting costs". This means that the subcontractor's quote/proposal may be subject to the same scrutiny by the Contracting Officer as the cost proposal submitted by the prime. The Contracting Officer will need to determine whether the subcontractor has an accepted purchasing system in place and/or conduct appropriate cost or price analyses to establish the reasonableness of proposed subcontract prices. Due to the proprietary nature of cost

data, the Subcontractor may choose to submit their pricing information directly to the Contracting Officer and not through the prime. This is understood and encouraged.

c. When a subcontractor is selected to provide support under the prime contract due to their specialized experience, the Contracting Officer may request sole source justification from the offeror.

Consultant – John Bowers: Again, the offeror shall provide a copy of the consultant's quote to the Contracting Officer as evidence. In this example, the consultant will be charging an hourly rate of $125 an hour for 96 hours of support. The offeror indicates to the Contracting Officer that this particular consultant was used on a previous contract with the Government (provide contract number), and will be charging the same rate. A copy of the consultant's invoice to the offeror under the prior contract is available as supporting evidence. Since the Government has paid this price for the same services in the past, determination has already been made that the price is fair.

Travel: The Contracting Officer will require a detailed cost breakdown for travel expenses to determine whether the total cost is reasonable based on Government per diem and mileage rates. This breakdown shall include the number of trips, the destinations, and the number of travelers. It will also need to include the estimated airfare per round trip, estimated car rental, lodging rate per trip, tax on lodging, and per diem rate per trip. The lodging and per diem rates must coincide with the Joint Travel Regulations. Please see the following website to determine the appropriate lodging and per diem rates: http://www.defensetravel.dod.mil/site/perdiemCalc.cfm. Additionally, the offeror must provide why the airfare is fair and reasonable as well. Sufficient back up for both airfare and car rental would include print outs of online research at the various travel search engines (Expedia, Travelocity, etc.) documenting the prices for airfare and car rentals thus proving why your chosen rate is fair and reasonable.

Table 8: Example of Travel Cost Breakout from ODCs by Example Offeror

TRAVEL		Trips	Travelers	Nights	Days	Unit Cost	Total Travel
Airfare	per roundtrip	1	1			$996.00	$996.00
Lodging	per day	1	1	1		$75.00	$75.00
Tax on Lodging (12%)	per day	1	1	1		$9.00	$9.00
Per Diem	per day	1	1		2	$44.00	$88.00
Automobile Rental	per day	1	1		2	$41.00	$82.00
Subtotal Travel							$1,250.00

C. Indirect Rates

Indirect rates include elements such as Fringe Benefits, General & Administrative (G&A), Overhead, and Material Handling costs. The offeror shall indicate in the cost proposal both the indirect rates (as a percentage) as well as how those rates are allocated to the costs in the proposal.

Table 9: Example of Indirect Rates by Example Offeror

INDIRECTS	YEAR 1	YEAR 2
Subtotal Direct Labor (DL):	$97,280.00	$100,198.40
Fringe Benefits, if not included in Overhead, rate (15.0000 %) X DL =	$14,592.00	$15,029.76
Labor Overhead (rate 45.0000 %) X (DL + Fringe) =	$50,342.40	$51,852.67
Total Direct Labor (TDL):	$162,214.40	$167,080.83

In this example, the offeror includes a Fringe Benefit rate of 15.00% that it allocated to the Direct Labor costs. They also propose a Labor Overhead rate of 45.00% that is allocated to the Direct Labor costs plus the Fringe Benefits.
All indirect rates and the allocation methods of those rates must be verified by the Contracting Officer. In most cases, DCAA documentation supporting the indirect rates and allocation methods can be obtained through a DCAA field audit or proposal review. Many offerors have already completed such reviews and have this documentation readily available. If an offeror is unable to participate in a DCAA review to substantiate indirect rates, the Contracting Officer may request other accounting data from the offeror to make a determination.

D. Cost of Money (COM)

If Cost of Money (an imputed cost that is not a form of interest on borrowings (see FAR 31.205-20); an "incurred cost" for cost-reimbursement purposes under applicable cost-reimbursement contracts and for progress payment purposes under fixed-price contracts; and refers to— (1) Facilities capital cost of money (48 CFR 9904.414); and (2) Cost of money as an element of the cost of capital assets under construction (48 CFR 9904.417)) is proposed in accordance with FAR 31.205-10, a DD Form 1861 is required to be completed and submitted with the contractor's proposal.

E. Fee/Profit

The proposed fee percentage will be analyzed in accordance with DFARS 215.404, the Weighted Guidelines Method.

c. Preparing an Application

This format applies to all proposals submitted via email and Grants.gov. Offerors' proposals should show the location of each section of the proposal, as well as major subdivisions of the project description. Forms are available at
http://www.arl.army.mil/www/default.cfm?page=218#baaforms.

COVER Sheet: for Contract proposals submitted by email. The Form SF 424 (R&R) is for all proposals submitted through Grants.gov (Assistance Instruments such as a Cooperative Agreement must submit through Grants.gov):

1. A Cover Sheet is required. Proposals will not be processed without either: (1) a signed Cover Sheet or (2) an SF 424 R & R Form.

2. Should the project be carried out at a branch campus or other component of the submitting organization, that branch campus or component should be identified in the cover sheet (Block 12 on the SF424 R&R).

3. The title of the proposed project should be brief, scientifically representative, intelligible to a scientifically literate reader, and suitable for use in the public domain.

4. The proposed duration for which support is requested should be consistent with the program duration of forty-two (42) months.

5. Specification of a desired starting date for the project is important and helpful however, requested effective dates cannot be guaranteed.

6. To evaluate compliance with Title IX of the Education Amendments of 1972 {20 U.S.C. A§ 1681 Et. Seq.), the Department of Defense is collecting certain demographic and career information to be able to assess the success rates of women who are proposed for key roles in applications in STEM disciplines. To enable this assessment, each application must also include the following forms completed as indicated:

Research and Related Senior/Key Person Profile (Expanded) form:
The Degree Type and Degree Year fields on the Research and Related Senior/Key Person Profile {Expanded} form will be used by DoD as the source for career information. In addition to the required fields on the form, applicants must complete these two fields for all individuals that are identified as having the project role of PD/Pl or Co-PD/Pl on the form. Additional senior/key persons can be added by selecting the "Next Person" button.

Research and Related Personal Data form:

This form will be used by DoD as the source of demographic information, such as gender, race, ethnicity, and disability information for the Project Director/Principal Investigator and all other persons identified as Co-Project Director{s)/Co-Principal Investigator(s). Each application must include this form with the name fields of the Project Director/Principal Investigator and any Co-Project Director(s)/Co-Principal Investigator(s) completed; however, provision of the demographic information in the form is voluntary. If completing the form for multiple individuals, each Co-Project Director/Co-Principal Investigator can be added by selecting the "Next Person" button. The demographic information, if provided, will be used for statistical purposes only and will not be made available to merit reviewers. Applicants who do not wish to provide some or all of the information should check or select the "Do not wish to provide" option.

7. Pursuant to 31 U.S.C. 7701, as amended by the Debt Collection Improvement Act of 1996 [Section 31001(I)(1), Public Law 104-134], federal agencies shall obtain each awardees' Taxpayer Identification Number (TIN). This number may be the Employer Identification Number for a business or non-profit entity or the Social Security Number for an individual. The TIN is being obtained for purposes of collecting and reporting on any delinquent amounts that may arise out of an awardees' relationship with the Government.

8. Offerors shall provide their organization's Unique Entity Identifier (formerly DUNS). This number is a nine-digit number assigned by Dun and Bradstreet Information Services. See Section II, B, 3 of this BAA for requirements pertaining to the Unique Entity Identifier.

9. Offerors shall provide their assigned Commercial and Government Entity (CAGE) Code. The CAGE Code is a 5-character code assigned and maintained by the Defense Logistics Service Center (DLSC) to identify a commercial plant or establishment.

TABLE OF CONTENTS: Use the following Format for the Proposal Table of Contents, Forms are available at
https://www.arl.army.mil/business/broad-agency-announcements/baa-forms/

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List Appendix Items: _____

This format applies to proposals submitted via email and via Grants.gov. Offerors' proposals should show the location of each section of the proposal, as well as major subdivisions of the project description.

STATEMENT OF DISCLOSURE PREFERENCE (FORM 52 OR 52A): Complete and sign ARO Form 52 (Industrial Contractors) or ARO Form 52A (Educational and Nonprofit Organizations), form can be found at the following website: https://www.arl.army.mil/business/broad-agency-announcements/baa-forms/ .

RESEARCH AND RELATED Other Project Information: The form entitled "Research and Related Other Project Information" found at the following website:

https://www.arl.army.mil/business/broad-agency-announcements/baa-forms/ ,shall be completed and signed by all organizations.

PROJECT ABSTRACT:

1. The Project Abstract shall be completed on the form entitled "Publicly Releasable Abstract" found at the following website: https://www.arl.army.mil/business/broad-agency-announcements/baa-forms/.

2. Unless otherwise instructed in this BAA, the Project Abstract shall include a concise statement of work and basic approaches to be used in the proposed effort. The abstract should include a statement of scientific objectives, methods to be employed, and the significance of the proposed effort to the advancement of knowledge.

3. The abstract should be no longer than one (1) page (maximum 4,000 characters).

4. The project abstract shall be marked by the applicant as publicly releasable. By submission of the project abstract, the applicant confirms that the abstract is releasable to the public. For a proposal that results in a grant award, the project abstract will be posted to a searchable website available to the general public to meet the requirements of Title VII (General Provisions), Section 8123, of the Department of Defense Appropriations Act, 2015. (Division C of the Consolidated and Further Continuing Appropriations Act, Public Law 113-235) The website address is https://dodgrantawards.dtic.mil/grants

TECHNICAL PROPOSAL (PROJECT DESCRIPTION): The detailed technical portion of the proposal shall be no longer than 15 pages including tables and figures, single spaced text, size 12 Times New Roman font with one inch page margins, and shall contain the following:

1. Technical Approach: Introduce the problem to be addressed, survey related work, identify key obstacles, and outline the proposed solution and well-defined objective. Proposals should describe an approach to all technical areas with unambiguous and quantitative milestones. Proposers must justify the utility of the proposed work and highlight its benefits over the current state-of-the-art. Proposals should clearly address the expected key challenges and proposed methods to overcome these difficulties taking into consideration the current state of field. Proposers should set aggressive yearly quantitative milestones that define a path toward the end-of-the-program goals and analyze the impact if successful. Proposers should address any metrics they feel would be more appropriate to include in T&E evaluation. Proposers must address approach for completing T&E activities.

2. Project Schedule, Milestones, and Deliverables: A summary of the schedule of events, milestones, and a detailed description of the results and products to be delivered.

3. Management Approach: A discussion of the overall approach to the management of this effort, including brief discussions of: required facilities; relationships with any subawardees and with other organizations; availability of personnel; and planning, scheduling, and control procedures. A brief description of your organization, including if the offeror has extensive government contracting experience. If this information has been previously provided to the ARL/ARO, the information need not be provided again. A statement setting forth this condition should be made.

4. The names of other federal, state, local agencies, or other parties receiving the proposal and/or funding the proposed effort. If none, so state. Concurrent or later submission of the proposal to other organizations will not prejudice its review by the ARL/ARO if we are kept informed of the situation.

5. A statement regarding possible impact, if any, of the proposed effort on the environment considering as a minimum its effect upon water, atmosphere, natural resources, human resources, and any other values.

6. The offeror shall provide a statement regarding the use of Class I and Class II ozone-depleting substances. Ozone-depleting substances mean any substance designated as Class I by EPA, including but not limited chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform and any substance designated as Class II by EPA, including but not limited to hydrochlorofluorocarbons. See 40 C.F.R. Part 82 for detailed information. If Class I or II substances are to be utilized, a list shall be provided as part of the offeror's proposal. If none, so state.

7. The type of additional support, if any, requested (e.g., facilities, equipment, and materials). Government Furnished Information or Equipment (GFI/GFE) available to all proposers is described in A.2.4.

BIOGRAPHICAL SKETCHES:

1. This Section shall contain the biographical sketches for senior and key personnel only.

a. Primary Principal Investigator: The "Primary" PI provides a single or initial point of communication between the sponsoring agency(s) and the awardee organization(s) about scientific matters. If not otherwise designated, the first PI listed will serve as the "Primary" PI. This individual can be changed with approval of the agency. The sponsoring agency(s) does not infer any additional scientific stature to this role among collaborating investigators.

b. Co-Principal Investigators: The individual(s) a research organization designates as having an appropriate level of authority and responsibility for the proper conduct of the research and submission of required reports to the agency. When an organization designates more than one PI, it identifies them as individuals who share the authority and responsibility for leading and directing the research, intellectually and logistically. The sponsoring agency(s) does not infer any distinction among multiple

PIs.

c. Key personnel: The individual(s) a research organization designates as having a high level of technical expertise in the topics proposed to be researched and who will both play an active role in the research and supervise the work of more junior personnel on a daily basis.

2. The following information is required:

a. Relevant experience and employment history including a description of any prior Federal employment within one year preceding the date of proposal submission.

b. List of up to three (3) publications most closely related to the proposed project and up to three (3) other significant publications, including those being printed. Patents, copyrights, or software systems developed may be substituted for publications.

c. List of persons, other than those cited in the publications list, who have collaborated on a project or a book, article, report or paper within the last four (4) years. Include pending publications and submissions. Otherwise, state "None."

d. Names of each investigator's own graduate or post graduate advisors and advisees. The information provided in "c" and "d" is used to help identify potential conflicts or bias in the selection of reviewers.

e. The time commitment of each senior or key person to this project.

3. For the personnel categories of postdoctoral associates, other professionals, and students (research assistants), the proposal may include information on exceptional qualifications of these individuals that merit consideration in the evaluation of the proposal.

4. The biographical sketches are limited to three (3) pages per investigator and other individuals that merit consideration.

BIBLIOGRAPHY: A bibliography of pertinent literature is required. Citations must be complete (including full name of author(s), title, and location in the literature).

CURRENT AND PENDING SUPPORT:

1. All project support from whatever source must be listed. The list must include all projects requiring a portion of the principal investigator's and other senior personnel's time, even if they receive no salary support from the project(s) including Cooperative Research and Development Agreements (CRADAs) or other technology transfer agreements with federal labs. Funding provided under any award resulting from this BAA may only be used in support of the effort funded by that award, and not for any other project or purpose.

2. The information should include, as a minimum:

(a) the project/proposal title and brief description,
(b) the name and location of the organization or agency presently funding the work or requested to fund such work,
(c) the award amount or annual dollar volume of the effort,
(d) the period of performance, and
(e) a breakdown of the time required of the principal investigator and/or other senior personnel.

FACILITIES, EQUIPMENT, AND OTHER RESOURCES: The offeror should include in the proposal a listing of facilities, equipment, and other resources already available to perform the research proposed.

COST PROPOSAL (including DD Form 1861):

1. Each proposal must contain a budget for each year of support requested and a cumulative budget for the full term of requested support. Locally produced versions may be used, but you may not make substitutions in prescribed budget categories nor alter or rearrange the cost categories as they appear on the form. The proposal may request funds under any of the categories listed so long as the item is considered necessary to perform the proposed work and is not precluded by applicable cost principles. Additionally, a budget by major proposed research tasks and sub-task using the same budget categories must be included. An example is provided in Section II, H.

2. A signed summary budget page must be included. The documentation pages should be titled "Budget Explanation Page" and numbered chronologically starting with the budget form. The need for each item should be explained clearly.

3. All cost data must be current and complete. Costs proposed must conform to the following principles and procedures:

Educational Institutions: 2 CFR Part 200 (formerly OMB Circular A-21) Nonprofit Organizations: 2 CFR Part 200 (formerly OMB Circular A-122*) Commercial Organizations: FAR Part 31, DFARS Part 231, FAR Subsection 15.403-5, and DFARS Subsection 215.403-5.

*For those nonprofit organizations specifically exempt from the provisions of 2 CFR Part 230, FAR Part 31 and DFARS Part 231 shall apply.

APPENDICES: Some situations require that special information and supporting documents be included in the proposal before funding can be approved. Such information and documentation should be included by appendix to the proposal.

d. Submission of Complete Research Proposals

Proposals must be submitted through the offeror's organizational office having responsibility for Government business relations. All signatures must be that of an official authorized to commit the organization in business and financial affairs. Proposals must be submitted electronically using one of the two following formats, based on award type sought. The content will remain the same whether using email or Grants.gov.

EMAIL SUBMISSION (for **Contracts only**):

1. Proposal requesting award of a contract must be emailed directly to TEI_REX-BAASubmission-2021@iarpa.gov.
Do not email full proposals to the LQC Program Point of Contact. All e-mailed proposals must contain the information outlined in Section II, D, 2, c. including the electronic forms as follows:

2. All forms requiring signature must be completed, printed, signed, and scanned into a PDF document. All documents must be combined into a single PDF formatted file to be attached to the e-mail.

3. Proposal documents (excluding required forms) must use the following format:
- Page Size – 8 ½ x 11 inches
- Margins – 1 inch
- Spacing – single
- Font – Times New Roman, 12 point, single-sided pages

GRANTS.GOV SUBMISSION (For **all Assistance Instruments**):

1. Grants.gov Registration (See Section e. below) must be accomplished prior to application through this process. Note- All web links referenced in this section and "*Grants.gov Registration"* (below) are subject to change by grants.gov and may not be updated here.

2. Specific forms are required for submission of a proposal. The forms are contained in the Application Package available through the Grants.gov application process. To access these materials, go to http://www.grants.gov select "Apply for Grants," and then select "Get Application Package." A Grant Application Package and Application Instructions are available for through the Grants.Gov Apply portal under CFDA Number 12.431/Funding Opportunity Number **W911NF-22-S-0002**. Select "Apply" and then "Apply Now Using Workspace." The following documents are mandatory: (1) Application for Federal Assistance (Research and Related) (SF 424 (R&R), and (2) Attachments form.

(a) The SF 424 (R&R) form and a completed Cover Sheet per instruction above as determined appropriate by submitter, is to be used as the cover sheet for all proposals.

Authorized Organization Representative (AOR) usernames and passwords serve as

"electronic signatures" when your organization submits applications through Grants.gov. By using the SF 424 (R&R), proposers are providing the certification required by 32 CFR Part 28 regarding lobbying. The SF 424 (R&R) must be fully completed.

(b) The Attachments form must contain the information outlined in Section III, 4, g, entitled "Table of Contents" of this BAA including the electronic forms as follows:

(1) Research and Related Other Project Information;
(2) ARO Form 99, Summary Proposal Budget;
(3) ARO Current and Pending Support (unnumbered form)
(4) Representation by Corporations Regarding conviction of a Felony Criminal Violation under any Federal or State Law and Representation by Corporations Regarding an Unpaid Delinquent Tax Liability

Items (1)-(4) forms may be accessed at https://www.arl.army.mil/business/broad-agency-announcements/baa-forms/ Item (4) "Representation relating to Tax Liability and Felony Convictions" may be submitted on a word document and attached to available field within the attachments form. The fillable PDF forms may be saved to a working directory on a computer and opened and filled in using the latest compatible Adobe Reader software application found at this Grants.Gov:
https://www.grants.gov/web/grants/applicants/adobe-software-compatibility.html

Note: Representation by Corporations Regarding Conviction of a Felony Criminal Violation and Unpaid Delinquent Tax Liability require POC information and signature of the authorized representative.

(c) All documents must be combined into separate and single PDF formatted files titled using the Table of Contents names listed in "*Section II.D.2.c. Preparing an Application*": Preparation of complete Research Proposals". Include "**BAA# W911NF-22-S-0002**" in title so the proposal will be distinguished from other BAA submissions and upload using the mandatory Attachments form.

(d) The training demonstration at https://www.grants.gov/web/grants/applicants/applicant-training.html?inheritRedirect=true will assist AORs in the application process. Remember that you must open and complete the Application for Federal Assistance (Research and Related) (SF 424 (R&R)) first, as this form will automatically populate data fields in other forms. If you encounter any problems, contact customer support at 1-800-518-4726 or at support@grants.gov. If you forget your user name or password, follow the instructions provided in the Credential Provider tutorial. Tutorials may be printed by right-clicking on the tutorial and selecting "Print".

(e) As it is possible for grants.gov to reject the proposal during this process, it is strongly recommended that proposals be uploaded at least two days before any established deadline in the BAA so that they will not be received late and be ineligible for award consideration. It is also recommended to start uploading proposals at least two days before the deadline to plan ahead for any potential technical and/or input problems involving the applicant's

own equipment.

e. Grants.Gov Registration

Registration. Each organization that desires to submit applications via Grants.Gov must complete a one-time registration. There are several one-time actions your organization must complete in order to submit applications through Grants.gov (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the System for Award Management (SAM), register with the credential provider, register with Grants.gov and obtain approval for an Authorized Organization Representative (AOR) to submit applications on behalf of the organization). To registered please see
http://www.grants.gov/web/grants/applicants/organization-registration.html.

Please note the registration process for an Organization or an Individual can take between three to five (5) business days or as long as four weeks if all steps are not completed in a timely manner.

Questions relating to the registration process, system requirements, how an application form works, or the submittal process should be directed to Grants.gov at 1-800-518-4726 or support@grants.gov.

3. Unique Entity Identifier and System for Award Management (SAM)

Each applicant (unless the applicant is an individual or Federal awarding agency that is exempt from those requirements under 2 CFR §25.110(b) or (c), or has an exception approved by the Federal awarding agency under 2 CFR §25.110(d)) is required to:

(i) Be registered in SAM before submitting its application;
(ii) Provide a valid unique entity identifier in its application; and
(iii) Continue to maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal awarding agency.

The Federal awarding agency may not make a Federal award to an applicant until the applicant has complied with all applicable unique entity identifier and SAM requirements. If an applicant has not fully complied with the requirements by the time the Federal awarding agency is ready to make a Federal award, the Federal awarding agency may determine that the applicant is not qualified to receive a Federal award and use that determination as a basis for making a Federal award to another applicant.

4. Submission Dates and Times:

Proposals:
Proposals transmitted to be considered for award must be received by ARL **no later than 5:00 PM EDT on 13 December 2021.**

Applicants are responsible for submitting electronic proposals in sufficient time to insure Grants.gov receives it by the time specified in this BAA. If the electronic proposal is received by Grants.gov after the exact time and date specified for receipt of offers, it will be considered "late" and may not be considered for award. Acceptable evidence to establish the time of receipt by Grants.gov includes documentary evidence of receipt maintained by Grants.gov.

Because of potential problems involving the applicants' own equipment, to avoid the possibility of late receipt and resulting in ineligibility for award consideration, it is strongly recommended that proposals be uploaded at least two business days before the deadline established in the BAA.

If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at grants.gov by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation closing date, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

Proposal Receipt Notices – After a proposal is submitted to Grants.gov, ARO will receive a series of three (3) emails from Grants.gov. The first two emails will be received within 24 to 48 hours after submission. The first email will confirm time of receipt of the application by the Grants.gov system and the second will indicate that the application has either been successfully validated by the system prior to transmission to the grantor agency or has been rejected due to errors. A third email will be received once the agency has confirmed receipt of the proposal. The document, Tracking Your Application Package, located at https://www.grants.gov/web/grants/applicants/track-my-application.html?inheritRedirect=true explains this process. The proposal is not considered received until the AOR receives email #3.

5. Intergovernmental Review

Other Government Agencies will be involved in the review process.

6. Funding Restrictions:

Multiple 42-month awards are anticipated. The actual amount of each award will be contingent on availability of funds and the scope of the proposed work. Depending on the results of the proposal evaluation, there is no guarantee that any of the proposals submitted in response to a particular program goal will be recommended for funding. Proposals may be funded in part.

7. Other Submission Requirements:

Information to Be Requested from Successful Offerors - Offerors whose proposals are accepted for funding will be contacted before award to provide additional information required

for award. The required information is normally limited to clarifying budget explanations, representations, certifications, and some technical aspects.

Statement of Work (SOW) - prior to award the Contracting Officer may request that the contractor submit an SOW for the effort to be performed, which will be incorporated into the contract at the time of award.

An applicant may withdraw a proposal at any time before award by written notice or by email. Notice of withdrawal shall be sent to the Contracting/Grants Officer identified in Section III, G, of this BAA. Withdrawals are effective upon receipt of notice by the Contracting/Grants Officer.

E. Proposal Evaluation Information

1. Criteria:

IARPA/ARO shall only review proposals against the evaluation criteria, program balance, and availability of funds, and shall not evaluate them against other proposals, since they are not submitted in accordance with a common work statement. For evaluation purposes, a proposal is the document described in Section II, D, 2, b of the BAA. Other supporting or background materials submitted with the proposal shall not be considered. Only Government personnel shall make evaluation and award determinations under this BAA

The factors used to evaluate and select proposals for negotiation for this Program BAA are described in the following paragraphs. 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 on the basis of technical strength, as determined by the technical criteria described below, of the proposal and funding availability factors. . Within the technical evaluation factor, the specific technical criteria are listed and weighting of importance are identified as follows:

- Overall Scientific and Technical Merit
    - Greater importance – equal weight between Overall Scientific and Technical Merit and Effectiveness of Proposed Work Plan
- Effectiveness of Proposed Work Plan
    - Greater importance – equal weight between Overall Scientific and Technical Merit and Effectiveness of Proposed Work Plan
- Contribution and Relevance to the IARPA and ARO Mission and Program Goals
    - Lesser importance – equal weight between Contribution and Relevance to the IARPA and ARO Mission and Program Goals, Relevant Experience and Expertise, and Resource Realism.
- Relevant Experience and Expertise
    - Lesser importance – equal weight between Contribution and Relevance to the IARPA and ARO Mission and Program Goals, Relevant Experience and Expertise, and Resource Realism.

- Resource Realism
    - Lesser importance – equal weight between Contribution and Relevance to the IARPA and ARO Mission and Program Goals, Relevant Experience and Expertise, and Resource Realism.

Specifics about the evaluation criteria are provided below.

Award(s) shall be made to an offeror on the basis of 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 instructions may negatively impact their proposal evaluation or may result in rejection of the proposal for non-compliance

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.

B. Effectiveness of Proposed Work Plan

The feasibility and likelihood that the proposed approach shall 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 is 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 key personnel 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., is fully described including dates when such Government Furnished Property (GFP), Government Furnished Equipment (GFE), Government Furnished Information (GFI) or other similar Government-provided resources shall be required.

The offeror's proposed intellectual property 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 and further use and development of the program results to Intelligence Community users

at an acceptable cost. The proposed approach to intellectual property rights is in the Government's best interest.

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 making this data available.

C. Contribution and Relevance to the IARPA and ARO Mission and Program Goals

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.

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 as well as qualifications, capabilities, and experience of the proposed principal investigator, team leader, and key personnel critical in achieving the proposal objectives. Time commitments of key personnel must be sufficient for their proposed responsibilities in the effort.

E. Resource Realism

The proposed resources demonstrates a clear understanding of the project, a perception of the risks and the ability to organize and perform the work. The labor hours and mix are consistent with the technical and management proposal 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.

2. Review and Selection Process:

NOTE: A proposal may be handled for administrative purposes by support contractors. These support contractors are prohibited from competing on BAA proposals and are bound by appropriate non-disclosure requirements.

Given the broad, ambitious, and complex nature of the TEI-REX program, the number of Government personnel who have "hands-on" expertise or in-depth knowledge related to each proposal may be limited. Within the Office of the Director of National Intelligence (ODNI), there may be an insufficient number of available experts to evaluate proposals. As such, it may be necessary to enlist Proposal Reviewers from Other Government Agencies (OGAs) that have related expertise and vested interests in the BAA technology areas, as well as Non-Government technical experts including Federally Funded Research and Development Center (FFRDC) resources to serve as Non-Government Advisors. All OGA Proposal Reviewers will have advised their home organizations and supervisors of their involvement in the specific TEI-REX proposal review and confirm to ARO that their home organization is aware of and has approved

their participation and that any necessary agreements are in place (e.g., inter-agency agreement, MOU, etc.). Similarly, IARPA will ensure that appropriate approvals and agreements are in place to engage Non-Government Advisors to provide these advisory services.

The Government may use Non-Government contractors who are employees of Booz Allen Hamilton, Whitney, Bradley & Brown, Inc. (WBB), Patriot Solutions Group, Airlin Technologies, Bluemont Technology and Research, Navstar, Crimson Phoenix, Northwood Global Solutions, Onts & Quants, Inc., Quantitative Scientific Solutions, Quantitative Scientific Solutions (QS-2), SAIC, Tarragon Solutions, and subject matter experts from the DOE and DOD National Laboratories to provide expert advice regarding portions of the proposals submitted to the Government and to provide logistical support in carrying out the evaluation process. In addition to supporting evaluations, the following entities: The Department of Energy Los Alamos National Laboratory and Lawrence Berkeley National Laboratory will be supporting T&E activities for contracts awarded under this program and should be considered as part of an Offeror's OCI disclosure. These personnel shall have signed and are 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 purpose 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 shall make evaluation and award determinations under this BAA.

3. Recipient Qualifications

a. For Cooperative Agreement:

In accordance with OMB guidance in parts 180 and 200 of Title 2, CFR, it is DoD policy that DoD Components must report and use integrity and performance information in the Federal Awardee Performance and Integrity Information System (FAPIIS), or any successor system designated by OMB, concerning grants, cooperative agreements, and TIAs as follows:

> (i) If the total Federal share will be greater than the simplified acquisition threshold on any Federal award under a notice of funding opportunity (see §200.88 Simplified Acquisition Threshold):
>
> > (a) The Federal awarding agency, prior to making a Federal award with a total amount of Federal share greater than the simplified acquisition threshold, will review and consider any information about the applicant that is in the designated integrity and performance system accessible through SAM (currently FAPIIS) (see 41 U.S.C. 2313);
> >
> > (b) An applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM and comment on any information about itself that a Federal awarding agency previously entered and is currently in the designated integrity and performance system accessible through SAM;

(c) The Federal awarding agency will consider any comments by the applicant, in addition to the other information in the designated integrity and performance system, in making a judgment about the applicant's integrity, business ethics, and record of performance under Federal awards when completing the review of risk posed by applicants as described in §200.205 Federal awarding agency review of risk posed by applicants.

b. For Assistance awards recipients will be required to submit the following representation prior to award:

Representations under DoD Assistance Agreements: Appropriations Provisions on Tax Delinquency and Felony Convictions

The applicant is ( ) is not ( ) a "Corporation" meaning any entity, including any institution of higher education, other nonprofit organization, or for-profit entity that has filed articles of incorporation.

If the applicant is a "Corporation" please complete the following representations:

(1) The applicant represents that it is ( ) is not ( ) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

(2) The applicant represents that it is ( ) is not ( ) is not a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

The "Representation relating to Tax Liability and Felony Convictions", the form may be accessed at https://www.arl.army.mil/business/broad-agency-announcements/baa-forms/

NOTE: If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the agency suspension and debarment official (SDO) has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore should provide information about its tax liability or conviction to the agency's SDO as soon as it can do so, to facilitate completion of the required considerations before award decisions are made. Applicant's authorized representative must sign and date form.

c. For CONTRACT Proposals:

(i) The Federal Awardee Performance and Integrity Information System (FAPIIS) will be checked prior to making an award. The web address is: https://fapiis.gov. The applicant representing the entity may comment in this system on any information about

itself that a Federal Government Official entered. The information in FAPIIS will be used in making a judgment about the entity's integrity, business ethics, and record of performance under Federal awards that may affect the official's determination that the applicant is qualified to receive an award.

(ii) For contracts, the following representation must be submitted prior to award if the offeror's SAM Representations and Certifications are not dated after March 2016. If the offeror's SAM Representations and Certifications have been updated after March 2016, this representation is not required to be submitted separately.

FAR 52.209-11: Representation by Corporations Regarding Delinquent Tax Liability or a Felony Conviction under any Federal Law (Feb 2016)

(a) As required by sections 744 and 745 of Division E of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub. L 113-235), and similar provisions, if contained in subsequent appropriations acts, the Government will not enter into a contract with any corporation that--

(1) Has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability, where the awarding agency is aware of the unpaid tax liability, unless an agency has considered suspension or debarment of the corporation and made a determination that suspension or debarment is not necessary to protect the interests of the Government; or

(2) Was convicted of a felony criminal violation under any Federal law within the preceding 24 months, where the awarding agency is aware of the conviction, unless an agency has considered suspension or debarment of the corporation and made a determination that this action is not necessary to protect the interests of the Government.

(b) The Offeror represents that—

(1) It is [ ] is not [ ] a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability; and

(2) It is [ ] is not [ ] a corporation that was convicted of a felony criminal violation under a Federal law within the preceding 24 months.

F. Award Administration Information

1. Award Notices:

Initial notification of selection of proposals for funding will be e-mailed by ARO to successful offerors. Unsuccessful offerors will be notified shortly thereafter by ARO.

The notification e-mail of selection for funding must not be regarded as an authorization to commit or expend funds. The Government is not obligated to provide any funding until a Government Contracting Grants Officer signs the cooperative agreement or contract award document.

Applicants whose proposals are recommended for negotiation of award will be contacted by a Contract/Grant Specialist to discuss additional information required for award. This may include representations and certifications, revised budgets or budget explanations, certificate of current cost or pricing data, subcontracting plan for small businesses, and other information as applicable to the proposed award.

2. Administrative and National Policy Requirements:

a. Required Certifications

(i) For CONTRACT Proposals:

Certifications Required for Contract Awards. Certifications and representations shall be completed by successful offerors prior to award. Federal Acquisition Regulation (FAR) Online Representations and Certifications are to be completed through SAM at website https://www.SAM.gov. Defense FAR Supplement and contract specific certification packages will be provided to the contractor for completion prior to award.

FAR 52.203-18, PROHIBITION ON CONTRACTING WITH ENTITIES THAT REQUIRE CERTAIN CONFIDENTIALITY AGREEMENTS OR STATEMENTS—REPRESENTATION (JAN 2017)

(ii) For COOPERATIVE AGREEMENT Proposals:

Agreement awards greater than $100,000 require a certification of compliance with a national policy mandate concerning lobbying. Statutes and Government-wide regulations require the certification to be submitted prior to award. The certification is set forth at Appendix A to 32 CFR 28 regarding lobbying. When submitting your grant through Grants.gov, by completing blocks 18 and 19 of the Standard Form 424 Research and Related (R&R) Form, the grant applicant is providing the certification on lobbying required by 32 CFR Part 28, otherwise a signed copy by the authorized representative must be provided. Below is the required certification:

(a). CERTIFICATION AT APPENDIX A TO 32 CFR PART 28 REGARDING LOBBYING: Certification for Contracts, Grants, Loans, and Cooperative Agreements The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

(b). PROHIBITION ON CONTRACTING WITH ENTITIES THAT REQUIRED CERTAIN INTERNAL CONFIDENTIALITY AGREEMENTS – REPRESENTATION

Agreement with the representation below will be affirmed by checking the “I agree” box in block 17 of the SF424 (R&R) as part of the electronic proposal submitted via Grants.gov. The representation reads as follows:

By submission of its proposal or application, the applicant represents that it does not require any of its employees, contractors, or subrecipients seeking to report fraud, waste, or abuse to sign or comply with internal confidentiality agreements or statements prohibiting or otherwise restricting those employees, contractors, subrecipients from lawfully reporting that waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information.

Note that: (1) the basis for this representation is a prohibition in section 743 of the Financial Services and General Government Appropriations Act, 2015, Pub. L. 113-235) on provision of funds through grants and cooperative agreements to entities with certain internal confidentiality agreements or statements; and 2) section 743 states that it does not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.

(c.) PROHIBITION ON CONTRACTING WITH ENTITIES USING CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

Section 889 of the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2019 (Public Law 115-232) prohibits the head of an executive agency from obligating or expending loan or grant funds to procure or obtain, extend, or renew a contract to procure or obtain, or enter into a contract (or extend or 105 renew a contract) to procure or obtain the equipment, services, or systems prohibited systems as identified in section 889 of the NDAA for FY 2019. For more information on how this applies to all grant recipients and sub-recipients after August 13, 2020, please see DoD Research General Terms and Conditions (SEP 2020) NP Article IV. Other national policy requirements, paragraph 18.

b. Policy Requirements

i. PROTECTION OF HUMAN SUBJECTS:

(1) Assistance Instruments:

(a) The recipient must protect the rights and welfare of individuals who participate as human subjects in research under this award and comply with the requirements at 32 CFR part 219, Department of Defense Instruction (DoDI) 3216.02, 10 U.S.C. 980, and when applicable, Food and Drug Administration (FDA) regulations.

(b) The recipient must not begin performance of research involving human subjects, also known as human subjects research (HSR), that is covered under 32 CFR part 219, or that meets exemption criteria under 32 CFR 219.101(b), until you receive a formal notification of approval from a DoD Human Research Protection Official (HRPO). Approval to perform HSR under this award is received after the HRPO has performed a review of the recipient's documentation of planned HSR activities and has officially furnished a concurrence with the recipient's determination as presented in the documentation.

(c) In order for the HRPO to accomplish this concurrence review, the recipient must provide sufficient documentation to enable his or her assessment as follows:

(i) If the HSR meets an exemption criteria under 32 CFR 219.101(b), the documentation must include a citation of the exemption category under 32 CFR 219.101(b) and a rationale statement.

(ii) If the recipient's activity is determined as "non-exempt research involving human subjects", the documentation must include:

- Assurance of Compliance (i.e., Department of Health and Human Services Office for Human Research Protections (OHRP) Federal Wide Assurance (FWA)) appropriate for the scope of work or program plan; and

- Institutional Review Board (IRB) approval, as well as all documentation reviewed by the IRB to make their determination.

(d) The HRPO retains final judgment on what activities constitute HSR, whether an exempt category applies, whether the risk determination is appropriate, and whether the planned HSR activities comply with the requirements in paragraph (a) of this section.

(e) The recipient must notify the HRPO immediately of any suspensions or terminations of the Assurance of Compliance.

(f) DoD staff, consultants, and advisory groups may independently review and inspect the recipient's research and research procedures involving human subjects and, based on such findings, DoD may prohibit research that presents unacceptable hazards or otherwise fails to comply with DoD requirements.

(g) Definitions for terms used in this article are found in DoDI 3216.02.

(2) Contracts: The appropriate clauses shall be added to the award.

ii. ANIMAL USE:

(1) Assistance Instruments:

(a) Prior to initiating any animal work under the award, the recipient must:

(i) Register the recipient's research, development, test, and evaluation or training facility with the Secretary of Agriculture in accordance with 7 U.S.C. 2136 and 9 CFR section 2.30, unless otherwise exempt from this requirement by meeting the conditions in 7 U.S.C. 2136 and 9 CFR parts 1-4 for the duration of the activity.

(ii) Have the recipient's proposed animal use approved in accordance with DoDI 3216.01, Use of Animals in DoD Programs by a DoD Component Headquarters Oversight Office.

(iii) Furnish evidence of such registration and approval to the grants officer.

(b) The recipient must make the animals on which the research is being conducted, and all premises, facilities, vehicles, equipment, and records that support animal care and use available during business hours and at other times mutually agreeable to the recipient, the United States Department of Agriculture Office of Animal and Plant Health Inspection Service (USDA/APHIS) representative, personnel representing the DoD component oversight offices, as well as the grants officer, to ascertain that the recipient is compliant with 7 U.S.C. 2131 et seq., 9 CFR parts 1-4, and DoDI 3216.01.

(c) The recipient's care and use of animals must conform with the pertinent laws of the United States, regulations of the Department of Agriculture, and regulations, policies, and procedures of the DoD (see 7 U.S.C. 2131 et seq., 9 CFR parts 1-4, and DoDI 3216.01).
(d) The recipient must acquire animals in accordance with DoDI 3216.01.

(2) Contracts: The appropriate clauses shall be added to the award.

(iii) BIOLOGICAL DEFENSE SAFETY PROGRAM REQUIREMENTS: For All Awards. Successful offerors whose Principal Investigators are conducting research with Bio-safety Levels 3 and 4 material must prepare a Facility Safety Plan in accordance with 32 Code of Federal Regulations (CFR) 626.18. See URL: https://www.gpo.gov/fdsys/search/pagedetails.action?collectionCode=CFR&searchPath=Title+32%2FChapter+V%2FSubchapter+H%2FPart+626&granuleId=CFR-2002-title32-vol3-part626&packageId=CFR-2002-title32-vol3&oldPath=Title+32%2FChapter+V%2FSubchapter+H%2FPart+626&fromPageDetails=true&collapse=false&ycord=2178 for a copy of 32 CFR 626.18, Biological Defense Safety Program.

(iv) MILITARY RECRUITING: For Assistance Instruments Only. This is to notify potential offerors that each grant or cooperative agreement awarded under this announcement to an institution of higher education must include the following term and condition:

"As a condition for receipt of funds available to the Department of Defense (DOD) under this award, the recipient agrees that it is not an institution of higher education (as defined in 32 CFR part 216) that has a policy of denying, and that it is not an institution of higher education that effectively prevents, the Secretary of Defense from obtaining for military recruiting purposes: (A) entry to campuses or access to students on campuses or (B) access to directory information pertaining to students. If the recipient is determined, using the procedures in 32 CFR part 216,
to be such an institution of higher education during the period of performance of this agreement, and therefore to be in breach of this clause, the Government will cease all payments of DOD funds under this agreement and all other DOD grants and

cooperative agreements to the recipient, and it may suspend or terminate such grants and agreements unilaterally for material failure to comply with the terms and conditions of award."

If your institution has been identified under the procedures established by the Secretary of Defense to implement Section 558, then: (1) no funds available to DOD may be provided to your institution through any grant, including any existing grant, (2) as a matter of policy, this restriction also applies to any cooperative agreement, and (3) your institution is not eligible to receive a grant or cooperative agreement in response to this solicitation.

(v) MILITARY RECRUITING: For Contracts Only. This is to notify potential offerors that each contract awarded under this announcement to an institution of higher education shall include the following clause: Defense Federal Acquisition Regulation Supplement (DFARS) clause 252.209-7005, Military Recruiting on Campus.

(vi) SUBCONTRACTING: For Contracts Only. This section is applicable to contracts where the dollar threshold is expected to exceed to $750,000.00. Pursuant to Section 8(d) of the Small Business Act [15 U.S.C. 637(d)], it is the policy of the Government to enable small business concerns to be considered fairly as subcontractors under all research agreements awarded to prime contractors. The required elements of the Subcontracting Plan are set forth by FAR 52.219-9 (DEVIATION 2013-O0014) and DFARS 252.219-7003.

Subcontracting Plan Goals. Small business subcontracting goals are established on an individual contract basis. The applicant is requested to consider, when appropriate, the Governments' subcontracting goals. When applied to R&D the small business-subcontractor plan should result in the best mix of cost schedule and performance.

(vi) EXPORT CONTROL LAWS:

(1) Assistance Instruments: N/A

(2) Contracts: Applicants should be aware of current export control laws and are responsible for ensuring compliance with all International Traffic in Arms Regulation (ITAR) (22 CFR 120 et. Seq.) requirements, as applicable. In some cases, developmental items funded by the Department of Defense are now included on the United States Munition List (USML) and are therefore subject to ITAR jurisdiction. Applicants should address in their proposals whether ITAR restrictions apply or do not apply, such as in the case when research products would have both civil and military application, to the work they are proposing to perform for the Department of Defense. The USML is available online at https://www.ecfr.gov/cgi-bin/text-idx?node=pt22.1.121. Additional information regarding the President's Export Control Reform Initiative can be found at http://export.gov/ecr/index.asp .

vii. DRUG-FREE WORKPLACE:

(1) Assistance Instruments: The recipient must comply with drug-free workplace requirements in Subpart B of 2 CFR part 26, which is the DoD implementation of 41 U.S.C. chapter 81, "Drug-Free Workplace."

(2) Contracts: The appropriate clause(s) shall be added to the award.

viii. DEBARMENT AND SUSPENSION:

(1) Assistance Instruments: The recipient must comply with requirements regarding debarment and suspension in Subpart C of 2 CFR part 180, as adopted by DoD at 2 CFR part 1125. This includes requirements concerning the recipient's principals under an award, as well as requirements concerning the recipient's procurement transactions and subawards that are implemented in DoD Research and Development General Terms and Conditions PROC Articles I through III and SUB Article II.

(2) Contracts: The appropriate clause(s) shall be added to the award.

ix. REPORTING SUBAWARDS AND EXECUTIVE COMPENSATION:

(1) Assistance Instruments: The recipient must report information about subawards and executive compensation as specified in the award term in Appendix A to 2 CFR part 170, "Reporting subaward and executive compensation information," modified as follows:

(a) To accommodate any future designation of a different Government wide site for reporting subaward information, the Web site "http://www.fsrs.gov" cited in paragraphs a.2.i. and a.3 of the award provision is replaced by the phrase "http://www.fsrs.gov or successor OMB designated Web site for reporting subaward information";
(b) To accommodate any future designation of a different Government wide Web site for reporting executive compensation information, the Web site "http://www.sam.gov" cited in paragraph b.2.i. of the award provision is replaced by the phrase "https://www.sam.gov or successor OMB-designated Web site for reporting information on total compensation"; and 106
(c) The reference to "Sec. ___.210 of the attachment to OMB Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations" in paragraph e.3.ii of the award term is replaced by "2 CFR 200.330, as implemented in DoD Research and Development General Terms and Conditions SUB Article I of this award."

(2) Contracts: The appropriate clause(s) shall be added to the award.

3. Reporting:

Reports including number and types will be specified in the award document, but will include as a minimum monthly technical and financial status reports. The reports shall be prepared and submitted in accordance with the procedures contained in the award document and mutually agreed upon before award. Reports and briefing material will also be required as appropriate to document progress in accomplishing program metrics.

MANPOWER CONTRACTOR REPORTING: For Contracts Only. The Office of the Assistant Secretary of the Army (Manpower & Reserve Affairs) operates and maintains a secure Army data collection site where the contractor will report ALL contractor manpower (including subcontractor manpower) required for performance of this contract. The contractor is required to completely fill in all the information in the format using the following web address: www.sam.gov . The required information includes:

(1) Contracting Office, Contracting Officer, Contracting Officer's Technical Representative;
(2) Contract number, including task and delivery order number;
(3) Beginning and ending dates covered by reporting period;
(4) Contractor name, address, phone number, e-mail address, identity of contractor employee entering data;
(5) Estimated direct labor hours (including sub-contractors);
(6) Estimated direct labor dollars paid this reporting period (including sub- contractors);
(7) Total payments (including sub-contractors);
(8) Predominate Federal Service Code (FSC) reflecting services provided by contractor (and separate predominant FSC for each sub-contractor if different);
(9) Estimated data collection cost;
(10) Organizational title associated with the Unit Identification Code (UIC) for the Army Requiring Activity (the Army Requiring Activity is responsible for providing the contractor with its UIC for the purposes of reporting this information);
(11) Locations where contractor and sub-contractors perform the work (specified by zip code in the United States and nearest city, country, when in an overseas location, using standardized nomenclature provided on website);
(12) Presence of deployment or contingency contract language; and
(13) Number of contractor and sub-contractor employees deployed in theater this reporting period (by country).

As part of its submission, the contractor will also provide the estimated total cost (if any) incurred to comply with this reporting requirement. Reporting period will be the period of performance not to exceed 12 months ending 30 September of each government fiscal year and must be reported by 31 October of each calendar year.

Contractors may use a direct XML data transfer to the database server or fill in the fields on the website. The XML direct transfer is a format for transferring files from a contractor's systems to the secure web site without the need for separate data entries for each required data element at the web site. The specific formats for the XML direct transfer may be downloaded from the web site.

If the total Federal share exceeds $500,000 on any Federal award under a notice of funding opportunity, the post-award reporting requirements reflected in Appendix XII to Part 200 of Title 2 CFR will be included in the award document. This requirement also applies to modifications of awards that: 1) increase the scope of the award, 2) are issued on or after January 1, 2016, and 3) increase the federal share of the award's total value to an amount that exceeds $500,000.

G. Agency Contacts

Questions of a technical nature or a programmatic nature shall be directed as specified below:

Technical Program Point of Contact:

IARPA Program Manager:
Dr. Michael Patterson
TEI-REX Program Manager
IARPA/Analysis Office
michael.patterson@iarpa.gov
301-243-1812

Questions of a business nature shall be directed to the contact info, as specified below:

Kevin Bassler
Army Contracting Command- Aberdeen Proving Ground- Research Triangle Park Division (ACC-APG-RTP)
Kevin.bassler.civ@army.mil

Comments or questions submitted should be concise and to the point, eliminating any unnecessary verbiage. In addition, the relevant part and paragraph of the Broad Agency Announcement (BAA) should be referenced.

H. Other Information

1. Cooperative Agreement Proposals

The categories below are specific to the Cost Proposal preparation for a cooperative agreement. Before award it must be established that an approved accounting system and financial management system exist.

A.) Direct Labor: Show the current and projected salary amounts in terms of man-hours, man-months, or annual salary to be charged by the principal investigator(s), faculty, research associates, postdoctoral associates, graduate and undergraduate students, secretarial, clerical, and other technical personnel either by personnel or position. State the number of man-hours used to calculate a man-month or man-year. For proposals from universities, research during the academic term is deemed part of regular academic duties, not an extra function for which additional compensation or compensation at a higher rate is warranted. Consequently,

academic term salaries shall not be augmented either in rate or in total amount for research performed during the academic term. Rates of compensation for research conducted during non-academic (summer) terms shall not exceed the rate for the academic terms. When part or all of a person's services are to be charged as project costs, it is expected that the person will be relieved of an equal part or all of his or her regular teaching or other obligations. For each person or position, provide the following information:

1) The basis for the direct labor hours or percentage of effort (e.g., historical hours or estimates).

2) The basis for the direct labor rates or salaries. Labor costs should be predicted upon current labor rates or salaries. These rates may be adjusted upward for forecast salary or wage cost-of-living increases that will occur during the agreement period. The cost proposal should separately identify the rationale applied to base salary/wage for cost-of-living adjustments and merit increases. Each must be fully explained.

3) The portion of time to be devoted to the proposed research, divided between academic and non-academic (summer) terms, when applicable.

4) The total annual salary charged to the research project.

5) Any details that may affect the salary during the project, such as plans for leave and/or remuneration while on leave.

B.) Fringe Benefits and Indirect Costs (Overhead, General and Administrative, and Other): The most recent rates, dates of negotiation, the base(s) and periods to which the rates apply must be disclosed and a statement included identifying whether the proposed rates are provisional or fixed. If the rates have been negotiated by a Government agency, state when and by which agency. A copy of the negotiation memorandum should be provided. If negotiated forecast rates do not exist, offerors must provide sufficient detail to enable a determination to be made that the costs included in the forecast rate are allocable according to applicable OMB Circulars or FAR/DFARS provisions. Offerors' disclosure should be sufficient to permit a full understanding of the content of the rate(s) and how it was established. As a minimum, the submission should identify:

1) All individual cost elements included in the forecast rate(s);

2) Bases used to prorate indirect expenses to cost pools, if any;

3) How the rate(s) was calculated;

4) Distribution basis of the developed rate(s);

5) Bases on which the overhead rate is calculated, such as "salaries and wages" or "total costs," and

6) The period of the offeror's fiscal year.

C.) Permanent Equipment: If facilities or equipment are required, a justification why this property should be furnished by the Government must be submitted. State the organization's inability or unwillingness to furnish the facilities or equipment. Offerors must provide an itemized list of permanent equipment showing the cost for each item. Permanent equipment is any article or tangible nonexpendable property having a useful life of more than one year and an acquisition cost of $10,000 or more per unit. The basis for the cost of each item of permanent equipment included in the budget must be disclosed, such as:

1) Vendor Quote: Show name of vendor, number of quotes received and justification, if intended award is to other than lowest bidder.

2) Historical Cost: Identify vendor, date of purchase, and whether or not cost represents lowest bid. Include reason(s) for not soliciting current quotes.

3) Engineering Estimate: Include rationale for quote and reason for not soliciting current quotes. If applicable, the following additional information shall be disclosed in the offeror's cost proposal:

4) Special test equipment to be fabricated by the awardee for specific research purposes and its cost.

5) Standard equipment to be acquired and modified to meet specific requirements, including acquisition and modification costs, listed separately.

6) Existing equipment to be modified to meet specific research requirements, including modification costs. Do not include equipment the organization will purchase with its funds if the equipment will be capitalized for Federal income tax purposes. Proposed permanent equipment purchases during the final year of an award shall be limited and fully justified.

7) Cooperative agreements may convey title to an institution for equipment purchased with project funds. At the discretion of the contracting/grants officer, the agreement may provide for retention of the title by the Government or may impose conditions governing the equipment conveyed to the organization per the governing laws and regulations.

D.) Travel: Forecasts of travel expenditures (domestic and foreign) that identify the destination and the various cost elements (airfare, mileage, per diem rates, etc.) must be submitted. The costs should be in sufficient detail to determine the reasonableness of such costs. Allowance for air travel normally will not exceed the cost of round-trip, economy air accommodations. Specify the type of travel and its relationship to the research project. Requests for domestic travel must not exceed $10,000 per year per principal investigator. Separate, prior approval by the ARL is required for all foreign travel (i.e., travel outside the continental U.S., its possessions and

Canada). Foreign travel requests must not exceed $1,800 each per year per principal investigator. Special justification will be required for travel requests in excess of the amounts stated above and for travel by individuals other than the principal investigator(s). Individuals other than the principal investigator(s) are considered postdoctoral associates, research associates, graduate and undergraduate students, secretarial, clerical, and other technical personnel. Additional travel may be requested for travel to Army laboratories and facilities to enhance agreement objectives and to achieve technology transfer.

E.) Materials, Supplies, and Consumables: A general description and total estimated cost of expendable equipment and supplies are required. The basis for developing the cost estimate (vendor quotes, invoice prices, engineering estimate, purchase order history, etc.) must be included. If possible, provide a material list.

F.) Publication, Documentation, and Dissemination: The budget may request funds for the costs of preparing, publishing, or otherwise making available to others the findings and products of the work conducted under an agreement, including costs of reports, reprints, page charges, or other journal costs (except costs for prior or early publication); necessary illustrations, cleanup, documentation, storage, and indexing of data and databases; and development, documentation, and debugging of software.

G.) Consultant Costs: Offerors normally are expected to utilize the services of their own staff to the maximum extent possible in managing and performing the project's effort. If the need for consultant services is anticipated, the nature of proposed consultant services should be justified and included in the technical proposal narrative. The cost proposal should include the names of consultant(s), primary organizational affiliation, each individual's expertise, daily compensation rate, number of days of expected service, and estimated travel and per diem costs.

H.) Computer Services: The cost of computer services, including computer-based retrieval of scientific, technical, and educational information, may be requested. A justification/explanation based on the established computer service rates at the proposing organization should be included. The budget also may request costs, which must be shown to be reasonable, for leasing automatic data processing equipment. The purchase of computers or associated hardware and software should be requested as items of equipment.

I.) Subawards (subcontracts or subgrants): A precise description of services or materials that are to be awarded by a subaward must be provided. For subawards totaling $10,000 or more, provide the following specific information:

1) A clear description of the work to be performed.
2) If known, the identification of the proposed subawardee and an explanation of why and how the subawardee was selected or will be selected.

3) The identification of the type of award to be used (cost reimbursement, fixed price, etc.).

4) Whether or not the award will be competitive and, if noncompetitive, rationale to justify the absence of competition.

5) A detailed cost summary.

J.) Other Direct Costs: Itemize and provide the basis for proposed costs for other anticipated direct costs such as communications, transportation, insurance, and rental of equipment other than computer related items. Unusual or expensive items shall be fully explained and justified.

K.) Profit/Fee: Profit/fee is not allowed for the Recipient of or subaward to an assistance instrument, where the principal purpose of the activity to be carried out is to stimulate or support a public purpose (i.e., to provide assistance), rather than acquisition (i.e., to acquire goods and services for the direct benefit of the United States Government). A subaward is an award of financial assistance in the form of money, or property in lieu of money, made under a DoD grant or cooperative agreement by a recipient to an eligible subrecipient. The term includes financial assistance for substantive program performance by the subrecipient of a portion of the program for which the DoD grant or cooperative agreement was made. It does not include the recipient's procurement of goods and services needed to carry out the program.

M.) Subcontracting Plan: Subcontracting plans do not apply to assistance instruments.

N.) CONTRACT FACILITIES CAPITAL COST OF MONEY: If cost of money is proposed, a completed Contract Facilities Capital Cost of Money (FCCM) (DD Form 1861) is required.

2. Example of Technical Cover Sheet

(1) BAA Number	**W911NF-22-S-0002**
(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	

3. Example of Academic Institution Acknowledgement 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 BAA# **W911NF-22-S-0002**and is hereby approved by the undersigned official, serving as the president, vice- president, chancellor, vice-chancellor, or provost of the institution.

4. Example of Technical SOW

I. Task 1
   a. Sub Task 1.a
   b. Sub Task 1.b
   c. Waypoints/Milestones & Associated Metrics
   d. Deliverables
II. Task 2
   a. Sub Task 2.a
   b. Sub Task 2.b
   c. Waypoints/Milestones & Associated Metrics
   d. Deliverables
III. Task 3
   a. Sub Task 3.a
   b. Sub Task 3.b
   c. Waypoints/Milestones & Associated Metrics
   d. Deliverables
IV. Travel Requirements
V. Period of Performance
VI. Place of Performance
VII. Research and Compliance Requirements

a.

5. Example of Team Organization Table

Participants	Org	Role	Unique, Relevant Capabilities	Role: Tasks	Clearance Level *	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

*if applicable

6. Example of Intellectual Rights Sheet

[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 or 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.

7. Example of Contract Deliverables Table

Contract Deliverables				
SOW TASK#	Deliverable Title	Format	Due Date	Distribution/Copies
Continual	Monthly Contract Status Report	Gov't Format	10th of each month	Copy to PM, CO and COTR
Continual	Monthly Technical Status Reports	Gov't Format	10th of each month	Standard Distribution**

** Standard Distribution: 1 copy of the transmittal letter without the deliverable to the Contracting Officer. 1 copy of the transmittal letter with the deliverable to the Primary PM and COTR.

8. Example of Organizational Conflicts of Interest Certification Letter

(Month DD, YYYY)

U.S. Army Research Office and Office of the Director of National Intelligence
Intelligence Advanced Research Projects
Activity (IARPA) TEI-REX Program
ATTN: Kevin Bassler, Contracting
Officer

Subject: OCI Certification

Reference: <Insert Program Name>, BAA# **W911NF-22-S-0002**, (Insert

assigned proposal ID#, if received) Dear_,

In accordance with IARPA Broad Agency Announcement # **W911NF-22-S-0002**, 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 TEI-REX 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)

9. Example of 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 3: Expected Impact

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

10. Sample of the Research Data Management Plan

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/research-programs/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. **Submittal 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.

11. Cover Sheet – Cost Proposal

(1) BAA Number	**W911NF-22-S-0002**
(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	
(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	

12. Example of Prime Contractor/Subcontract 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-CONTRAC-TOR, IOT & CONSULTA NT QUOTED	COST PROPOSED BY PRIME FOR SUBCONTRACTOR, IOT & CONSULTANT	DIFFERENCE (Column D - Column E) IF APPLICABL E
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.

13. Example of Travel Costs Trip Breakdown Sheet

		Trip Breakdown					
Base - Phase I:							
Trip #	Month of Trip	# of Travelers	Name of Traveler/Company	# of Days	Location	Purpose of Travel	Estimated Cost
Option Period - Phase II:							
Trip #	Month of Trip	# of Travelers	Name of Traveler/Company	# of Days	Location	Purpose of Travel	Estimated Cost
Option Period - Phase III:							
Trip #	Month of Trip	# of Travelers	Name of Traveler/Company	# of Days	Location	Purpose of Travel	Estimated Cost

14.Glossary of Acronyms:

Term	Definition

CO	Contracting Officer
COTR	Contract Officer Technical Representative
DCA	Dicentric Chromosome Assay
DNA	Deoxyribonucleic acid
FA	Focus Area
FPR	False Positive Rate
Gray	One Gray (Gy) is the international system of units (SI) equivalent of 100 rads, which is equal to an absorbed dose of 1 Joule/kilogram
MAE	Mean Absolute Error
ML/DL	Machine Learning / Deep Learning
PM	Program Manager
RNA	Ribonucleic acid
RNS	Reactive Nitrogen Species
ROS	Reactive Oxygen Species
SI	International system of Units
T&E	Test and Evaluation
TEI-REX	Targeted Evaluation of Ionizing Radiation Exposure
TPR	True Positive Rate

15. References

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