

The Tradewind OTA Enterprise Office (operated by IN3), in conjunction with the Joint Artificial Intelligence Center (JAIC), will host the following coliseum event:

UNCLASSIFIED



TW-21-0003
Joint Artificial Intelligence Center (JAIC)
AI Accelerator Coliseum Event

Initial Submission Deadline: 6/25/2021 1700 EST

Summary

The Tradewind OTA Enterprise Office (operated by IN3), in conjunction with the Joint Artificial Intelligence Center (JAIC) will host a coliseum event to assess and acquire technical solutions relevant to its AI Accelerator project. The AI Accelerator Project is a multifaceted prototyping effort to establish:

- An integrated network infrastructure across multiple service networks,
- An AI-enabled “operating system” data and application platform, and
- The development of the specific applications on this platform required to enable the utilization of AI at the Combatant Commands (CCMD) to automate and optimize operations.

All technologies developed under these efforts will result in a government owned open architecture that allows for the rapid development of new applications and capabilities through uniform and non-proprietary API and application platform services.

What is a Coliseum Event?

The Coliseum Event is a multi-phased, competitive opportunity to present new, novel, or provocative solutions to Government Stakeholders in a one-on-one environment that can lead to a near-term award. Coliseum events are information, assessment, and/or competitive events that are not directly managed by the JAIC but are of interest to Government end users for potential review of prototypes. The coliseum is intended to foster conversations and partnerships that lead to enhanced solution sets.

Why Should You Participate?

The JAIC seeks to enter into agreements (OTA) with industry partners whose solutions are favorably evaluated by subject matter experts. As such, this event is considered competitive in the same manner as a Broad Agency Announcement (BAA) or Commercial Solutions Opening (CSO), and solutions will be evaluated independently of one another primarily for technical merit.

What is the Goal of a Coliseum Event?

The goal of the event is to find cutting edge technical solutions, develop a joint vision and statement of work for the development and rapidly enter into agreements for potential prototypes in the identified capability areas. Agreements issued because of this multi-phased approach will be executed under the other transaction authority. Awarded prototypes may include multiple phases/milestones, and the Government may enter into noncompetitive follow-on transaction agreements and production contracts as a result of the multi-phase competitive Coliseum approach.

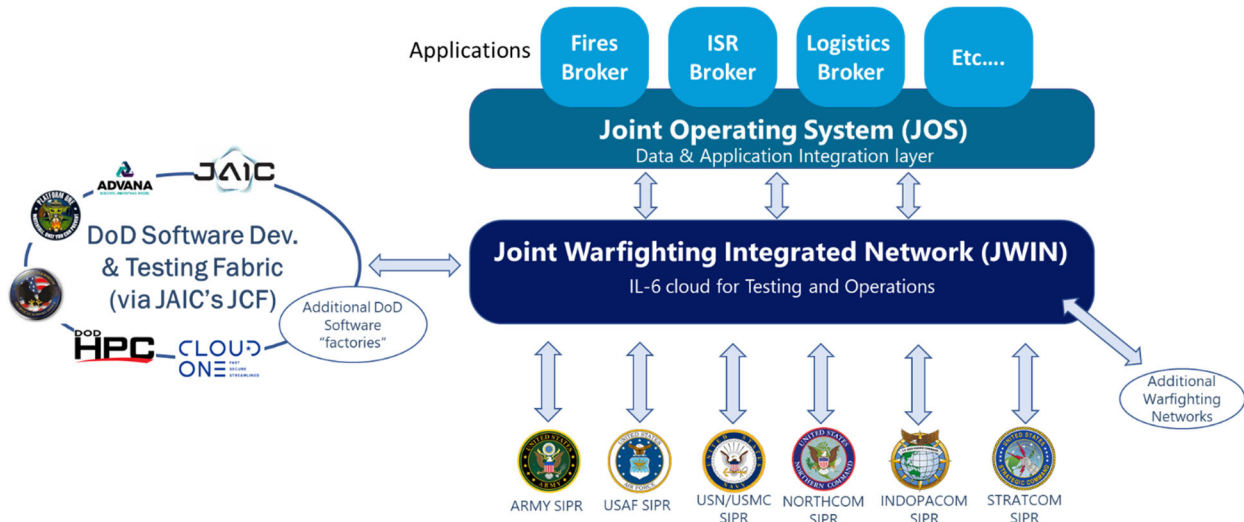
The Coliseum serves as a competitive opportunity for interested parties to present solutions and be evaluated for participation in the next phase of competition. Not all entities participating in the Coliseum will participate in future phases or obtain an agreement with the Government.

System Overview and Supporting Technical Capability Areas

The Department of Defense's (DoD) ability to adopt, scale, and deliver artificial intelligence (AI) solutions to the warfighting edge will be a critical component of future military advantage. While it is accepted that data is the 'fuel' of AI and foundational to successful data-driven warfighting, it is however not enough to achieve Decision Advantage in the competition-conflict spectrum. The DoD also requires progressive construction and testing of an integrated network infrastructure, processing platforms, and AI algorithms/automation applications. These efficient and effective 'engines' and 'highways' complement the work on data policy development, collection, and standardization to achieve desired outcomes. As the DoD embraces AI across a broad spectrum of use, it is committed to ensuring that all of the Department's AI capabilities are designed, developed, acquired, and used in a responsible and ethical manner in accordance with the [DoD's AI Ethics Principles](#), and further described in the Department's recently issued [memorandum on implementing Responsible AI \(https://media.defense.gov/2021/May/27/2002730593/-1/-1/0/IMPLEMENTING-RESPONSIBLE-ARTIFICIAL-INTELLIGENCE-IN-THE-DEPARTMENT-OF-DEFENSE.PDF\)](https://media.defense.gov/2021/May/27/2002730593/-1/-1/0/IMPLEMENTING-RESPONSIBLE-ARTIFICIAL-INTELLIGENCE-IN-THE-DEPARTMENT-OF-DEFENSE.PDF).

The JAIC Integrated Product Team (IPT) has thus developed an overarching system architecture to support complex operational decision making. An overview of the envisioned system is shown in the following figure. At the base level this system provides an integrated network architecture to support extremely high-performance data collection, such as from real-time sensors of all types continuously generating data. This system architecture ingests data and platform information from multiple service supported networks. In addition, the architecture needs to support inbound requests, such as commands to weapons systems that are available and online at the time. To manage complexity, each contributing service network shall provide these inbound/outbound requests through well-defined and highly available API's (Application Programming Interfaces). The integrated network, known as the Joint Warfare Information Network (JWIN) provides the interface and highway that collects and delivers data to the application later. The processing platform/application layer, known as the Joint Operating System (JOS), is tightly coupled to the JWIN. It is powered by an architecture, government-owned application and data platform that supports the development, hosting and maintenance of general and application specific AI powered applications. The "apps" are designed in a modular fashion and are developed to meet specific mission operations. Note that unlike many other applications that the DoD uses, not all of these applications will be designed to have a user interface with human input; many applications will run in the background (such as "AI bots") or even provide further API-based callable interfaces for other applications. The other objective is that by the "operating system" platform provide an abstraction layer and services, a developer of a new application can rapidly and efficiently write

their code without having to worry or rewrite entire libraries and services that the platform will offer them – thereby driving down the cost and speed of delivering new applications, as well as potentially opening up the platform to internal developers inside the DoD who can now easily write rich applications based on customer need.

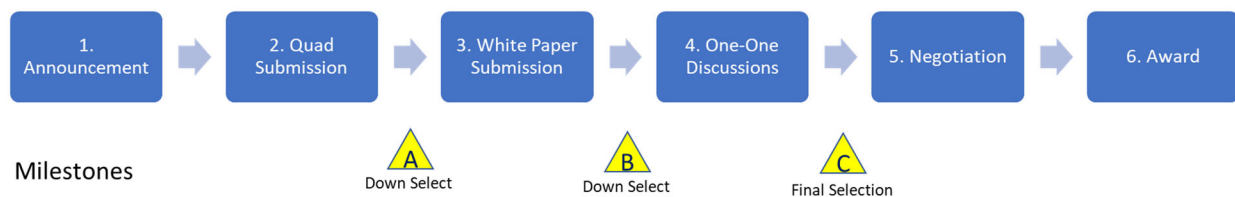


The specific requirements that are being pursued in this Coliseum event are defined in three Technology Capability Areas (TCA). To support the overall prototyping of the system architecture, the IPT is seeking solutions to the following TCAs, which are defined in more detail in Appendix A.

- TCA1 - AI Enabled Operating System (JOS)
- TCA2 - Integrated Network Architecture (JWIN)
- TCA3 - Warfighting Function Workflow Automation (Applications)

COLISEUM STRUCTURE AND TIMELINE

A coliseum is intended to maximize the exchange of information between vendors and the government to help derive the best sets of solutions/vendors to fulfill requirements. It is thus a flexible process with a variable schedule depending on the suitability of the provided information. It is possible a vendor provides an optimal solution at any of the down select milestones and the government can proceed to agreement. Additionally, a project can proceed from quad chart to one-on-one discussions. One key objective is for the vendor to continually evolve their solution and team in response to the feedback from the government evaluators throughout the process. The notional flow of a coliseum is defined below.



A standard Coliseum process utilizes the following steps:

- Announcement and Request for Quad Charts (Appendix B)
- Down Select and Notifications to those who Proceed to White Papers
- Announcement and Request for White Papers (Appendix C)
- Down Select and Notifications to those whose proceed to One-on-One Discussions.
- One on One Discussions (Appendix D)
- Down Select and Negotiations (Often happens simultaneously) (Appendix E)
- Contract Award

Detailed instructions for Quad Chart and White Paper submission, formats and process are contained in Appendix B and C. A description of the One-on-One Discussions is contained in Appendix D.

Schedule

Due to the complexity of the technology and its anticipated evolution of the concepts throughout the Coliseum process, a complete schedule has yet to be determined for all TCAs. Initial focus will be on procuring a solution to TCA1, with parallel efforts running on TCA 2 and TCA 3.

TCA	Quad Submission	White Paper Submission	One-One Discussions
1 - JOS	6/25/2021	7/12/2021	7/19-7/23/2021
2 - JWIN	6/25/2021	TBD	TBD
3 - APPS	6/25/2021	TBD	TBD

NOTE 1: Only respondents that are U.S. entities are eligible to submit a Quad Chart or project proposal. This process is closed to foreign participation at ALL levels (i.e., prime, and sub-contracts at all levels).

NOTE 2: Teaming is highly encouraged and recommended in the submissions and performance of this project.

Immediate registration on the VULCAN Portal is highly recommended.

Coliseum Process Guidelines

- Section 2371b requires competitive procedures be used to the maximum extent practical. This Announcement serves as a competitive opportunity for interested parties to present solutions and be evaluated for potential selection of a prototype project and is considered to satisfy the reasonable effort to obtain competition in accordance with 10 USC 2371b (b)(2).
- The Government will not reimburse interested respondents for costs of preparation of submissions, pricing information, or any other activity during the competitive selection process.
- Participation in part of the selection process (any or all of the Phases identified in this Announcement) are at the respondent's expense.
- Unnecessarily elaborate brochures or marketing materials are not desired.
- Use of a diagram(s) or figure(s) to depict the essence of the proposed solution is strongly encouraged.
- All information in submissions must be unclassified **and non-proprietary**. Submission of a Quad chart or white paper under this Announcement indicates confirmation that the submission provided is unclassified and does not contain proprietary information.
- The period of performance for any white paper or proposal submitted under this Announcement should generally be no greater than 48 months.
- Submitted materials may be considered by the Government for a prototype award up to one (1) year after submission for same or similar requirements.
- **The Government will be using the Vulcan Technology Platform to collect, receive, share, and assess quad charts and white papers. Respondents interested in responding to this announcement will need to register to obtain access to Vulcan at the following website: www.Vulcan-SOF.com. Immediate registration on the VULCAN Portal is highly recommended given the short suspense on this announcement.**

Questions

Questions regarding this Announcement should be sent to:

Dr. William Kiser -- Tradewind003@in3indiana.com

DISCLAIMERS**Follow-On Production**

The potential for follow-on production for projects awarded from this announcement will be in accordance with 10.U.S.C. 2371b(f). Upon a determination that the competitively awarded prototype project(s) have been successfully completed, and subject to the availability of funds, the prototype project(s) may result in the award of a follow-on production contract or transaction without the use of competitive procedures. Prototype agreements may include multiple phases, to include follow on transaction and production efforts.

Use of Contractor Support

Non-Government advisors may be used in the evaluation of the submissions and proposals and will have signed Non-Disclosure Agreements (NDAs) with the Government. The Government understands that information provided in this Announcement is presented in confidence and may contain trade secret or commercial or financial information and agrees to protect such information from unauthorized disclosure to the maximum extent permitted and as required by law. A respondent's participation in any part of the selection process under this announcement indicates concurrence with the aforementioned use of contractor support personnel.

- MITRE
- Tuknik Government Services
- Johns Hopkins University - Applied Physics Lab
- ERPi
- Redhorse
- Elder Research
- Cyberpoint
- Barbaricum

Appendix A

AI Accelerator TCAs

Technology Capability Area 1: AI-enabled Operating System (JOS)

Problem Statement: Today, the Combatant Commands (CCMDs) use a variety of stove-piped software and hardware systems that are provided by the Services or CCMD-purchased for manual warfighting function command and control; each system is itself “vertically integrated” and requires its own data integration layer, application layer, and user interface. This creates inefficiencies for application development, system procurement, and CCMD warfighting operations. Currently, CCMD operations teams have to access multiple systems to manually fuse information across them and then manually re-enter information into multiple systems to react – adding minutes or hours to processes that should take seconds. These stove-piped systems also make it impossible to write rich, AI-enabled applications as there is no single interface to access multiple stovepipes of data through a single interface. The JAIC seeks an experimental, government-owned, but commercially developed “Joint Operating System” that serves as an integrated application and data platform for the deployment of warfighting applications. This platform will integrate data from both sensors and weapons systems across warfighting functions to enable applications to automatically process, fuse, and automate user workflows and C2 processes. The JOS will also provide services such as “presence” of available objects across the network (such as weapons systems that are “online”), status and supplies, and even static description and spec data for each system, and over time other “rich” application services such as mapping, logistics, readiness through API’s that an application developer can easily access.

Operational Use Scenario: During integrated CCMD exercises such as Global Lightning or the Global Information Dominance Experiment series, multiple Combatant Commanders and their staffs can conduct operations using applications hosted on a common data integration layer.

General Conditions: The Joint Operating System will initially be hosted at the IL-4 and IL-6 security domains and will eventually require multi-domain data labeling and PKI-enabled security features. The Joint Operating System will be built with “open architecture” principles, with a set of configurable, government owned Application Program Interfaces (API) that will enable data sharing between any Service or agency external system and applications hosted on the platform. Data will consist of all domain sensor modalities, and command and control messages for weapons and business systems. The system will be designed to allow any developer, whether an Industry partner or government developer, to enhance existing applications or build brand-new applications on the platform with no technology barriers, hidden or proprietary API’s, “toll collection”, or unreasonable withholding of access to the platform.

Unique Conditions: None

Standards/Desirements: The result is a singular application and data platform that enables application and user rapid application development and data fusion for the purposes of warfighting function workflow automation across and within CCMDs.

Technology Capability Area 2: Integrated Network (JWIN)

Problem Statement: The Combatant Commands (CCMDs) operate on warfighting networks at the Impact Level 4, 6, and SCI security levels that are not integrated and have varied levels of maturity – some cloud, some purely on- premises, and some a hybrid. The Joint Force does not have an operational test network that mimics production networks and enables DEVSECOPs software

delivery to the Joint Force Commander and staff. CCMDs struggle to share a common operating picture between CCMDs and within CCMDs between Component Commands. This results in a restricted ability to conduct global all domain command and control operations across CCMD boundaries.

Operational Use Scenario: During integrated CCMD exercises such as Global Lightning or the Global Information Dominance Experiment series, multiple Combatant Commanders and their staffs operate using the same applications hosted on a singular warfighting network.

General Conditions: This warfighting network will be a production network that is both cloud and edge-node based at the IL-4 and IL-6 security domains. It will require bi-directional cross-domain solutions between IL4 and IL6 for data and software transfer between domains.

Unique Conditions: Appropriate high-performance compute (including Graphic Processing Unit (GPU) support) at the IL4 and IL6 security domains required to execute Artificial Intelligence software processing.

Standards/Desirements: The result is a cloud/edge-based joint integrated warfighting network that multiple CCMD users can access to automate workflows and command and control forces across multiple domains at speed.

Technology Capability Area 3: Warfighting Function Workflow Automation Applications

Problem Statement: The Combatant Commands (CCMDs) command and control across warfighting functions via manually intensive workflows and use software systems designed for manual, human-intensive interaction. This results in a restricted ability to generate decision advantage for the Combatant Commander in great power competition, crisis, and conflict. The JAIC seeks solutions that automate user workflows across warfighting functions (fires, maneuver, logistics, intelligence, etc.) through a variety of means: optimization algorithms, logical matching/pairing algorithms, or deep-learning analytics. These applications will be built on top of the API's exposed by the Joint Operating System (JOS), thereby providing a layer of abstraction that these applications can be rapidly built and deployed on.

Operational Use Scenario: During an integrated CCMD exercise such as Global Lightning or Global Information Dominance Experiment series, multiple Combatant Commanders and their staffs are able to conduct operations in a human-on-the-loop manner, with workflows automated to the extent possible given the data and conditions available for a respective function.

General Conditions: The set of deployed applications will enable a CCMD user to optimize resource allocation in complex multi-target multi-asset and multi-domain scenarios using real-time government and commercial or publicly available sensor feeds (inbound calls) and government weapons system actions (outbound calls). Applications the JAIC is interested include, but are not limited to:

- Sensor platform automated command and control to optimize sensor coverage for persistent target custody.
- Effects platform automated command and control to optimize effects coverage for kill chain closure.
- Sensors, Fires/Maneuver and Effects modeling and simulation
- Operations-level course of action generation

These initial applications will be built in an iterative fashion on top of the Joint Operating System. Any inbound data needs (such as sensor data) shall be delivered to the application through the JOS, which in turn will access these data feeds (static and in-motion) from the service network API's. Any "loop closure" that involves an action (such as directing a weapons system for kill-chain closure) shall be an outbound API call from the application to the JOS, that in turn will access the appropriate service-level API's to execute the call.

Each application will have its own access control and authorization (i.e. personalization based on the user accessing the system), but there will be an additional set of authentication and authorization services provided by the JOS at the API layer. In addition, calls in/out of the service-provided API's will also be secured on a transaction-by-transaction basis through industry-standard token-based API security mechanisms as well as any additional API-management layer functionality (such as publishing available API's, rate-limiting, etc.)

Unique Conditions: Workflow optimization algorithms will be subject to government-conducted Test and Evaluation to determine solution effectiveness and user adoption success.

Standards/Desirements: The result is a CCMD staff that can execute automated command and control during complex real-world scenarios across CCMDs.

Appendix B

Quad Chart Instructions and Evaluation Process

Quad Chart Submission Guidelines

Quad Charts will be submitted through the Vulcan Portal (<https://vulcan-sof.com>). Registration is required to use this website and registration prior to the due date is recommended. The preferred quad chart format is shown below.

The call for Quad Charts can be found on www.vulcan-sof.com at <https://vulcan-sof.com/login/ng2/submission?collectionUuid=f778da4b-84ba-489c-996f-f7022aa7ecdb>


All submissions uploaded to Vulcan must adhere to the following naming convention.

TW-21-0003_Vendor Name_Document Title*

*Document Title should specify whether the file is the vendor profile information
 For Quad Charts, product name should also be provided as follows:

TW-21-0003_Vendor Name_Quad Chart_Product Name

Quad Chart Format

[Company Name & Submission Title] TCA Focus Area [Enter Area of Focus Here]	
<p style="text-align: center;">Technology / Capability Overview</p> <ul style="list-style-type: none"> Provide an overview of the technology and how solution meets the needs of the Apollo TCAs 	<div style="border: 1px solid black; padding: 10px; text-align: center;"> Place photos, illustrations, and/or graphics HERE </div>
<p>Schedule/ ROM Cost/ Approach to IP</p> <ul style="list-style-type: none"> Describe your proposed schedule, cost, what you will provide the government from an IP standpoint Are government purpose IP rights available Yes <input type="checkbox"/> No <input type="checkbox"/> 	<p style="text-align: center;">Technology / Capability Overview</p> <ul style="list-style-type: none"> TRL: (Times New Roman/14 Font) <ul style="list-style-type: none"> Supporting Data Regarding TRL: (Times New Roman/14 Font) Is any part of the solution currently being produced? (Times New Roman/14 Font) Are currently under contract with another government agency for relevant work? (Times New Roman/14 Font) Name, title, email and phone number for vendor TPOC

Additional Quad Chart Instructions

A. The period of performance for any proposed solution should generally be no greater than 48 months.

- B. All submissions and discussions shall be unclassified.
- C. Quad Charts containing data that is not to be disclosed to the public for any purpose or used by the Government except for evaluation purposes shall include the following statement on the cover page: “This Quad Chart includes data that shall not be disclosed outside the Government, except to non-Government personnel (who have signed NDAs) for evaluation purposes, and shall not be duplicated, used, or disclosed – in whole or in part - for any purpose other than to evaluate this submission. If, however, an agreement is awarded to this Company as a result of – or in connection with – the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent agreed upon by both parties in the resulting agreement. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets [insert numbers or other identification of sheets].”
- D. Each restricted quad chart should be marked as follows: “Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this quad chart.”
- E. Please Note: Agreements issued as a result of this multi-phased approach will be done under the other transaction authority, and awarded prototypes may include multiple phases/milestones, and the Government may enter into noncompetitive follow-on Other Transaction Agreements and production contracts as a result of the multi-phase competitive Coliseum approach.

Quad Chart Evaluations

Quad Charts will be evaluated without regard to other submissions received under this announcement. The Government will aim to complete these evaluations and provide notification to selected entities rapidly.

Evaluation criteria are as follows:

- Technical merit of the proposed concept (i.e., the feasibility of the proposed solution).
- Relevancy of the proposed concept/technology/solution to the TCA
- Ability of Vendor to Deliver Proposed Solution
- Agility and maturity of the development process
- All solutions result in government owned or government purpose IP rights (Mandatory)
- Ability to perform Classified Government Work at Impact Level 6 (Mandatory)

Entities whose Quad Charts are favorably evaluated will receive an invitation to either submit a white paper or attend a one-on-one session to pitch and/or demonstrate their proposed technology in person or via teleconference. Additional guidance will be provided to invitees on pitch and demonstration information requirements.

Those companies not selected for a one-on-one to pitch and/or demonstrate their proposed technology, in person at the Coliseum or via teleconference, will not have the opportunity to compete in future phases of the competition or be awarded an agreement.

Appendix C

White Paper Instructions

White Paper Format

- A. Executive Summary: A brief description of the proposed solution.
- B. Solution Description: Describe the unique aspects of your solution and/or technology as it relates to the problem statement.
- C. Value to the Government: It is the Company's responsibility to demonstrate why it is offering the best solution and what value-add this solution will bring to the Department of Defense. This is the respondent's chance to convince the Government as to why it should invest in a prototype. Respondents are reminded this is not a sales pitch and should stay on message to demonstrating why the proposed solution will address the problem statement. As an example, the Company may take a deeper dive how the solution would be used by an operational user, what processes will be used for the agile development of this item and/or what benefits the solution would provide.

Additional Guidelines

- A. White papers should be written in clear, concise, layman style statements.
- B. Limited to 8 pages. (Vendor profile information not included)
- C. Vendor Profile Information: Vendors must provide the following background information with their white paper submissions.
 - Name of Company
 - Company Address
 - Company POC (name, email, phone)
 - Company URL
 - Where is your organization based?
 - Does your Company identify as: Large/Small Business or not a commercial endeavor
 - Does your Company identify as: traditional or non-traditional contractor
- D. All submissions uploaded to Vulcan must adhere to the following naming convention.

TW-21-0003_Vendor Name_Document Title*

*Document Title should specify whether the file is the vendor profile information, white paper, or other. For White paper, product name should also be provided as follows:

TW-21-0003_Vendor Name_White_Paper_Product Name

The white paper submitted for this announcement should fully explain your concept. Additional guidance and instructions will be provided to those who are selected to advance to the white paper process. (The Government intends to use the following criteria when evaluating White Paper submissions, but these may change or be modified as additional information is received. Any changes to the evaluation criteria will be provided with the invitations to participate in the White Paper phase of the program.)

- E. White Paper Evaluation Criteria The criteria for White Papers that is included in this announcement is tentative and what at this time the Government anticipates it will use in the next phase. However, the Government reserves the right to update these criteria based on information gained from industry and other sources. Final criteria will be provided with the request for White Papers based on the evaluation of the Quad Charts in Phase 1.)

- Technical merit of the proposed concept (i.e., the feasibility of the proposed solution).
- Relevancy of the proposed concept/technology/solution to the TCA
- Ability of Vendor to Deliver Proposed Solution
- All solutions result in government owned or government purpose IP rights (Mandatory)
- Ability to perform Classified Government Work at Impact Level 6 (Mandatory)
- Responsivity to IPT comments from Quad Chart Review

Appendix D

One-on-One Discussions

PROCESS

The Government intends to conduct One-on-One Discussions with selected vendors of the final solutions that are being favorably considered after evaluation of Phase II. Additional details for this event will be provided after Phase II. The purpose of this phase is to discover, learn and understand more about the proposed solution, but most importantly, what innovation the proposed solution offers the Government. During the One-on-One Discussions the vendor will present how the proposed solution solves the problems the Government may or may not have thought of yet. The Government encourages invitees to focus on what innovative approach the proposed solution brings that shall be highlighted and considered by the Government and/or what else does the proposed solution offer besides what the Government is asking for? The vendors will be given the opportunity to fully describe with the use of white boards, their approach complete with detailed diagrams and flow charts, describe the process for the agile development of the product and discuss the composition of the team that will be responsible for the delivery of the final product. The vendors will also be prepared to answer questions from the evaluation team on any aspect of their proposed design approach.

Time and Location

The date, time and location of the one-on-one sessions will be provided to those vendors selected to proceed to the one-on-one discussions.

One on One Evaluation Criteria (The criteria for One-on-One Discussions that is included in this announcement is tentative and what at this time the Government anticipates it will use in the next phase. However, the Government reserves the right to update these criteria based on information gained from industry and other sources. Final criteria will be provided with the request for One-on-One Discussions based on the evaluation of the White Papers in Phase 2.)

- Technical merit of the proposed concept (i.e., the feasibility of the proposed solution).
- Relevancy of the proposed concept/technology/solution to the TCA
- Ability of Vendor to Deliver Proposed Solution
- Ability of the vendor or vendor team to adequately and thoroughly describe in sufficient detail their approach and process for the development.
- All solutions result in government owned or government purpose IP rights (Mandatory)
- Ability to perform Classified Government Work at Impact Level 6 (Mandatory)
- Responsivity to IPT comments from White Paper Review
- Cost and schedule for proposed solution

Appendix E

Negotiations

During this phase of the program, the selected vendor will work with the Government to develop the Project Agreement for the initial phases of the program. The Project agreement will contain:

- Detailed Scope of Work
- Complete list of deliverables
- Complete program Schedule
- Defined Milestones
- Complete pricing (with detailed pricing support information)
- Payment milestone with success criteria
- Intellectual Property Assertions