

Broad Agency Announcement

Warfighter Analytics using Smartphones for Health (WASH)

HR001117S0032

May 8, 2017



Defense Advanced Research Projects Agency
Information Innovation Office
675 North Randolph Street
Arlington, VA 22203-2114

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PART I: OVERVIEW INFORMATION

- **Federal Agency Name:** Defense Advanced Research Projects Agency (DARPA), Information Innovation Office (I2O)
- **Funding Opportunity Title:** Warfighter Analytics using Smartphones for Health (WASH)
- **Announcement Type:** Initial Announcement
- **Funding Opportunity Number:** HR001117S0032
- **Catalog of Federal Domestic Assistance Numbers (CFDA):** Not Applicable
- **Dates**
 - Posting Date: May 8, 2017
 - Proposers Day: May 16, 2017
 - Proposal Due Date: June 23, 2017, 12:00 noon (ET)
 - BAA Closing Date: June 23, 2017, 12:00 noon (ET)
- **Anticipated Individual Awards:** There are two technical areas (TAs) for this solicitation. Currently, DARPA anticipates one or more awards in TA1; and multiple awards in TA2. DARPA anticipates the work done in this program to be fundamental research.
- **Types of Instruments that May be Awarded:** Procurement contracts
- **Agency Contacts**
 - **Technical POC:** Dr. Angelos D. Keromytis, Program Manager, DARPA/I2O
 - **BAA Email:** WASH@darpa.mil
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675 North Randolph Street
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 - **I2O Solicitation Website:** <http://www.darpa.mil/work-with-us/opportunities>

PART II: FULL TEXT OF ANNOUNCEMENT

I. Funding Opportunity Description

DARPA is soliciting innovative research proposals in the area of mobile health analytics for determining warfighter health condition and combat/mission readiness. The goal of the Warfighter Analytics using Smartphones for Health (WASH) program is to develop algorithms that enable continuous and real-time assessment of the warfighter by leveraging data that is passively and unobtrusively captured from any and all cellphone sensors. WASH will assess combat/mission readiness by passively linking the warfighter's behavior to their physiological and cognitive state. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice, research that focuses on active interaction of the user with the cellphone, or research that requires the use of additional or other devices beyond the cellphone.

This Broad Agency Announcement (BAA) is being issued, and any resultant selection will be made, using procedures under Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016. Any negotiations and/or awards will use procedures under FAR 15.4. Proposals received as a result of this BAA shall be evaluated in accordance with evaluation criteria specified herein through a scientific review process.

DARPA BAAs are posted on the Federal Business Opportunities (FBO) website (<https://www.fbo.gov/>)

The following information is for those wishing to respond to this BAA.

A. Background

To determine the readiness and "health" of equipment, military or otherwise, manufacturers and operators employ extensive sensors and data analytics on device diagnostic data. Combined with real-time telemetry, this approach allows for the quick and early identification of weaknesses and possible failures, and eases the forensic analysis in case of equipment failure. As a result, maintenance costs are lowered, failure rates are reduced, and subtle but possibly widespread problems can be identified and corrected before they impact missions.

No such approach to understanding the condition and mission readiness of the human warfighter is employed, even though the impact of a single warfighter's non-readiness can affect the unit as a whole and its mission, especially through conditions such as infectious disease. Currently, understanding and assessing the readiness of the warfighter is complex, intrusive, done relatively infrequently, and relies heavily on self-reporting. Readiness is determined through medical intervention with the help of advanced equipment, such as electrocardiographs (EKGs) and other specialized medical devices, that are too expensive and cumbersome to employ continuously or without supervision in non-controlled environments. On the other hand, currently 92% of adults in the United States own a cell phone, which could be used as the basis for continuous, passive health and readiness assessment.

B. Program Scope

The Warfighter Analytics using Smartphones for Health (WASH) program will use data collected from cellphone sensors to enable novel algorithms that conduct passive, continuous, real-time assessment of the warfighter. Abstractly, WASH will extract physiological signals, which may be weak and noisy, that are embedded in the data obtained through existing mobile device sensors (e.g., accelerometer, screen, microphone). Such extraction and analysis, done on a continuous basis, will be used to determine current health status and identify latent or developing health disorders. WASH will develop algorithms and techniques for identifying both known indicators of physiological problems (such as disease, illness, and/or injury) and deviations from the warfighter’s micro-behaviors that could indicate such problems. It is also expected that additional “digital biomarkers”¹ of physiological problems will be identified during the research through the combination of big data analytics and medical ground truth provided to TA2 performers by TA1 performers.

A prerequisite for the extraction and interpretation of the raw sensor data and any identified digital biomarkers is determining the context of such data collection and analysis, as this will affect the relevance of any given sensor and will permit “denoising,” or elimination of irrelevant or misleading readings. For example, relying on cellphone accelerometer data while the warfighter is in a moving vehicle will likely negatively impact the utility of such data for WASH-type analysis unless the auxiliary motion is identified and cancelled. Thus, a key component and the focus of the first phase of the program will be on the extraction of the signal context and the identification of complicated actions and environmental variables. During the second phase of the program, this ambient context extraction of user state will be overlaid to symptoms of illness conditions, with the goal of identifying potential illnesses and conditions before conventional symptomatic display. It is the union of personal behavior/characteristics, smartphone sensor collection, context of smartphone use, and disease biomarkers that defines the preclinical health determination of the WASH program (Figure 1).

(See next page for Figure 1.)

¹ Digital biomarkers are consumer-generated physiological and behavioral measures collected through connected digital tools, in this case a smartphone.

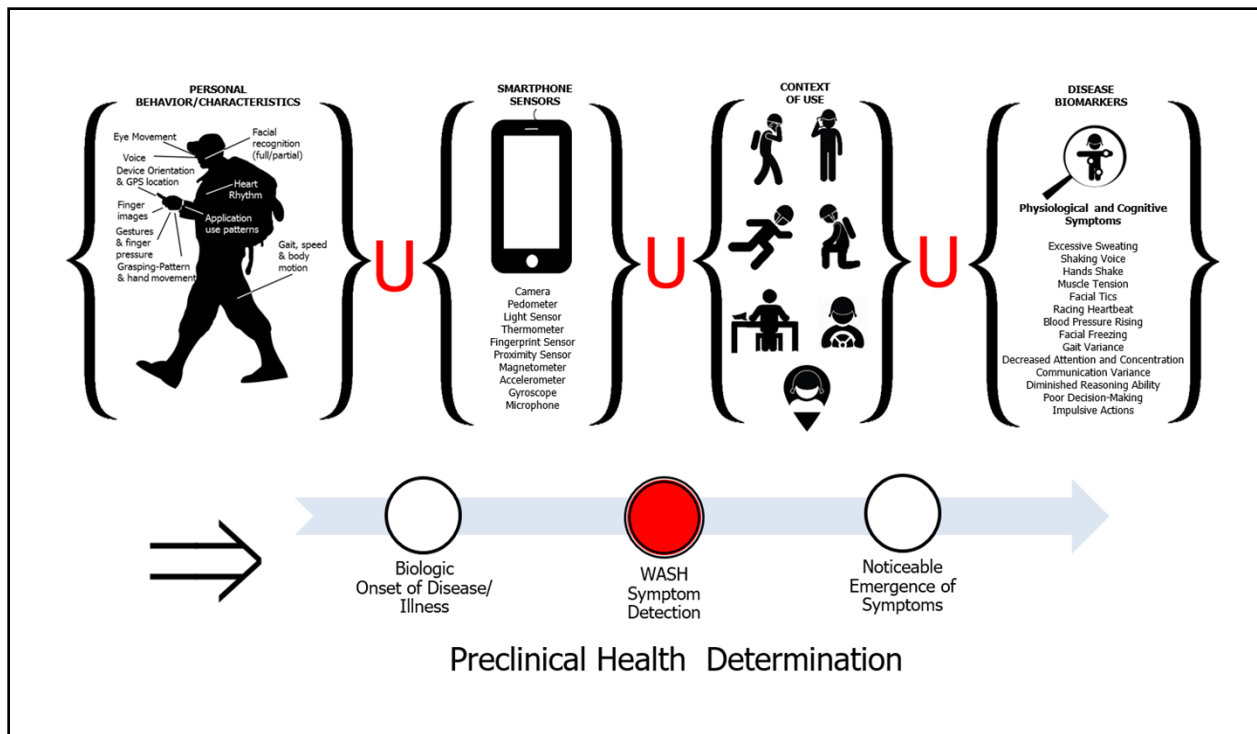


Figure 1: WASH program concept

The program goal is to enable the creation of a mobile application that passively assesses a warfighter's readiness immediately and over time. This application seeks to provide:

- clinicians with plausible health conditions supported by the analysis, determination, and fusion of digital biomarkers for disease correlation against ground truth;
- commanders with unit readiness information, both at the current time and in the near future; and
- users of the device with information about their current status and early indicators of medical conditions.

C. Program Structure

The program will develop basic technologies that will demonstrate the passive continuous collection of reliable physiological data from a smartphone; data analysis for identifying reliable digital biomarkers from such data; and the fusion of such digital biomarkers for achieving disease identification, recognition of precursors, and warfighter readiness assessment. The technical approach draws from the fields of data analysis (with an expected emphasis in signal analysis and machine learning), behavioral biometrics, and epidemiology to a lesser degree. Proposers may only submit one proposal as lead institution to the WASH program. Each proposal may cover multiple technical areas. Proposers may include additional pages for each technical area addressed in the technical approach (See Section IV.B.a).

The WASH program is structured as two technical areas (TAs) that will proceed in parallel, starting at program kickoff and spanning 48 months. The two technical areas are:

- TA1: Infrastructure (Sensor Collection, Data Management, and User/Cohort Management)

- TA2: Context Extraction and Symptom/User State Association (Data Analysis)

Further detail regarding these technical areas is provided below.

In coordination with TA2 performers, TA1 performers will create a mobile application that passively captures all relevant user-sensing data to a data repository shared across the life of the program (48 months). TA1 performers will also manage the user base by enlisting existing or new medical cohorts, managing interactions with the cohort coordinators, and ensuring compliance with security and privacy requirements of said cohorts. DARPA anticipates that TA1 performers will act as managers of the smartphone sensor data collected from participating cohort members, making said data available under appropriate protections to TA2 performers.

TA2 performers will develop the data analytics for extracting context from TA1-provided data, identifying useful digital biomarkers that are predictive or indicative of physiological conditions, and demonstrating the correct anticipation and identification of said conditions.

TA1 performers will be required to collaborate with other TA1 performers as applicable. TA2 performers will be required to collaborate with all TA1 performers; additionally, TA2 performers will be encouraged (but not required) to collaborate with other TA2 performers. The Government may determine that Associate Contractor Agreements (ACA) are necessary to help facilitate an open exchange of information and ensure complete compatibility between software components, the system architecture, equipment, data and other program elements to prevent unnecessary duplication of effort, and to maximize commonality to guarantee appropriate coordination and integration of work. If the Government determines that ACAs are necessary, all selected performers will be required to have their ACAs in place prior to the program kick-off meeting.

D. Technical Areas

TA1: Infrastructure (Sensor Collection, Data Management, and User/Cohort Management)

TA1 performers will act as the program interface to data sources (medical cohorts), create a mobile application to passively capture all relevant user-sensing data that will be shared across the life of the program, and coordinate access to that data for the TA2 performers.

The TA1 performers will provide a central location of data captured for scientific research providing access to user base ground truth. The various sources of the user bases will be provided by partnerships with medical study cohorts such as the Framingham Cohort (general population), Millennium Cohort (DoD-specific), Military Recruitment Protocol (active and recently retired DoD personnel) for traumatic brain injury, and additional cohorts as applicable. User consent will be established through cohort Institutional Review Boards (IRBs). TA1 performers will be required to manage the user base(s) through partnerships they establish with the cohorts.

Competitive TA1 proposals should include the plan, level of effort, assumptions, and risks for one, some, or all of the following three main topics:

- a. Cellphone Sensor Collection

1. List of sensors collected on Android and iOS operating systems, as informed by experience with efforts comparable to the DARPA Active Authentication program.
 2. Overhead management of the collection application inclusive of power, storage management, data transfer bandwidth/timing, and scalability.
 3. Application management for periodic updates and modifications (bug fixes, new features).
 4. Server-based database development for data collection, storage requirements, and protection.
- b. Data Management
1. Infrastructure specifications, including access latency, storage capacity, and scalability in terms of number of users, number of TA2 performers, and computational analytics supported.
 2. Data protection and privacy (in accordance with cohort IRB requirements)
 3. Accommodations for public, private, and hybrid cloud environments (see Defense Federal Acquisition Regulation Supplement 252.239-7010 for more information on cloud requirements, as well as <http://www.darpa.mil/work-with-us/additional-baa>).
 4. Component and data failure recovery strategy.
- c. User/Cohort Management
1. Identify and sign up medical cohorts to participate at data providers.
 2. Coordinate with, monitor, and manage diverse cohorts (DoD and private).
 3. Communication plan with cohort management, cohort participants, and TA2 performers.
 4. Issue resolution plan.

Proposals for TA1 must be structured as a Phase 1, 18-month base effort with a Phase 2, 30-month option. Furthermore, in each Phase, TA1 proposers are requested to separate human subject research (HSR) tasks from those that do not require human-use within their Statement of Work. The intention is for awards to be structured in each Phase with a base task comprised of non-HSR work followed by an option that will award the HSR affected tasks.

TA2: Context Extraction and Symptom/User State Association (Data Analysis)

TA2 performers will develop the data analytics for extracting context from the TA1-provided data, identifying useful digital biomarkers that are predictive or indicative of medical conditions, and demonstrating the correct prediction and identification of said medical conditions. It is anticipated that TA2 performers will use: (1) a model-based approach that leverages the existing medical literature to identify promising digital biomarkers, convert them to equivalent digital biomarkers, and validate them using TA1-provided data; and (2) a “data exploration” approach that leverages medical ground truth provided by the cohorts to do retroactive digital biomarker identification.

The period of performance for TA2 is divided in two phases:

- Phase 1 (Determine Context for Extracting Relevant Data): In the first phase of the program, WASH performers will use sensors to determine what the user is doing and where (ambient conditions such as travel in a car, user activity such as exercise, etc.). This will allow a determination to be made with respect to the usability of the data for

assessment prediction, as well as establish sensing limits. It is expected that TA2 performers will closely work with TA1 performers during this phase. It is also anticipated that TA2 performers will conduct experiments under controlled conditions to establish baselines during this phase (i.e., will not solely rely on TA1/cohort-derived data).

- Phase 2 (Associating Symptoms with the User State and Ambient Context): The goal in the second phase is to associate symptoms with the user state and ambient context. Due to the impact on warfighter readiness, the focus will be primarily on traumatic brain injury and infectious disease. Other illnesses and diseases may also be addressed within the scope of warfighter readiness, especially as part of the data exploration approach.

Competitive TA2 proposals should address the following topics:

1. How to establish context from the data gathered;
2. Method of extraction of a weak signal over varying ambient conditions;
3. Deconfliction of multiple hypotheses for different medical conditions;
4. Level of confidence in sensing limits and data granularity; and
5. The ability to acquire data with ground truth.

Proposals for TA2 must be structured as a Phase 1, 18-month base effort with a Phase 2, 30-month option. Furthermore, in each Phase, TA2 proposers are requested to separate HSR tasks from those that do not require HSR within their Statement of Work. The intention is for awards to be structured in each Phase with a base task comprised of non-HSR work followed by an option that will award the HSR affected tasks.

E. Program Metrics

The goal of the program at the end of Phase 2 (see Table 1) will be to demonstrate the utility of the complete WASH workflow, which includes passive collection, analysis, determination, and fusion of digital biomarkers for detection of physiological problems from the data provided by a mobile application that passively collects all relevant user-sensing information.

In Phase 1:

- For TA1 performers, the mobile application must incur less than 5% power consumption overhead, with the data storage and analytics backend scalable to at least 100K users.
- For TA2 performers, the goal is to develop activity-recognition models that accurately determine the user context in which to extract Phase 2-relevant data. Using TA2 performer-collected data (e.g., in a lab setting) for which ground truth is known, the target is an accuracy of 80% in terms of identifying the activity performed by the user, for at least 25 different activities representative of real world situations (e.g., walking, running, traveling in a car, talking on the phone, interacting with the phone). TA2 performers will then apply these activity-recognition models to TA1-provided data, to determine the coverage achieved by their models.

In Phase 2:

- For TA1 performers, the mobile application must incur less than 5% power consumption

overhead, with the data storage and analytics backend scalable to at least 1 million users.

- For TA2 performers, the goal is to associate symptoms with the user state and ambient context. Metrics will include the number of digital biomarkers identified. Ground truth sources must be identified in the TA1-provided data. The goal is to achieve a True Positive (TP) rate of 70% for identification of condition family (e.g., Traumatic Brain Injury, Infectious Disease, or other identified illness/disease) relative to ground truth at $.3t$ where t =Time of Emergence of Symptoms, where Emergence of Symptoms is defined as the clinical observation of indicators associated with the condition family. An additional goal for the TA2 analysis is to achieve a TP rate of 80% for identification of condition family relative to ground truth at $.8t$ where t =Time of Emergence of Symptoms. Additional target goals for the analysis include a false positive (FP) rate of 10% or less on a monthly basis, and a false negative (FN) rate of 20% per known incident in the TA1 data.

The Government will assess performer progress using informal technology evaluations throughout the duration of the program. If necessary, the Government will engage with an external partner to independently evaluate the technologies under development.

(See next page for Table 1)

Technical Area	Phase	Duration		Metrics	
		Start	End	Evaluation Criteria	Target Goals
Infrastructure (TA1: Phase 1)	1	M0	M18	Power consumption overhead	<5%
				Scale	>100K Users
				Data Access and Availability	99.9%
Infrastructure (TA1: Phase 2)	2	M19	M48	Power consumption overhead	<5%
				Scale	>1M Users
				Data Access and Availability	99.9%
Determine Context to Extract Relevant Data (TA2: Phase 1)	1	M0	M18	Accuracy of Context Identification	80% accurate identification
Associating Symptoms with the User State and Ambient Context (TA2: Phase 2) - TBI - Infectious Disease - Other Illnesses and Diseases	2	M19	M48	Biomarker Identification with Multiple Hypothesis Classifications	<ul style="list-style-type: none"> TP: 70% accurate identification of condition family (relative to ground truth) at $.3t$ TP: 80% accurate identification of condition family (relative to ground truth) at $.8t$ FP: 10% on a monthly basis FN: 20% <p>Where t=T the emergence of symptoms</p>

Table 1: Program Metrics

F. Schedule and Milestones

WASH is a 4-year (48 month) program. The period of performance is divided in two phases: Phase 1 (18 months) and Phase 2 (30 months). Option Phase 2 will be initiated only if sufficient

progress is experimentally demonstrated in Phase 1.

There will be quarterly technical reviews, including biannual PI meetings, during which the program management team will assess progress towards a solution via performer briefings, technical exchange meetings, and evaluations. Program evaluation will be conducted by the Government team informally and organically throughout program execution, leveraging access to ground truth data from cohort partners to the maximum extent possible. Performers that have not made progress towards the program goal at the end of Phase 1 may not be funded during Phase 2.

PI meetings will focus on open technical exchange that includes discussion of difficulties encountered and possible solutions. The goals of the PI meetings will be to: (a) review and share innovations/accomplishments of the program; (b) review and discuss plans and options for technology demonstrations and prototypes; (c) review and discuss results from meetings and events conducted prior to the tests and evaluations; (d) demonstrate prototypes; and (e) plan for the next six-month period.

The Government will specify the locations for the technical interchanges, PI meetings, and other events. For budgeting purposes, assume the locations of the two PI meetings held each year will be in the Washington, D.C. metro area. Actual locations will be determined based on performer locations and relative cost to the Government. In addition to site visits, regular meetings are encouraged to enhance communications and collaborations, as required, among the all performers. Should important issues arise between program reviews, the Government team will be available to support informal interim meetings.

Proposers should propose a detailed schedule that is consistent with the maturity of their approaches and the risk reduction required for their concepts, and their program plan. These schedules will be synchronized across performers, as required, and monitored and revised as necessary, throughout the program's period of performance. A start date of November 1, 2017, should be assumed for budgeting purposes. Subject to the availability of funding and TA2 performer meeting Phase 1 goals, the program is intended to last for 48 months.

G. Deliverables

All performers are responsible for providing the following deliverables, as applicable:

- Slide Presentations – Annotated slide presentations will be submitted within two weeks after program kick-off meeting and after each review.
- Monthly Coordination Reports – A monthly technical coordination report describing progress made, resources expended, and any issues requiring the attention of the Government team will be provided within 10 days after the end of each month. Monthly expenditure reports and uploading of required deliverables to the new DARPA reporting system (Contracting Execution Reporting Services), which is required by all program performers.
- Algorithm Development Plan (TA2 performers only) – The Algorithmic Development Plan will incorporate any new math or sciences developed, different scaling/accuracy properties, as well as the variables and event handlers. Each event handler needs to be identified and defined.

- Software – All computer software developed or delivered under the program shall be delivered as source (including entire version control history) and as object (executable) code. Include the source listings and source code for the target computer systems. Delivered software under this effort is to be completely maintainable and modifiable with no reliance on any non-delivered computer programs or documentation.
- Software Documentation – Software documentation shall be provided within one month after the end of each phase documenting source code, compilation steps, hardware description language specifications, system diagrams, part numbers and other data necessary to maintain and to produce copies of the software.
- Hardware – At the conclusion of Phase 2, hardware procured or developed under the program shall be delivered at the discretion of DARPA. The delivery is to include sufficient documentation so as to be completely operable, maintainable and modifiable with no reliance on any non-delivered hardware or hardware documentation developed or procured under the program.
- Final Technical Report – The final report, due at contract completion, will concisely summarize the effort conducted and provide any lessons learned during the development of the technology. Formatting must follow the AFRL Final Technical Report Guidelines, which may be found at the FedBizOpps website.

H. Government-Furnished Property/Equipment/Information

Proposals should clearly state any assumptions regarding the use of proposed Government test facilities and capabilities, as well as any proposed Government-Furnished Equipment used as part of their development, test, and evaluation approach. Proposers should not make any assumptions as to what the Government will provide in regards to equipment.

I. Intellectual Property

The program will emphasize creating and leveraging open source technology and architecture. Intellectual property rights asserted by proposers are strongly encouraged to be aligned with open source regimes.

A key goal of the program is to establish an open, standards-based, multi-source, plug-and-play architecture that allows for interoperability and integration. This includes the ability to easily add, remove, substitute, and modify software and hardware components. This will facilitate rapid innovation by providing a base for future users or developers of program technologies and deliverables. Therefore, it is desired that all noncommercial software (including source code), software documentation, hardware designs and documentation, and technical data generated by the program be provided as deliverables to the Government, with a minimum of Government Purpose Rights (GPR), as lesser rights may adversely impact the lifecycle costs of affected items, components, or processes. See Section VI.B.1 for more details on intellectual property.

J. Security Clearance Requirements

See Section III.D.

II. Award Information

A. Awards

Multiple awards are anticipated. The level of funding for individual awards made under this solicitation has not been predetermined and will depend on the quality of the proposals received and the availability of funds. Awards will be made to proposers whose proposals are determined to be the most advantageous and provide the best value to the Government, all factors considered, including the potential contributions of the proposed work, overall funding strategy, and availability of funding. See Section V for further information.

The Government reserves the right to:

- select for negotiation all, some, one, or none of the proposals received in response to this solicitation;
- make awards without discussions with proposers;
- conduct discussions with proposers if it is later determined to be necessary;
- segregate portions of resulting awards into pre-priced options;
- accept proposals in their entirety or to select only portions of proposals for award;
- fund proposals in increments and/or with options for continued work at the end of one or more phases;
- request additional documentation once the award instrument has been determined (e.g., representations and certifications); and
- remove proposers from award consideration should the parties fail to reach agreement on award terms within a reasonable time or the proposer fails to provide requested additional information in a timely manner.

Proposals selected for award negotiation may result in a procurement contract, depending upon the nature of the work proposed, the required degree of interaction between parties, and other factors.

In all cases, the Government contracting officer shall have sole discretion to select award instrument type, regardless of instrument type proposed, and to negotiate all instrument terms and conditions with selectees. DARPA will apply publication or other restrictions, as necessary, if it determines that the research resulting from the proposed effort will present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Any award resulting from such a determination will include a requirement for DARPA permission before publishing any information or results on the program. For more information on publication restrictions, see the section below on Fundamental Research.

B. Fundamental Research

It is DoD policy that the publication of products of fundamental research will remain unrestricted to the maximum extent possible. National Security Decision Directive (NSDD) 189 defines fundamental research as follows:

‘Fundamental research’ means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development,

design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons.

As of the date of publication of this BAA, the Government expects that program goals as described herein may be met by proposers intending to perform fundamental research and proposers not intending to perform fundamental research or the proposed research may present a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense. Based on the nature of the performer and the nature of the work, the Government anticipates that some awards will include restrictions on the resultant research that will require the awardee to seek DARPA permission before publishing any information or results relative to the program.

Proposers should indicate in their proposal whether they believe the scope of the research included in their proposal is fundamental or not. While proposers should clearly explain the intended results of their research, the Government shall have sole discretion to select award instrument type and to negotiate all instrument terms and conditions with selectees. Appropriate clauses will be included in resultant awards for non-fundamental research to prescribe publication requirements and other restrictions, as appropriate. This clause can be found at www.darpa.mil/work-with-us/additional-baa.

For certain research projects, it may be possible that although the research being performed by the awardee is restricted research, a subawardee may be conducting fundamental research. In those cases, it is the awardee's responsibility to explain in their proposal why its subawardee's effort is fundamental research

C. Disclosure of Information and Compliance with Safeguarding Covered Defense Information Controls

Unless a proposer is performing strictly fundamental research, all proposers receiving FAR-based Procurement Contracts under this BAA shall be compliant with the following:

DFARS 252.204-7000, "Disclosure of Information"

DFARS 252.204-7008, "Compliance with Safeguarding Covered Defense Information Controls"

DFARS 252.204-7012, "Safeguarding Covered Defense Information and Cyber Incident Reporting"

The full text of the above solicitation provision and contract clauses can be found at <http://www.darpa.mil/work-with-us/additional-baa#NPRPAC>.

Compliance with the above requirements includes the mandate for proposers to implement the security requirements specified by National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171, "Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations" (see <https://doi.org/10.6028/NIST.SP.800-171r1>) that are in effect at the time the BAA is issued, or as authorized by the Contracting Officer, not later than December 31, 2017.

III. Eligibility Information

A. Eligible Applicants

DARPA welcomes engagement from all responsible sources capable of satisfying the Government's needs, including academia (colleges and universities); businesses (large, small, small disadvantaged, etc.); other organizations (including non-profit); entities (foreign, domestic, and government); FFRDCs; minority institutions; and others.

DARPA welcomes engagement from non-traditional sources in addition to current DARPA performers.

1. Federally Funded Research and Development Centers (FFRDCs) and Government Entities

a. FFRDCs

FFRDCs are subject to applicable direct competition limitations and cannot propose to this BAA in any capacity unless they meet the following conditions: (1) FFRDCs must clearly demonstrate that the proposed work is not otherwise available from the private sector. (2) FFRDCs must provide a letter on official letterhead from their sponsoring organization citing the specific authority establishing their eligibility to propose to Government solicitations and compete with industry, and their compliance with the associated FFRDC sponsor agreement's terms and conditions. This information is required for FFRDCs proposing to be awardees or subawardees.

b. Government Entities

Government Entities (e.g., Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations. Government entities must clearly demonstrate that the work is not otherwise available from the private sector and provide written documentation citing the specific statutory authority and contractual authority, if relevant, establishing their ability to propose to Government solicitations.

c. Authority and Eligibility

At the present time, DARPA does not consider 15 U.S.C. § 3710a to be sufficient legal authority to show eligibility. While 10 U.S.C. § 2539b may be the appropriate statutory starting point for some entities, specific supporting regulatory guidance, together with evidence of agency approval, will still be required to fully establish eligibility. DARPA will consider FFRDC and Government entity eligibility submissions on a case-by-case basis; however, the burden to prove eligibility for all team members rests solely with the proposer.

2. Foreign Participation

Non-U.S. organizations and/or individuals may participate to the extent that such participants comply with any necessary nondisclosure agreements, security regulations, export control laws, and other governing statutes applicable under the circumstances.

B. Organizational Conflicts of Interest

FAR 9.5 Requirements

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

Agency Supplemental OCI Policy

In addition, DARPA has a supplemental OCI policy that prohibits contractors/performers from concurrently providing Scientific Engineering Technical Assistance (SETA), Advisory and Assistance Services (A&AS) or similar support services and being a technical performer. Therefore, as part of the FAR 9.5 disclosure requirement above, a proposer must affirm whether the proposer or *any* proposed team member (subawardee, consultant) is providing SETA, A&AS, or similar support to any DARPA office(s) under: (a) a current award or subaward; or (b) a past award or subaward that ended within one calendar year prior to the proposal's submission date.

If SETA, A&AS, or similar support is being or was provided to any DARPA office(s), the proposal must include:

- The name of the DARPA office receiving the support;
- The prime contract number;
- Identification of proposed team member (subawardee, consultant) providing the support; and
- An OCI mitigation plan in accordance with FAR 9.5.

Government Procedures

In accordance with FAR 9.503, 9.504 and 9.506, the Government will evaluate OCI mitigation plans to avoid, neutralize or mitigate potential OCI issues before award and to determine whether it is in the Government's interest to grant a waiver. The Government will only evaluate OCI mitigation plans for proposals that are determined selectable under the BAA evaluation criteria and funding availability.

The Government may require proposers to provide additional information to assist the Government in evaluating the proposer's OCI mitigation plan.

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

C. Cost Sharing/Matching

Cost sharing is not required; however, it will be carefully considered where there is an applicable statutory condition relating to the selected funding instrument (e.g., OTs under the authority of 10 U.S.C. § 2371).

D. Other Eligibility Requirements

1. Ability to Receive Awards in Multiple Technical Areas

Proposers may submit proposals for either (or both) of the two technical areas, and proposers can be selected for potential contract award under both TAs.

2. Ability to Support Classified Development

Proposers to TA1 are not required to hold or obtain security clearances; however, TA1 proposers who wish to have access to classified data and evaluation results for their applications must have personnel and access to facilities with a minimum classification level of SECRET at the time of award, and must provide their CAGE code and security point(s) of contact in their proposals. Proposers to TA2 are not required to hold or obtain security clearances.

IV. Application and Submission Information

A. Address to Request Application Package

This document contains all information required to submit a response to this solicitation. No additional forms, kits, or other materials are needed except as referenced herein. No request for proposal (RFP) or additional solicitation regarding this opportunity will be issued, nor is additional information available except as provided at the Federal Business Opportunities website (<https://www.fbo.gov>), or referenced herein.

B. Content and Form of Application Submission

Proposals

Proposals consist of Volume 1: Technical and Management Proposal (including mandatory Appendix A and optional Appendix B); Volume 2: Cost Proposal; the Level of Effort Summary by Task Excel™ spreadsheet; and the PowerPoint™ summary slide.

All pages shall be formatted for printing on 8-1/2 by 11-inch paper with 1-inch margins, single-line spacing, and a font size not smaller than 12 point. Font sizes of 8 or 10 point may be used for figures, tables, and charts. Document files must be in .pdf, .odx, .doc, .docx, .xls, or .xlsx formats. Submissions must be written in English.

A summary slide of the proposed effort, in PowerPoint™ format, should be submitted with the proposal. A template slide is provided as an attachment to the BAA. Submit this PowerPoint™ file in addition to Volumes 1 and 2 of your full proposal, and the Level of Effort Summary by Task Excel™ spreadsheet. This summary slide does not count towards the total page count.

Proposers may only submit one proposal as lead institution to the WASH program. Each proposal may cover one or more technical areas.

Proposals not meeting the format prescribed herein may not be reviewed.

a. Volume 1: Technical and Management Proposal

If addressing a single TA, the maximum page count for Volume 1 is 30 pages, including all figures, tables and charts but not including the cover sheet, table of contents or appendices. A submission letter is optional and is not included in the page count. If addressing both TAs, the maximum page count for Volume 1 is 40 pages, including all figures, tables and charts but not including the cover sheet, table of contents or appendices. A submission letter is optional and is not included in the page count. Appendix A does not count against the page limit and is mandatory. Appendix B does not count against the page limit and is optional. Additional information not explicitly called for here must not be submitted with the proposal, but may be included in the bibliography in Appendix B. Such materials will be considered for the reviewers' convenience only and not evaluated as part of the proposal.

Volume 1 must include the following components:

i. Cover Sheet: Include the following information.

- Label: “Proposal: Volume 1”
- BAA number (HR001117S0032)
- Technical Area
- Proposal title
- Lead organization (prime contractor) name
- Type of organization, selected from the following categories: Large Business, Small Disadvantaged Business, Other Small Business, HBCU, MI, Other Educational, or Other Nonprofit
- Technical point of contact (POC) including name, mailing address, telephone, and email
- Administrative POC including name, mailing address, telephone number, and email address
- Award instrument requested: procurement contract²
- Total amount of the proposed effort
- Place(s) and period(s) of performance
- Other team member (subcontractors and consultants) information (for each, include Technical POC name, organization, type of organization, mailing address, telephone number, and email address)
- Proposal validity period (minimum 120 days)
- Data Universal Numbering System (DUNS) number³
- Taxpayer identification number⁴
- Commercial and Government Entity (CAGE) code⁵
- Proposer’s reference number (if any)

ii. Table of Contents

iii. Executive Summary: Provide a synopsis of the proposed project, including answers to the following questions:

- What is the proposed work attempting to accomplish or do?
- How is it done today, and what are the limitations?
- Who or what will be affected and what will be the impact if the work is successful?
- How much will it cost, and how long will it take?

The executive summary should include a description of the key technical challenges, a concise review of the technologies proposed to overcome these challenges and achieve the project’s goal, and a clear statement of the novelty and uniqueness of the proposed work.

² Information on award instruments can be found at <http://www.darpa.mil/work-with-us/contract-management>.

³ The DUNS number is used as the Government’s contractor identification code for all procurement-related activities. Go to <http://fedgov.dnb.com/webform/index.jsp> to request a DUNS number (may take at least one business day). For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa for further information.

⁴ See <http://www.irs.gov/businesses/small/international/article/0,,id=96696,00.html> for information on requesting a TIN. Note, requests may take from 1 business day to 1 month depending on the method (online, fax, mail).

⁵ A CAGE Code identifies companies doing or wishing to do business with the Federal Government. For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa.

iv. Innovative Claims and Deliverables: Describe the innovative aspects of the project in the context of existing capabilities and approaches, clearly delineating the uniqueness and benefits of this project in the context of the state of the art, alternative approaches, and other projects from the past and present. Describe how the proposed project is revolutionary and how it significantly rises above the current state of the art.

Describe the deliverables associated with the proposed project and any plans to commercialize the technology, transition it to a customer, or further the work. Discuss the mitigation of any issues related to sustainment of the technology over its entire lifecycle, assuming the technology transition plan is successful.

v. Technical Plan: Outline and address technical challenges inherent in the approach and possible solutions for overcoming potential problems. Demonstrate a deep understanding of the technical challenges and present a credible (even if risky) plan to achieve the project's goal. Discuss mitigation of technical risk. Provide appropriate measurable milestones (quantitative if possible) at intermediate stages of the project to demonstrate progress, and a plan for achieving the milestones.

vi. Management Plan: Provide a summary of expertise of the proposed team, including any subcontractors/consultants and key personnel who will be executing the work. Resumes count against the proposal page limit so proposers may wish to include them in Appendix B below. Identify a principal investigator (PI) for the project. Provide a clear description of the team's organization including an organization chart that includes, as applicable, the relationship of team members; unique capabilities of team members; task responsibilities of team members; teaming strategy among the team members; and key personnel with the amount of effort to be expended by each person during the project. Provide a detailed plan for coordination including explicit guidelines for interaction among collaborators/subcontractors of the proposed project. Include risk management approaches. Describe any formal teaming agreements that are required to execute this project. List Government-furnished materials or data assumed to be available.

vii. Personnel, Qualifications, and Commitments: List key personnel (no more than one page per person), showing a concise summary of their qualifications, discussion of previous accomplishments, and work in this or closely related research areas. Indicate the level of effort in terms of hours to be expended by each person during each contract year and other (current and proposed) major sources of support for them and/or commitments of their efforts. DARPA expects all key personnel associated with a proposal to make a substantial time commitment to the proposed activity and the proposal will be evaluated accordingly. It is DARPA's intention to put key personnel conditions into the awards, so proposers should not propose personnel that are not anticipated to execute the award.

Include a table of key individual time commitments as follows:

Key Individual	Project	Status (Current, Pending, Proposed)	Hours on Project		
			Phase 1	Phase 2	Phase 3
Name 1	WASH	Proposed	x	x	x
	Project Name 1	Current	x	x	n/a
	Project Name 2	Pending	n/a	x	x
Name 2	WASH	Proposed	x	x	x
	Project Name 3	Proposed	x	x	x

viii. Capabilities: Describe organizational experience in relevant subject area(s), existing intellectual property, or specialized facilities. Discuss any work in closely related research areas and previous accomplishments.

ix. Statement of Work (SOW): The SOW must provide a detailed task breakdown, citing specific tasks and their connection to the interim milestones and metrics, as applicable. Each year of the project should be separately defined. The SOW must not include proprietary information. For each defined task/subtask, provide:

- A general description of the objective.
- A detailed description of the approach to be taken to accomplish each defined task/subtask.
- Identification of the primary organization responsible for task execution (prime contractor, subcontractor(s), consultant(s)), by name.
- A measurable milestone, (e.g., a deliverable, demonstration, or other event/activity that marks task completion).
- A definition of all deliverables (e.g., data, reports, software) to be provided to the Government in support of the proposed tasks/subtasks.
- Identify any tasks/subtasks (by the prime or subcontractor) that will be accomplished at a university and believed to be fundamental research.

x. Schedule and Milestones: Provide a detailed schedule showing tasks (task name, duration, work breakdown structure element as applicable, performing organization), milestones, and the interrelationships among tasks. The task structure must be consistent with that in the SOW. Measurable milestones should be clearly articulated and defined in time relative to the start of the project.

xi. Appendix A: This section is mandatory and must include all of the following components. If a particular subsection is not applicable, state “NONE”.

- (1). **Team Member Identification:** Provide a list of all team members including the prime, subcontractor(s), and consultant(s), as applicable. Identify specifically whether any are a non-US organization or individual, FFRDC and/or Government entity. Use the following format for this list:

Individual Name	Role (Prime, Subcontractor or Consultant)	Organization	Non-US?		FFRDC or Govt?
			Org	Ind.	

- (2). Government or FFRDC Team Member Proof of Eligibility to Propose:** If none of the team member organizations (prime or subcontractor) are a Government entity or FFRDC, state “NONE”.

If any of the team member organizations are a Government entity or FFRDC, provide documentation (per Section III.A.1) citing the specific authority that establishes the applicable team member’s eligibility to propose to Government solicitations to include: 1) statutory authority; 2) contractual authority; 3) supporting regulatory guidance; and 4) evidence of agency approval for applicable team member participation.

- (3). Government or FFRDC Team Member Statement of Unique Capability:** If none of the team member organizations (prime or subcontractor) are a Government entity or FFRDC, state “NONE”.

If any of the team member organizations are a Government entity or FFRDC, provide a statement (per Section III.A.1) that demonstrates the work to be performed by the Government entity or FFRDC team member is not otherwise available from the private sector.

- (4). Organizational Conflict of Interest Affirmations and Disclosure:** If none of the proposed team members is currently providing SETA or similar support as described in Section III.B, state “NONE”.

If any of the proposed team members (individual or organization) is currently performing SETA or similar support, furnish the following information:

Prime Contract Number	DARPA Technical Office supported	A description of the action the proposer has taken or proposes to take to avoid, neutralize, or mitigate the conflict

- (5). Intellectual Property (IP):** If no IP restrictions are intended, state “NONE”. The Government will assume unlimited rights to all IP not explicitly identified as having less than unlimited rights in the proposal.

For all technical data or computer software that will be furnished to the Government with other than unlimited rights, provide (per Section VI.B.1)

a list describing all proprietary claims to results, prototypes, deliverables or systems supporting and/or necessary for the use of the research, results, prototypes and/or deliverables. Provide documentation proving ownership or possession of appropriate licensing rights to all patented inventions (or inventions for which a patent application has been filed) to be used for the proposed project. Use the following format for these lists:

NONCOMMERCIAL				
Technical Data and/or Computer Software To be Furnished With Restrictions	Summary of Intended Use in the Conduct of the Research	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(List)	(Narrative)	(List)	(List)	(List)
(List)	(Narrative)	(List)	(List)	(List)

COMMERCIAL				
Technical Data and/or Computer Software To be Furnished With Restrictions	Summary of Intended Use in the Conduct of the Research	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(List)	(Narrative)	(List)	(List)	(List)
(List)	(Narrative)	(List)	(List)	(List)

- (6). **Human Subjects Research (HSR):** If HSR is not a factor in the proposal, state “NONE”.

If the proposed work will involve human subjects, provide evidence of or a plan for review by an Institutional Review Board (IRB). For further information on this subject, see Section VI.B.2.

- (7). **Animal Use:** If animal use is not a factor in the proposal, state “NONE”.

If the proposed research will involve animal use, provide a brief description of the plan for Institutional Animal Care and Use Committee (IACUC) review and approval. For further information on this subject, see Section VI.B.2.

- (8). **Representations Regarding Unpaid Delinquent Tax Liability or a Felony Conviction under Any Federal Law:** For further information regarding this subject, please see www.darpa.mil/work-with-us/additional-baa.

Please also complete the following statements.

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

- (9). Cost Accounting Standards (CAS) Notices and Certification:** For any proposer who submits a proposal which, if accepted, will result in a CAS-compliant contract, must include a Disclosure Statement as required by 48 CFR 9903.202.

Further information regarding the CAS notices and certification can be found in the FAR 52.230-1, as well as at www.darpa.mil/work-with-us/additional-baa.

If this section is not applicable, state “NONE”.

- xii. Appendix B:** If desired, include a brief bibliography to relevant papers, reports, or resumes. Do not include technical papers. This section is optional, and the materials will not be evaluated as part of the proposal review.

b. Volume 2 - Cost Proposal

This volume is mandatory and must include all the listed components. No page limit is specified for this volume.

The cost proposal should include a working spreadsheet file (.xls or equivalent format) that provides formula traceability among all components of the cost proposal. The spreadsheet file should be included as a separate component of the full proposal package. Costs must be traceable between the prime and subcontractors/consultants, as well as between the cost proposal and the SOW.

Pre-award costs will not be reimbursed unless a pre-award cost agreement is negotiated prior to award.

- i. Cover Sheet:** Include the same information as the cover sheet for Volume 1, but with the label “Proposal: Volume 2.”
- ii. Cost Summary Tables:** Provide a single-page summary table broken down by fiscal year listing cost totals for labor, materials, other direct charges (ODCs), indirect costs (overhead, fringe, general and administrative (G&A)), and any proposed fee for the project. Include costs for each task in each fiscal year of the project by prime and major subcontractors, total cost and proposed cost share, if applicable. Provide a second table containing the same information broken down by project phase.
- iii. Cost Details:** For each task, provide the following cost details by month. Include supporting documentation describing the method used to estimate costs. Identify any cost sharing.

- (1) Direct Labor:** Provide labor categories, rates and hours. Justify rates by providing examples of equivalent rates for equivalent talent, past commercial or

Government rates from a Government audit agency such as the Defense Contract Audit Agency (DCAA), the Office of Naval Research (ONR), the Department of Health and Human Services (DHHS), etc.

(2) Indirect Costs: Identify all indirect cost rates (such as fringe benefits, labor overhead, material overhead, G&A, or F&A, etc.) and the basis for each.

(3) Materials: Provide an itemized list of all proposed materials, equipment, and supplies for each year including quantities, unit prices, proposed vendors (if known), and the basis of estimate (e.g., quotes, prior purchases, catalog price lists, etc.). For proposed equipment/information technology (as defined in FAR 2.101) purchases equal to or greater than \$50,000, include a letter justifying the purchase. Include any requests for Government-furnished equipment or information with cost estimates (if applicable) and delivery dates.

(4) Travel: Provide a breakout of travel costs including the purpose and number of trips, origin and destination(s), duration, and travelers per trip.

(5) Subcontractor/Consultant Costs: Provide above info for each proposed subcontractor/consultant. Subcontractor cost proposals must include interdivisional work transfer agreements or similar arrangements. If the proposer has conducted a cost or price analysis to determine reasonableness, submit a copy of this along with the subcontractor proposal.

The proposer is responsible for the compilation and submission of all subcontractor/consultant cost proposals. At a minimum, the submitted cost volume must contain a copy of each subcontractor or consultant non-proprietary cost proposal (i.e. cost proposals that do not contain proprietary pricing information such as rates, factors, etc.) Proprietary subcontractor/consultant cost proposals may be included as part of Volume 2. Proposal submissions will not be considered complete unless the Government has received all subcontractor/consultant cost proposals.

If proprietary subcontractor/consultant cost proposals are not included as part of Volume 2, they may be emailed separately to WASH@darpa.mil. Email messages must include "Subcontractor Cost Proposal" in the subject line and identify the principal investigator, prime proposer organization and proposal title in the body of the message. Any proprietary subcontractor or consultant proposal documentation which is not uploaded to BAAT as part of the proposer's submission or provided by separate email shall be made immediately available to the Government, upon request, under separate cover (i.e., mail, electronic/email, etc.), either by the proposer or by the subcontractor/consultant organization.

Please note that a rough order of magnitude (ROM) or similar budgetary estimate is not considered a fully qualified subcontract cost proposal submission. Inclusion of a ROM or similar budgetary estimate, or failure to provide a subcontract proposal, will result in the full proposal being deemed non-compliant.

(6) ODCs: Provide an itemized breakout and explanation of all anticipated other direct costs.

iv. Proposals Requesting a Procurement Contract: Provide the following information where applicable.

(1) Proposals for \$750,000 or more: Provide “certified cost or pricing data” (as defined in FAR 2.101) or a request for exception in accordance with FAR 15.403.

(2) Proposals for \$700,000 or more: Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. § 637(d)), it is Government policy to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to organizations performing work as prime contractors or subcontractors under Government contracts, and to ensure that prime contractors and subcontractors carry out this policy. In accordance with FAR 19.702(a)(1) and 19.702(b), prepare a subcontractor plan, if applicable. The plan format is outlined in FAR 19.704.

(3) Proposers without an adequate cost accounting system: If requesting a cost-type contract, provide the DCAA Pre-award Accounting System Adequacy Checklist to facilitate DCAA’s completion of an SF 1408. Proposers without an accounting system considered adequate for determining accurate costs must complete an SF 1408 if a cost type contract is to be negotiated. To facilitate this process, proposers should complete the SF 1408 found at <http://www.gsa.gov/portal/forms/download/115778> and submit the completed form with the proposal. To complete the form, check the boxes on the second page, then provide a narrative explanation of your accounting system to supplement the checklist on page one.

c. Level of Effort Summary by Task Spreadsheet

Provide a one-page table summarizing estimated level of effort per task (in hours) broken out by senior, mid-level and junior personnel, in the format shown below in Figure 2. Also include dollar-denominated estimates of travel, materials and equipment. For this table, consider materials to include the cost of any data sets or software licenses proposed. For convenience, an Excel™ template is available for download as an attachment along with the BAA. Submit the Level of Effort Summary Excel™ file (do not convert the Excel™ file to pdf format) in addition to Volume 1 and Volume 2 of your full proposal. This Excel™ file does not count towards the total page count.

SOW Task	Duration (months)	Intensity (hrs/mo)	Labor Hours						
			Sr	Mid	Jr	Total	SubC	Conslt	Total
1.1.0 <Phase 1 Task 1 name>	7	135	240	680	24	944	-	200	1,144
1.1.1 <Subtask 1.1.1 name>	4	90	80	280	-	360	-	200	560
1.1.2 <Subtask 1.1.2 name>	3	195	160	400	24	584	-	-	584
1.2.0 <Phase 1 Task 2 name>	6	385	108	400	1,800	2,308	1,400	-	3,708
1.2.1 <Subtask 1.2.1 name>	3	656	48	320	1,600	1,968	600	-	2,568
1.2.2 <Subtask 1.2.2 name>	3	113	60	80	200	340	800	-	1,140
:	:	:	:	:	:	:	:	:	:
Phase 1 Total Hours			348	1,080	1,824	3,252	1,400	200	4,652
Phase 1 Costs <i>First column is prime, second is total subcontractor, third is total consultant, fourth is total</i>			Travel			\$ 44,000	\$ 12,000	\$ 2,000	\$ 58,000
			Materials & Equipment			\$ 8,000	\$ -	\$ -	\$ 8,000
2.1.0 <Phase 2 Task 1 name>	8	100	176	560	64	800	100	100	1,000
2.1.1 <Subtask 2.1.1 name>	7	51	96	240	24	360	100	100	560
2.1.2 <Subtask 2.1.2 name>	4	110	80	320	40	440	-	-	440
2.2.0 <Phase 2 Task 2 name>	6	417	180	520	1,800	2,500	1,240	-	3,740
2.2.1 <Subtask 2.2.1 name>	4	435	140	400	1,200	1,740	400	-	2,140
2.2.2 <Subtask 2.2.2 name>	4	190	40	120	600	760	840	-	1,600
:	:	:	:	:	:	:	:	:	:
Phase 2 Total Hours			356	1,080	1,864	3,300	1,340	100	4,640
Phase 2 Costs <i>First column is prime, second is total subcontractor, third is total consultant, fourth is total</i>			Travel			\$ 47,000	\$ 12,000	\$ 2,000	\$ 61,000
			Materials & Equipment			\$ 4,000	\$ -	\$ -	\$ 4,000
Project Total Hours			704	2,160	3,688	6,552	2,740	300	9,292
Total Project Costs <i>First column is prime, second is total subcontractor, third is total consultant, fourth is total</i>			Travel			\$ 91,000	\$ 24,000	\$ 4,000	\$ 119,000
			Materials & Equipment			\$ 12,000	\$ -	\$ -	\$ 12,000

Figure 2: Example level-of-effort summary table. Numbers illustrate roll-ups and subtotals. The SubC column captures all subcontractor hours and the Conslt column captures all consultant hours.

d. Summary Slide

The submission of a PowerPoint™ slide summarizing the proposed effort is mandatory. A template PowerPoint™ slide will be provided on the FedBizOpps website as an attachment. Submit the PowerPoint™ file (do not convert PowerPoint™ file to pdf format) in addition to Volume 1, Volume 2 of your full proposal. This summary slide does not count towards the total page count.

1. Proprietary and Classified Information

DARPA policy is to treat all submissions as source selection information (see FAR 2.101 and 3.104) and to disclose the contents only for the purpose of evaluation. Restrictive notices notwithstanding, during the evaluation process, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation. All DARPA support contractors performing this role are expressly prohibited from performing DARPA-sponsored technical research and are bound by appropriate nondisclosure agreements.

a. Proprietary Information

Proposers are responsible for clearly identifying proprietary information. Submissions containing proprietary information must have the cover page and each page containing such information clearly marked.

b. Classified Information

Classified submissions (classified technical proposals or classified appendices to unclassified proposals) will not be accepted under this solicitation.

C. Submission Date and Time

Proposers are warned that submission deadlines as outlined herein are strictly enforced. Note: some proposal requirements may take from 1 business day to 1 month to complete. See the proposal checklist in Section VIII.C for further information.

When utilizing the DARPA BAA Submission Website, as described below in Section IV.E.1 below, a control number will be provided at the conclusion of the submission process. This control number should be used in all further correspondence regarding your proposal submission.

Failure to comply with the submission procedures outlined herein may result in the submission not being evaluated.

1. Proposals

The proposal package -- full proposal (Volume 1 and 2, the Level of Effort Summary by Task Spreadsheet, and the PowerPoint™ slide) and, as applicable, Appendix B (optional), and proprietary subcontractor cost proposals -- must be submitted per the instructions outlined herein and received by DARPA no later than June 23, 2017 at 12:00 noon (ET). Submissions received after this date and time will not be reviewed.

D. Funding Restrictions

Not applicable.

E. Other Submission Requirements

1. Unclassified Submission Instructions

Proposers must submit all parts of their submission package using the same method; submissions cannot be sent in part by one method and in part by another method nor should duplicate submissions be sent by multiple methods. Email submissions will not be accepted.

a. Proposals Requesting a Procurement Contract

DARPA/I2O will employ an electronic upload submission system (<https://baa.darpa.mil/>) for UNCLASSIFIED proposals requesting award of a procurement contract under this solicitation.

First time users of the DARPA BAA Submission Website must complete a two-step account creation process at <https://baa.darpa.mil/>. The first step consists of registering for an Extranet account by going to the above URL and selecting the “Account Request” link. Upon completion of the online form, proposers will receive two separate emails; one will contain a user name and the second will provide a temporary password. Once both emails have been received, proposers must go back to the submission website and log in using that user name and password. After accessing the Extranet, proposers must create a user account

for the DARPA BAA Submission Website by selecting the “Register Your Organization” link at the top of the page. The DARPA BAA Submission Website will display a list of solicitations open for submissions. Once a proposer’s user account is created, they may view instructions on uploading their proposal.

Proposers who already have an account on the DARPA BAA Submission Website may simply log in at <https://baa.darpa.mil/>, select this solicitation from the list of open DARPA solicitations and proceed with their proposal submission. Note: Proposers who have created a DARPA BAA Submission Website account to submit to another DARPA Technical Office’s solicitations do not need to create a new account to submit to this solicitation.

All submissions submitted electronically through DARPA's BAA website must be uploaded as zip files (.zip or .zipx extension). The final zip file should contain only the files requested herein and must not exceed 50 MB in size. Only one zip file will be accepted per submission. Note: Submissions not uploaded as zip files will be rejected by DARPA.

Please note that all submissions MUST be finalized, meaning that no further editing will be possible, when submitting through the DARPA BAA Submission Website in order for DARPA to be able to review your submission. If a submission is not finalized, the submission will not be deemed acceptable and will not be reviewed.

Website technical support may be reached at Action@darpa.mil and is typically available during regular business hours (9:00 AM – 5:00 PM ET, Monday-Friday). Questions regarding submission contents, format, deadlines, etc. should be emailed to WASH@darpa.mil.

Since proposers may encounter heavy traffic on the web server, they should not wait until the day proposals are due to request an account and/or upload the submission. Full proposals should not be submitted via Email. Any full proposals submitted by Email will not be accepted or evaluated.

V. Application Review Information

A. Evaluation Criteria

Proposals will be evaluated using the following criteria listed in descending order of importance: Overall Scientific and Technical Merit; Potential Contribution and Relevance to the DARPA Mission; and Cost Realism.

– *Overall Scientific and Technical Merit:*

The proposed technical approach is innovative, feasible, achievable, and complete.

The effort is supported by a proposed technical team that has the expertise and experience to accomplish the proposed tasks.

The task descriptions and associated technical elements are complete and in a logical sequence, with all proposed deliverables clearly defined such that a viable attempt to achieve project goals is likely as a result of award. The proposal identifies major technical risks and clearly defines feasible mitigation efforts.

Proposer should also take note to the information provided in Section I, as DARPA will also look at how a proposer addresses the technical challenges relevant to each TA, as well as view how key personnel will work on those challenges.

– *Potential Contribution and Relevance to the DARPA Mission:*

The potential contributions of the proposed effort are relevant to the national technology base. Specifically, DARPA's mission is to make pivotal early technology investments that create or prevent strategic surprise for U.S. National Security.

This includes considering the extent to which any proposed intellectual property restrictions will potentially impact the Government's ability to transition the technology.

– *Cost Realism:*

The proposed costs are realistic for the technical and management approach and accurately reflect the technical goals and objectives of the solicitation. The proposed costs are consistent with the proposer's Statement of Work and reflect a sufficient understanding of the costs and level of effort needed to successfully accomplish the proposed technical approach. The costs for the prime proposer and proposed subawardees are substantiated by the details provided in the proposal (e.g., the type and number of labor hours proposed per task, the types and quantities of materials, equipment and fabrication costs, travel and any other applicable costs and the basis for the estimates).

B. Review and Selection Process

The review process identifies proposals that meet the evaluation criteria described above and are, therefore, selectable for negotiation of awards by the Government. DARPA policy is to ensure impartial, equitable, comprehensive proposal evaluations and to select proposals that meet DARPA technical, policy, and programmatic goals. If necessary, panels of experts in the appropriate areas will be convened. As described in Section IV, proposals must be deemed conforming to the solicitation to receive a full technical review against the evaluation criteria; proposals deemed non-conforming will be removed from consideration.

DARPA will conduct a scientific/technical review of each conforming proposal. Conforming proposals comply with all requirements detailed in this BAA; proposals that fail to do so may be deemed non-conforming and may be removed from consideration. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. DARPA's intent is to review proposals as soon as possible after they arrive; however, proposals may be reviewed periodically for administrative reasons

Selections may be made at any time during the period of solicitation. Pursuant to FAR 35.016, the primary basis for selecting proposals for award negotiation shall be technical, importance to agency programs, and fund availability. Proposals that are determined selectable will not necessarily receive awards.

For evaluation purposes, a proposal is defined to be the document and supporting materials as described in Section IV.B. Subject to the restrictions set forth in FAR 37.203(d), input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants/experts who are strictly bound by the appropriate non-disclosure requirements. No submissions will be returned.

VI. Award Administration Information

A. Selection Notices

After proposal evaluations are complete, proposers will be notified as to whether their proposal was selected for award negotiation as a result of the review process. Notification will be sent by email to the technical and administrative POCs identified on the proposal cover sheet. If a proposal has been selected for award negotiation, the Government will initiate those negotiations following the notification.

B. Administrative and National Policy Requirements

1. Intellectual Property

Proposers should note that the Government does not own the intellectual property of technical data/computer software developed under Government contracts; it acquires the right to use the technical data/computer software. Regardless of the scope of the Government's rights, performers may freely use their same data/software for their own commercial purposes (unless restricted by U.S. export control laws or security classification). Therefore, technical data and computer software developed under this solicitation will remain the property of the performers, though DARPA desires to have a minimum of Government Purpose Rights (GPR) to noncommercial technical data/computer software developed through DARPA sponsorship.

If proposers desire to use proprietary software or technical data or both as the basis of their proposed approach, in whole or in part, they should: (1) clearly identify such software/data and its proposed particular use(s); (2) explain how the Government will be able to reach its program goals (including transition) within the proprietary model offered; and (3) provide possible nonproprietary alternatives in any area that might present transition difficulties or increased risk or cost to the Government under the proposed proprietary solution.

Proposers expecting to use, but not to deliver, commercial open source tools or other materials in implementing their approach may be required to indemnify the Government against legal liability arising from such use.

All references to "Unlimited Rights" or "Government Purpose Rights" are intended to refer to the definitions of those terms as set forth in the Defense Federal Acquisition Regulation Supplement (DFARS) Part 227.

a. Intellectual Property Representations

All proposers must provide a good faith representation of either ownership or possession of appropriate licensing rights to all other intellectual property to be used for the proposed project. Proposers must provide a short summary for each item 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. If proposers desire to use proprietary software or technical data or both as the basis of their proposed approach, in whole or in part, they should: (1) clearly identify such software/data and its proposed particular use(s); (2) explain how the Government will be able to reach its program goals (including transition) within the proprietary model offered; and (3) provide possible nonproprietary alternatives in any area that might present transition difficulties or increased

risk or cost to the Government under the proposed proprietary solution.

b. Patents

All proposers must include documentation proving ownership or possession of appropriate licensing rights to all patented inventions to be used for the proposed project. If a patent application has been filed for an invention, but it includes proprietary information and is not publicly available, a proposer must provide documentation that includes: the patent number, inventor name(s), assignee names (if any), filing date, filing date of any related provisional application, and summary of the patent title, with either: (1) a representation of invention ownership, or (2) proof of possession of appropriate licensing rights in the invention (i.e., an agreement from the owner of the patent granting license to the proposer).

c. Procurement Contracts

- **Noncommercial Items (Technical Data and Computer Software):** Proposers must list all noncommercial technical data and computer software that it plans to generate, develop, and/or deliver, in which the Government will acquire less than unlimited rights and to assert specific restrictions on those deliverables. In the event a proposer does not submit the list, the Government will assume that it has unlimited rights to all noncommercial technical data and computer software generated, developed, and/or delivered, unless it is substantiated that development of the noncommercial technical data and computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data and computer software generated, developed, and/or delivered, proposers should identify the data and software in question as subject to GPR. In accordance with DFARS 252.227-7013, “Rights in Technical Data - Noncommercial Items,” and DFARS 252.227-7014, “Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation,” the Government will automatically assume that any such GPR restriction is limited to a period of 5 years, at which time the Government will acquire unlimited rights unless the parties agree otherwise. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer, as may be necessary, to evaluate the proposer’s assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. A template for complying with this request is provided in Section IV.B.a.xi.(5).
- **Commercial Items (Technical Data and Computer Software):** Proposers must list all commercial technical data and commercial computer software that may be included in any deliverables contemplated under the research project, and assert any applicable restrictions on the Government’s use of such commercial technical data and/or computer software. Include a copy of each commercial license agreement. In the event a proposer does not submit the list, the Government will assume there are no restrictions on the Government’s use of such commercial items. The Government may use the list during the evaluation process to evaluate the impact of any identified restrictions and may request additional information from the proposer to evaluate the proposer’s assertions. Failure to provide full information may result in a determination that the proposal is not compliant with the solicitation. A template for complying with this request is provided in Section

IV.B.a.xi.(5).

2. Human Research Subjects/Animal Use

Proposers that anticipate involving Human Research Subjects or Animal Use must comply with the approval procedures detailed at www.darpa.mil/work-with-us/additional-baa.

3. Electronic and Information Technology

All electronic and information technology acquired through this solicitation must satisfy the accessibility requirements of Section 508 of the Rehabilitation Act (29 U.S.C. § 794d) and FAR 39.2. Each project involving the creation or inclusion of electronic and information technology must ensure that: (1) Federal employees with disabilities will have access to and use of information that is comparable to the access and use by Federal employees who are not individuals with disabilities; and (2) members of the public with disabilities seeking information or services from DARPA will have access to and use of information and data that is comparable to the access and use of information and data by members of the public who are not individuals with disabilities.

4. System for Award Management (SAM) and Universal Identifier Requirements

All proposers must be registered in SAM unless exempt per FAR 4.1102. FAR 52.204-7, “System for Award Management” and FAR 52.204-13, “System for Award Management Maintenance” are incorporated into this BAA. See www.darpa.mil/work-with-us/additional-baa for further information.

Note that new registrations can take an average of 7-10 business days to process in SAM. SAM registration requires the following information:

- DUNS number
- TIN
- CAGE Code. If a proposer does not already have a CAGE code, one will be assigned during SAM registration.
- Electronic Funds Transfer information (e.g., proposer’s bank account number, routing number, and bank phone or fax number).

C. Reporting

1. Technical and Financial Reports

The number and types of technical and financial reports required under the contracted project will be specified in the award document, and will include, as a minimum, monthly financial status reports and a yearly status summary. A final report that summarizes the project and tasks will be required at the conclusion of the performance period for the award. The reports shall be prepared and submitted in accordance with the procedures contained in the award document.

2. Representations and Certifications

If a procurement contract is contemplated, prospective awardees will need to be registered in the SAM database prior to award and complete electronic annual representations and certifications consistent with FAR guidance at 4.1102 and 4.1201; the representations and

certifications can be found at www.sam.gov. Supplementary representations and certifications can be found at www.darpa.mil/work-with-us/additional-baa.

3. Wide Area Work Flow (WAWF)

Unless using another means of invoicing, performers will be required to submit invoices for payment directly at <https://wawf.eb.mil>. If applicable, WAWF registration is required prior to any award under this solicitation.

4. FAR and DFARS Clauses

Solicitation clauses in the FAR and DFARS relevant to procurement contracts and FAR and DFARS clauses that may be included in any resultant procurement contracts are incorporated herein and can be found at www.darpa.mil/work-with-us/additional-baa.

See also Section II.C regarding the disclosure of information and compliance with safeguarding covered defense information controls (for FAR-based procurement contracts only).

5. i-Edison

Award documents will contain a requirement for patent reports and notifications to be submitted electronically through the i-Edison Federal patent reporting system at <http://s-edison.info.nih.gov/iEdison>.

6. Controlled Unclassified Information (CUI) on Non-DoD Information Systems

Further information on Controlled Unclassified Information on Non-DoD Information Systems is incorporated herein can be found at www.darpa.mil/work-with-us/additional-baa.

VII. Agency Contacts

DARPA will use email for all technical and administrative correspondence regarding this solicitation.

- **Technical POC:** Dr. Angelos Keromytis, Program Manager, DARPA/I2O
- **Email:** WASH@darpa.mil
- **Mailing address:**
DARPA/I2O
ATTN: HR001117S0032
675 North Randolph Street
Arlington, VA 22203-2114
- **I2O Solicitation Website:** <http://www.darpa.mil/work-with-us/opportunities>

VIII. Other Information

A. Frequently Asked Questions (FAQs)

Administrative, technical, and contractual questions should be sent via email to WASH@darpa.mil. All questions must be in English and must include the name, email address, and the telephone number of a point of contact.

DARPA will attempt to answer questions in a timely manner; however, questions submitted within 7 days of closing may not be answered. If applicable, DARPA will post FAQs to <http://www.darpa.mil/work-with-us/opportunities>.

B. Proposers Day

The Proposers Day will be held on May 16, 2017 in Arlington, VA. The special notice regarding the WASH Proposers Day, DARPA-SN-17-43, can be found at <https://www.fbo.gov/index?s=opportunity&mode=form&id=378686b75edaffeb6d7a432eddc194d6&tab=core&cvview=0>.

For further information regarding the WASH Proposers Day, including slides from the event, please see <http://www.darpa.mil/work-with-us/opportunities> under HR001117S0032.

C. Submission Checklist

The following items apply prior to proposal submission. Note: some items may take up to 1 month to complete.

✓	Item	BAA Section	Applicability	Comment
	Obtain DUNS number	IV.B.a.i	Required of all proposers	The DUNS Number is the Federal Government's contractor identification code for all procurement-related activities. See http://fedgov.dnb.com/webform/index.jsp to request a DUNS number. Note: requests may take at least one business day.
	Obtain Taxpayer Identification Number (TIN)	IV.B.a.i	Required of all proposers	A TIN is used by the Internal Revenue Service in the administration of tax laws. See http://www.irs.gov/businesses/small/international/article/0,,id=96696,00.html for information on requesting a TIN. Note: requests may take from 1 business day to 1 month depending on the method (online, fax, mail).
	Register in the System for Award Management (SAM)	VI.B.4	Required of all proposers	The SAM combines Federal procurement systems and the Catalog of Federal Domestic Assistance into one system. See www.sam.gov for information and registration. Note: new registrations can take an average of 7-10 business days. SAM registration requires the following information: -DUNS number -TIN -CAGE Code. A CAGE Code identifies companies doing or wishing to do business with the Federal Government. If a proposer does not already have a CAGE code, one will be assigned during SAM registration. -Electronic Funds Transfer information (e.g., proposer's bank account number, routing number, and bank phone or fax number).
	Ensure eligibility of all team members	IV.B.a.i	Required of all proposers	Verify eligibility, as applicable, for in accordance with requirements outlined in Section III.

The following items apply as part of the submission package:

✓	Item	BAA Section	Applicability	Comment
	Volume 1 (Technical and Management Proposal)	IV.B.a	Required of all proposers	Conform to stated page limits and formatting requirements. Include all requested information.
	Appendix A	IV.B.a.xi	Required of all proposers	<ul style="list-style-type: none"> - Team member identification - Government/FFRDC team member proof of eligibility - Organizational conflict of interest affirmations - Intellectual property assertions - Human subjects research - Animal use - Unpaid delinquent tax liability/felony conviction representations - CASB disclosure, if applicable
	Volume 2 (Cost Proposal)	IV.B.b	Required of all proposers	<ul style="list-style-type: none"> - Cover Sheet - Cost summary - Detailed cost information including justifications for direct labor, indirect costs/rates, materials/equipment, subcontractors/consultants, travel, ODCs - Cost spreadsheet file (.xls or equivalent format) - Subcontractor plan, if applicable - Subcontractor cost proposals - Itemized list of material and equipment items to be purchased with vendor quotes or engineering estimates for material and equipment more than \$50,000 - Travel purpose, departure/arrival destinations, and sample airfare
	Level of Effort Summary by Task Excel spreadsheet	IV.B.c	Required of all proposers	A template LoE Excel file will be provided on the FedBizOpps website as an attachment. Submit the LoE Excel file (do not convert Excel file to pdf format).
	PowerPoint Summary Slide	IV.B.d		A template PowerPoint slide will be provided on the FedBizOpps website as an attachment. Submit the PowerPoint file (do not convert PowerPoint file to pdf format).

For information concerning agency level protests see <http://www.darpa.mil/work-with-us/additional-baa#NPRPAC>.

D. Associate Contractor Agreement Clause (ACA)

This same or similar clause will be included in contract awards against HR001117S0032. Awards other than FAR based contracts will contain similar agreement language:

(a) It is recognized that success of the Warfighter Analytics using Smartphones for Health (WASH) research effort depends in part upon the open exchange of information between the various Associate Contractors involved in the effort. This clause is intended to insure that there will be appropriate coordination and integration of work by the Associate Contractors to achieve complete compatibility and to prevent unnecessary duplication of effort. By executing this contract, the Contractor assumes the responsibilities of an Associate Contractor. For the purpose

of this clause, the term Contractor includes subsidiaries, affiliates, and organizations under the control of the contractor (e.g., subcontractors).

(b) Work under this contract may involve access to proprietary or confidential data from an Associate Contractor. To the extent that such data is received by the Contractor from any Associate Contractor for the performance of this contract, the Contractor hereby agrees that any proprietary information received shall remain the property of the Associate Contractor and shall be used solely for the purpose of the Warfighter Analytics using Smartphones for Health (WASH) research effort. Only that information which is received from another contractor in writing and which is clearly identified as proprietary or confidential shall be protected in accordance with this provision. The obligation to retain such information in confidence will be satisfied if the Contractor receiving such information utilizes the same controls as it employs to avoid disclosure, publication, or dissemination of its own proprietary information. The receiving Contractor agrees to hold such information in confidence as provided herein so long as such information is of a proprietary/confidential or limited rights nature.

(c) The Contractor hereby agrees to closely cooperate as an Associate Contractor with the other Associate Contractors on this research effort. This involves as a minimum:

- (1) maintenance of a close liaison and working relationship;
- (2) maintenance of a free and open information network with all Government-identified associate Contractors;
- (3) delineation of detailed interface responsibilities;
- (4) entering into a written agreement with the other Associate Contractors setting forth the substance and procedures relating to the foregoing, and promptly providing the Agreements Officer/Procuring Contracting Officer with a copy of same; and,
- (5) receipt of proprietary information from the Associate Contractor and transmittal of Contractor proprietary information to the Associate Contractors subject to any applicable proprietary information exchange agreements between associate contractors when, in either case, those actions are necessary for the performance of either.

(d) In the event that the Contractor and the Associate Contractor are unable to agree upon any such interface matter of substance, or if the technical data identified is not provided as scheduled, the Contractor shall promptly notify the DARPA Warfighter Analytics using Smartphones for Health (WASH) Program Manager. The Government will determine the appropriate corrective action and will issue guidance to the affected Contractor.

(e) The Contractor agrees to insert in all subcontracts hereunder which require access to proprietary information belonging to the Associate Contractor, a provision which shall conform substantially to the language of this clause, including this paragraph (e).

(f) Associate Contractors for the Warfighter Analytics using Smartphones for Health (WASH) research effort include:

Contractor

Technical Area

(end of clause)