Challenge-Based
Acquisition

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Challenge-Based Acquisition

Using challenges to communicate needed capability, encourage innovation in a minimally prescriptive environment, assess candidate offerings, and purchase solutions.

Fifth Edition

Version 5 written by:

- Stephen W. Roe, MITRE
- Ryan Novak, MITRE
- Justin Raines, MITRE
- Pat Staresina, MITRE
- Marcie Zaharee, MITRE
- Jason Kattman, US Department of Agriculture (USDA)
- Mandie Lee, US Department of Agriculture (USDA)

Version 4 written by:

- Stephen W. Roe
- Mike Arendt, Ph.D.
- Ryan Novak

Version 3 written by:

- Stephen Roe
- Larry Jennings
- Ryan Novak
- Mike Arendt, Ph.D.

Version 2 written by:

- Richard Weatherly, Ph.D.
- Ryan Novak
- Mike Arendt, Ph.D.
- Scott Robbins,
- Martin Edwards
- Dave Seidel

in consultation with Adrian Kaehler, Ph.D.

MITRE

7515 Colshire Drive

McLean, VA 22102-7508

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Executive Summary

This document describes how the Government, to include Civilian Agencies, the Department of Defense, and Intelligence Community, can procure solutions using Challenge-Based Acquisition (ChBA).

ChBA is based on the concept that Government agencies can best perform acquisitions if they present the solution to be acquired as a need (the challenge) and potential providers are free to propose innovative solutions that fill the need. Challenges are issued in terms of operational needs and are accompanied by mechanisms for evaluating proposed solutions and contractual terms for provider participation. Typically, solutions take the form of simplified implementations, and evaluations assess how well a solution satisfies the need. Following the guidelines provided in this document, a well-crafted challenge, accompanied by clear, transparent, and effective assessment methodologies and appropriate contracting vehicles, leads to successful acquisitions.

The Federal Acquisition Regulations (FAR) encourages approaches such as ChBA: "…absence of direction should be interpreted as permitting the Team to innovate and use sound business judgment that is otherwise consistent with law and within the limits of their authority. Contracting officers should take the lead in encouraging business process innovations and ensuring that business decisions are sound…"

ChBA is especially appropriate in situations where the Government's need is urgent and time critical, where no traditional solution seems viable, or where emerging technologies have the potential to provide non- traditional solutions. It does not represent a good approach for large, multi-year major system acquisitions; however, within these types of programs, ChBA may have a role in the acquisition of subsystems or components.

Several acquisition strategies are available for ChBA. The choice of strategy depends on circumstances—acquisition objectives, available time, complexity, technology ambiguity, challenger pool size, and acquisition scope. Some options include multiple award Indefinite Delivery/Indefinite Quantity (IDIQ) contracts for evaluation and procurement, Broad Agency Announcements (BAAs) for technology creation followed by competitive procurement, BAAs exclusively for intellectual property creation, and Other Transaction Authority (OTA) for prototypes and demonstrations with a subsequent transition to a procurement. In all cases, using the guidelines in this document to create a pool of qualified offerors, followed by successive evaluation cycles, should lead to a successful procurement that adheres to all Government regulations.

This document provides a detailed description of ChBA and why it represents a superior mechanism for many acquisitions. It lays out how to construct a challenge and how to fashion the evaluation and compensation mechanisms that accompany it. It proposes acquisition strategies that fit different circumstances and provides several case studies demonstrating successful application of ChBA.

This Fifth Edition of the ChBA Handbook adds three new Appendices: H, I, and J. Appendix H provides a sample challenge which can be used and tailored to exercise Agile development and DevSecOps capabilities. Appendix I provides an end-to-end checklist for preparing and executing a ChBA challenge or demonstration, and Appendix J provides a detailed ChBA use case that was conducted for USDA's Farmers.gov.

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1. Introduction

This handbook provides guidance and procedures for procuring solutions or intellectual property (IP) using Challenge-Based Acquisition (ChBA). With ChBA, a Government agency selects solutions on the basis of demonstrated capability rather than on the basis of written proposals alone. When a viable solution is demonstrated in real-world operational conditions, the Government needs a streamlined process to swiftly procure it for subsequent testing, fielding, or continuous capability improvement. ChBA, supported by the Federal Acquisition Regulations (FAR) and Other Transaction Authority (OTA), offers one such approach to greater acquisition efficiency.

Section 2 of this handbook defines ChBA and breaks out the process into nine major steps for completion. The description of each step, in turn is divided into three sections: Define (self-explanatory), Execute (information on how to implement the ChBA step), and Succeed (tips that can provide keys to success for executing the ChBA step). Section 3 provides detail on how to execute ChBA using acquisition strategies such as Broad Agency Announcements (BAAs) and Indefinite Delivery, Indefinite Quantity (IDIQ) contracts, or using OTA as part of a Consortium Model. Section 4 presents high-level recommendations for implementing ChBA.

The appendices include a primer on the interaction diagrams used to depict each of the three ChBA acquisition strategies, a white paper on the basis for ChBA as rooted in the FAR, information on how to transition a traditional prize contest to a procurement outside of the ChBA construct, and three ChBA case studies: the Joint Improvised Explosive Device Defeat Organization / Joint Improvised Threat Defeat Organization (JIEDDO/JIDA) Counter-IED Culvert Challenge, the Army Cyber Innovation Challenge using OTA, and a Case Management System example using ChBA and OTA. The case studies contain information on the case background, problem set, acquisition approach used, results/outcomes from the ChBA, lessons learned or best practices from the ChBA, and reference material that may include primary source documents used during the ChBA such as the challenge event descriptions and challenge evaluation criteria.

1.1 Background

Incentive prize and challenge competitions have been used for centuries to encourage radical innovation in technology and solutions to particularly difficult problems.[1] The Federal Government understands the value of using incentive prize and challenge competitions to stimulate cutting-edge innovation given the depth and breadth of critical public sector missions.[2] The America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007 provides additional authority for Government agencies to engage in high-risk, high-reward research to meet critical national

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[1] Hendrix, Michael. 2014. *The Power of Prizes: Incentivizing Radical Innovation*. U.S. Chamber of Commerce Foundation. Available at: https://www.uschamberfoundation.org/sites/default/files/article/foundation/Power%20of%20Prizes_0.pdf.

[2] White House Office of Social Innovation and Civic Participation. 2016. *Prizes and Challenges*. Executive Office of the President. Available at: https://www.whitehouse.gov/administration/eop/sicp/initiatives/prizes-challenges.

needs. In pursuit of this work, the COMPETES Act specifically calls for the increased use of incentive prize and challenge competitions as one means of encouraging the development of cutting-edge solutions.[3]

After executing an incentive prize or challenge competition under the COMPETES Act or other authorities, the Government often wants to purchase and field the winning solution(s) but does not do so expeditiously. Reasons for the inefficient transition from prizes to procurements include differing interpretations of the current FAR, Agency Specific Regulations, and/or OTA by program managers (PMs) and contracting officers, as well as the overall methods by which incentive prize and challenge competitions are structured, executed, evaluated, and documented. When these two factors are combined, transitioning an incentive prize or challenge competition result to a Government procurement becomes inefficient and arduous.

One approach to successful transition includes streamlining the move from an incentive prize and challenge competition to a follow-on acquisition by using ChBA from the start. ChBA takes the Government-endorsed incentive prize and challenge competition concept a step further by making it part of the procurement process (FAR or OTA). ChBA incorporates the creative thinking, innovation, and efficiencies that result from Government incentive prize and challenge competition by bringing the approach under the umbrella of the federal acquisition process from the start. This allows the Government to use challenges as the core of its evaluations, and, most important, to test and purchase quantities of products beyond prototypes without having to make the transition from the incentive prize or challenge competition to a FAR- or OTA-based procurement activity.[4] Streamlining is delivered through foresight, communication, simple pre-planning, and developing the incentive or challenge competition strategy in parallel with the follow-on acquisition strategy. The strategic use of the incentive prize or challenge competition results to inform the follow-on acquisition satisfies the FAR's competition and evaluation requirements simultaneously, thus streamlining the acquisition process. Requiring offerors to submit a proposal or solution which, if awarded, would be contractually binding, naturally deters unqualified offerors and streamlines the evaluation process through this initial vetting.

By properly structuring an incentive prize or challenge competition within the formal acquisition's source selection framework or as part of the overall acquisition's scope, the Government can evaluate proposed solutions and refine, test, and determine quantity requirements. If the scope is properly structured up-front, then there is no need for the actual "transition" or start-up of a new, formal acquisition – streamlining the process and saving time. By doing so, the Government leverages the benefits of real-world competition and evidence-based results that can augment or supplement contractor's proposals while streamlining and economizing the Government's evaluation process.

1.2 A Case for Action

Federal acquisition traditionally follows a lengthy, serial process that generates megabytes of documentation in response to gigabytes of regulations, policies, and directives. Mission needs are translated into technical requirements, then into system specifications and contract deliverables. The

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[3] Office of Management and Budget. 2012. *Prize Authority in the America COMPETES Reauthorization Act*. Executive Office of the President. Available at: https://cio.gov/wp-content/uploads/downloads/2012/09/Prize_Authority_in_the_America_COMPETES_Reauthorization_Act.pdf.

[4] The MITRE Corporation. 2014. *Challenge-Based Acquisition*. The MITRE Corporation. Available at: https://www.mitre.org/sites/default/files/publications/pr-13-3525-challenge-based-acquisition-handbook-2nd-ed-9-30-2015.pdf.

result is often a single performer being funded to develop a solution that meets the minimum specifications. Broader innovation is stifled, and private sector competition focuses on writing the best proposal rather than developing the best solution. Many times, prizes and ChBA are a better approach.

Despite the best efforts of federal programs to mitigate risk through verification and validation using the systems engineering process, even a perfectly executed research project can still produce a result that is "late to the fight," operationally ineffective, or unsuitable, even if it addresses the Request for Proposal's (RFP's) stated requirements. When this happens, agencies are back at square one, as only a single contractor was selected to perform and fulfill the Government's requirements.

Furthermore, most contracts are awarded using Government source selection evaluations based on industry paper proposals rather than "actual" product performance. This creates an incentive for industry to produce flawless documents with highly optimistic cost, schedule, and performance projections that meet RFP requirements. As a result, performance during program execution often falls short of the Government's expectations, and cost and schedule overruns become nearly inevitable.

Challenges and prize contests differ from traditional development activities that fund participants for their time and materials. Federal resources are instead devoted to developing an infrastructure and/or awards that incentivize external parties to devote their own resources to overcoming the stated problem or addressing the capability sought. When developed and managed properly, challenges and prize competitions can stimulate significantly more innovation than would be possible through the implementation of traditional acquisition strategies and approaches. The concept is not new, but its usage within innovation programs and as part of the federal acquisition process has rapidly increased over the past several years.

Merging the prize and challenge concept directly with the federal acquisition process is also feasible and has already proven successful in a limited number of case studies. The Trump administration can further refine and embrace ChBA as a better way to incentivize and leverage the private sector to solve national problems for both defense and civilian agencies while simultaneously enhancing the effectiveness of federal research programs.

ChBA requires both industry and the Government to depart from their normal way of doing business. Innovation, partnership, communication, and collaboration are paramount in effectively executing a successful ChBA.

In traditional acquisition, the Government communicates its needs in a specification, where fulfillment of the specification equates to meeting mission needs. However, the specification could be under-constrained, over-constrained, inaccurate or simply inappropriate for the actual need. Any of these conditions can result in the project's lasting longer, costing more than anticipated, or being unachievable. It is important to recognize that the specification may unduly drive design and possibly limit the Government's ability to obtain the best outcome. To avoid these problems and implement ChBA successfully, the Government must depart from the norm, demand more innovation from contractors, and be more innovative itself.

"Contracting officers should take the lead in encouraging business process innovations and ensuring that business decisions are sound."[5] This applies to the Acquisition Team as well. The FAR allows for such

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[5] FAR 1.102-4: Role of the Acquisition Team.

innovation (see FAR 1.102(d), 1.102-3, and 1.102-4(e)). While OTAs are known to be flexible, the FAR allows for flexibility and innovation as well. The Acquisition Team, and more specifically, the Contracting Officer must use the FAR and applicable rules, laws, regulations, and policies to seek innovation. The Government must also allow industry to innovate within a well-defined, outcome-based framework. ChBA requires Government PMs and contracting officers to foster innovation within their organizations – to identify and implement innovative approaches like ChBA, to improve performance, shorten schedules, and reduce costs.

Industry also takes on a new role in ChBA: one that more closely mirrors how industry normally develops and brings a product to the commercial market. In the commercial marketplace, industry independently develops a solution to address a given capability need. This approach contrasts with the traditional federal acquisition process where industry responds to the Government-provided set of detailed specifications and requirements. "By defining a problem and seeking a solution, without specifics on how to proceed, non-Government organizations can be as creative or unique as they would like."[6] In the former case, industry bears most of the risk, while in the latter case, the Government bears the risk.

Departing from the norm of traditional federal acquisitions, ChBA does not presuppose one specific solution; instead, it demands that industry propose innovative solutions. Consequently, the Government must not prescribe a specific technological path that industry must follow but must rather present its requirements in the form of general challenge objectives that proposed solutions must meet. Industry then applies its expertise to determine the best technical approach to meet the objectives within the schedule and cost constraints provided by the Government.

Furthermore, industry and Government must cooperate with both traditional and non-traditional entities, as no one company has a monopoly on innovative solutions. ChBA seeks the best technology to address Government needs and, therefore, both industry and the Government must be willing to cooperate with any individuals or organizations that could contribute to a solution. The White House's Innovative Contracting Case Studies highlighted this, stating "…the standard procurement processes that agencies rely on to meet most of their needs may remain highly complex and enigmatic for companies that are not traditional Government contractors. Many of these companies can offer Federal agencies valuable new ways of solving long-standing problems and cost effective alternatives for meeting everyday needs."[7]

Finally, industry must dedicate Independent Research and Development (IR&D) Funding (see FAR 31.001 and 31.205-18(a)), as ChBA encourages this to develop solutions that meet the Government's challenge performance criteria, and ultimately, the solution sought. While the Government may choose to fund organizations to participate in challenge events, it may choose not to fund any portion of initial solution development.

1.3 Scope

Challenges are most frequently used to draw attention to excellence, spur market development, or encourage industry networking. ChBA incorporates innovation, unconstrained thinking, and efficiencies

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[6] Booz, Allen, Hamilton & The Partnership for Public Service. 2016. *Innovation is a Contract Sport* Available at: https://www.govexec.com/media/gbc/docs/pdfs_edit/020916cc1.pdf.

[7] Office of Science and Technology Policy. 2014. *Innovative Contracting Case Studies*. Available at: https://acc.dau.mil/adl/en-US/740685/file/82150/innovative_contracting_case_studies_2014_-_august.pd%2020140821.pdf.

that result from Government challenges and does so under the umbrella of the federal acquisition process. This allows the Government to use challenges as the core of its evaluations, pay vendors for participation, and most importantly, test and purchase quantities of items beyond simply prototypes.[8] ChBA is a mechanism to:

- Communicate needed capability
- Encourage innovation in a minimally prescriptive environment
- Assess candidate offerings based on demonstrated capabilities
- Purchase proven solutions.

Prior to employing ChBA, the Government must determine whether a ChBA approach is appropriate to address its needs. ChBA is most effective in programs that possess certain "sweet spot" characteristics for cost, schedule, and performance. Specifically, the program should:

- Have rapid schedule demands or respond to an urgent requirement
- Respond to incremental capability needs
- Be small from an Acquisition Category (ACAT) perspective
- Seek to acquire a sub-system or component of a larger system or acquisition
- Depend on emerging or uncertain technology
- Expect proposed solutions to be of a mid-to-high Technology Readiness Level (TRL)
- Be able to test proposed solution(s) in a simulated environment
- Seek to attract participation of non-traditional innovation sources
- Expect a short product life cycle or rapid refresh rate
- Have a clear acquisition quantity and price
- Require simultaneous solution discovery by industry and Government
- Wish to pay only for results.

The Acquisition Team should evaluate the current state of its program against the characteristics listed above. If a program does not possess at least *some* of these characteristics, a ChBA approach may not yield significantly better results than a traditional acquisition approach.

1.4 Objective

Obtaining needed capabilities for the Government is a team effort. FAR 1.102(c) defines the Acquisition Team as "all participants in Government acquisition including not only representatives of the technical, supply, and procurement communities but also the customers they serve, and the contractors who provide the products and services." The Department of Defense's (DoD's) 2017 *Other Transaction Guide for Prototype Projects* defines the team as including the Project Manager, end users, a warranted Agreements officer and "…subject matter experts such as legal counsel, payment, and administrative offices to advise on agreement terms and conditions."[9]

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[8] United States Department of Defense. 2017. *Other Transactions Guide for Prototype Projects*. Available at:
http://www.acq.osd.mil/dpap/cpic/cp/docs/OTA_Guide%20(17%20Jan%202017)%20DPAP%20signature%20FINAL.pdf

This document aims to guide and empower Acquisition Teams as they innovate to rapidly, efficiently, and correctly satisfy needs as encouraged by FAR 1.102-4(e). The FAR outlines procurement policies and procedures used by members of the Acquisition Team. If a policy or procedure, or a strategy or practice, is in the best interest of the Government and is not specifically addressed in the FAR, nor prohibited by law (statute or case law), Executive Order, or other regulation, members of the Acquisition Team should not assume it is prohibited. Rather, absence of direction should be interpreted as permitting the team to innovate and use sound business judgment that is otherwise consistent with law and within the limits of its authority. Contracting officers should take the lead in encouraging business process innovations and ensuring sound business decisions.

Moreover, in cases where ChBA is used under OTA, Acquisition Teams should refer to the relevant OTA statutes, regulations, and agreements as stipulated in the previously cited Other Transaction guide. OTA offers much more flexibility than does a FAR-based contract, in essence operating from a "clean sheet of paper." The FAR and other federal regulations do not apply when executing OTA and offer more flexibility to the Government when negotiating agreements while "…lower[ing] barriers to attract non-traditional defense contractors and increase access to commercial solutions…." However, while this unstructured environment provides many benefits to both the Government and industry, the Government Acquisition Team must possess a "…level of responsibility, business acumen, and judgment" that enables them to negotiate "…agreements that equitably reflect the risks undertaken by all parties to the agreement…."[10]

1.5 Stakeholder Applicability

ChBA relies on a close and transparent relationship between Government and industry. This document guides the Government on conducting acquisitions based on challenges. It also helps industry understand how to engage that process and increase the likelihood of supplying viable solutions to the Government. How sections of this document apply to each stakeholder community is suggested below. Table 1-1 outlines the relationship between the stakeholder communities and the nine major steps of ChBA.

Table 1-1. Stakeholders Responsible, Consulted, and Informed for ChBA

R – Responsible C – Consulted I – Informed	Requirements Community	Program Management Community	Contracting Community	Testing Community	Operational Community	Industry
Understand Acquisition	C	R	I	I	C	
Design the Challenge	C	R	I	C	C	
Plan the Contract	I	C	R	C	I	
Communicate Capability Needs	C	C	R	I	C	I
Establish Initial Pool	I	C	R	I	I	I
Conduct Challenge Event	C	R	I	C	C	R
Evaluate Challenge Results	C	R	C	C	C	I
Reduce Challenger Pool	I	C	R	C	C	I
Procure Solutions	I	C	R	I	I	R

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[10] IBID.

Requirements Community – assesses where capability gaps may currently exist and determines that a materiel solution is needed to fill that gap. This community works with the program management community to translate the capability gaps into an executable challenge definition. In ChBA, the challenge captures and communicates the requirement.

Program Management Community – performs management functions in support of a program or project office. Members include PMs, Deputy PMs, Engineers, Technical Experts, and their support staff. The Program Management community executes the ChBA from initiation to completion, and determines the acquisition strategy that best suits its needs based on program constraints and expected outcomes. Community members are aware of all the contracting tools and strategies available to them for developing and executing their acquisition strategy and harmonizing them with the technical aspects of the ChBA.

Contracting Community – is part of the contract development and execution process. It includes Contracting Officers, Administrative Contracting Officers, Contracting Officer's Representatives (CORs), Contract Specialists, Contract Administrators, and relevant support personnel. The contracting community plans and executes the contract that implements the acquisition strategy set by the program.

Testing Community – supports the test and evaluation process, and includes personnel responsible for developmental and operational test and evaluation processes. The testing community integrates test and evaluation criteria into the challenge event process to ensure that a proposed solution receives testing credit for as many test and evaluation requirements as practicable.

Operational Community – will become the end-users of the solutions procured following the ChBA. Community members assess solutions during the challenge event and provide input for challenge design and procurement decisions. The operational community fields the solutions procured through the ChBA process.

Industry – consists of private-sector entities that may respond to a Government inquiry for information, participate in a challenge event, or produce solutions. Members of this group include small, medium, and large corporations, non-profit organizations, academia, and entrepreneurs. Industry responds to requests for white paper proposals and, if selected, participates in the challenge event. A company that prevails in the challenge expects to sell products or intellectual property to the Government in accordance with the terms of the specific ChBA. Industry members should read this document to understand what the Government expects of them in a ChBA.

1.6 Barriers to ChBA Implementation

The Government should consider the following considerations before pursuing a ChBA:

The Need for Trust – ChBA is a rewarding and demanding technique. It requires risk taking by industry and intellectual leadership from the Government. Industry has the economic bottom line to provide focus for risk-reward tradeoffs, but Government stakeholder communities lack such a focusing mechanism. If there is uncertainty or mistrust, then each Government stakeholder community will naturally move to reduce local risk at the possible expense of global good. For this reason, successful ChBAs result from a trusting and cohesive Government team and successful collaboration with industry. In the absence of such trust and cohesion, specifically between the contracting and program management communities, a ChBA approach may be inappropriate.

Uneven Appreciation of the ChBA Concept – Leaders may see the utility of ChBA while their supporting staff may not. Office staff charged with creating contracting artifacts use a set of familiar tools and techniques built through long experience. From their perspective, ChBA may not fit well into their customary structures, particularly with respect to use of OTA. This may cause office staff to push ChBA tasks to the bottom of their stack in favor of more familiar work.

Conflict of Cultures – A lack of appreciation for the contracting community situation by the technical community can lead to unwarranted mistrust and impatience. The complex body of acquisition law and regulation is overwhelming, yet it constitutes the daily environment for contracting professionals. These professionals usually choose to navigate this labyrinth based more on experience and contractual precedent than on taking risks and pursuing innovative acquisition approaches such as ChBA.

Intellectual Property (IP) – IP considerations play a vital during the ChBA process. Some key questions that acquisition staff must address include: What IP is needed, and when is it needed for my program? Does my program intend to purchase a complete solution, a prototype, or just the IP? What IP is required to field, maintain, and upgrade a chosen solution? Given the complexity and level of detail associated with issues surrounding IP, Section 1.7.7 focuses exclusively on this topic.

1.7   Keys to Overcoming Barriers to ChBA Implementation

The following actions are essential to overcoming barriers when pursuing a ChBA.

1.7.1   Stack the Acquisition Team for ChBA

ChBA is an innovative acquisition approach that requires team members who are open-minded, have the breadth of expertise to develop the necessary strategy, and the depth of technical expertise to execute it from start to finish. When building a ChBA team, it is important to consider including members who:

- Have an unconstrained approach to solutions and a strong ability to think creatively
- Accept and believe in the ChBA process
- Possess both breadth and depth of technical and business experience in their area of expertise
- Champion collaboration and proactively engage with other team members
- Are highly approachable and accessible to the whole team
- Are willing to work on the acquisition as a function of daily duties
- Make ultimate success of the acquisition their highest priority.

1.7.2   Stand up an Innovation Cell Focused on ChBA

An innovation cell is a distinct group of contracting professionals within a given contracting shop who focus specifically on the implementation and use of ChBA. These individuals should volunteer or be nominated for participation in the cell and should receive incentivizes for success. Under the guidance of senior leadership, the cell would work to identify which upcoming key acquisitions may be best suited for ChBA.

An innovation cell can help implement innovative contracting approaches and overcome aversion to risk and a risk-averse culture because it represents the literal creation of a safe space within the contracting office for the express purpose of executing innovative approaches. By segregating the ChBA work from

other contracting work in the same organization, the rules of the road for process execution, level of engagement by senior leadership, and dedication by the personnel involved can all change in a way deliberately tailored to facilitate success.

1.7.3 Conduct Contracting Innovation ChBA Pilots

ChBA pilots create an ideal environment to capture lessons learned, the ChBA process flow, and key ChBA templates that a given agency may use to execute a ChBA. The results of the ChBA pilot effort may be shared agency-wide or across the broader federal enterprise. Individuals who see exactly how a successful ChBA pilot was conducted and are given the accompanying artifacts will have reduced aversion to risk and less fear of using new approaches.

1.7.4 Create a ChBA Champion

A ChBA Champion is a senior leader within the contracting organization who:

1. Understands the ChBA acquisition approach

2. Embraces and is committed to the use of ChBA

3. Promotes and encourages the use of ChBA within his/her organization.

Designating a ChBA Champion will help create an environment that enables personnel throughout the organization to feel comfortable using this approach. When senior leadership is openly supportive of and knowledgeable about ChBA, staff in the middle and lower tiers of the organization can have confidence that their use of ChBA will not meet resistance but instead receive support and recognition.

1.7.5 Empower Leadership to Leverage ChBA

Senior leadership within the organization must be empowered to implement ChBA. More specifically, they must have the authority and control over people, processes, and resources to roll out ChBA across their organization. When leaders are empowered to leverage ChBA, they can dictate the ChBA process within their organization. Under this scenario, leadership then has the ability to set the right conditions for success, create incentives, reduce fear through encouragement and positive communication, act as a champion for ChBA, and dedicate the resources (people, processes, tools, and time) to ensure that ChBA is well understood, effectively supported, and successfully implemented.

1.7.6 Develop ChBA Cases and Promote Success Stories

Throughout the acquisition process, communication with all stakeholders on where ChBA approaches have been used and how they have succeeded is vitally important. Development of use cases can be described as the creation of step-by-step examples where ChBA has been used within a particular agency or elsewhere in the Government. These use cases should clearly describe the problem set, why and how ChBA was used, all the relevant reference documents and templates (such as process flows, acquisition plans, statements of work, etc.), and the results achieved via ChBA. Once these use cases are documented, ChBA successes must be widely shared across all relevant acquisition stakeholders for a given organization or, more strategically, across the entire acquisition community.

1.7.7 Address IP from the Beginning

Industry and academia may achieve great success in innovation and bringing leading-edge technologies and capabilities to bear on the Government's needs, but the ability to create and demonstrate innovative capabilities does not guarantee the ability to mature them into a set of production-ready and scalable outcomes. Conversely, those organizations with extensive experience in providing highly scalable and sustainable production capabilities may not possess the level of innovation and out-of-the-box development capability necessary to solve the Government's problems. ChBA provides a means of leveraging the best of both types of participants. The Government can establish challenges to discover what is possible and to identify IP that the Government can acquire.

ChBA requires that industry be prepared to negotiate potential IP licenses with the Government. Thus, industry must identify which of its solutions are derived through exclusive use of IR&D funding versus those developed at partial or full Government expense. Such a distinction is important because the source of funding dictates the type of licensing rights available to the Government, to include Government Purpose Rights (GPR), Unlimited Rights, Limited Rights, or Restricted Rights.

If an agency acquires GPR in IP, it may use these rights in support of a follow-on or on-going acquisition (using competitive or other than competitive procedures) and may provide the IP to a third party as Government Furnished Information (GFI) or Government Furnished Equipment (GFE). While the DoD Federal Acquisition Regulation Supplement (DFARS) contains specific language on the use of GPR in technical data and computer software in DoD acquisition,[11] civilian agencies may be able to negotiate similar rights as part of an agreement for participation in an incentive prize or challenge competition prior to execution of the event. All military departments or civilian agencies considering the use of an incentive prize or challenge competition should discuss with their General Counsel (GC) the most effective strategy for securing any IP that may be under consideration for transition to a follow-on or on-going acquisition.[12]

Early identification of the desire to obtain GPR in technical data and computer software can help to facilitate the streamlined acquisition of solutions resulting from an incentive prize or challenge competition. For example, in incentive prize or challenge competitions conducted under the DoD Prize authority, GPR may be negotiated up front as part of the terms and conditions for participation. The DoD may then provide this IP to another vendor as GFI or GFE in support of a Government purpose (such as the execution of a contract). For example, this may be a desirable strategy if a vendor that has developed a solution and participated in a prize challenge does not have the interest or capacity to mass produce and field its solution. In these cases, a vendor may instead choose to exit the Government market after a solution has been identified and purchased while allowing others more familiar with federal acquisition to produce and support the solution over its life cycle.

Secondary challenge events can provide opportunities for the Government to transition IP as GFI to a set of participants to determine who can best mature the IP into a sustainable and scalable product. Therefore, the Government must anticipate the need for IP rights and ensure that such rights are available for the acquisition and sustainment of the system or product throughout its lifecycle. The Acquisition

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[11] Defense Information Systems Agency. 2016. *Data Rights*. Available at: http://www.disa.mil/about/legal-and-regulatory/datarights-ip/datarights

[12] Tereschuk, George B. Undated. Government Purpose Rights in Technical Data and Computer Software in DoD Acquisition. Available at: www.wifcon.com/anal/GPR_TD.doc*.*

Team must ensure that all IP rights and issues are identified early, approved by legal counsel, and resolved during the development of an acquisition strategy and solicitation prior to contract or agreement award. These rights include any applicable licenses for technical data, computer software, and computer software documentation as required by the Government following execution of the challenge event.

2. Major Steps in ChBA Execution

Challenges conducted for acquisition encompass pre-challenge and challenge activities, as depicted in Figure 2-1.
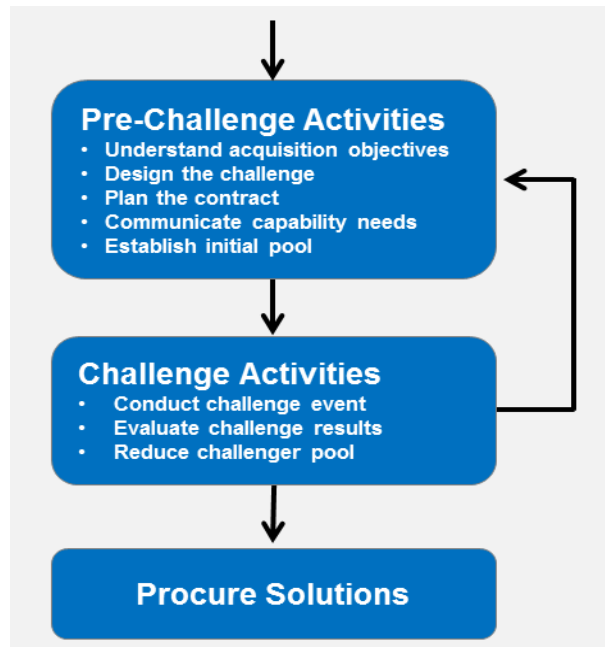
Figure 2-1. Challenge Strategy

This section explains and illustrates the nine major steps in the ChBA process. It breaks the description of each step into three subsections: Definition, Execution, and Success.

- The Definition subsection establishes what the step entails.
- The Execution subsection presents information on how to implement the step.
- The Success subsection offers tips that can provide keys to success for executing the step.

2.1 STEP 1: Understand Acquisition Objectives

2.1.1 Definition

The Acquisition Team must understand what the Government needs in terms of a missing capability or an unsatisfied gap in a current capability and must be able to express this understanding using concepts and terms from the capability domain. The description of the objectives should focus on what is needed and not on how the need should be addressed. This is not a license to be vague. Descriptions of a sought capability can be very detailed and specific but should avoid specifying a solution. Statements of sought capability that stray into the specification of a solution can constrain industry and limit innovation, thereby negating the benefits of the ChBA approach.

2.1.2 Execution

Before acquisition planning can begin, the Government must understand the objectives of the acquisition and the applicability of ChBA. If the Government intends to pursue a ChBA, then it can create a supporting Acquisition Strategy and Acquisition Plan consistent with the approach.

Acquisition Strategy – For FAR-based acquisitions, FAR 34.004, OMB circular A-109, and Department of Defense (DoD) Instruction 5000.02 require that programs have an acquisition strategy: a business and technical management approach designed to achieve program objectives within imposed resource constraints. The strategy is the framework for planning, directing, contracting for, and managing a program.

Similarly, for an OTA-based approach, the Acquisition Team should consider the following questions:

- **What is the capability sought?** Describe what the Government needs, but not how to meet that need.
- **How should the sought capability be described?** Descriptions can be textual or physical. Text descriptions describe the capability, actions that cannot be performed without the envisioned capability, where the capability will be employed, and/or how it will be operated. Physical descriptions take the form of challenges, enabling industry to learn about the needed capability by studying the challenge design. If a solution can meet the challenge, then that solution is the needed capability.
- **When will the challenge take place in relation to the contract or agreement award?** Challenges can be used at various points throughout the contracting process. Factors influencing challenge timing include the level of understanding of the needed capability and the desired outcome. Section 3 contains further discussion on the timing of challenges in relationship to contract award.
- **Will offered solutions be evaluated iteratively, in a graduated process, or during a single event?** An iterative approach demands that the strategy describe and explain when the challenge(s) will end due the identification of a satisfactory solution; a graduated approach demands that the strategy explain the advancement of an offeror and the associated solution. Both explanations must be easily understood. Section 2.2.2 describes the iterative and graduated processes.
- **What is the compensation model?** If the Government will compensate offerors for participating in the challenge, the strategy should discuss this in detail. If compensation will not be offered, this should also be stated. Section 2.2.2 describes compensation models.
  - **How will IP ownership be addressed?** The Acquisition Team must ensure that all relevant Technical Data and Computer Software and related license rights required to field a solution are available to the Government. Thus, the team must identify and resolve IP rights issues prior to contract award.
  - **How will the solution be tested, fielded, and supported?** It is critical to evaluate the entire lifecycle of the product from testing and prototyping through fielding and lifecycle support. The Acquisition Team must weigh how can one or more challenges be used to

satisfy these areas. Taking the entire lifecycle into consideration supports a holistic acquisition strategy and must be considered during acquisition strategy development.

Acquisition Plan – FAR 7.102 requires acquisition planning, as described in FAR 7.105. The plan documents the specific actions necessary to execute the approach delineated in the Acquisition Strategy.[13] For a ChBA using a FAR-based approach, the Acquisition Plan must additionally address these questions, and for an OTA-based approach, the Acquisition Team should consider the following questions as part of the follow-on acquisition planning process:

- **What contract type will be used in the selection process?** The plan should be specific as to where the challenge is in the process to ensure appropriate decision points are available. For an OTA-based acquisition, the Acquisition Team must consider the OTA agreement terms and conditions that will be used regarding any follow-on procurement activity.
- **Should industry expect to be compensated for participation in the selection process? If so, what mechanism for compensation will be used?** Vendors must be motivated to offer their best solutions, because there is the longer-term potential for monetary gain. In an IDIQ-based approach, this compensation may be included as part of a given Task Order (TO). In an OTA-based approach, the OTA agreement must include any provisions governing compensation for challenge participation.
- **When a solution is found, what contract type will be used to obtain the desired quantity?** The overall strategy must be well understood to ensure the contract type and scope will produce the Government's desired outcome. In an IDIQ-based approach, the contracting type would be pre-determined prior to execution of the challenge event. In an OTA-based approach, the Government may award a production contract as per the provisions of Section 815, Amendments to Other Transaction Authority, of the National Defense Authorization Act ("NDAA") for Fiscal Year 2016 ("FY16").[14]

2.1.3 Success

Requirements Flexibility – In traditional acquisition, the Government communicates its needs in a specification (such as a Statement of Work), assuming that fulfillment of the specification equates to meeting mission needs. However, the specification could be under-constrained, over-constrained, inaccurate or simply inappropriate for the actual need. The fundamental flaw in this process is the failure to recognize that the Government-dictated specification drives design constraints and possibly limits the Government's ability to obtain the best solution to address its need. To avoid these problems and implement ChBA successfully, the Government must allow industry to innovate within a well-defined performance-based framework. Therefore, Government agencies should:

Assess if an incentive prize or challenge competition meets the agency's particular needs (see *From Incentive Prize and Challenge Competitions to Procurement* in Appendix C) or if the use of a ChBA or other

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[13] Plan documentation requirements are addressed in FAR 7.103 and DFARS 207.103 or other agency supplements.

[14] C5 Technologies. 2016. *Section 815 of 2016 National Defense Authorization Act*. Available at: http://c5technologies.org/wp-content/uploads/2016/03/Section815_MEMO.pdf

innovative acquisition approach would prove more appropriate (also see *Innovative Contracting Case Studies*).

Consult *early* with the Contracting Office and GC to discuss the statutory, regulatory, and legal requirements and gain their understanding of and support for the proposed approach and next steps.

Plan ahead and design the incentive prize or challenge competition structure to enable the efficient execution of a follow-on acquisition for the winning solution(s) under the FAR, Agency Specific Regulations, and/or OTA as appropriate. By planning the follow-on acquisition in parallel with execution of the incentive prize or challenge competition, agencies can reduce duplication of effort and streamline the follow-on source selection process through inclusion of incentive prize or challenge competition results.

Embrace the flexibility that the FAR gives to Contracting Officers (COs), as they have "…the authority to the maximum extent practicable and consistent with law, to determine the application of rules, regulations, and policies, on a specific contract."[15] Furthermore, the FAR mandates that "Contracting officers should take the lead in encouraging business process innovations and ensuring that business decisions are sound."[16] The alternatives presented herein are wholly consistent with the FAR and with ensuring good business decisions are executed.

Consider the level of funding and resources needed to transition a solution from an incentive prize or challenge competition to a follow-on procurement. Agencies should undertake a preliminary assessment of the resources necessary for this transition, the key stakeholders, and the impact that resource constraints may have on the transition from an incentive prize or challenge competition to a procurement.

Clearly articulate the plan to use the incentive prize or challenge competition results to support the follow-on source selection decision per FAR 7.105(b)(4), while addressing all acquisition considerations and benefits this approach would generate per FAR 7.105(b)(5). Using the results to support the source selection decision and potentially even testing can become part of an acquisition streamlining plan as described in FAR 7.105(a)(8). Furthermore, agencies may consider using the results of a prize challenge to further refine requirements and acquisition strategies as described in FAR 7.103(t).

2.2 STEP 2: Design the Challenge

2.2.1 Definition

Design the Challenge – The Government must express the goals and parameters of the challenge in a transparent and understandable way. The challenge should allow challenge participants to prove that their solution is the capability sought by the Government. This forces the Government to design a challenge that, if criteria are met, proves that the offered solution provides the needed capability.

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[15] FAR Subpart 1.1 – Purpose, Authority, Issuance. Available at:
https://www.acquisition.gov/sites/default/files/current/far/html/Subpart%201_1.html.

[16] IBID.

2.2.2 Execution

There is no single strategy for design of a challenge. This section provides options and guidance for structuring a challenge, deciding how challengers can be compensated for challenge participation, and establishing the relationships among testing, evaluation, and challenge execution.

Iterative and Graduated Challenge Strategies – The ChBA process can use an iterative or a graduated event structure. An iterative strategy, depicted in Figure 2-2, repeats a challenge event until a viable solution is revealed or the Government abandons pursuit of the capability. From one iteration to the next, Government understanding of industry capability improves while industry understanding of Government needs increases. If the Government determines that industry understanding has improved, then the next iteration can offer the challenge opportunity again. However, increased Government understanding of the solution space may necessitate that the agency adjust the challenge evaluation criteria or challenge design.
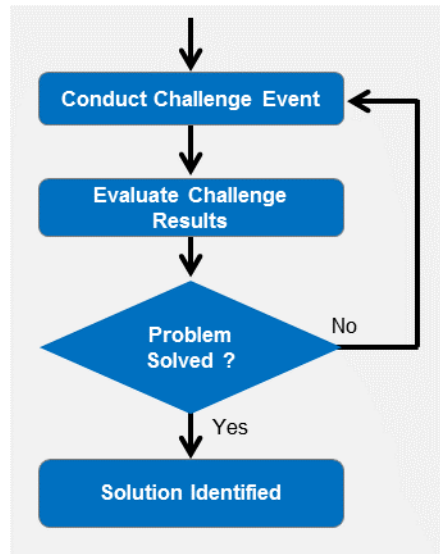
Figure 2-2. Iterative Challenge

In general, the Government does not initially know how many iterations will be needed to demonstrate the desired capability. This can make intermediate and long-term schedule planning difficult. However, an iterative strategy is an acquisition-design strength, permitting a continuous assessment of solution quality and allowing execution to occur quickly and efficiently when the needed capability is demonstrated.

The graduated strategy differs from the iterative strategy in that it uses a fixed set of different and often escalating challenges to find a capability. The graduated approach, depicted in Figure 2-3, offers an increasing scale of opportunities leading to a final challenge event that proves the existence of the needed capability. Generally, the rigor and specificity of the challenge increase with each step. Equally likely, each successive challenge event will require more resources to execute for both the Government and industry.
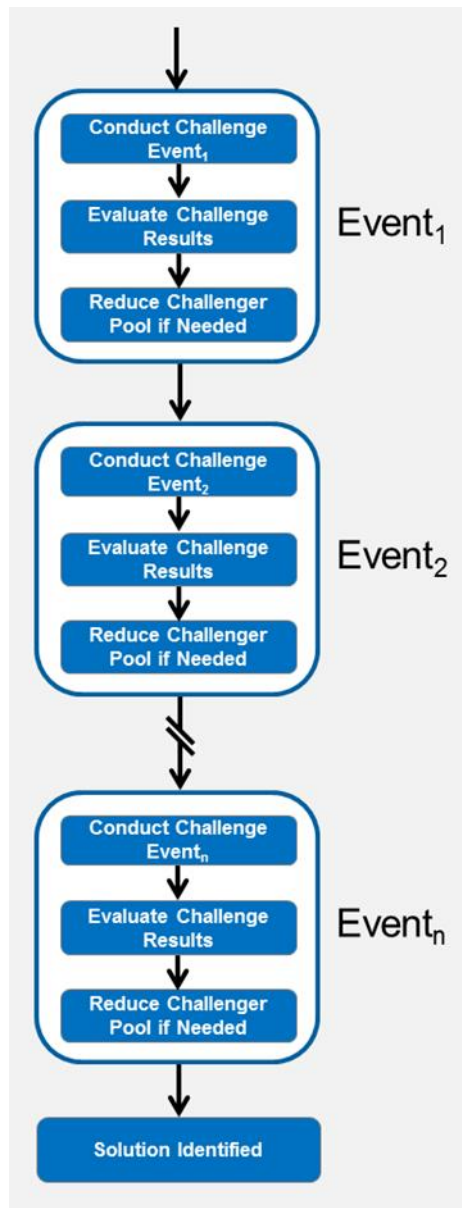
Figure 2-3. Graduated Challenge

A graduated process has an arbitrary but fixed number of steps. The number of steps is an acquisition design decision and depends on factors such as availability and capacity of testing assets, ability to decompose capability demonstrations into standalone parts, and cost or schedule constraints. After each graduated challenge step, the results are analyzed, and a subset of the participants is selected for the next challenge event. The Government hopes that after the final challenge event it will have determined that one or more viable solutions exist. If, after any event in the graduated process, no viable solutions are available, then the Government may abandon subsequent events or redesign the challenge and present it again.

The iterative and graduated strategies are abstractions. ChBA can also use a blended strategy as depicted in Figure 2-4. Here, a graduated strategy is nested inside an enclosing iterative strategy. For example, the DARPA [Defense Advanced Research Projects Agency] Grand Challenge was a multi-year effort to advance autonomous vehicle technology; it used a blended strategy. At the highest level, it was an iterative

challenge that was concluded when a robot vehicle successfully navigated a 100+ mile path through the Mojave Desert.[17] Each race, however, was itself a graduated challenge. The graduated steps leading up to each race were a white paper competition, on-site inspection, field demonstration, successful competition at the National Qualifying Event, and finally the race through the desert for the prize.
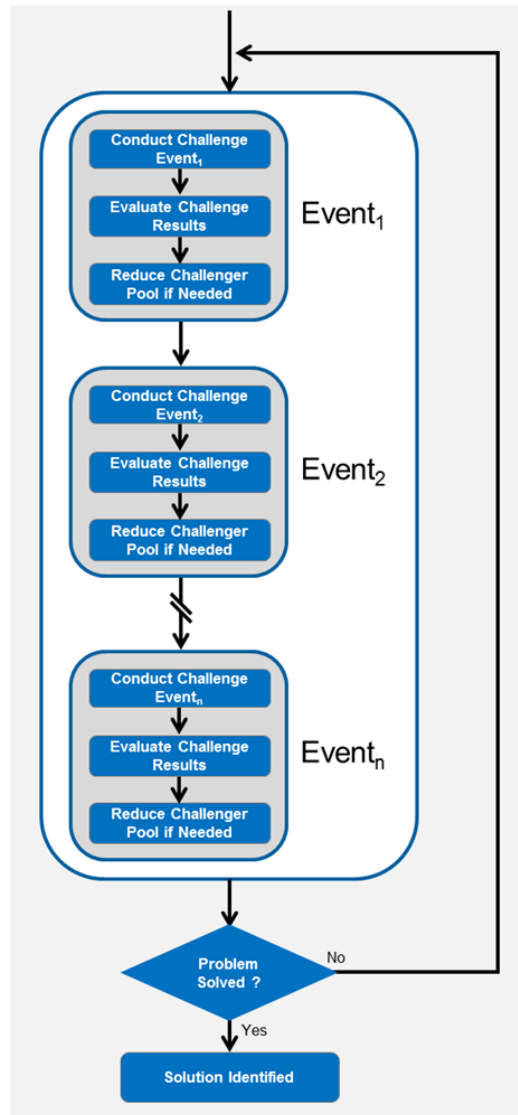
Figure 2-4. Blended Challenge

The iterative strategy allowed DARPA schedule flexibility to offer the challenge until the technology objectives were met. The graduated strategy opened the challenge to large numbers of participants from academia and industry, as well as to private citizens. The early, low-cost steps made this possible. Subsequent and more-costly steps were reserved for the smaller number of more promising challengers.

Figure 2-5 shows that graduated cost, driven by increased complexity and challenge rigor, increases with each successive event. It also shows that because successful challenges are used as a down-selection

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[17] Wikipedia. 2017. *DARPA Grand Challenge*. Available at: www.en.wikipedia.org/wiki/DARPA_Grand_Challenge.

criterion, the number of solutions under consideration decreases with each successive event for both the iterative and graduated approach. The iterative strategy usually results in a constant cost level because it repeatedly offers the same challenge until a viable solution is found. The learning curve and economies of scale may produce reduced levels of expenditure as Government experience increases. Experience can also have the opposite effect: as the challenge is repeatedly offered, the Government may find opportunities to improve the challenge that require additional resources.
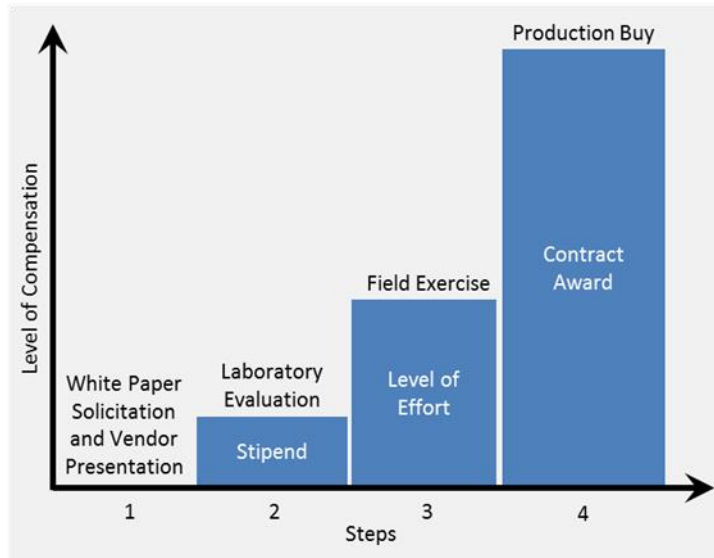
Figure 2-5. General Trends in Cost and Number of Solutions Considered

The following are examples of different levels of compensation based on size, scope, and complexity of the ChBA step:

1. **White Paper Solicitation** – Non-monetary compensation is chosen because it is assumed that vendors will bear the relatively small cost of paper preparation and presentation.

2. **Laboratory Evaluation** – A small stipend is offered to offset the expense of vendor travel to the Government site. This low level of monetary compensation might be chosen to encourage small businesses that could otherwise find travel cost a barrier to participation.

3. **Field Exercise** – Monetary compensation could be offered for the professional services of a winning challenge participant to perform the field exercise of their promising prototype.

4. **Production Buy** – A production contract could be offered to build enough instances of the solution for deployment to the field.

This approach also assumes that the number of solutions under consideration will decrease with each challenge event. The Government should schedule low-cost events early in the process when many solutions are under consideration and reserve higher-cost events until later when the number of solutions under consideration has been reduced.

Challenges rely on learning from the acquisition process itself. They explore the range of possible solutions in a competitive way that may require an initially undetermined amount of time to complete. This uncertainty is a natural consequence of the challenge process. However, this uncertainty regarding the expected schedule is balanced by certainty regarding tested performance of the acquired solution.

Government and industry interact in a cyclic fashion as each learns from the other. Each cycle, with its increased evidence from prior challenge events, brings the Government closer to a procurement decision.

Compensation Models – Compensation drives industry participation in a challenge. Compensation can be non-monetary, taking the form of recognition or acknowledgment. This can be effective in academic or non-profit environments. Even commercial organizations may participate in a challenge without monetary compensation in order to effectively market their products to Government decision makers, to obtain Government user feedback, or to provide business-networking opportunities. The ultimate motivation for industry, however, is a paid contract that supplies the Government with products that deliver the capabilities sought. These production contracts can be the strongest form of compensation. Whatever compensation model is chosen, however, *winning must be a win for the winner*. Commercial firms will eventually ignore Government programs if they do not see an opportunity for profit when expending resources to participate in the ChBA process

The Government can apply multiple forms of monetary and non-monetary compensation in a single challenge. Just as Figure 2-5 shows how cost and participation are a function of an iterative or graduated challenge process, Figure 2-6 shows how compensation can be phased within a single acquisition. To illustrate a phased compensation model, consider a hypothetical ChBA that employs a four-step, graduated strategy consisting of a white paper competition and on-site vendor presentations, laboratory evaluation, deployment in a field exercise, and finally a production-quantity buy. While the cost of each step is higher than the cost of the previous one, the number of participants will most likely decrease as solutions mature and some prove undesirable.

Figure 2-6. Application of Compensation Phasing

Pricing – The FAR requires the Government to pay only fair and reasonable prices for goods and services. This manifests itself in two ways:

- Setting a not-to-exceed price prior to a solicitation for goods and services
- Choosing a price from a set of offerings in response to a solicitation.

Traditionally, price is established in the context of a solution. ChBA focuses on communicating and evaluating needed capability and avoids specifying which solution should deliver that capability. This can make it difficult to set a not-to-exceed price prior to the execution of a challenge, when the type or even existence of the solution is not known. ChBAs must rely on competition between challengers to establish

a price. When a not-to-exceed price is required prior to a challenge, the Government should consider two sought-solution types:

- **Unprecedented Solutions** – In this case, no existing solution provides the capability sought by the Government. An example is a cure for cancer. Nobody knows what it costs to cure cancer, but it is clear what cancer costs society. The National Institutes of Health estimates that in the year 2008 the total direct medical cost of cancer in the United States was $77.4 billion and the indirect mortality cost was $124 billion.[18] If the Government wanted to address this problem by a challenge, it could set a target solution price based on expected health care savings from the discovery of a cure. A cancer-cure challenge that offered just 10 percent of what cancer costs the Government in a single year would still be worth billions of dollars to potential challengers.
- **Replacement of Existing Solutions** – Here the Government seeks a solution that will replace or refresh an existing solution. The needed capability is the same, but the method by which it is achieved requires improvement. In this case, the price paid to obtain the current capability can serve as a guide or price cap on future ChBAs for that same or even for an improved capability.

FAR 15.404-1(b)(2) presents seven price analysis techniques (presented below) by which the Government can make a fair and reasonable price determination. Government agencies can use these techniques when establishing a target price or when determining if a price derived competitively from a challenge is fair and reasonable.

1. Comparison of proposed prices received in response to the solicitation. This technique would be applicable if challengers were asked to include an offered price along with their challenge participation. The Government would consider the offered price as part of the overall challenge evaluation process, along with evidence collected during challenge performance. This applies to both unprecedented and replacement solutions and is a preferred ChBA pricing method.

2. Comparison of previously proposed prices and previous Government and commercial contract prices with current proposed prices for similar items. This is ideal for replacement solutions. The Government could specify the price of the current solution as part of the challenge solicitation. In addition to meeting the physical challenge, offerors would also have incentives to save the Government money by submitting prices for their candidate solutions that are lower than the price the Government currently pays.

3. Use of parametric estimating methods and/or application of rough yardsticks to highlight significant inconsistencies that warrant additional pricing inquiry. This technique focuses on measurable properties of the needed capability and could be useful in pricing both unprecedented and replacement solutions.

4. Comparison with competitive published price lists, published market prices of commodities, similar indexes, and discount or rebate arrangements. If the solution sought is a replacement for

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[18] The American Cancer Society. 2013. *Economic Impact of Cancer*. Available at: https://www.cancer.org/cancer/cancer-basics/economic-impact-of-cancer.html.

an existing solution, then this technique could be used to obtain prices for similar solutions. It is not applicable to acquisition of unprecedented solutions.

5. Comparison of proposed prices with independent Government cost estimates. The Government should take care when using this technique for ChBA if the cost estimation procedure assumes a particular solution or type of solution. Making assumptions about the nature of the solution to support cost estimation risks constraining the range of challenger offerings. Industry could interpret the solution model used by the Government for cost estimation as a high-level solution design. If an independent Government cost estimate is required to set a price target, the agency should use estimated Government cost savings for unprecedented solutions and prior solution costs for replacement of existing solutions.

6. Comparison of proposed prices with prices obtained through market research for the same or similar items. From a ChBA standpoint, this technique resembles techniques 2 and 4 above. If the Government is seeking a replacement solution, the cost of the current solution could inform the challenge target price.

7. Analysis of pricing information provided by the offeror. Such information could be used as part of the challenge evaluation process. Government agencies should take care to ensure transparency and uniformity by including price submission guidance in the challenge solicitation.

Testing – There is a subtle difference between a test and a challenge. A test compares something to an accepted standard, whereas a challenge represents the quest for a solution that provides a sought capability. If a test measures existing characteristics or qualities, a challenge finds the characteristics or qualities needed. It is possible to describe challenge outcomes so the captured results can support acquisition decisions and provide evidence to satisfy testing requirements.

Tests are categorized as functional (tests that measure what a solution does) and non-functional (tests that measure external constraints on how the solution must perform). For example, a functional test of a bicycle air pump would measure the maximum air pressure that the pump can supply to a tire for a given force applied to the pump handle. A non-functional test would measure how much the pump weighs, how big it is, or how long it can be expected to operate before it malfunctions or fails. Both the functional and non-functional tests are evaluated against thresholds that are properties of an ideal bicycle air pump. In a Government acquisition, these thresholds are usually captured in a specification document for a given solution.

A challenge describes a desired outcome and does not provide a specification that might constrain design and stifle innovation. In the case of a bicycle pump challenge, the outcome described would be the ability to inflate bicycle tires, with no prescriptive specification on this outcome that might force solutions in a particular direction. A bicycle pump challenge might begin with a statement "The Government seeks a solution to the problem of the need to inflate a bicycle tire during a road trip." The challenge event itself could have much in common with functional and even non-functional testing. However, it should avoid defining itself in terms of an ideal air pump, because such a specification is the beginning of solution design and can constrain challenger innovation. For example, some solutions do not involve an air pump at all. If an acquisition were based on desired testing parameters of an ideal air pump, then these solutions would be excluded. Such innovative solutions might include bicycle tire inflators based on small cylinders of compressed CO_2 gas. These inflators are small, light, effective, and reliable, but are not pumps and do not employ air.

2.2.3 Success

Maximize Incentives for Use of ChBA – Maximization of incentives is the linchpin for the implementation of innovative contracting approaches. If personnel are not encouraged to think creatively, try new things, and leverage an innovative approach that they have not used before, they will not change their behaviors. A combination of monetary and non-monetary incentives can help reduce aversion to perceived risk of ChBA across the contracting community. As the acquisition workforce sees they will be rewarded for using ChBA, its use will become more prevalent. Monetary incentives for use of ChBA may include small bonuses, large bonuses, raises, and promotions. Non-monetary incentives may include recognition by senior leadership, opportunities for flexibility in assignments, or perhaps attendance at a training session or conference to present one's work on ChBA.

Decompose Complex Requirements into Challenges – The Government must interpret user requirements and translate them into meaningful challenge events that give industry the latitude for innovation and get users what they need. This requires the Government to have a broad vision and a commitment to success beyond that typically needed to issue an RFP, Request for White Paper (RWP), BAA, or OTA Solicitation. Further, the Government must ensure that technical details are not over-specified, but rather generalized into technology-agnostic capability requirements that can be demonstrated in a challenge.

2.3 STEP 3: Plan the Contract or OTA Agreement

2.3.1 Definition

Plan the Contract – The goal of contract or agreement planning is to design a legal structure that ensures fair and open competition while obtaining the best result for the Government. ChBA is designed to acquire a solution that provides a needed capability. Evidence gained from a challenge becomes part of a source-selection process or part of an evaluation process ultimately leading to a production buy. This requires rigorous and thoughtful contract planning so that fairness and transparency are maintained as necessary when using a FAR- or OTA-based acquisition approach.

2.3.2 Execution

ChBAs have the following distinguishing characteristics that the contract must take into account:

- Evaluation based on challenger's ability to provide a needed capability rather than compliance to an implementation specification
- Potential need to compensate industry for participation in the challenge event
- Schedule uncertainty when an iterative challenge strategy is employed
- Multiple evaluations organized into phases that both distinguish qualified vendor offerings from unqualified ones and reduce the vendor pool.

The input to the contract or agreement planning process is derived from the acquisition strategy and plan. It is captured in a Procurement Request or a Requirements Summary package. These packages can be large, and it is tempting to believe that voluminous specification reduces risk. On the contrary, risk is reduced by precision and transparency in documenting contracting procedures plus strict adherence to those documented procedures during contract execution. Contract planning and execution for ChBA are guided by the overarching principles described below.

Clarity of Plan – The Government must ensure that both Government and industry understand precisely how the contract will be employed. This includes:

- **Compensation Model –** How should industry expect to profit from participation?
- **Evaluation Strategy** – Will the challenge employ an iterative, graduated, or hybrid strategy? Will the challenge be held before or after a contract is awarded?
- **Evaluation Methodology** – What criteria, metrics, apparatus, or evaluation techniques will be used to determine the quality of an offered solution or its equivalence to a desired capability?
- **Scope –** What length is the Government willing to go to find a needed capability? This should include an upper bound on the price the Government is willing to pay or how long the Government expects to remain interested in obtaining the sought capability.

Specificity of Sought Capability – The Government must determine exactly what capability it needs, but the statement of needed capability, as might be found in the Statement of Objectives (SOO), must avoid specifying a particular implementation. In other words, it should focus on what the Government wishes to do with the sought capability and not on how that capability is provided. If a solution can be unambiguously specified, then ChBA is not justified.

Adherence to Plan – Once an acquisition plan has been communicated to industry and Government partners, that plan must be followed rigorously by the Government. ChBA demands that industry take risk. It can be costly and frustrating to industry when a plan is changed after industry has committed resources based on that plan. Additionally, the acquisition scope, requirements, and evaluation process, once communicated to industry via a solicitation, can only be changed through a formal amendment to the solicitation or by a completely new solicitation.

Contract or Agreement Strategy – The Government bases its contract or agreement strategy on what is known about the sought capability, what outcomes are desired, and the level of effort required and time available to accomplish the acquisition. A ChBA includes the added dynamic of whether the challenge results will be used to evaluate offerors for contract award or used after contract award as a means of reducing the pool of contractors and solutions to a final winner. Section 3 contains more details on how challenge placement within the acquisition process affects the contracting strategy.

Often a SOO is considered the best way to stimulate innovation within industry because a SOO is not based on specifications but on overall performance objectives the offeror must achieve. A ChBA, however, would use a Statement of Work (SOW) or Performance Work Statement (PWS) because the Government's tasking to industry is to participate in and complete the challenge. For industry to do this, the Government must provide very specific information on what the challenge will involve, how results will be graded, and how a winner will be selected. The SOW or PWS provides the specifics of the challenge and innovation results from the way industry addresses the challenge. In cases where an OTA is the preferred acquisition approach, the Government would communicate the solicitation to consortium members and include specifics for participation in the challenge event.

Intellectual Property – IP should be addressed thoroughly during the Plan the Contract step. Section 2.2.2 contains detailed information on IP strategy development.

Standard Contract Sections – Solicitations and contracts for ChBAs have unique requirements. Those sections, their FAR definitions, and their special applicability are presented below.

Section A – Solicitation/Contract Form. Include a narrative write-up after the cover page of the contract that addresses the following topics:

> **Background of the Agency and the Specific Capability Sought** – Summarize the agency's background and mission and the capability the ChBA is seeking.

> **ChBA** – Provide a general overview of ChBA, specifics on how challenges will be used in the evaluation process, and whether challenges will be used before or after contract award. See Appendix F– Supplemental Information for example text.

> **Contracting Approach** – Describe the steps involved in contracting approach to the ChBA so that all Offerors understand the entire process.

Section C – Description/Specifications/Work Statement. Include any description or specifications needed in addition to information provided in the list of CLINS in Section B to permit full and open competition.

> If the challenge is conducted after contract award (e.g., future Task Orders on an IDIQ), Section C is used to address all the requirements pertinent to challenge participation and other requirements. This provides key background information to the Offerors when developing their RFP submission and white paper and provides the overall scope for the challenges once on contract. Furthermore, an attachment to the chosen Section C document – SOW or PWS – should be used to more fully describe the challenge events to include the purpose, the challenge description, and challenge technical objectives.

Section J – List of Attachments.

> If the challenge is to be conducted after contract award (e.g., future Task Orders on an IDIQ), Section J has an attachment that addresses the challenge event evaluation calculation and evaluation factors. While the task order for the challenge provides this information in the Request for Task Order Proposal, this information is put in Section J of the RFP for the Base IDIQ so that Offerors will have this information to develop their RFP submission.

Section L – Instructions, Conditions, & Notices to Offerors.

> If the challenge is conducted as the means of making the source selection decision (pre-award), then Section L specifically describes the challenge, its purpose, all challenge instructions and how the challenge will be performed, and the rules by which Offerors must abide. Section L also addresses any non-challenge source selection criteria.

Section M – Evaluation Factors for Award.

> If the challenge is conducted prior to contract award as a source selection mechanism, then Section M provides challenge objectives, the performance information, or other evidence that will be collected during the challenges. It describes how that information will be used to assess the quality and applicability of the offered solution at each step in the evaluation process. Evaluation factors are put forth and defined accordingly. Section M also addresses any non-challenge source selection criteria.

Selected Standard OTA Agreement Sections – Standard OTA agreement sections are different from typical FAR-based contracts. The following represent typical sections used when entering an OTA Agreement with a consortium member. See Appendices G and H for OTA case studies.

Scope of the Agreement

This section should state the proposed scope of the work to be performed under the OTA agreement and describe how the proposed program satisfies the statement of objectives. If there are dual or commercial uses of the developed technologies, they should be included but Government uses should be discussed first. In addition, this section should discuss the way the participant will interact with the Government program team.

Term

For planning purposes, the estimated period of performance should be captured here.

Statement of Objectives

This section should summarize the scope of the work and the business arrangement for Consortium members entering the Agreement. The participant will include or reference their proposed Task Description Document (TDD) in accordance with the guidance provided in the solicitation. This TDD describes the tasks that the team must accomplish to be successful in the execution of the OTA Agreement.

Payable Event Schedule and Deliverables

The section describes how the participants shall be paid for each Payable Milestone accomplished and delivered in accordance with the Schedule of Payments and Payable Milestones, which is described further within this section.

Data Rights

This section describes the specific data rights considerations to be made between the Government and participant as part of this OTA agreement.

2.3.3 Success

Stakeholder Engagement and Collaboration – It is critical that stakeholder engagement and collaboration take place throughout ChBA contract planning due to the many different skill sets required, including challenge event development, execution, and evaluation, contract strategy and overall acquisition approach, event planning, legal review, etc. Stakeholders must be brought in from the very beginning of the ChBA planning process to provide education, context, and their buy-in to the overall goals of the acquisition. Some of these roles include:[19]

- Team Lead/PM
- Requirements POCs, subject matter experts, technical experts, and evaluators
- Communications and engagement POCs

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[19] United States General Services Administration. 2017. *Challenge Toolkit: Transition*. Available at:
https://www.challenge.gov/toolkit/transition-5_4/.

- Legal advisors
- Contracting POCs
- End-users.

It is imperative to bring this team together early in the process not only for the expertise they can provide in executing the ChBA but also so that they understand the goals, objectives, and roadmap of the acquisition, to include each of their roles in achieving the desired results. The coordination of stakeholders helps to level-set each of their respective interests, expectations, and requirements for participation in the innovative contracting effort. Setting the context upfront and having all participants understand who is involved and why will go a long way toward streamlining the process for implementing the ChBA technique, which this team may not have employed before. Furthermore, this stakeholder collaboration requires on-going communication (recurring meetings, emails, updates, educational sessions, etc.) with the defined purpose of keeping all participants informed about the status of the contract and educated on the innovative approach being used.

Challenge-Event Strategy Pre-award/Post-Award Determination – When planning the ChBA, a key determination that must be made is the timing of the challenge event. A challenge event can be executed at two different times: pre-award or post-award (see Figure 2-7).
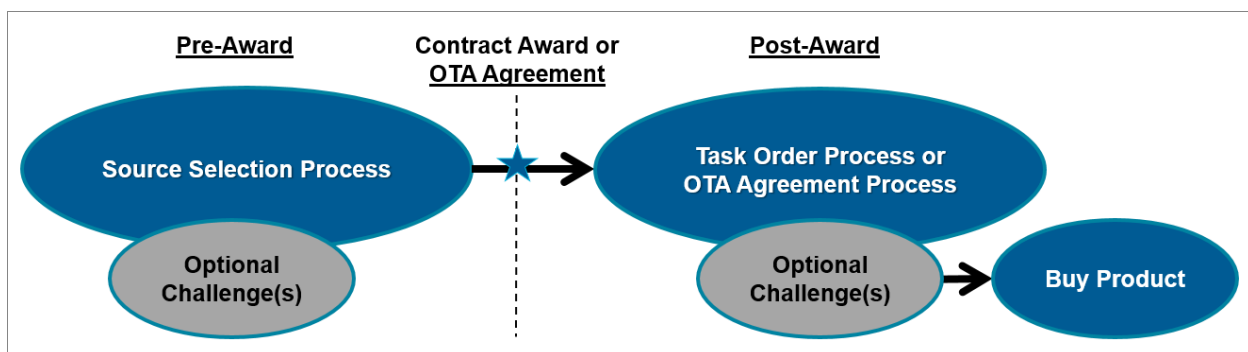
Figure 2-7. Challenge-Event Strategy Pre-Award/Post-Award Determination

During the Pre-Award Phase, a challenge event can be run as part of the source selection mechanism as part of a multi-step down-select process. The results of this challenge event could determine if the vendor was to move-on to the next phase of the evaluation. Using this methodology not only forces the vendors to display functioning product and/or capability, but also saves the Government time by not having to review and evaluated additional proposals from vendors that do not look promising. Furthermore, a challenge event can be run in the Pre-Award Phase and the results of the challenge can be used to supplement the offeror's technical proposal. Similar to oral proposals and presentations, the challenger's evaluated results in the Pre-Award challenge event can be used by the Government as part of the overarching strategy for the technical evaluation of each vendor. Whichever way you choose to utilize the challenge event in the Pre-Award Phase, your intent and detailed evaluation instructions and procedures (i.e., the multi-step down-select process) must be clearly communicated (in the solicitation) to industry and the Acquisition Team and strictly adhered to throughout the source selection process.

During the Post-Award Phase, challenge events can be executed as part of an IDIQ's Task Order Process. While multiple vendors are awarded the base IDIQ contract, they compete (or participate) on each consecutive task order of which can be a challenge event. As "winners" are evaluated and identified,

additional task orders can be issued to them for refinement of their technologies, additional testing, and potentially even another, more complex challenge event, culminating in the procurement of their product in quantity. The scope of the IDIQ and Task Order Process must be clearly communicated (via the IDIQ solicitation and awards and follow-on Request for Task Order Proposals and subsequent Task Order awards) to industry and the Acquisition Team and strictly adhered to throughout the life of the contract.

In the case of an OTA, a challenge event may also be used in the Pre-Award Phase as part of source selection process to identify a pool of qualified vendors. At this point, these vendors may then either enter negotiations for a project level agreement to develop a prototype or continue to participate in additional challenges. In the Post-Award Phase, additional challenges may be used to further reduce the pool through additional evaluation of proposed solutions. Once a challenger's solution meets the Government's stated need, a follow-on sole source contract may be awarded to the winner for the procurement of quantity beyond the initial prototype.

2.4 STEP 4: Communicate Capability Needs

2.4.1 Definition

A ChBA fails if potential challengers are unaware of it. The Government can use a wealth of outlets to advertise its intent to hold a challenge. No matter which outlets are chosen, the Government message has, at its heart, a challenge description. The challenge description informs potential participants about what capability the Government needs and stimulates organizations to devise innovative solutions so that they can participate in the challenge.

2.4.2 Execution

ChBA calls for a high degree of industry-government interaction. Both parties must clearly understand their roles to enable well-founded and productive investments. Challenges can help the Government understand the trade space of candidate solutions and give it a mechanism to assess the relative merit of those solutions based upon demonstrated performance. Challenges can also be used to eliminate minor concerns and emphasize nuanced levels of need that are not possible with static specifications.

When challenges are properly communicated, challenge participants learn what the Government needs by studying the challenge description, evaluation criteria, and competing in the challenge event. Most importantly, industry studies the nature of the challenge to learn what is needed rather than how to develop it through adherence to a Government specification document. Government needs can be fulfilled by either acquiring IP or physical products or both. For example, the Government may have a requirement for a capability but has no idea even where to start. By properly communicating to industry what capability is being sought, the Government unleashes industry's creative capabilities to find innovative and potentially unheard-of solutions.

The Government can run a challenge event for a sought capability, stipulating it will procure a prototype, production capability, or IP from the challenge winner. If the challenge results in a product, then the Government can move into a production decision or perhaps decide to use prototypes only. If, however, the challenge identifies IP for the viable solution, the Government can then procure that IP and use it in follow-on challenges or a competitive acquisition to establish a production-level capability. This two-phased approach allows the Government to communicate its need, sort through the best ideas, acquire

the most viable solution to include IP, and then compete production among industry. Thus, the Government leverages how one vendor may be able to generate a great idea, but other vendors may be able to "productize" it in a more efficient and effective manner.

2.4.3 Success

Generalize User Experience and Needs, Then Communicate Them to Industry – After gathering requirements from the user and translating them into executable challenges, the Government must communicate the scope of the challenges to industry. In doing so, the Government assumes risk because formulating the challenges requires interpreting and translating user experience and needs in a clear and concise manner. For the Government to succeed during this step, the end-user must have been an active participant in challenge event formulation.

Find Unclassified Analogues to Classified Situations – The Government can employ ChBA to identify solutions to classified requirements by utilizing unclassified analogues. In these situations, participants may not know the details of the setting in which the Government plans to use a solution but would only know the general performance objectives to be met. This approach supports an enhanced competitive environment by including vendors who do not already have appropriate security clearances and facilities.

Design and Execute a Concrete Challenge Process – The Government must design challenge-specific execution and evaluation processes that include:

- A plan for communicating challenges to industry using outlets such as Fed Biz Opps (FBO)
- A plan detailing how the challenge will be executed contractually using a FAR- or OTA-based approach
- Specific requirements for challenge participation, including how to submit a white paper for consideration, and, if selected, how to participate in the challenge event
- Detailed evaluation criteria to ensure the challenge evaluation is fair to all participants
- Communication to industry that the results of the incentive prize or challenge competition will inform a follow-on RFP. In this case, if a vendor does not participate in the incentive prize or challenge competition, it may be at a significant disadvantage in any follow-on evaluation for failure to adequately meet one of the primary factors of evaluation.

2.5 STEP 5: Establish Initial Pool

2.5.1 Definition

Establish an Initial Pool – Establishing the initial pool determines the set of challengers that will be invited to participate in the first challenge event.

2.5.2 Execution

Choosing the initial pool size is a balance between the desire to maximize challenger participation, and thus competition, versus the cost of challenge execution. Inclusion in the initial pool can be based on something as simple as a vendor white paper stating relevant experience or technical approach to the challenge or on something more complex, such as an oral proposal or initial demonstration of a proposed

solution. This gives the Government information on the potential challengers' understanding of the Government need and expectation that the offered solution will supply the needed capability.

2.5.3 Success

Maximize Candidate Participation as Practicable – The Government should accept as many candidates as economically possible in the initial pool. Keeping the initial pool as large as is practical avoids undue reliance on a speculative estimation of solution performance by giving the maximum number of viable candidates an opportunity to participate in the challenge event. Not only does a larger pool allow for the opportunity for more potential innovative solutions, but it also preserves competitive pressure and creates opportunities for potential partnering relationships to incorporate analogous or synergistic capabilities that may stimulate additional innovation and solutions.

Encourage Partnering to Drive Innovation – As noted above, partnerships can stimulate innovation. Some potential challengers may be "mom and pop shops" working out of a garage and using the state-of-the-art technology and may have no experience working with the Federal Government. These small organizations may partner with a more experienced firm that has experience and working relationships with Federal acquisition. Further, the smaller firm may have a subcomponent that fits onto their partner's product, making the offering a better overall solution and competitor in the challenge event, or vice versa.

Also, one firm may have the IP or the prototype, and it may partner with another firm for its machinery and further refinement of its solution and potential ability to commercialize and bring the solution to market.

It is important that a community of practice, large or small, be built around the problem set or capability gap the Government is trying to solve with the ChBA. This community can be established through a wiki, Facebook, Twitter, or other type of on-line community and can be supplemented by other forms of industry engagement that the Government initially manages (see below for other examples). Providing the opportunity for vendors, small and large, with sometimes completely different skills and solution sets, but focused on the same challenge, to get together, collaborate, meet, talk, brainstorm, and discuss, can and does encourage partnering and drives innovation. "It is important to prioritize how communities will be cultivated, engaged, empowered and sustained throughout the competition. Nurture and help strengthen bonds in existing networks before, during and after the challenge as much as possible. These are the groups of people you want to inspire to continue innovating."[20]

Engage Industry for Innovation and ChBA –Government agencies have become increasingly aware that for their acquisitions to be successful and innovation to thrive, they must ensure positive, on-going, and two-way communication and collaboration between and among key stakeholders in Government and industry (small and large companies, non-profits, FFRDCs, academia, consortia, and labs).

Industry engagement is extremely important in supporting ChBA and the development of the Government's capability sought and the associated challenge event, its rules and evaluation process and

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[20] United States General Services Administration. 2017. *Challenge Toolkit: Transition*. Available at:
https://www.challenge.gov/toolkit/transition-5_4/.

methodology, acquisition planning, and contracting strategies. Effective industry engagement may increase the solution space, stimulate innovation, and help to identify partnering relationships.

It is important that the Government not only communicate to industry one's plans, approaches, and strategies, but also to gain insightful feedback and recommendations about the breadth, depth, clarity, and realities of requirements. Moreover, industry should also be directly solicited for feedback on the use of the ChBA and how to best execute it. This collaboration should be done do so in a pro-active, positive manner that supports transparency and communication in the Government to industry relationship (such as an RFI or multiple RFIs, draft RFP, pilot challenge event, Q&A, etc.).

2.6 STEP 6: Conduct Challenge Event

2.6.1 Definition

Conduct the Challenge Event – The Government should ensure that challenge events are conducted with scientific rigor and that the evidence collected at the event is of high enough quality to inform subsequent acquisition decisions. Examples of evidence collected may include technical performance data, measurements, or performance characteristics for each participant. It is vitally important that this data be collected in an objective manner and be quantitative in nature to ensure integrity throughout the challenge event process. This is of high importance for the subsequent acquisition decisions made using a FAR or OTA-based approach.

2.6.2 Execution

Write the Challenge Event Script – Once the challenge timeline, competition setting, number of winners sought, incentive structure, and problem set have been defined and tailored to the acquisition, the Government agency or its surrogate must develop and execute the challenge script. The challenge event script is an all-encompassing document that should allow anyone from the Government or a surrogate to understand how to execute the challenge. This script should contain a repeatable set of activities that replicate the real-world operational environment against which solutions will be assessed for performance. The script should contain all the steps of the challenge from start to finish; who is involved; what additional props, tools, etc., are required; timing of any events during the challenge; locations of activities; relevant pictures/maps, etc. Activities may be choreographed and repeated for each challenger or randomized depending on the type of capability gap being addressed. For physical challenges, scripted activities may include the timing and type of movements and interactions among role players and challengers. For virtual challenges, scripted activities may include interfacing with data-sets, integrating with an existing system, or interacting with a simulation.

Establish Evaluation Criteria with Supporting Scoring Methodology – The challenge format should guide the specific evaluation criteria used whether the criteria be qualitative or quantitative. Qualitative evaluation criteria may include subjective means of assessment such as user satisfaction, ease of use, and changes in language, behaviors, or interactions. Quantitative evaluation criteria may include objective means of assessment such as time, speed, force, accuracy, etc.

In either case, evaluation criteria must be measurable and tied to activities performed as part of the challenge script. The evaluation of the challenge script activities must measure whether each criterion has been met (pass/fail) or to what extent it has been met (score). The measurement scale for each criterion

should be calibrated to ensure that those challengers who successfully perform and address the stated capability gap receive the appropriate positive rating. Likewise, those challengers who fail to perform must receive the appropriate negative rating.

Evaluators to Collect Data on Challenge Event Performance – During the challenge event and subsequent evaluation sessions, evaluators must collect data on challenger performance and document their assessments in accordance with the acquisition. The evaluators, typically hand-picked technical subject matter experts, collect data on challenger performance following the challenge script and associated evaluation criteria and protocol. For physical challenges, Evaluators may have to be physically present during the challenge event to observe challenger performance and collect data. Virtual challenges may not require physical presence provided the data needed for evaluation is collected virtually. Evaluators should review, understand, and meticulously follow the ChBA challenge script, evaluation criteria, challenge protocol, and roles and responsibilities as there is no room for deviation.

2.6.3 Success

Challenge events, by their nature, are specific to the capability sought by the Government and are thus difficult to describe generally. This section offers some guidance on how to ensure a challenge event is conducted successfully.

Transparency – Design of the challenge should be known to the challengers as much as possible without defeating the challenge purpose. For example, if the challenge involves analyzing email in real time to determine the existence of malicious activity, sample email messages should be made available prior to the challenge. However, if the challenge is about inferences drawn from email content and not about the details of email data structure, then making the message structure transparent but not revealing the specific contents until challenge event time keeps industry focused on what is important to the Government and avoids wasting time on simple misunderstandings.

Privacy – The Government may want to offer a degree of privacy to challengers, because vendors may be discouraged from participation if they see challenge failure as a potential source of corporate embarrassment. To combat this, the Government could offer industry the right to limit the dissemination of their challenge performance beyond specific Government use. In addition, challengers may see the challenge event as an opportunity for corporate espionage. If appropriate, the Government could offer to limit inter-challenger access during the event.

Challenge Participation Agreements – Whether the challenge event is conducted under a Government contract or OTA agreement or not, the Government should require challengers to sign challenge participation agreements prior to the event. These could include security, hold harmless, release of claims, wildlife contact restrictions, and IP retention agreements.

2.7 STEP 7: Evaluate Challenge Results

2.7.1 Definition

Evidence collected during challenge event execution must be evaluated to determine whether any proposed solution(s) demonstrated the needed capability. This is not necessarily a yes or no decision. The field of challengers may show progress in the direction of capability satisfaction, yet not reach the stated

performance objectives of the challenge. If so, the Government may choose to offer the challenge again, modify the challenge, or cease pursuing the capability.

2.7.2 Execution

The transparency, fairness, and clarity of the evaluation procedures are critical to the success of the ChBA process and resulting procurements. The compilation of evidence taken from challenger performance within a challenge event becomes the past performance evaluation used by the Government to make acquisition decisions. As with communicating needs, evaluation criteria should focus on measures of capability and not on implementation specifications: that is, on what the solution must do and not on how the solution should do it.

Evaluations take place at two points in the ChBA process. The first is prior to the first challenge event. This initial evaluation determines the pool of industry participants eligible to compete in subsequent evaluations. In some contracting strategies, it can even be used to determine an initial contract award that establishes a pool of participants for further evaluation. This initial evaluation is typically an inexpensive, rapid, or high-level analysis of vendor inputs such as a white paper submission. The second evaluation assesses candidate solution performance and price after a challenge takes place and is used to reduce the number of candidate solutions under consideration and ultimately to select solutions for procurement. This evaluation measures demonstrated capability and therefore has greater technical substance.

Both activities require the utmost transparency and fairness. The Government can achieve this by ensuring all evaluation criteria and processes are clearly stated in the solicitation and strictly observed.

2.7.3 Success

Perform Quantitative and Qualitative Analysis of Challenge Results – The Government must use rigorous quantitative and qualitative measurements to evaluate challenge results. Upon completion of the challenge, the Government may elect to:

- Purchase one or more of the competitor offerings for fielding, further testing, evaluation, or refinement. The Government would base this decision on product utility demonstrated during the challenge.
- Refine and reissue the challenge based on lessons learned during challenge performance. This can become part of an incremental Government strategy that includes challenge-based research projects.
- Do nothing. If the challenge results did not inspire confidence that any of the products would meet Government needs, the Government has no obligation to procure a product.

2.8 STEP 8: Reduce Challenger Pool

2.8.1 Definition

Reduce the Challenger Pool – If the Government can determine that a challenger is not likely to benefit from further participation in the challenge and that its proposed solution does not or will not fulfill the capability need, then that challenger should be eliminated from further consideration. Such a decision can

save money for both Government and industry. From a contractual perspective, it is important that the possibility of such "off-ramping" is specified up front during the Communicate Capability Needs step.

2.8.2 Execution

Both the iterative and graduated strategies include one or more evaluations of challenger performance. Like the evaluation that established the initial challenger pool, each subsequent evaluation assesses each candidate's ability to produce the desired capability and may also be used to reduce the field of challengers. A difference between the initial and subsequent evaluations is the availability of evidence resulting from challenges. As noted, the initial evaluation is likely based on vendor-supplied information such as a white paper, while all subsequent evaluations are based on evidence resulting from performance in challenges specified, designed, and conducted by the Government. These evaluations produce technical performance data that the Government can use in a best value source selection process to choose a product for procurement or to reduce the challenger pool for the next step in the challenge process.

2.8.3 Success

Ensure Fairness and Equity of Challenge Evaluations – A fair, equitable, and transparent evaluation process is critical to ensuring a ChBA is managed with integrity. If vendors believe that ChBA evaluations are questionable or inconsistent, it would be detrimental to the perceived value of using ChBA as a valid acquisition approach. To ensure fairness, the evaluation team must strictly adhere to the evaluation process and evaluation criteria developed during the contract planning phase and communicated to the vendors. Consistently applying the evaluation protocol to challenge performers gives all challengers equal opportunity for success. Likewise, this consistency allows for different innovative solutions to receive the same level of consideration by the evaluation team. Depending on the contracting mechanism used to execute the challenge event, failure to apply the evaluation criteria could be grounds for filing a bid protest or claim with the U.S. Court of Federal Claims. In an iterative challenge, consistent feedback is essential to ensure that the Government adequately informs participants of areas where their solutions require improvement to successfully address the stated requirements and better compete in the challenge.

Use Pass/Fail vs. Stratification Optimization for Pool Reduction – The Government must consider the best mechanism for reducing the challenger pool based on performance and results in the challenge event. The Government can use two methods for applying challenge evaluation criteria to reduce the challenger pool.

The first consists of applying a set of pass/fail criteria against the results of a challenger's participation in the challenge event. Any challenger that meets the stated pass/fail criteria would move on, and any performer that did not would be removed from the pool—a process also known as "off-ramping." Under this approach, it is possible that all or none of the challengers would be selected to move on.

The second method is a rank ordering, or stratification, of the challenger's results and the selection of a specific number of challengers from that list. For example, if there are 10 challengers, they would be rank ordered 1 through 10, with the top three performers being awarded a contract or chosen to move on to the next phase of the acquisition. To this end, the Government should carefully consider the number of challengers it wishes to maintain in the pool after a challenge event and use the most appropriate methodology described above for pool reduction.

Ensure a Clear and Transparent Process for Off-Ramping and Down-Selects – The process for off-ramping or down-selecting from the ChBA pool should be clear and transparent. All challengers should know before they decide to participate in the challenge exactly how they might win, move on, or be removed from further consideration or participation in the acquisition. Moreover, challengers should be made aware from the outset if they will have any additional opportunities to refine and improve their solutions and potentially even have them reconsidered.

2.9 STEP 9: Procure Solutions

2.9.1 Definition

Procure Solutions – If the evaluation of evidence from one or more challengers is satisfactory and proper contracting procedures were observed, the Government can purchase the winning solution(s) using the preferred FAR- or OTA-based acquisition approach.

2.9.2 Execution

After the Government has conducted the challenge event(s) and identified viable solutions, it must procure those solutions. This assumes the appropriate scope was established and there was full and open competition from challenge event to challenge event, allowing the Government to procure production units. If no viable solution was identified, the Government retains the option to pursue additional approaches to fulfill its capability needs. Below are some key steps to consider when procuring solutions:

- In lieu of procuring solutions, the Government can decide to acquire IP. By acquiring IP, the Government retains the right to use it in a follow-on challenge event or as part of another procurement for solutions.
- The Government can decide that the best course of action is to draw lessons learned from the challenge event and use them to inform a follow-on challenge or another procurement action.
- In cases where the Government has determined that the use of a challenge might be the best course of action for undertaking market research, it may decide not to procure solutions, but to use the results of such a challenge event to inform planning of future procurement activities.
- If the challenge event does not yield promising technology or IP, then the Government can determine its best course of action is to do nothing and exit the ChBA process altogether.
- If using an IDIQ contract, the Government may issue a new task order to purchase quantities of a given solution if this purchase is consistent with the original scope of the base IDIQ contract. For more information see section 3.2.1.
- If using a BAA, the Government may elect to procure prototypes or IP only without having to initiate a follow-on procurement activity. For more information, see section 3.2.2.
- If using an OTA, the Government may use a sole-source justification for a follow-on procurement if competitive procedures were used during the initial competition for OTA project-level agreements. For more information see section 3.3.3.

2.9.3 Success

Only Buy When a Solution Fills the Stated Capability Gap – A key tenet of ChBA is that the Government must only purchase a solution when its demonstrated performance fills the stated capability gap. In cases where no challengers meet the stated evaluation criteria for selection, the Government is under no obligation to purchase a solution. Strictly adhering to this approach ensures that Government resources are only allocated to acquire solutions that fulfill stated operational needs.

Re-issue the Challenge as Necessary – The program office should not be afraid to re-issue the challenge if it is not satisfied with the results. In cases where no solutions successfully meet the Government-defined capability gap, the challenge may be re-issued with additional guidance, feedback, suggestions, and potentially even changes to the challenge event participation and evaluation process, based on experience in the previous challenge. Additionally, the Government may provide detailed feedback to challengers about their performance so that they gain insight into how they may improve their approach. The key to a successful ChBA is to ensure that the Government acquires only those solutions that demonstrate proven performance to address the stated capability gap(s): pursuit of this objective, above all others, must be paramount.

Develop and Follow Strategy for Transition to Procure Solutions (OTA- vs. FAR-Based) – Transitioning the selected winner's solution to an acquisition for the purchase of quantity, fielding, and follow-on support should be consistent with the transition approach determined early in the contract planning phase of the ChBA and communicated to prospective vendors. Following this strategy ensures that challengers have appropriate incentives for participating in the ChBA. Above all else, the prospect of being awarded a contract is the key motivator to ensure a steady stream of offerors willing to participate in a ChBA.

3. Contracting Options

Many factors influence the selection of a contracting strategy in a ChBA. Is the sought capability well understood? What outcomes do the Government expect from the challenge events? Are viable challengers available within industry, academia, or some combination of both? Will challenge events be used to make the source selection decision (i.e., put a vendor on contract) or used once challengers are on contract to further refine the pool of solutions until an ultimate winner is found? It is important that the Government understands what it has and knows, what it wants to do, and how it will use the challenges in relation to the contract award or entrance into an OTA agreement.

An important consideration in contract award is the offerors' potential for success. Past Performance considers previous successes as an indicator of future potential: the usual practice has the Government review ratings by previous customers on how well an offeror performed.[21] Use of Past Performance in a ChBA does consider previous customer ratings, but primarily focuses on the performance of the offerors during the challenge events. Thus, an offeror's immediate performance during a challenge event determines participation in subsequent events.

The FAR, as currently written, supports the use of incentive prize and challenge competitions, demonstrations, and ChBA in the source selection process as part of a sole source justification, technical evaluation, past performance evaluation, and/or IP strategy. The approaches described in this section leverage justifications from current FAR language to properly structure challenge competitions for a more efficient transition of solutions to subsequent contracts. For more information on approaches that may be used to leverage justifications from the FAR to properly structure challenge competitions for a more efficient transition of solutions to subsequent contracts, please see Appendix C.

Furthermore, the same justifications and approaches used for a FAR-based approach may also be used when working under an OTA. However, an OTA provides far greater flexibility for executing business agreements, and numerous laws and regulations simply do not apply (e.g., while competition must be maximized, the Competition in Contracting Act (CICA) does not apply). Section 815, Amendments to Other Transaction Authority, of the FY16 National Defense Authorization Act (NDAA), provides even more flexibility for the award of non-competitive follow-on production contracts. While there are requirements for competition of the initial OTA and for its successful completion, the cost-share condition has been removed from the language. For more information on OTA transition approaches, please see DoD's Other Transaction Guide for Prototype Projects.[22]

3.1 Strategies

Several contracting strategies are available to Government agencies seeking to implement ChBA. The following list describes notional contracting strategies and how they align with a ChBA approach:

Evaluation of multiple participants to support a final procurement – When a program seeks to determine the best solution from among several potential solutions, a multiple award indefinite delivery/indefinite

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[21] FAR15.305 a(2)

[22] United States Department of Defense. 2017. *Other Transaction Guide for Prototype Projects*. Available at: http://www.acq.osd.mil/dpap/cpic/cp/docs/OTA_Guide%20(17%20Jan%202017)%20DPAP%20signature%20FINAL.pdf.

quantity (IDIQ) contract for evaluation and procurement is a highly flexible ChBA contracting strategy rooted in the FAR. This type of vehicle lets the program pursue either an iterative or a graduated challenge approach, since it permits an infinite number of task orders (within scope, ceiling, and period of performance) that can be tailored to challenge needs in support of individual program outcomes.

Technology creation leading to competitive procurement – If a program seeks an entirely new technology, then using a BAA permits use of challenge events for evaluating technology capabilities under a FAR-based approach. Even though the BAA is used "for the acquisition of basic and applied research and that part of development not related to the development of a specific system or hardware procurement,"[23] it is a useful contracting vehicle for ChBA because it permits the Government to compensate multiple vendors for participation. Once a suitable solution is found, the program can undertake a separate conventional competitive or sole-source procurement to acquire solutions.

Rapid acquisition of a prototype or demonstrated capability – When time is of the essence for acquisition of a prototype or demonstrated capability, the use of an OTA with an existing consortium is the preferred approach. The OTA approach allows for an agreement between the Government and the Consortium Agent that gives the Government access to consortium members within the bounds of an agreement outside typical contracting restrictions of the FAR. These agreements more closely resemble negotiated commercial contracts and, in some cases, work can begin in 120 days or less. If a suitable prototype is identified through the OTA approach, the Government may transition the agreement to a production contract per Section 815, Amendments to Other Transaction Authority, of the National Defense Authorization Act for Fiscal Year 2016.

IP creation leading to competitive procurement – Like using a BAA for technology creation, a program can use challenges within a BAA to focus industry or academic research and development (R&D) into an area for IP creation. As useful IP is produced as part of challenge outcomes, a BAA allows the program to procure IP licenses to a solution. After the IP licenses are procured, the IP can form the basis for a follow-on challenge to create either additional IP or other capability.

Many attributes influence which contracting strategy the Government should use to achieve an outcome. Table 3-1 associates the previously mentioned contracting strategies with these attributes to help programs determine which contracting strategy is most appropriate.

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[23] FAR 35.016a

Table 3-1. Contracting Strategies Related to Acquisition Attributes

	Evaluation of multiple participants to support a final procurement (IDIQ)	Technology creation leading to competitive procurement (BAA)	Rapid acquisition of a prototype or demonstrated capability (OTA)	IP creation for Government procurement (other)
Degree of Capability Understanding – Describes the level of understanding the Government and industry have of the desired capability outcome.	Best when moderate to high understanding of sought capability exists.	Best when little is known about how the sought capability may be supplied. Suited for acquisitions where considerable technology development is needed.	Best when little is known about how the sought capability may be supplied.	Best when the program is unsure whether the sought capability even exists.
Acquisition Scope – Defines the acquisition in terms of the level of development required and the expectations for production and delivery of IP or products.	Imposes few scope restrictions.	The program's scope should be defined as seeking the art of the possible and procuring the discovered solution.	Scope restrictions are a function of the OTA consortium to be used for the challenge. If standing up a new consortium, scope restrictions can be minimized.	The program must have RDT&E funding since the approach seeks early research resulting in IP. An advantage to this strategy is that it allows acquisition of IP under the BAA without a second contracting action.
Available Time – Establishes the flexibility of the schedule for the overall effort.	Saves lead time through the initial IDIQ award versus undertaking individual contract competitions.	May not be appropriate if the program is on a compressed schedule. The BAA process addresses technological uncertainty but even if technology development is rapid, this strategy requires time for a separate conventional procurement to acquire solutions.	Most rapid ChBA approach of all if OTA is used in conjunction with existing consortium.	Could be completed quickly depending on the speed of challenger IP development and its value to the Government. The challenge can end whenever the Government finds a useful portion of the desirable solution.
Challenger Pool Size – Identifies those industry partners that display an ability to perform within a challenge with the potential to achieve the desired outcome.	Requires a competitive pool size at each step of the process. If the initial pool size is uncompetitive the IDIQ strategy should be abandoned.	Uses an initial pool of challengers that are selected by a peer or scientific review of the initial proposals.	Initial challenger pool size is a function of the size of the consortium.	Uses an initial pool of challengers that are selected by a peer or scientific review of the initial proposals.

	Evaluation of multiple participants to support a final procurement (IDIQ)	Technology creation leading to competitive procurement (BAA)	Rapid acquisition of a prototype or demonstrated capability (OTA)	IP creation for Government procurement (other)
Financial Compensation – The Government's use of monetary compensation to incentivize challenger participation.	The IDIQ contract allows an indefinite number of task orders to be issued within scope of the original contract. These task orders can be used to conduct compensated challenge events throughout the evaluation process, and to procure solutions.	While BAAs allow the compensation of challengers for challenge participation only, the primary method of compensation may be the potential award of a follow-on production-quantity contract.	The OTA agreement permits maximum flexibility in providing financial compensation to consortium members.	Can be used to create multiple contracts to compensate challengers for challenge participation and for IP creation. At the program's discretion, a follow-on contract may be awarded for use of IP based on conventional procurement methods.
Evaluation – The Government's expected use of challenges to support contract decisions.	Once the competitive range (challenge pool) is created at IDIQ award, all subsequent evaluations use best value based on evidence revealed through challenge performance and price information.	Proposals and challenge results are evaluated "through a peer or scientific review process."[11]	The Government has maximum flexibility in evaluation criteria to support OTA initial agreement awards. Follow-on production contract award criteria would be similar to those used during the IDIQ evaluation process.	After the BAAs are awarded, each vendor may take part in one or more challenge events. Challenges can help keep the BAA focused in promising directions by directing funds to successful participants until the sought IP is available to the Government.
Procurement –The final decision parameters of whether the acquisition effort will result in a procurement and of what (e.g., product or IP).	Allows production quantities of a solution to be procured under the original IDIQ contract as a task order. If the scope and ceiling of the original contract are respected, more than one part of Government can use the same IDIQ for solution procurement.	Using a BAA does not permit procurement. The completed BAA may inform the Government about the range of viable solutions and can strengthen the RFP generation process. Technology developed under the BAA may be made available to industry if the appropriate IP licenses were purchased or included as part of challenge participation.	Allows production quantities of a solution to be procured via a follow-on FAR-based production contract without further competition required per Section 815 of the FY16 NDAA.	Can be augmented by using a conventional procurement as a separate contracting action for IP licenses if delivery of licenses were not included as part of the original BAA challenge process.

3.2 Vehicles

After the Government selects its contracting strategy, it must determine which contracting vehicle to use. This discussion of contracting vehicles addresses how the areas of pool formation, evaluation cycles, and production-level procurement are affected in a ChBA.

Pool formation begins when the Government publishes an RFP or OTA solicitation specifying the Government need and the type of contract vehicle being used, and requests potential vendors to provide their technical and price proposals. Based on an initial review of the proposals, the Government establishes a pool of offerors that demonstrate an understanding of the problem to be solved and show the greatest potential for a successful outcome.

The evaluation cycle is the process that evaluates the proposals of those offerors within the pool against the criteria established in the RFP or OTA solicitation. The Government determines which proposals best satisfy the criteria, and these become the basis for the award of the contract or OTA agreement.

After the challenge event evaluation cycle, the program can move into further product refinement or production-level procurement where the Government procures the IP or other items desired from the winning Offeror. The challenge-based approach succeeds when the Government's production decision is based on demonstrated IP or capability and not on a written proposal describing a potential solution.

3.2.1 Multiple Award Indefinite Delivery/Indefinite Quantity (IDIQ)

An IDIQ contract, as defined in FAR 16.504, "provides for an indefinite quantity, within stated limits, of supplies or services during a fixed period. The Government places orders for individual requirements. Quantity limits may be stated as number of units or as dollar values." A task order is the mechanism for the Government to have industry deliver against the IDIQ. A multiple award IDIQ is a single contract awarded to multiple offerors with a potential of competing for funded task orders. These Offerors are known as IDIQ contract holders. Thus, using a multiple award IDIQ contract within a ChBA provides a single contractual mechanism to:

- Compensate vendors for participation in the evaluation process.
- Make performance-based decisions during the evaluation process such as selecting promising offerors for subsequent evaluation or excluding unsatisfactory challengers.
- Procure solutions in significant quantities at the end of the evaluation process.
- Allow multiple Government organizations to buy the solution using the same contract.

Figure 3-1 shows the interactions among the Government, industry, IDIQ contract holders, and the challenge activity itself. Interaction takes place in three phases, all of which fall under the same contract: pool formation, evaluation cycles, and production-level procurement.[24]

Pool Formation – Pool formation begins when the Government publishes an RFP specifying that an IDIQ contract will be used for the challenge and requests technical and price proposals. The technical proposals submitted describe how industry intends to meet the challenge. The price proposals provide upper and lower bounds on the price that industry will accept to accomplish the Task Order described in the RFP. On the basis of the proposals, the Government establishes a competitive range and uses it to choose a vendor

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[24] A key to interpreting interaction diagrams can be found in Appendix A.

pool, which must be large enough to ensure fair and open competition. The Government also notifies offerors outside the competitive range of their exclusion. The Government uses each offeror's proposal response to determine if the offeror truly understands the problem needing a solution. Offerors' proposals are evaluated, and the highest rated proposals are awarded a contract; these organizations constitute the pool of IDIQ contract holders. Along with the award notification, all members of the pool receive a request to submit a proposal for the first Task Order.

Evaluation Cycles – Each evaluation cycle is governed by a single Task Order that provides compensation to industry for challenge participation. All IDIQ contract holders should be invited to participate in the first Task Order, which is the first evaluation cycle (i.e., challenge event). This satisfies the FAR 16.504(a)(1) requirement that all IDIQ contract holders be given an opportunity to deliver a minimum quantity of services or supplies on the IDIQ contract. Each evaluation cycle contains a challenge event and an evaluation of evidence created during challenge performance. Involving all the IDIQ holders in the first evaluation cycle places the challenge mechanism itself under the greatest scrutiny in the shortest amount of time. If there is a problem with the challenge, it is more likely to be detected in the light of full vendor exposure. The evaluation of evidence gives the Government the information necessary to select winners and thus reduce the pool of offerors.

The cycle begins with Government issuing a Request for Task Order Proposal (RFTOP) to members of the IDIQ vendor pool. Upon receipt of the RFTOP, each member of the vendor pool responds with a Task Order proposal. If the proposal is consistent with the original constraints of the IDIQ contract, the vendor is awarded a Task Order that allows them to participate in the challenge event. When the challenge concludes and the evidence is ready for evaluation, members of the vendor pool receive payment for Task Order execution. The Government evaluates challenge evidence using best value and then does one of the following:

- Keeps vendors in the pool for subsequent evaluation in later challenges
- Removes vendors from the pool to avoid wasteful re-evaluation of non-qualifying solutions
- Identifies vendors for receipt of a production-quantity RFTOP.

The challenge events continue until the termination condition specified in the acquisition strategy is reached. Generally, the evaluation cycles continue until a viable solution is found or the Government judges that the sought capability is not available or not affordable.

Production-Level Procurement – When the challenges executed in the evaluation cycles reveal a solution, the Government can use a final Task Order to obtain the solution in production quantities. Again, a best value approach is used to evaluate evidence from all the challenge events to select one or more solutions for production (or for additional testing, refinement, and then production). As long as the scope and ceiling of the original IDIQ contract are respected, a single IDIQ contract allows one Government organization to conduct the challenge events and other Government organizations to use that same IDIQ contract to procure the resultant solution.
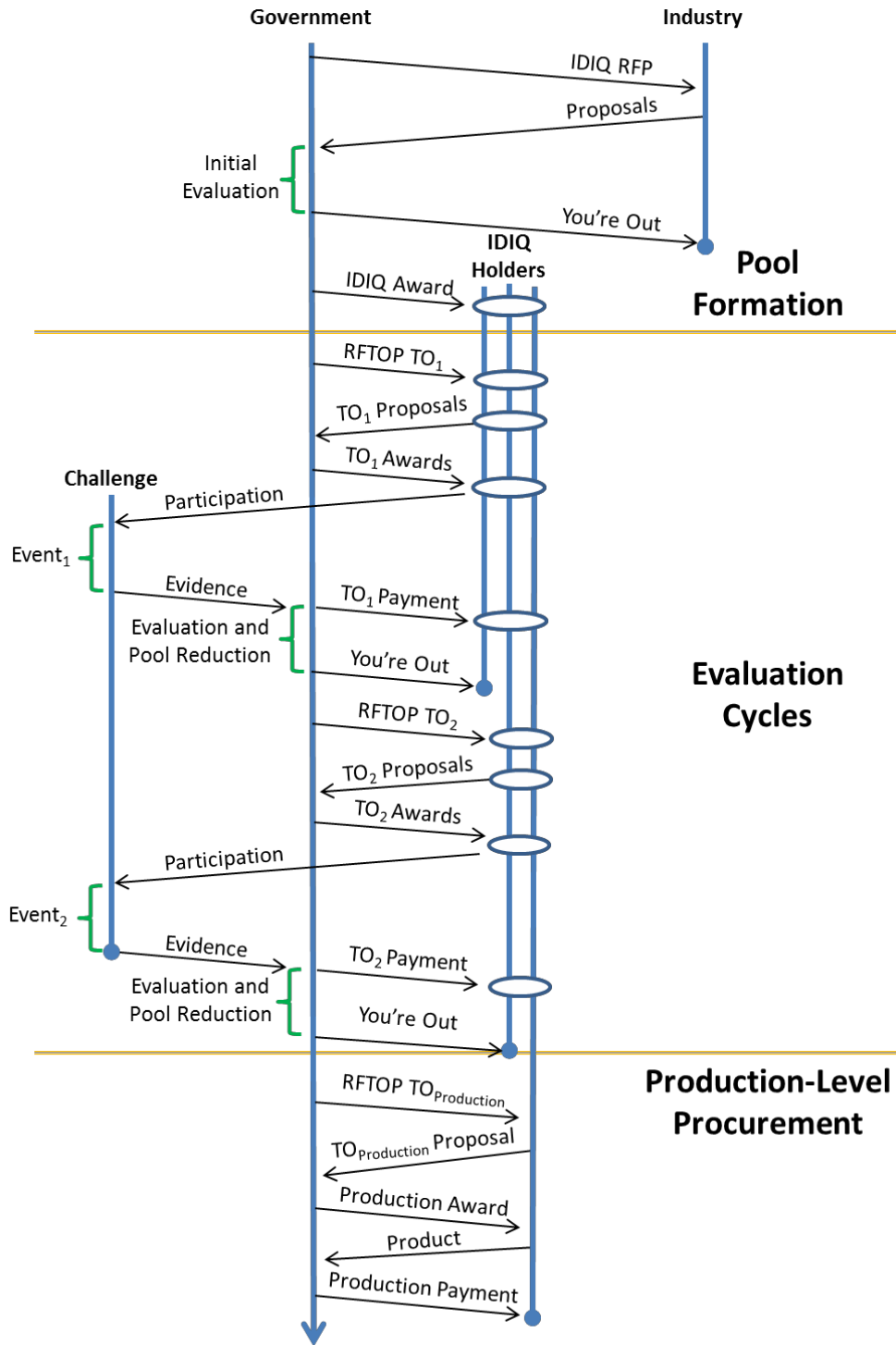
Figure 3-1. Government and Industry IDIQ ChBA Interaction

3.2.2 Broad Agency Announcement (BAA)

A BAA is a "general announcement of an agency's research interest including criteria for selecting proposals and soliciting the participation of all Offerors capable of satisfying the Government's needs."[25] From the ChBA perspective, the BAA:

- Provides a mechanism to compensate vendors for participation in the evaluation process.
- Makes performance-based decisions possible during the evaluation process; for example, selection of promising offerors for subsequent evaluation or exclusion of unsatisfactory contenders.
- Limits the type of money dispersed to offerors during evaluation to either basic research or applied research funds.
- Dictates that the challenge be an open attempt to find unanticipated solutions to a documented need and is not an effort to develop specific solutions for an ongoing procurement.

Figure 3-2 shows the interaction between the Government, research community, industry, BAA awardees, and the challenge activity itself.

Pool Formation – Pool formation begins with the publication of a BAA. The BAA contains a Government challenge strategy—iterative, graduated, or hybrid—along with the challenge description, evaluation plan for each challenge event, and compensation model. The challenge description and evaluation plan communicate the needed capability and highlight where innovation is required. Offerors respond to the BAA with written proposals that outline their approach to meeting the challenge. The Government selects the initial pool of challengers by conducting a "peer or scientific review" of the proposals.

Evaluation Cycles – Both the iterative and graduated strategies support a down-selection process during a challenge. If a down-select is to be employed, offerors should be asked to price their participation and create a separate SOW for each challenge event. This gives the Government freedom to advance only those challengers that clearly understand the Government's problem area and show promise after each challenge event evaluation. The example in Figure 3-2 contains two challenge events. It shows a reduction from three challengers to two based on the results of the first challenge event.

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[25] FAR 2.101(b)
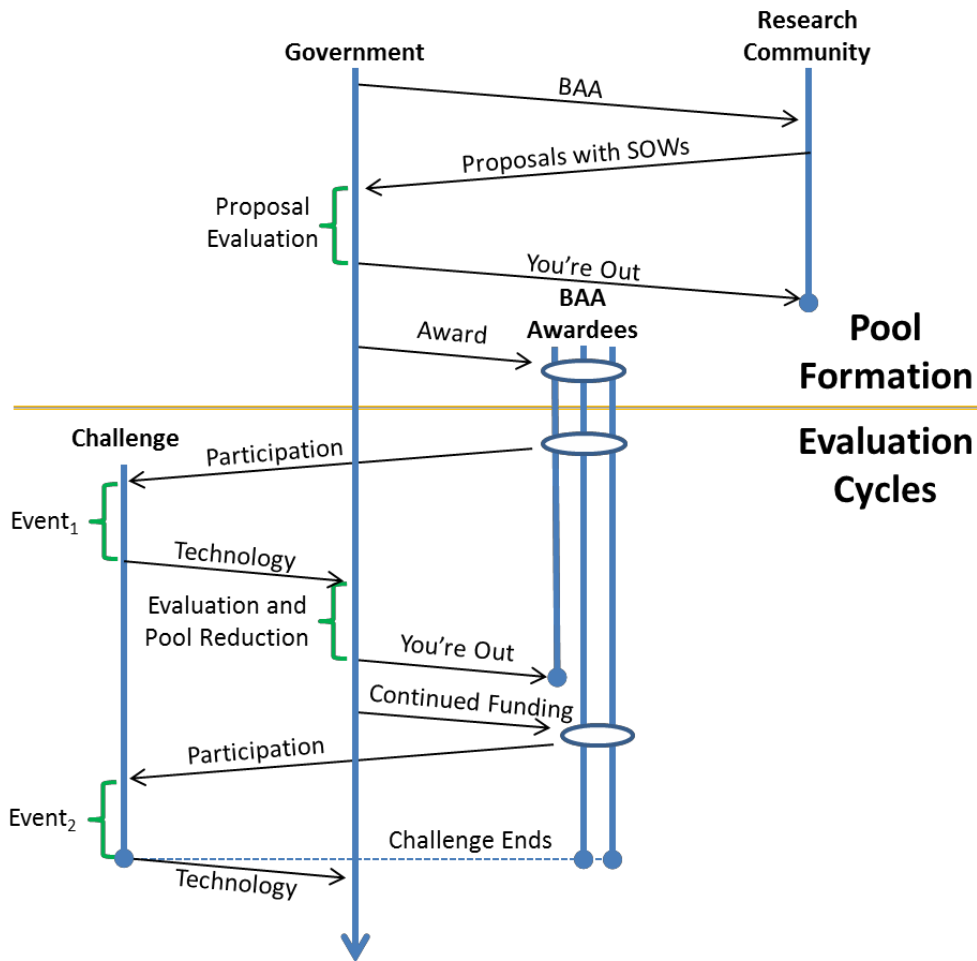
Figure 3-2. Government and Industry BAA ChBA Interaction

3.2.3 OTA Consortium Model

A consortium is defined as "…an association of two or more individuals, companies, organizations, or Governments (or any combination of these entities) with the objective of participating in a common activity or pooling their resources for achieving a common goal."[26] For additional information on consortia, please refer to Appendix H.

The Government's relationship with a consortium is typically solidified through a business agreement using OTA with a single point of contact: the Consortium Agent, a non-profit business entity tasked with managing the business and administrative oversight of the consortium. For this model, it is assumed that a Government agency, acting with full authority, is leveraging an existing or newly established consortium and OTA in executing the acquisition and fulfilling their requirements.

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[26] http://www.ndia.org/Divisions/IndustrialWorkingGroups/ChemicalBiologicalDefenseAcquisitionInitiativesForum/Documents/16-ACC%20NJ%20OTA.pdf

OTA is not subject to the FAR and is a "…highly flexible business tool"[27] permitting the use of business agreements not covered by the FAR. They are transactions other than contracts, grants, or cooperative agreements and may be used for "…basic, applied, advanced research and prototype projects."[28] For additional information on OTAs, please refer to Appendix H.

Consortia are often established for conducting shared R&D of technologies benefiting the consortium members and the Government. Thus, using the OTA Consortium Model provides a mechanism to:

- Tap into non-traditional Government suppliers, small businesses, laboratories, and academia by lowering the barriers to entry in the Federal marketplace.
- Make performance-based decisions during the evaluation process such as selecting promising offerors for subsequent evaluation or excluding unsatisfactory challengers.
- More efficiently procure solutions in significant quantities at the end of the evaluation process through a follow-on sole source procurement.
- Facilitate on-going communication and collaboration between Government and industry or academia.

Figure 3-3 shows the interaction between the Government, Consortium Agent, consortium entities, and the challenge activity itself.

Pool Formation – Pool formation begins when the Government sends a Request for White Papers (RWP) to the consortium through the Consortium Agent. The resulting white papers describe how the vendors within the consortium intend to meet the challenge and fulfill the Government's requirements or capability needs. The Government uses each Offeror's white paper response to determine if the offeror truly understands the problem and has the ability to provide an innovative solution to the stated problem set. On the basis of the white papers, the Government selects the most competitive proposals for pool formation to move on to the evaluation cycle phase. These offerors constitute the pool for participating in the challenge event for further evaluation and consideration of OTA funding and potential follow-on production level contract award. The Government also notifies the offerors not selected of their exclusion.

Evaluation Cycles – Next, the offerors that were selected to move on participate in the challenge event(s) for further evaluation. This part of the evaluation cycle can be iterative or graduated in nature. Each evaluation cycle contains a challenge event and an evaluation of evidence created during challenge performance. The evaluation of evidence from the challenge event gives the Government the information necessary to select winners and thus reduce the pool of offerors even more for consideration of OTA funding.

The winners— the offerors that receive the highest evaluations during the challenge event(s)—are awarded an OTA with funding to continue R&D of their proposed solutions. The evaluation cycle phase ends upon vendor completion of the OTA and development of a technology or prototype.

Production-Level Procurement – When the challenge events under the OTA agreements reveal a potential solution or solutions, the Government can use a production-level RFP and subsequent contract

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[27] Defense Acquisition University. 2017. *Other Transaction Authority*. Available at: http://www.acqnotes.com/acqnote/careerfields/other-transaction-authority-ota.

[28] IBID.

to obtain production quantities. Per the FY16 NDAA, follow-on production contracts can be issued to participants if competitive procedures were initially used and the prototype project was deemed successful. Furthermore, a sole source follow-on procurement contract can be awarded following development of a successful prototype. Follow-on production contracts, utilizing OTA for prototypes in accordance with 10 U.S.C. 2371, are allowed when the OTA includes such provisions and appropriate scope, when the quantities and prices set in the OTA are established within these targets for the follow-on, and when other specific conditions are met in accordance with 10 U.S.C. 2371 and 32 CFR 3.9(d).[29] OTAs authorize direct award of production or procurement contracts following a successful prototype which allows for an extremely efficient transition from R&D to production as part of the acquisition process.

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[29] DFARS 206.000. Available at:
http://www.acq.osd.mil/dpap/dars/pgi/frameset.htm?dfarsno=206_0&pgino=PGI206_0&dfarsanchor=206.000&pgianchor=206.000
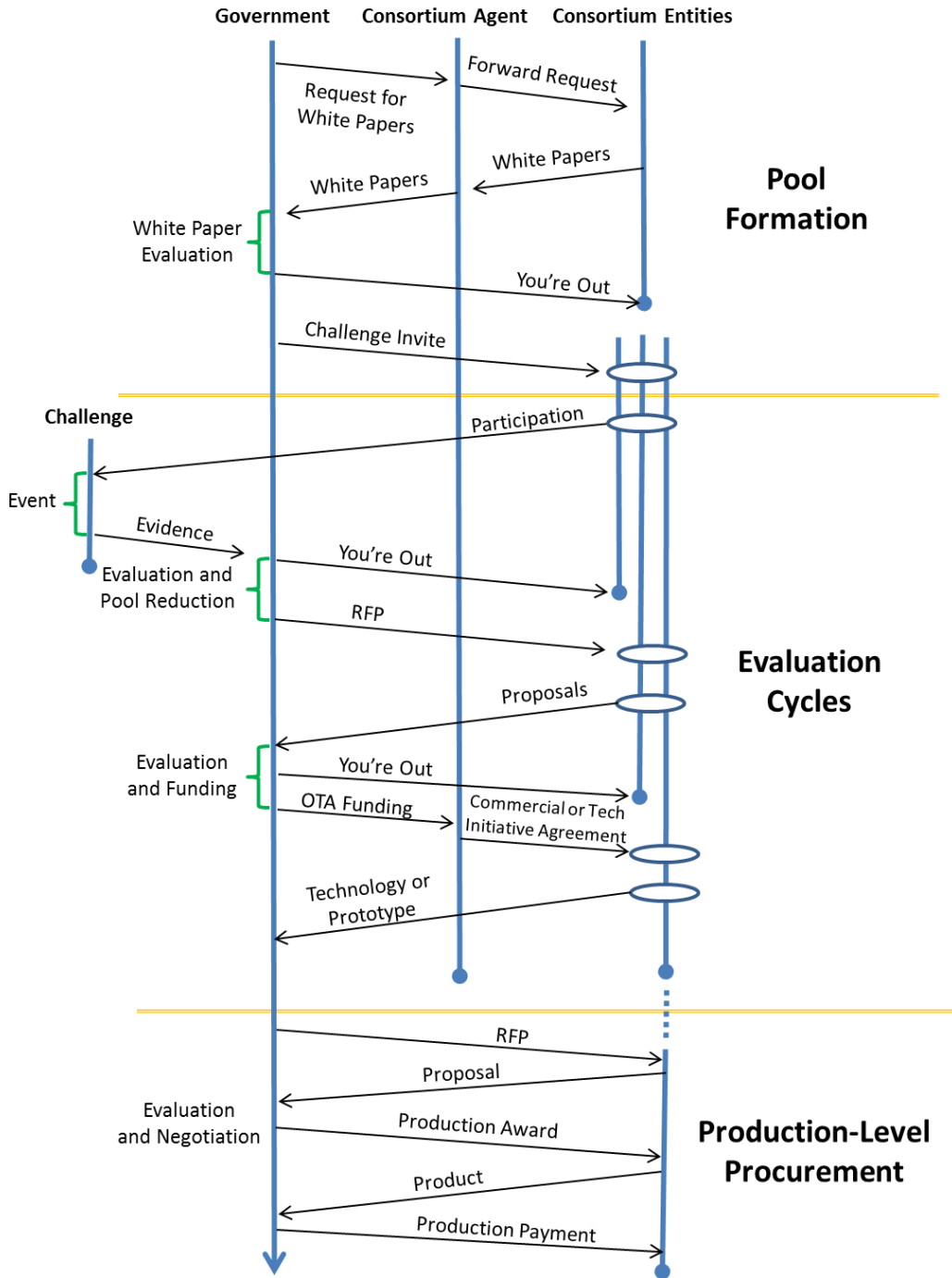
Figure 3-3. Government and Industry OTA Consortium Interaction

4. Conclusion

ChBA is a valuable tool for acquiring superior solutions to vexing, time-critical problems. It functions well in situations where the need is urgent and time critical, where no traditional solution seems viable, or where emerging technologies have the potential for providing non-traditional solutions. It is based on the proposition that acquisitions are best performed if the product or capability to be acquired is presented as a need (the challenge) and potential providers are free to propose innovative solutions that fill the Government's need.

This document contains a detailed description of what a ChBA is and why it provides a superior mechanism for many acquisitions. It lays out how to construct a challenge and how to fashion the evaluation and compensation mechanisms that accompany it. It proposes acquisition strategies that adhere to the FAR philosophy and fit different circumstances. The appendices include several case studies using the ChBA approach.

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Appendix A   Interaction Diagram Interpretation Key

The following diagram describes the interactions captured within the contracting strategy diagrams:
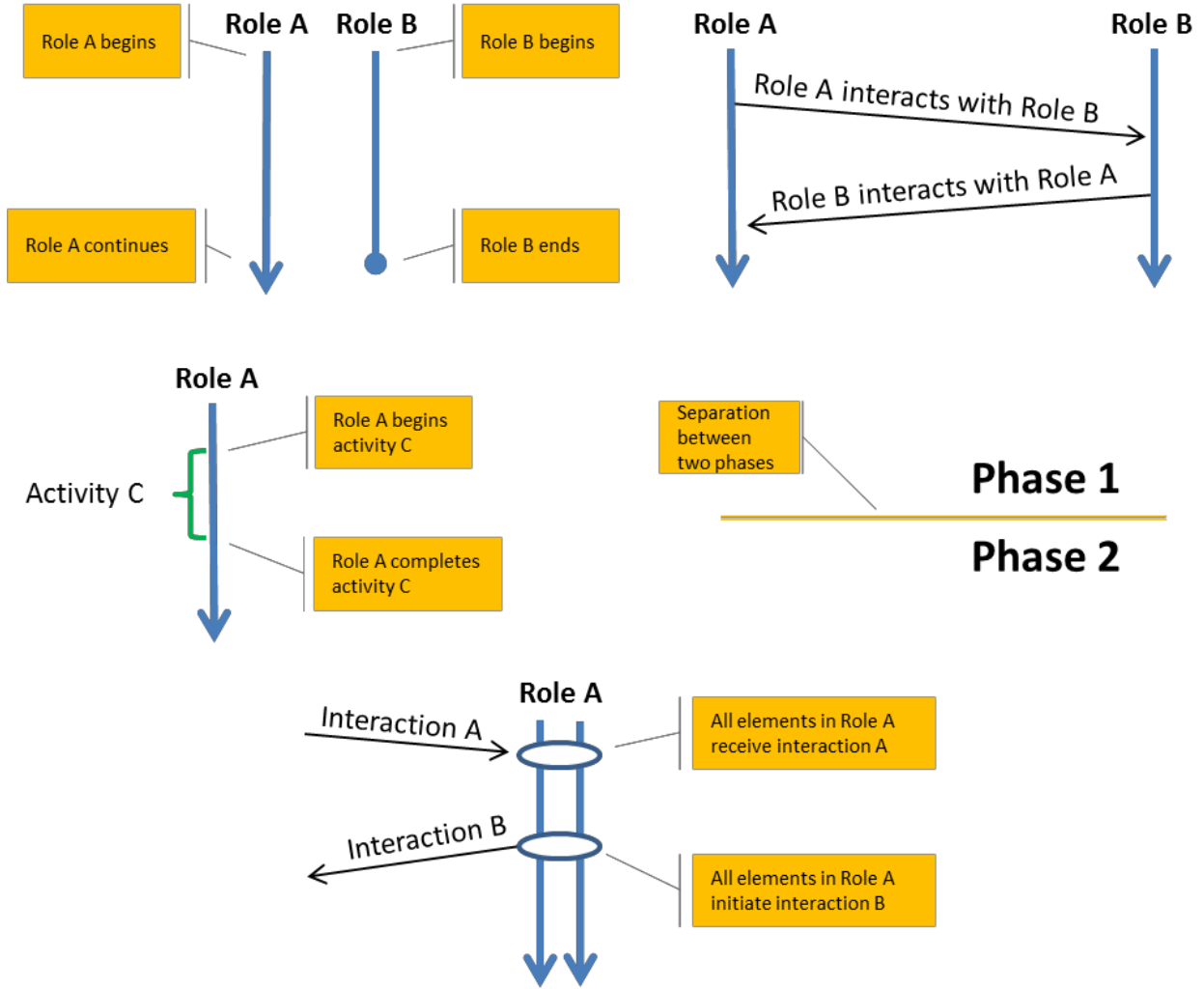
Figure A-1. Interaction Diagram Interpretation Key

Appendix B Analysis of Challenge-Based Acquisition and the Federal Acquisition Regulations

B.1 Challenge-Based Acquisition

A challenge is imbued with a sense of difficulty and victory.[30] It is intended to encourage discovery or development of unprecedented capability. Challenges are best known today as the engine propelling cutting-edge projects such as the DARPA Grand,[31] Urban,[32] and Robotics[33] Challenges or the pioneering work of the XPRIZE Foundation.[34] Challenges like these incentivize, recognize, and reward innovative thinking.[35] The Government supports these efforts through the OMB *Guidance on the Use of Challenges and Prizes to Promote Open Government*[36] memorandum and the OSTP report *A Strategy for American Innovation: Driving Towards Sustainable Growth and Quality Jobs*.[37]

Beyond their ability to propel innovation, challenges also improve Government acquisition system efficiency. They express Government needs in ways that enhance opportunities for open competition and innovation. In challenge-based acquisition (ChBA), the challenge mechanism communicates what the Government-sought capability must do but does not specify how it must do so. If an offered solution meets the challenge, then that solution is, by definition, the Government-sought capability.

The Federal Acquisition Regulations (FAR) authorizes a broad range of approaches that support ChBA, but agencies often do not take full advantage of these existing flexibilities. Some agency officials may be reluctant to engage in innovative acquisition approaches out of fear of protests or binding the agency in an unauthorized manner. Others within the acquisition workforce may be unaware of alternative acquisition approaches that may be utilized under the current FAR.

ChBA sparks innovation, is consistent with the FAR, and can be more definitive than acquisitions based on paper specifications. Procurement decisions based on challenge-based evidence reduce Government risk and give industry a wider field in which to innovate and compete for Government contracts. Challenges demonstrate outcomes using stated criteria met through proof-of-delivery rather than simply promised in a proposed design. ChBA lets the private sector work for the Government rather than against it.[38]

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[30] Wikipedia. 2012. *Challenge*. Available at: https://en.wikipedia.org/wiki/Challenge_(rhetoric) .

[31] Wikipedia. 2005. *DARPA Grand Challenge*. Available at: https://, en.wikipedia.org/wiki/DARPA_Grand_Challenge

[32] DARPA. 2007. *DARPA Urban Challenge*, Available at: https://archive.darpa.mil/grandchallenge/index.asp.

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[37] Office of Science and Technology Policy. 2009. *A Strategy for American Innovation: Driving Towards Sustainable Growth and Quality Jobs*. https://archive.org/stream/ERIC_ED511653#page/n0/mode/2up.

[38] United States Department of Defense. 2012. The Defense Business Board report to the Secretary of Defense FY12-02, Linking and Streamlining the Defense Requirements, Acquisition, and Budget Process. Available at:

When industry accepts a challenge, the Government observes each challenger's performance and can take a range of actions. The Government may purchase one or more of the challenger offerings based on confidence in the product utility demonstrated during the challenge. The Government may refine and reissue the challenge based on what was learned during challenge performance. Finally, the Government may do nothing if challenge results did not inspire confidence that the Government's needs could be met, precluding the risk of wasteful acquisition. Even if nothing is acquired as a direct result of the challenge, the stimulation of industry focus may have desirable side effects such as the establishment of private markets from which the Government can benefit without further intervention.

ChBA represents a valid, legal, and effective acquisition approach. This appendix presents in-depth analysis of the FAR and its support for ChBA.

B.2 FAR Part 1 – Federal Acquisition Regulation System

The Federal Acquisition Regulation System provides significant flexibility for the acquisition workforce to identify and implement innovative acquisition approaches as a means to improve performance, shorten schedules, and reduce costs. Specifically, FAR Part 1.102 allows *Government members of the Acquisition Team to assume if a specific strategy, practice, policy or procedure is in the best interests of the Government and is not address in the FAR, nor prohibited by law (statute or case law), Executive order or other regulation, that the strategy, practice, policy, or procedure is a permissible exercise of authority.*[39] Such flexibility allows for the use of challenge-based acquisition as a valid, legal acquisition approach.

Challenge-based acquisition is predicated upon evaluating a contractor's demonstrated ability at a challenge event prior to making a final contract award. This feature of challenge-based acquisition is consistent with FAR Part 1.102-2 which states *when selecting contractors to provide products or perform services, the Government will use contractors who have a track record of successful past performance or who demonstrate a current superior ability to perform.*[40]

FAR Part 1.102-4 permits challenge-based acquisition as a type of business process innovation because, as the FAR states, the *absence of direction should be interpreted as permitting the Team to innovate and use sound business judgment that is otherwise consistent with law and within the limits of their authority. Contracting officers should take the lead in encouraging business process innovations and ensuring that business decisions are sound.*[41] MITRE believes that challenge-based acquisition is a valid, legal acquisition approach that falls within the bounds of business process innovation permissible under FAR Part 1.102-4. It fulfills the spirit of this regulation by providing program managers and contracting officers with a sound method for encouraging business innovation and ensuring sound business decisions.

http://dbb.defense.gov/Portals/35/Documents/Reports/2012/FY12-2_Linking_And_Streamlining_The_Defense_Requirements_Acquisition_Budget_Processes_2012-4.pdf.

[39] FAR 1.102 – Statement on Guiding Principles for the Federal Acquisition System.

[40] FAR 1.102-2 Performance Standards.

[41] FAR 1.102-4 Role of the Acquisition Team.

B.3 FAR Part 2 – Definitions

The FAR does not contain a clear definition of "proposal." MITRE believes that the term "proposal," as referred to throughout the FAR, may be extended beyond its current interpretation to optionally include participation in a challenge event. In other words, in addition to the current paper-based or electronic submission, operational capabilities demonstration, or oral presentation, the Government may require offerors to participate in a challenge event as the entirety or part of a selection process.

B.4 FAR Part 6 – Competition Requirements

FAR Part 6 contains regulations concerning competition requirements for acquisitions. ChBA seeks to bolster opportunities for competition by including multiple participants such as those that may not be traditional Government contractors. Challenges may be executed using either an Indefinite Delivery/Indefinite Quantity (IDIQ) or Broad Agency Announcement (BAA) approach. Per FAR Part 6.102, MITRE believes that scientific analysis of challenge-event-generated evidence fulfills the BAA requirement for a *peer or scientific review*,[42] enabling the activity to be considered a valid competitive procedure.

B.5 FAR Part 7 – Acquisition Planning

FAR Part 7 provides enormous flexibility in the type of acquisition plan a program may develop. Specifically, FAR Part 7 requires an acquisition plan that describes how the *competition will be sought, promoted, and sustained throughout the course of the acquisition*. The acquisition plan *should discuss the source-selection procedures including the timing for submission and evaluation of proposals, and the relationship of evaluation factors to the attainment of the acquisition objectives*. FAR Part 7 also requires a *program to describe the test program for each major phase of the acquisition*.[43] MITRE believes that an acquisition plan may be written or updated to include ChBA as a valid, legal acquisition approach should agency officials determine this is the best course of action for their given program. Furthermore, a plan may be written to include a discussion of ChBA source-selection procedures including the use of challenge events to evaluate offeror submissions and concurrently fulfill testing requirements as applicable. Utilization of a challenge event, and the evidence it produces, for both source selection and testing can be part of an acquisition streamlining plan as described in FAR 7.105(a)(8). Additionally, a challenge event is considered one of the *other means of stimulating industry involvement during design and development in recommending the most appropriate application and tailoring of contract requirements.*[44]

B.6 FAR Part 9 – Contractor Qualifications

Ensuring that the Government does business with responsible contractors is of the utmost importance. FAR Part 9.1 addresses this issue by stipulating that *purchases shall be made from, and contracts shall be awarded to, responsible prospective contractors only*.[45] Responsible contractors are those that *have a*

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[42] FAR 6.102 Use of Competitive Procedures.

[43] FAR 7.105 Contents of Written Acquisition Plans.

[44] FAR 7.105(a)(8)(i)

[45] FAR 9.1 Responsible Prospective Contractors, 9.103 Policy.

satisfactory performance record.[46] MITRE believes that successful participation in a challenge event is sufficient to fulfill FAR Part 9.1 qualification requirements to demonstrate a satisfactory technical performance record. It is the responsibility of the contracting agency to determine if an offeror has a satisfactory business performance record to support final contract award.

A key component of ChBA is that it requires offerors to demonstrate their ability to meet program requirements prior to contract award by the Government. In support of this, FAR Part 9.205 specifies that if an agency determines that a qualification requirement is necessary, *the agency activity responsible for establishing the requirement must urge manufacturers and other potential sources to demonstrate their ability to meet the standards specified for qualification.*[47] MITRE believes that successful participation in a challenge event fulfills this demonstration requirement.

FAR Part 9.3 also addresses first article testing and approval conducted to ensure *that the contractor can furnish a product that conforms to all contract requirements for acceptance.*[48] This type of testing and approval may be appropriate in cases *where the contractor has not previously furnished the product to the Government, the product is described by a performance specification, or it is essential to have an approved first article to serve as a manufacturing standard.*[49] MITRE believes that such first article testing and approval activities may be augmented with a challenge event.

It is important to note that not all exceptions specified in FAR Part 9.304 are applicable in a ChBA. Specifically, this section of the FAR states that *testing and approval is not required for research and development contracts, products requiring qualification before award, products normally sold in the commercial market, or products covered by complete and detailed technical specifications.*[50] Because ChBA seeks to test and approve products prior to acquiring them, MITRE believes that these exceptions are not applicable to ChBAs.

For a challenge event to meet Government goals, it is vital that all performance criteria and test requirements be detailed in the solicitation document. Consistent with FAR Part 9.306, ChBA solicitations should detail *the performance or other characteristics that the first article must meet for approval; the detailed technical requirements for the tests that must be performed for approval; and the necessary data that must be submitted to the Government in the first article approval test report.*[51]

B.7   FAR Part 10 – Market Research

FAR Part 10 contains regulations concerning the need to conduct market research as part of the acquisition process. MITRE believes that challenges not intended to result in an acquisition, such as those

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[46] FAR 9.104-1 General Standards.

[47] FAR 9.205 Opportunity for Qualification Before Award.

[48] FAR 9.3 First Article Testing and Approval, 9.302 General.

[49] FAR 9.303 Use.

[50] FAR 9.304 Exceptions.

[51] FAR 9.306 Solicitation Requirements.

described in OMB *Guidance on the Use of Challenges and Prizes to Promote Open Government,*[52] constitute market research.[53]

B.8 FAR Part 11 – Describing Agency Needs

Challenges are intended to mimic real-world operational scenarios to give the Government greater certainty regarding product performance prior to final contract award. MITRE believes that FAR Part 11.002 supports the design of challenge events by requiring that acquisition officials *state requirements in terms of functions to be performed; performance required; or essential physical characteristics*.[54]

A well-developed challenge may also include performance requirements that will meet or exceed those required to gain system operational testing approval. MITRE believes that FAR Part 11 supports this by stipulating that *supplies may be evaluated under comparable in-use conditions without a further test plan, provided offerors are so advised in the solicitation.*[55] Challenge events use demonstrations to evaluate offeror capability and make a final contract award. FAR Part 11.801 fully supports this approach, as it states the *results of such tests or demonstrations may be used to rate the proposal, to determine technical acceptability, or otherwise to evaluate the proposal*.[56]

B.9 FAR Part 15 – Contracting by Negotiation

Most ChBAs will fall under FAR Part 15. Of importance for ChBAs is the advisory multi-step process described in FAR 15.202, which allows for a pre-solicitation notice to qualify a limited number of offerors to participate in a subsequent competition. Within the context of ChBA, in step one offerors submit an initial proposal for evaluation based on technical capability, price, and, relevant past performance. In step two, those offerors that meet program requirements would be invited to participate in the challenge event to demonstrate their product.[57] MITRE believes that the results of a challenge event could be used to make a production contract award.

B.10 FAR Part 35 – Research and Development Contracting

ChBA may be pursued under the umbrella of research and development contracting such as a Broad Agency Announcement (BAA). In these cases, MITRE believes that challenge events may be used to evaluate an offeror's proposal and make a final contract award determination.[58] Additionally, BAAs may also be used to fund challenge participation.

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[52] United States Office of Management and Budget. 2010. *Guidance on the Use of Challenges and Prizes to Promote Open Government*. Available at: https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2010/m10-11.pdf.

[53] FAR 10.001 Policy.

[54] FAR 11.002 Policy.

[55] FAR 11.801 Preaward In-use Evaluation.

[56] FAR 11.801 Preaward In-use Evaluation.

[57] FAR 15.202 Advisory Multi-Step Process.

[58] FAR 35.008 Evaluation for Award and 35.016 Broad Agency Announcement.

Appendix C   From Incentive Prize and Challenge Competitions to Procurement

C.1   Introduction

Governments and private organizations have used incentive prize and challenge competitions for centuries to encourage radical innovation in technology and as solutions to particularly difficult problems.[59] Implementing an incentive prize or challenge competition requires: 1) a description of a problem set; 2) clearly defined assessment criteria for evaluating proposed solutions; and 3) an incentive for participation based upon the pre-defined evaluation criteria. Incentives may be monetary in nature, such as a cash prize or contract award, or non-monetary in nature, such as public recognition as the prize or challenge winner. The Federal Government understands the value of using incentive prize and challenge competitions to stimulate cutting-edge innovation given the depth and breadth of critical public sector missions.[60] The America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007 provides additional authority for Government agencies to engage in high-risk, high-reward research in areas of critical national need. In pursuit of this work, the COMPETES Act specifically calls for the increased use of incentive prize and challenge competitions as one means of encouraging the development of cutting-edge solutions.[61]

C.2   Problem Statement

After executing an incentive prize or challenge competition under the COMPETES Act or other authorities, the Government often wants to purchase and field the winning solution(s), but does not have the ability to do so expeditiously. Reasons for the inefficient transition from prizes to procurements include differing interpretations of the current Federal Acquisition Regulations (FAR), Agency-Specific Regulations, and/or Other Transaction Authority (OTA) by program managers and contracting officers, as well as the overall methods by which incentive prize and challenge competitions are structured, executed, evaluated, and documented. When these two factors are combined, transitioning an incentive prize or challenge competition result to a Government procurement becomes inefficient and arduous.

C.3   Assumptions, Scope, and Context

This is not intended to be a "how" or "when" to use guide on conducting incentive prize and challenge competitions or challenge-based acquisitions (ChBAs). Rather, it assumes the reader is generally familiar with these acquisition strategies and provides relevant and targeted reference material about these topics. This paper also assumes that the Government has carefully chosen to conduct an incentive prize or challenge competition and desires that the result of this incentive prize or challenge competition be

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[59] Hendrix, Michael. 2014. *The Power of Prizes: Incentivizing Radical Innovation*. U.S. Chamber of Commerce Foundation. Available at: https://www.uschamberfoundation.org/sites/default/files/article/foundation/Power%20of%20Prizes_0.pdf.

[60] White House Office of Social Innovation and Civic Participation. 2016. *Prizes and Challenges*. Executive Office of the President. Available at: https://www.whitehouse.gov/administration/eop/sicp/initiatives/prizes-challenges.

[61] Office of Management and Budget. 2012. *Prize Authority in the America COMPETES Reauthorization Act*. Executive Office of the President. Available at: https://cio.gov/wp-content/uploads/downloads/2012/09/Prize_Authority_in_the_America_COMPETES_Reauthorization_Act.pdf.

transitioned to a procurement. Thus, this appendix suggests high-level approaches for *more efficiently* transitioning solutions (hardware, software, and intellectual property [IP]) identified by the results of an incentive prize or challenge competition to the Government.

C.4 Acquisition Streamlining

One approach to successful transition includes streamlining the move from an incentive prize and challenge competitions to a follow-on acquisition by using a ChBA from the start. Streamlining results from foresight, communication, simple pre-planning, and developing the incentive or challenge competition strategy in parallel with the follow-on acquisition strategy. The strategic use of the incentive prize or challenge competition results to inform the follow-on acquisition satisfies a federal acquisition's competition and evaluation requirements simultaneously, thus streamlining the acquisition process. Requiring offerors to submit a proposal or solution that, if selected for award, would be contractually binding, naturally deters unqualified offerors from submitting proposals, which streamlines proposal evaluation. Of equal importance, this approach substantially streamlines the Government's Request for Proposal (RFP) development time. In summary, this methodology simplifies the proposal submission and evaluation process because these functions are now performed simultaneously.

C.5 Incentive Prizes and Challenge Competitions

Incentive prize and challenge competitions can involve individuals, private industry, and academia, and Government stakeholders, requiring them to submit solutions in response to a defined problem set. Challengers are incentivized through the use of monetary or non-monetary rewards. These incentives focus the competitors' attention on the problem set and help to diversify the vendor pool for proposed solutions beyond traditional Government contractors alone.[62]

Over the past several years, incentive prize and challenge competitions have proven to increase innovation within the public, private, and philanthropic sectors.[63] This approach to problem solving has shown itself to be a successful methodology based on the well-established and scientifically sound concept of crowd-sourcing. However, incentive prize and challenge competitions executed under the COMPETES Act or other authorities as currently written do not allow for the efficient transition of solutions from prototypes to full production. Instead, current acquisition policy requires the Government to repeat most processes during the formal acquisition process, and lose most efficiencies realized through the incentive prize and challenge competition. Thus, for the Government to acquire and field the winning solution from an incentive prize or challenge competition it is forced to repeat what it has already achieved, through a laborious, yet no more effective, FAR process. This additional step in the process adds time and complexity to transitioning the winning solution from the challenge to the mission—without adding any value! Again, there are two alternatives to overcome this dilemma – first, employ ChBA, or second, use an incentive prize or challenge competition, leveraging some of the recommendations contained herein.

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[62] White House Office of Social Innovation and Civic Participation, 2016.

[63] IBID.

C.6 Challenge-Based Acquisition – Potential Solution

ChBA takes the Government-endorsed incentive prize and challenge competition concept, as described above, a step further by making it part of the procurement process. It brings the innovation opportunity of an incentive prize or challenge competition into the procurement framework of the FAR from the very beginning. ChBA incorporates free thinking, innovation, and efficiencies that result from Government incentive prize and challenge competition by bringing the approach under the umbrella of the federal acquisition process from the start. This allows the Government to use challenges as the core of its evaluations, and, most important, to test and purchase quantities beyond prototypes without having to make the transition from the incentive prize or challenge competition to a FAR-based procurement activity.[64]

By properly structuring an incentive prize or challenge competition within the formal acquisition's source selection framework or as part of the overall acquisition's scope, the Government can evaluate proposed solutions and refine, test, and determine quantity requirements. If the scope is properly structured up-front, there is no need for the actual "transition" or start-up of a new, formal acquisition – streamlining the process and saving time!

C.7 Keys to Success for Transitioning Incentive Prize and Challenge Competitions to a Procurement

This document describes an innovative approach to the application of the FAR when transitioning an incentive prize or challenge competition to a follow-on procurement. To this end, it presents the following keys to success for agencies implementing the recommendations:

- Assess if an incentive prize or challenge competition meets the agency's particular needs (see Incentive Prize and Challenge Competitions) or if the use of a *Challenge-Based Acquisition* or other innovative acquisition approach would prove more appropriate (also see *Innovative Contracting Case Studies*).
- Consult *early* with the Contracting Office and General Counsel (GC) to discuss the statutory, regulatory, and legal requirements and gain their understanding and support for the proposed approach and next steps.
- Plan ahead and design the incentive prize or challenge competition structure to enable the efficient execution of a follow-on acquisition for the winning solution(s) under the FAR, Agency Specific Regulations, and/or OTA as appropriate. By planning the follow-on acquisition in parallel with execution of the incentive prize or challenge competition, agencies can reduce duplication of effort and streamline the follow-on source selection process through inclusion of incentive prize or challenge competition results.
- Embrace the flexibility that the FAR gives the Contracting Officer (CO) as they have "…the authority to the maximum extent practicable and consistent with law, to determine the

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[64] The MITRE Corporation. 2014. *Challenge-Based Acquisition*. The MITRE Corporation. Available at:
https://www.mitre.org/sites/default/files/publications/pr-13-3525-challenge-based-acquisition-handbook-2nd-ed-9-30-2015.pdf.

application of rules, regulations, and policies, on a specific contract."[65] Furthermore, the FAR mandates that "Contracting officers should take the lead in encouraging business process innovations and ensuring that business decisions are sound."[66] The alternatives presented herein are wholly consistent with the FAR and ensuring good business decisions are executed.

- Consider the level of funding and resources needed to transition a solution from an incentive prize or challenge competition to a follow-on procurement. Undertake a preliminary assessment of the resources necessary for this transition, the key stakeholders, and the impact that resource constraints may have on the transition from an incentive prize or challenge competition to a procurement.

- Clearly articulate the plan to use the incentive prize or challenge competition results to support the follow-on source selection decision per FAR 7.105(b)(4) while addressing all acquisition considerations and benefits this approach would generate per FAR 7.105(b)(5). Using the results to support the source selection decision and potentially even testing can become part of an acquisition streamlining plan as described in FAR 7.105(a)(8). Furthermore, agencies may consider using the results of a prize challenge to further refine requirements and acquisition strategies as described in FAR 7.103(t).

- Communicate to industry that the results of the incentive prize or challenge competition will inform a follow-on RFP. In this case, if a vendor does not participate in the incentive prize or challenge competition, then they may be at a significant deficit in any follow-on evaluation for failure to adequately meet one of the primary factors of evaluation.

C.7.1   Alternative Approaches

The FAR, as currently written, supports the use of incentive prize and challenge competitions, demonstrations, and ChBA in the source selection process as part of a sole source justification, technical evaluation, past performance evaluation, and/or Intellectual Property (IP) strategy. The following approaches leverage justifications from current FAR language to properly structure incentive prize and challenge competitions for a more efficient transition of solutions to subsequent procurements.

C.8   From Incentive Prize or Challenge Competitions to a Follow-on Sole Source Procurement

This section describes the specific areas that may meet or exceed FAR sole source justification requirements following the execution of an incentive prize or challenge competition. As always, agencies should consult the CO and GC as early as possible and throughout the process to determine if a sole source procurement is a legal and valid approach for their present situation.

Current FAR definitions permit the interpretation that a sole source procurement after the execution of an incentive prize or challenge competition may be fully justified. If the incentive prize or challenge

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[65] FAR Subpart 1.1 – Purpose, Authority, Issuance.

[66] IBID.

competitions terms and conditions have clearly stipulated that the intent of the effort is to identify a single, unique solution (e.g., not more than one) that does not exist within the current marketplace, then a sole source justification for only one responsible source may be considered.[67] Likewise, should the circumstances exist, FAR 6.302-2 Unusual and Compelling Urgency and 6.302-6 National Security may also be considered as valid justifications for a follow-on sole source award.[68] Furthermore, if the winner of the incentive prize or challenge competition is an educational or non-profit institution, FAR 6.302-3(b)(2) may be used, and FAR 6.302-7 may be worth discussing as a possible exception due to the Public Interest of furthering the goals of such statutes as the COMPETES Act.

C.9 Use of Incentive Prize and Challenge Competition Participation for Full and Open Competition

Incentive prize or challenge competition participation may meet the requirements for executing a full and open FAR-based competition. By planning the follow-on acquisition in parallel with the incentive prize or challenge competition, agencies can reduce duplication of effort and streamline the follow-on source selection process through inclusion of prize and challenge results. The recommendations described in the following sub-sections provide specific guidance for implementation.

C.9.1 Design Incentive Prize and Challenge Competitions to Support FAR's Full and Open Competition Requirements

Meeting full and open competition requirements of FAR 6 for an incentive prize and challenge competition and articulating the intent to use this same competition in a parallel solicitation, may support the streamlined award of a follow-on contract directly with the prize or challenge winner. Per FAR 6.1, full and open competition means that all sources deemed responsible are permitted to compete and submit a bid or proposal on the Government's requirements. Furthermore, FAR 6.1 states that full and open competition (with certain exceptions) should be promoted, maximized, and utilized for soliciting offers and awarding contracts.[69] The incentive prize or challenge competition environment may be designed in such a manner as to support streamlined and efficient competitive procedures for the follow-on acquisition.

C.9.2 Incentive Prize and Challenge Competition Environment and Pre-Award In-Use Evaluation

Setting the right incentive prize and challenge competition environment is important in the future transition to a follow-on acquisition. Conducting the incentive prize or challenge competition event and evaluating competitors' results under realistic operational conditions will help to expedite the Government's proposal evaluation process for the follow-on acquisition. Per FAR 11.801, "Supplies may be evaluated under comparable in-use conditions without a further test plan, provided offerors are so advised in the solicitation. The results of such tests or demonstrations may be used to rate the proposal,

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[67] FAR Subpart 6.3 - Other Than Full and Open Competition.

[68] IBID.

[69] FAR Subpart 6.1 – Full and Open Competition.

to determine technical acceptability, or otherwise to evaluate the proposal."[70] In other words, if the incentive prize or challenge competition environment meets this standard, the follow-on acquisition could use the winner's (or all challenger's) results from the competition to augment or potentially substitute for the requirement of submitting a full technical proposal.

C.9.3   Incentive Prize and Challenge Competition Results and Follow-on Proposal Evaluation

Agencies must define the incentive prize and challenge competition's scoring factors and sub-factors in a way that is easily translated into evaluation factors and sub-factors for the follow-on acquisition. Per FAR 15.305(a), "Proposal evaluation is an assessment of the proposal and the offeror's ability to perform the prospective contract successfully. An agency shall evaluate competitive proposals and then assess their relative qualities solely on the factors and sub-factors specified in the solicitation."[71] Thus, if structured appropriately and communicated in the incentive prize or challenge competition terms and conditions and solicitation for the follow-on acquisition, then the results of the incentive prize or challenge competition may become part of the offeror's proposal. These results may serve as a major evaluation factor(s) for the follow-on contract, ultimately streamlining the proposal evaluation and contract award process.

C.9.4   Incentive Prize and Challenge Competitions Results and the Follow-on Technical Proposal

The results of a full and open incentive prize or challenge competition may be considered analogous to oral presentations and may be used to substitute for, or augment, an offeror's proposal for the follow-on acquisition. If the Government intends to use the results in this manner, it should clearly communicate this in the incentive prize and challenge competition terms and conditions. Per FAR 15.102, "Oral presentations by offerors as requested by the Government may substitute for, or augment, written information. Use of oral presentations as a substitute for portions of a proposal can be effective in streamlining the source selection process."[72] Using the incentive prize or challenge competition results as part of an offeror's technical proposal would not only streamline the acquisition process, but also provide an opportunity to produce evidence-based and previously evaluated offeror performance for use in a subsequent source selection evaluation and decision.

C.9.5   Incentive Prize or Challenge Competition Results and the Advisory Multi-Step Process

The terms and conditions of the incentive prize or challenge competition should stipulate that the agency may use the results of a challenger's participation as a basis for inviting the offeror to participate in a follow-on acquisition. Per FAR 15.202(b), "The agency shall evaluate all responses in accordance with the criteria stated in the notice, and shall advise each respondent in writing either that it will be invited to

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[70] FAR Subpart 11.8 – Testing.

[71] FAR Subpart 15.3 – Source Selection.

[72] FAR Subpart 15.1 – Source Selection Processes and Techniques.

participate in the resultant acquisition or, based on the information submitted, that it is unlikely to be a viable competitor."[73] The results of the incentive prize or challenge competition may augment this "information submitted" by the offeror for evaluation by the Government in recommending further participation in the follow-on acquisition as part of the Advisory Multi-Step Process. Thus, the use of an incentive prize or challenge competition in combination with the Advisory Multi-Step Process for the follow-on acquisition streamlines the acquisition process by economizing the evaluation and award process as only offerors who have participated in the incentive prize or challenge competition may be considered satisfactory in the evaluation.

C.9.6 Incentive Prize or Challenge Competition Participation and Follow-on Past Performance Evaluation

The use of incentive prize or challenge competition results as a source of past performance information for the follow-on acquisition can help to establish the "currency" and "relevance" of the offeror to meet the agency need. Specifically, FAR 13.305 (a)(2)(i) focuses on the assessment of past performance information as "one indicator of an offeror's ability to perform the contract successfully."[74] Participation in an incentive prize or challenge competition that uses a consistent and repeatable evaluation process with supporting documentation for factors such as relative strengths, deficiencies, significant weaknesses, and risks in addition to competitor's overall evaluated performance, may provide current and relevant past performance information and thus be used to substantiate the offeror's ability to deliver results in the follow-on effort. Using incentive prize or challenge competition results as a source of established past performance information for the follow-on acquisition streamlines the acquisition process because it exists in the desired format and has already been evaluated by the Government.

C.10 Government Purpose Rights and the Follow-on Procurement

The Government must consider its IP needs prior to the execution of an incentive prize or challenge competition. If an agency acquires Government Purpose Rights (GPR) in IP, it may use these rights in support of a follow-on or on-going acquisition (using competitive or other than competitive procedures) and may be provided to a third party as Government Furnished Information (GFI) or Government Furnished Equipment (GFE).

C.10.1 Negotiate Government Purpose Rights in Intellectual Property

Early identification of the desire to obtain GPR in technical data and computer software can help to facilitate the streamlined acquisition of solutions resulting from an incentive prize or challenge competition. For example, in incentive prize or challenge competitions conducted under the Department of Defense's (DoD) Prize authority, GPR may be negotiated upfront as part of the terms and conditions for participation. This IP may then be provided to another vendor as GFI or GFE in support of a Government purpose (such as the execution of a contract). An example where this may be a desirable strategy is if a vendor who has developed a solution and participated in a prize challenge does not have the interest or capacity to mass produce and field their solution. In these cases, a vendor may rather choose to exit the

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[73] FAR Subpart 15.202 – Advisory Multi-Step Process.

[74] FAR Subpart 13.3 – Simplified Acquisition Methods.

Government market after a solution has been identified and purchased while allowing for others with more familiarly with federal acquisition to produce and support the solution over the life cycle.

While, the DoD Federal Acquisition Regulations (DFAR) contain specific language on the use of GPR in technical data and computer software in DoD acquisition,[75] civilian agencies may be able to negotiate similar rights as part of an incentive prize or challenge competition participation agreement prior to execution of the event. All military departments or civilian agencies considering the use of an incentive prize or challenge competition should discuss with their GC the most effective strategy for securing any IP that may be under consideration for transition to a follow-on or on-going acquisition.[76]

C.11 Conclusion

The efficient transition of a winning solution from an incentive prize or challenge competition to an agency procurement can play a key role in meeting mission needs if the follow-on acquisition is planned in parallel with the prize or challenge event. By doing so, the Government leverages the benefits of real-world competition and evidence-based results that can augment or supplement contractor's proposals while streamlining and economizing the Government's evaluation process. This paper has sought to provide thought leadership on potential approaches for bridging the gap between prizes to procurements to enhance cost, schedule, and performance across the Federal enterprise.

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[75] Defense Information Systems Agency. 2016. *Data Rights*. Available at: http://www.disa.mil/about/legal-and-regulatory/datarights-ip/datarights

[76] IBID.

Tereschuk, George B. Undated. Government Purpose Rights in Technical Data and Computer Software in DoD Acquisition. Available at: www.wifcon.com/anal/GPR_TD.doc*.*

Appendix D   Case Study: JIEDDO Counter-IED Culvert Challenge

D.1   Overview

The Joint Improvised Explosive Device Defeat Organization (JIEDDO), now called the Joint Improvised Threat Defeat Agency (JIDA), leads Department of Defense actions to rapidly provide counter-IED capabilities and solutions in support of combatant commanders, the Services, and, as authorized, other federal agencies to enable the defeat of the IED as a weapon of strategic influence. JIDA's strategic vision is to reduce the effectiveness and lethality of IEDs to allow freedom of maneuver for joint forces, federal agencies, and partner nations in current and future operating environments.

JIDA has sought technologies to improve the speed of inspection of culverts and surveillance of nefarious activity in a given vicinity. This has been motivated by lessons learned in Afghanistan and a desire for readily available technology to mitigate the effectiveness of culverts as a location for improvised explosive device (IED) emplacement. JIDA seeks innovative solutions for surveillance and inspection in or around roadway culverts, tunnels and tunneling events under roadways, and roadway craters to defeat IED emplacements. In addition, JIEDDO seeks the ability to defeat IED emplacements and remotely detect and identify objects of interest, specifically IEDs and paraphernalia within and around culvert tunnels, tunneling events under roadways, and roadway craters. JIDA expects effective technologies will also have application to tunnel scenarios. JIDA elected to apply ChBA to this need and devised the Culvert Denial Challenge. JIDA believes ChBA will communicate its problem set to industry and incentivize top performers by offering acquisition opportunities. In coordination with the Army Research Laboratory (ARL) in Adelphi, MD, JIDA worked for several months establishing an IDIQ contract as suggested in MITRE's ChBA Handbook.

D.2   Problem Set

IEDs are the terrorists' weapon of choice because they require limited skills to build and provide dramatic results for very little investment of time, money, and effort. The public relations benefit of a surprising spectacular explosion far outweighs that resulting from attacks using more conventional weapons. Given terrorists' easy access to commercial technologies, internet training, and the ability to either make or obtain explosive materials, IEDs continue to provide the enemy inexpensive, stand-off, precision weapons systems with near-total anonymity. IEDs are the greatest casualty producer in 21st century warfare and a long-standing threat to civilian populations.

IEDs will continue to pose a threat throughout the world that may never go away. They will grow in sophistication and frequency as more enemies of peace realize the potential psychological, social, and political impact a weapon like this provides. No other widely available terror weapon delivers the mass media focus, sheer panic, and strategic influence of the IED.

D.3   Acquisition Approach

ChBA selects solutions based on the quality of demonstrated capability and not the satisfaction of written specifications, requirements, or proposals. Further, ChBA is based on the proposition that acquisitions are best performed if the requirement is described as a challenge and potential providers are free to demonstrate innovative solutions at a challenge event. During the challenge demonstration, the

Government will evaluate proposed solutions and use these evaluations as the basis for making future acquisition determinations such as follow-on contract or task order awards.

The challenge descriptions for both Surveillance and Inspection, provided in the reference material [see Section D.6], are the mechanism by which Offerors will understand both the capability sought by JIEDDO to defeat IEDs and the challenge process. Offerors will determine the technical applicability of their solutions to fill the Government need based on the challenge description. Offerors who believe that their solution will succeed at the challenge event are encouraged to respond to this RFP to compete for an IDIQ contract. If successful and awarded an IDIQ, IDIQ holders will receive a task order to participate in the challenge event. The Government will use evaluations of contractor performance at the challenge event as part of the evaluation criteria for follow-on task orders.

The following steps summarize the acquisition approach used for this ChBA:

- Offerors will provide a white paper in response to the base IDIQ RFP.
- White paper responses will be evaluated by the Government. Concurrent awards for the Base IDIQ and Task Order 1 will be made. The Base IDIQ is the overarching contract awarded to successful Offerors. Competitive task/delivery orders will be placed against the Base IDIQ. For this multiple award IDIQ, Task Order 1 will cover both the Surveillance and Inspection Challenge efforts.
- The Government will conduct the challenge event and contractors will attend with their proposed solutions. The Government will evaluate contractor performance per the challenge evaluation criteria provided in Section J, Attachments 001 and 002.
- Based on evaluation of contractor challenge performance, additional task orders may be issued to top performers for procurement of solutions in evaluation quantities to undergo U.S. Government testing and evaluation.
- If there are favorable testing and evaluation results, additional task orders may be issued to top performers for solution refinement.
- Following solution refinement, additional task orders may be issued for procurement of solutions in fielding quantities.

D.4 Results and Outcomes

The first IDIQ task order for challenge participation was awarded to 20 vendors in August 2014. Subsequent task orders will allow JIEDDO and ARL to conduct technology development and validation testing.

In coordination with ARL and the Maneuver Center of Excellence, Ft. Benning, GA, JIEDDO conducted the 2014 Culvert Denial Challenge 29 SEP–10 OCT at Ft. Benning, GA. The challenge event had two parts: an inspection challenge and a surveillance challenge, each involving 10 challengers. The 20 vendor challengers included companies from Israel (Roboteam, Elbit) and the United Kingdom (Pearson Engineering) in addition to a mix of small and large domestic businesses.

The inspection challenge required vendors to locate replicated IED threats over a series of culvert scenarios with varying terrain, obstacles, communications limitations, and lighting. The surveillance challenge had vendors perform eight hours of continuous surveillance, spanning day and night, on a

culvert while various scripted activities took place. A key challenge for surveillance was differentiating between benign and nefarious activities while minimizing human attention for monitoring.

Results of the challenge events were compiled and distributed to the vendors. Though promising, no technology distinguished itself as a clear solution ready for JIEDDO acquisition. The challenge served as confirmation that existing technologies do not yet solve the culvert denial need posed by JIEDDO.

Based on results of the challenge, JIEDDO sent a Request for Information (RFI) in November 2014 to the 20 IDIQ vendors seeking estimates for pricing to improve their scores should they compete in a subsequent event. Vendor performance at the challenge, along with estimated vendor pricing from the responses to this RFI, formed the basis for a Task Order 2 to fund awardees for refinements of their technologies.

In December 2015, $2.6M was awarded to five IDIQ vendors based on their performance in the 2014 Culvert Challenge. These five vendors, two with inspection technologies and three with surveillance technologies, along with three other IDIQ vendors that did not receive Task Order 2 funding, will compete in a repeat of the 2014 Culvert Challenge to be conducted at Ft. Benning in 2016.

D.5   Lessons Learned / Best Practices

- **Ensure buy-in from all stakeholders upfront** – By engaging all stakeholders from both the program office and the supporting contract office upfront, we could gain buy-in from all parties involved. To accomplish this, we held a kick-off meeting where we discussed the strategy for the ChBA, proposed timeline, and expectations for each member of the team. During this session, we allowed an open, free-flowing discussion and revised the strategy and timeline accordingly based on input from the team.
- **Hold an industry day to communicate needs and answer questions –** An industry day was held to explain the ChBA process as well as the Government need to interested vendors. Questions and answers were given and any questions that could not be answered immediately were addressed at a later date. The industry day offered an opportunity for networking among participants and an educational session on challenges and ChBA.
- **Expect the unexpected** – Candidate solutions may include features not conceived by the ChBA team; thus, it is imperative that the challenge evaluation criteria be developed in a manner that will allow for the fair evaluation of all proposed solutions. One must not assume that all solutions proposed will be of a certain type or attack the problem from a singular perspective. In the case of the Culvert Challenge, proposed solutions ranged from Micro-Unmanned Aerial Vehicles (UAVs) to bomb-detecting dogs.

D.6   Additional Reference Materials, Articles, Publications, and Point of Contact

D.6.1   Pre-Solicitation Notice

Solicitation Number: W911QX-14-R-0002

This pre-solicitation notice is posted to publicize the Government's intent to issue a Multiple Award Indefinite Delivery Indefinite Quantity (MA IDIQ) contract in support of the Counter-IED Culvert Challenge. Large and small business concerns are sought to participate in a ChBA where their technical capabilities, production capacity, prior experience, and competitive pricing will be assessed. Task orders issued under this MA IDIQ ChBA may be awarded as Firm Fixed-Price (FFP), Cost Plus Fixed Fee (CPFF), or a hybrid of the two. There will be task orders for challenge participation, and additional task orders may be awarded based on challenge performance for testing, refinement, and production quantities.

Description of work: Through this MA IDIQ, the Army Research Laboratory (ARL) in collaboration with the Joint Improvised Explosive Devices Defeat Organization (JIEDDO) seeks innovative solutions for surveillance and inspection of Improvised Explosive Devices (IED) emplacements and remote detection and identification of objects of interest, specifically IEDs and paraphernalia within and around culvert tunnels, tunneling events under roadways, and roadway craters.

This solicitation will be issued in electronic format only. Offerors must register in the System for Award Management (SAM) at www.sam.gov prior to submission of proposals. The solicitation will be posted to FedBizOpps at www.fedbizopps.gov and is available to contractors without charge.

D.6.2   Section C – Description/Specification/Statement of Work

1 PURPOSE

The Joint Improvised Explosive Device Defeat Organization (JIEDDO) in collaboration with the Army Research Laboratory (ARL) seeks innovative solutions for surveillance and inspection in or around roadway culverts, tunnels and tunneling events under roadways, and roadway craters to defeat Improvised Explosive Device (IED) emplacements. In addition, JIEDDO seeks the ability to remotely detect and identify objects of interest, specifically IEDs and paraphernalia within and around culvert tunnels, tunneling events under roadways, and roadway craters. This acquisition is to evaluate, test, and produce solutions that are capable of meeting the Government's objectives.

2 MISSION

JIEDDO leads Department of Defense actions to rapidly provide counter-IED capabilities and solutions in support of combatant commanders, the military Services, and as authorized, other federal agencies to enable the defeat of the IED as a weapon of strategic influence. JIEDDO's strategic vision is to reduce the effectiveness and lethality of IEDs to allow freedom of maneuver for joint forces, federal agencies, and partner nations in current and future operating environments. Over the past few years, ARL has worked numerous programs with JIEDDO and will again team with them to provide technical and contractual support for this acquisition.

3 BACKGROUND

IEDs have become the weapon of choice for terrorists. They require limited skills to build and provide dramatic results with very little investment of time, money, and effort. The public relations benefit of a surprising, spectacular explosion far outweighs attacks using more conventional weapons. With easy access to commercial technologies, internet training, and explosive materials, IEDs provide the enemy with inexpensive, stand-off, precision weapons systems while allowing them to maintain near total anonymity.

The IED became the insurgent weapon of choice during Operation Iraqi Freedom (OIF), but they continue to have a devastating effect in Operation Enduring Freedom (OEF) taking place in Afghanistan. Because these threats evolve and adapt quickly and continuously, they also have the potential for posing future risks to other U.S. interests, both domestic and abroad.

4 SCOPE

In order to perform the culvert denial mission, two (2) components have been identified: culvert surveillance and culvert inspection. A successful culvert surveillance system will significantly increase the warfighter's ability to efficiently monitor multiple locations with high degrees of accuracy and minimal effort. A successful culvert inspection system will deploy rapidly to identify the presence or absence of weapons and associated paraphernalia in the vicinity of a culvert. This PWS also addresses evaluation, testing, program management, production, logistical support, and planning requirements for final deployment.

5 PERIOD/PLACE OF PERFORMANCE

The anticipated period of performance is five (5) years from contract award. The work performed under this contract shall be performed at a combination of the contractor and Government facilities.

6 CULVERT DENIAL PROGRAM TASKS

The Government intends to issue task orders in the following task areas:

6.1   CHALLENGE TASKS

The Contractor shall demonstrate a solution to the Challenge in Section 6.1.1 or the Challenge in 6.1.2. If a Contractor wishes to participate in both challenges, then two (2) white paper proposals are required.

6.1.1   Surveillance Challenge Task

In a controlled environment, the Contractor shall demonstrate the ability of their solution to remotely monitor a culvert in near real-time and detect and identify nefarious activities with a minimal amount of human attention in order to determine when and where activities associated with the implantation of IEDs has taken place (see PWS - Attachment A for challenge description and Section J Attachment 001 for evaluation criteria). The Government will present scenarios and evaluate the contractor-proposed solution performance at the challenge event.

6.1.1.1   Personnel

Participants shall provide necessary personnel to support their solution before, during, and after execution of the challenge event. Participants may send a maximum of five (5) personnel to support challenge event participation. Participants will be provided a stipend to cover the travel of two (2) individuals to support their solution for one (1) week at Ft. Benning, GA during execution of the culvert surveillance challenge event. Personnel in attendance shall be limited to those who have the technical expertise and appropriate skill sets necessary to operate each participant vendor's proposed solution for the duration of the challenge event.

6.1.1.2   Materials

Participants shall provide all necessary supplies, spare parts, tools, test equipment, consumables, hardware, software, and other applicable materials required for the use

of their IED surveillance solution during execution of the challenge event. Participants will not have an opportunity to repair or maintain equipment during the surveillance challenge event itself.

6.1.1.3 Facilities

Performance under this task order will be primarily conducted at Ft. Benning, Georgia.

6.1.2 Inspection Challenge Task

In a controlled environment, the Contractor shall demonstrate the ability of their solution to remotely detect and identify objects of interest, specifically IEDs and paraphernalia within and around a culvert (see PWS - Attachment B for challenge description and Section J Attachment 002 for evaluation criteria). The Government will present scenarios and evaluate the contractor-proposed solution performance at the challenge event.

6.1.2.1 Personnel

Participants will provide necessary personnel to support their solution before, during, and after execution of the challenge event. Participants may send a maximum of five (5) personnel to support challenge event participation. Participants will be provided a stipend to cover the travel of two (2) individuals to support their solution for one (1) week at Ft. Benning, GA during execution of the culvert IED inspection challenge event. Personnel in attendance shall be limited to those who have the technical expertise and appropriate skill sets necessary to operate each participant vendor's proposed solution for the duration of the challenge event.

6.1.2.2 Materials

Participants shall provide all necessary supplies, spares, tools, test equipment, consumables, hardware, software, and other applicable materials required for the use of their culvert IED inspection solution during execution of the Inspection Challenge event. However, participants will not have an opportunity to repair or maintain equipment during the culvert IED inspection challenge event itself.

6.1.2.3 Facilities

Performance under this task order will be primarily conducted at Ft. Benning, Georgia.

6.2 TESTING TASK

6.2.1 The Contractor shall deliver enough fully functional challenge-proven solutions to perform successful inspection or surveillance operations at five (5) culverts simultaneously to the U.S. Government Test and Evaluation facility.

6.2.1.1 At the scheduled testing start up, the Contractor shall provide, in person, instructions to operate the solution units as well as demonstrations on how the technology functions to the Government officials executing the testing. The Contractor shall ensure that the Government testing officials are able to operate the technology without assistance when Contractor-furnished instructions are followed, and no malfunctioning occurs. The Contractor shall ensure that enough Contractor operators are present to initially train and assist the Government officials for all five (5) solutions.

6.2.1.2 The Contractor shall remain at the testing and evaluation facility for the remainder of the testing exercise, which is estimated to last between forty-five (45) and sixty (60) days.

6.3   REFINEMENT TASK

The Contractor shall refine the solution to meet JIEDDO and ARL objectives based on results of prior test and evaluation and/or challenge(s) and in preparation for operational evaluation (see C.6.2). The Contractor shall ensure that these refinements are small in scope and not fundamental to the overall technology.

6.4   PRODUCTION/FIELDING TASKS

6.4.1   The Contractor shall produce and deliver enough fully functional, challenge-proven, and tested solutions to perform successful inspection or surveillance operations at twenty (20) culverts simultaneously for field evaluation purposes.

C.6.4.1.1 In order to support field evaluation, the Contractor shall travel to locations selected by the Government to conduct training, support, and repairs

6.4.2   Upon successful field evaluation and at the request of the Government, the Contractor shall produce and deliver enough fully functional, challenge-proven, and tested solutions to perform successful inspection or surveillance operations at up to two hundred (200) culverts for further operational testing and evaluation.

6.4.2.1 In order to support operational testing and evaluation, the Contractor shall travel to locations selected by the Government to conduct training, support, and repairs.

6.5   PROGRAM MANAGEMENT REQUIREMENTS

6.5.1 The Contractor shall produce and deliver status reports, schedules, and deliverables in support of the coordination of efforts and performance for each task order throughout the period of performance by milestones specified in each Task Order (TO)/Delivery Order (DO).

D.6.3   PWS – Attachment A - Task Order 1 – Surveillance Challenge

PURPOSE

The Surveillance Challenge task order, Task Order 1, and associated challenge event seek to support the acquisition of IED surveillance technology for use in support of JIEDDO's counter-IED mission. The challenge event will assess technologies designed to remotely monitor a culvert in near real-time and detect and identify nefarious activities (e.g., personnel carrying weapons) with a minimal amount of human interaction. Furthermore, this challenge will assess participants' ability to remotely survey the area within and around a culvert to determine when and where activities associated with the implantation of IEDs has taken place.

SURVEILLANCE CHALLENGE DESCRIPTION

Participants shall perform near real-time, remote surveillance of a culvert from an Operations Area (OA) that does not afford direct visual access to a Named Area of Interest (NAI). The NAI will represent a typical remote culvert area without available power. The OA environment will be a temporary facility located within one (1) kilometer of the NAI. It will have 110v AC power and shelter from precipitation. Participants

shall be responsible for communications between the NAI and OA. Participants will not be allowed to run cable of any type between the OA and the NAI. The OA will not be in line-of-sight of the NAI. Participants will be given free access to the NAI for up to two (2) hours prior to the event to install any needed surveillance equipment. After the equipment installation period, a contiguous eight (8) hour surveillance period begins. The surveillance period may include both light and darkness. Challenge participants shall not be permitted to directly observe the NAI during the surveillance period. Participants shall conduct surveillance from the OA. When suspicious or nefarious activity is detected during the surveillance period, participants shall expeditiously report their findings to a challenge administrator. Participants shall not report activities that are not considered suspicious or nefarious. All findings must be reported within five (5) minutes after the end of the eight (8) hour surveillance period.

Suspicious or nefarious activities are defined as follows:

- A person within three (3) meters of a culvert opening not on the road
- Physical disturbance within five (5) meters of a culvert such as digging, drilling, or sawing
- A person carrying a weapon along the road or within ten (10) meters of a culvert (Weapons will be simulated AK-47s and simulated hand-carried Rocket-Propelled Grenade (RPG) launchers)
- A person placing any item within three (3) meters of a culvert opening

TECHNICAL OBJECTIVES FOR SURVEILLANCE CHALLENGE

The Contractor shall provide IED Surveillance technology to be rigorously evaluated during the challenge to determine the best overall culvert IED surveillance solution. Viable solutions will have the following characteristics:

- Identifies the greatest number of suspicious and nefarious activities with a minimum number of false positives
- Reports suspicious and nefarious events quickly (low latency) with the greatest time accuracy
- Consumes the smallest amount of human attention
- Operates with the smallest surveillance team size
- Requires the least amount of setup time with the fewest resources

The evaluation criteria for the solution characteristics above are found in Section J, Attachment 001 – SURVEILLANCE CHALLENGE EVALUATION.

D.6.4 PWS – Attachment B - Task Order 1 – Inspection Challenge

PURPOSE

The Inspection Challenge task order, Task Order 1, and associated challenge event seek to support the acquisition of IED inspection technology for use in support of JIEDDO's Counter-IED mission. The purpose of this challenge is to assess technologies designed to remotely detect and identify objects of interest, specifically IEDs and paraphernalia within and around a culvert.

INSPECTION CHALLENGE DESCRIPTION

In this event, participants will use their technology to determine if IEDs have been implanted in a Named Area of Interest (NAI) containing a culvert. Simulated IEDs, their associated trigger devices, and other

objects of interest may be located anywhere in the NAI. Their nature and placement will mimic known enemy techniques and devices used to attack mounted and dismounted traffic. Prior to the event, participants will be shown examples of what devices to expect and given reference documentation.

Existing knowledge of IED appearance is not expected and will not affect performance. Participants perform their determination while remaining outside an exclusion zone (EZ) containing the NAI for the duration of the event but can deploy equipment into the EZ and NAI. The EZ will require a standoff distance between fifty (50) and three hundred (300) meters from the NAI. A fielded system for inspection of culverts will need to be quickly deployed and have minimal impact on convoy logistics. The challenger team must demonstrate the speed and ease of deployment by having a single individual from the vendor team carry all equipment that will be deployed into the EZ and NAI 100 meters in a single pass, in less than 5 minutes, prior to the start of the event. The Inspection Challenge will consist of two (2) components, Culvert Clearance and Culvert Investigation. These components will each result in a score as described in the Inspection Challenge Evaluation section (see Section J – Attachment 002). The scores for these components will be evaluated separately and will result in two winners, one for Culvert Clearance and one for Culvert Investigation.

The Culvert Clearance component will evaluate the efficiency of system clearing capabilities by assessing the amount of time required for the system to determine if it is safe for mounted traffic to continue over the culvert. This will be considered completed when the operator communicates the number of culverts and the presence or absence of a weapon inside each. Upon effective communication of the initial inspection finding, the system will begin the second component, Culvert Investigation, immediately. In Culvert Investigation, the system will demonstrate wider-area inspection capabilities by reporting the location of inert weapons or other objects of interest located in the NAI with an accuracy of one (1) meter or better. This will be marked on an NAI map furnished by the challenge administrator at the time of the event. If a participant elects to produce their own map in lieu of the administrator- provided map, it must allow position determination of identified items with one (1) meter accuracy or better. Completed maps will be given to the challenge administrator within ten (10) minutes of the completion of the event.

Innovation is sought in the method by which inspection results are quickly and effectively communicated to the system operator. Time will stop when the operator declares that they have discovered all items of interest within the NAI. Participants will have a maximum of ninety (90) minutes total to complete both components at each event location. The challenge will include up to three (3) event locations. The challenge may include events in both light and darkness.

TECHNICAL OBJECTIVES FOR INSPECTION CHALLENGE

The Contractor shall provide IED inspection technology to be rigorously evaluated during the challenge to determine the best overall culvert IED inspection solution. Viable solutions will have the following characteristics:

Provides the greatest culvert clearance speed

- Identifies and reports the location of inert weapons or other objects of interest (greatest number of items found) with the greatest accuracy
- Reports accurate findings in the minimum amount of time (completion speed)
- Requires the smallest inspection team size.

The evaluation criteria for the solution characteristics above are found in Section J, Attachment 002 – INSPECTION CHALLENGE EVALUATION.

D.6.5   Section J – Attachment 001 – Surveillance Challenge Evaluation

EVALUATION CALCULATION

For the purpose of comparison and ranking, challenger performance is summarized by a single numerical value computed as follows:

EVALUATION FACTORS

Suspicious or nefarious activity identified (SNA) – Contractor surveillance team members will report the time of each activity they identify as suspicious or nefarious to the event administrator. Time will be in Coordinated Universal Time (UTC) to the nearest minute. Suspicious and nefarious activities are restricted to those specifically identified in PWS Attachment A. Score for this criterion is the sum of correctly identified activities reported or recorded within five (5) minutes after the actual event time.

False positive (FP) – Total number of reported or recorded suspicious or nefarious activities without correspondence to, or beyond five (5) minutes after, an actual suspicious or nefarious activity.

$$Score = (SNA \times 100) - (FP \times 50) + (5 - STS) \times 50 + (480 - HA)$$

Surveillance team size (STS) – The greatest number of challenger personnel present in the OA during the eight (8) hour surveillance period at any given time. Shift changes of personnel are permitted without penalty.

Human attention (HA) – The OA will be partitioned with an area for challengers to install monitoring equipment and a second area out of sight of the first but immediately accessible to surveillance team members. The challenge administrator will document the time one or more surveillance team members spend in the first area where their equipment is installed. Flashing lights and audible alarms are permitted in the second area to alert surveillance team members and are not considered for human attention calculations. Human attention is defined as the total number of minutes any team member spends in the area containing their monitoring equipment.

Setup time (ST) – Challengers will be allowed up to two (2) hours to setup their equipment. Challengers who exceed two (2) hours will be scored overall zero (0) for the surveillance challenge.

D.6.6   Section J – Attachment 002 – Inspection Challenge Evaluation

EVALUATION CALCULATION

For the purpose of comparison and ranking, challenger performance is summarized by two (2) scores: culvert clearance score and culvert investigation score. Vendors will be offered an opportunity to inspect some number of culvert locations. The scores are computed as the summation of performance across all culvert locations. The scores are computed as follows:

$$Culvert\ Clearance\ score = \sum(90 - CCS)$$

$$Culvert\ Investigation\ score = \sum\left((IF \times 100) + (5 - ITS) \times 5 + \frac{(90 - CS)}{18} + \frac{(90 - LIF)}{60}\right)$$

EVALUATION FACTORS

Culvert clearance speed (CCS) – The time in minutes from the start of the event to when the operator communicates the number of culverts and the presence or absence of a weapon inside each.

Items found (IF) – The total of the number of items correctly identified and recorded on the NAI map furnished by the challenge administrator, or on a challenger provided map that allows position determination of identified items with one (1) meter accuracy or better. Items that are recorded outside a one (1) meter radius of actual surveyed item location will not be considered found.

Inspection team size (ITS) – The number of team members present during the event.

Completion speed (CS) – The time in minutes from the start of the event to when the inspection team declares they have found all items within the NAI or ninety (90) minutes passes.

Last item found speed (LIF) – The time in minutes from the start of the event until the last correctly identified and located item is recorded. If the challenge administrator cannot determine this time, ninety (90) minutes will be used.

D.6.7   Section L – Instructions, Conditions, and Notices to Offerors

1 OVERVIEW

JIEDDO and ARL seek to establish quantifiable metrics that will bring transparency, objectivity, and competition to the acquisition of counter-IED culvert solutions that support the warfighter. Offerors shall provide the following requested information while addressing the respective PWS and evaluation criteria as stipulated herein. The response shall be in the form of a short white paper and will help JIEDDO and ARL understand the unique capabilities of each Offeror and create the best opportunity to distinguish their solution(s).

Offerors shall prepare their white paper(s) to be evaluated for contract award(s) per the directions below. Offerors may express their interest in participating in the inspection or surveillance challenge or both.

To be considered, Offerors must submit a separate white paper for each solution and for each challenge for which they want to be considered. Each white paper will be evaluated independently.

2 ADMINISTRATION

Each white paper shall be no more than ten (10) pages in length and may include pictures and diagrams within the page limit requirement. References made to material outside the white paper will not be considered.

The following additional restrictions apply:

    a. Each paragraph shall be separated by at least one (1) blank line. A standard, 12 point minimum font size applies. Arial or Times New Roman fonts are required. Tables and illustrations may use a reduced font size not less than 8 point and may be landscape.
    b. Margins – Top, Bottom, Left, Right 1"
    c. Gutter – 0"
    d. From Edge – Header, Footer 0.5"
    e. Page Size, Width – 8.5"

f. Page Size, Height – 11"

The front cover does not count against the page count limit. Please provide the following information on the front cover page of the white paper:

g. Offeror Name

h. Offeror Mailing Address

i. Company URL

j. Offeror POC

k. Offeror POC Job Title

l. Offeror POC Phone Number

m. Offeror POC Email Address

Offerors shall include a declaration affirming participation in their selected challenge. This declaration should read as follows:

n. [Insert Company Name] submits this white paper to be considered for contract award of the Base IDIQ and to participate in the [surveillance or inspection] challenge.

3 SURVEILLANCE CHALLENGE WHITE PAPER INSTRUCTIONS

If you plan to participate in the surveillance challenge, please address the following in your white paper submission:

3.1   Offeror Experience

a. Summary of Offeror's overall experience to include general technical capabilities. Examples include corporate experience with technology, relevant educational background, depth of knowledge, and publications.

b. Summary of Offeror's overall experience to include products and examples of their successful application.

3.2   Offeror Management Approach

a. Summary of company's program management approach for the execution of the IDIQ and respective task orders. Examples include timely submission of status reports, ability to accurately project and reliably follow schedules, production of quality deliverables on time and budget, and overall program management of the contract to include achievement of cost, schedule, and performance objectives.

b. Summary of Offeror's intellectual property strategy to include what (if any) intellectual property rights the Offeror may be willing to provide the Government and what (if any) rights the Government may already have in the Offeror's solution from previous development contracts.

3.3   Approach to the PWS

White paper submissions will explain or describe the following:

a. Execution of the tasks in PWS Section C.6, Culvert Denial Program Tasks, and PWS Attachment A, Surveillance Challenge.

b. Solution to the Surveillance Challenge.

c. Identification of suspicious or nefarious activity taking place in the vicinity of a culvert while minimizing false-positive identifications.

d. Time it takes your solution to identify and then report (latency) suspicious or nefarious activity

e. Level of human attention required to operate your solution.

f. How the solution reports suspicious or nefarious activities.

g. Number of personnel required to operate your solution.

h. Amount of set-up time is required to prepare your solution for operation, resources required, and its concept of emplacement.

3.4   Supporting Information

White paper submissions will explain or describe the following:

a. Resistance of your solution to weather and its ability to operate in darkness

b. Communication approach

c. Size, weight, and power requirements of your solution

d. Training, skills, knowledge, and experience required to operate your solution

e. Resistance of your solution to tampering and your approach to concealment

f. If using a radio in the solution, please fill out and submit a completed DD Form 1494 in Section

j. (This completed form shall be attached to the Offeror's white paper as an appendix and will not count against the page count limitation)

3.5   Pricing

Estimate the per culvert deployment price for your solution.

4 INSPECTION CHALLENGE WHITE PAPER INSTRUCTIONS

If you plan to participate in the inspection challenge, please address the following in your white paper submission.

4.1   Offeror Experience

a. Summary of Offeror's overall experience to include general technical capabilities. Examples include corporate experience with technology, relevant educational background, depth of knowledge, and publications.

b. Summary of Offeror's overall experience to include products and examples of their successful application.

4.2   Offeror Management Approach

a. Summary of company's program management approach for the execution of the IDIQ and respective task orders. Examples include timely submission of status reports, ability to accurately project and reliably follow schedules, production of quality deliverables on time and budget, and overall program management of the contract to include achievement of cost, schedule, and performance objectives.

b. Summary of Offeror's intellectual property strategy to include what (if any) intellectual property rights the Offeror may be willing to provide the Government and what (if any) rights the Government may already have in the Offeror's solution from previous development contracts.

4.3   Approach to the PWS

White paper submissions will explain or describe the following:

   a. Execution of the tasks in PWS Section C.6, Culvert Denial Program Tasks, and PWS Attachment B, Inspection Challenge.

   b. Solution to the Inspection Challenge.

   c. Time it takes your solution to determine the presence or absence of a weapon concealed in or around a culvert.

   d. How expeditiously the system identifies and locates multiple simulated IEDs, trigger devices, and other objects of interest and how this information is plotted on a map.

   e. Location accuracy when item of interest is found.

   f. Number of personnel required to operate your solution.

4.4   Supporting Information

White paper submissions will explain or describe the following:

   a. Resistance of your solution to weather and its ability to operate in darkness.

   b. Communication approach

   c. Size, weight, power requirements of your solution.

   d. Training, skills, knowledge, and experience required to operate your solution.

   e. If using a radio in the solution, please fill out and submit a completed DD Form 1494 in Section

   j. This completed form shall be attached to the Offeror's white paper as an appendix and will not count against the page count limitation.

4.5   Pricing

Estimate the unit price for your solution.

D.6.8   Section M – Evaluation Factors for Award

1 OVERVIEW

Award of this contract and subsequent task orders will be evaluated based on:

   a. Offeror Experience (Section L.3.1 Surveillance, Section L.4.1 Inspection),

   b. Offeror Management Approach (Section L.3.2 Surveillance, Section L.4.2 Inspection),

   c. Approach to the PWS (Section L.3.3 Surveillance, Section L.4.3 Inspection),

   d. Supporting Information (Section L.3.4 Surveillance, Section L.4.4 Inspection),

   e. Price (Section L.3.5 Surveillance, Section L.4.5 Inspection).

Unless all offers are rejected, award will be made to the responsible Offeror(s) whose offer, conforming to the solicitation, is determined to be the best overall value to the Government, price and other factors considered. In determining the best overall response, the combined non-price factors are more important that the price factor, however, price is a significant factor. The Government may select for award the Offeror(s) whose price is not necessarily the lowest, but whose technical proposal (White Paper) is more advantageous to the Government and warrants the additional cost.

2 WHITE PAPER EVALUATION CRITERIA

White papers submitted following Section L instructions will be evaluated using the following evaluation criteria to determine contract award.

Color	Rating	Description
Blue	Outstanding	Proposal meets requirements and indicates an exceptional approach and understanding of the requirements. The proposal contains multiple strengths and no deficiencies.
Purple	Good	Proposal meets requirements and indicates a thorough approach and understanding of the requirements. Proposal contains at least one strength and no deficiencies.
Green	Acceptable	Proposal meets requirements and indicates an adequate approach and understanding of the requirements. Proposal has no strengths or deficiencies.
Yellow	Marginal	Proposal does not clearly meet requirements and has not demonstrated an adequate approach and understanding of the requirements.
Red	Unacceptable	Proposal does not meet requirements and contains one or more deficiencies and is unawardable.

Please reference: DoD Source Selection Procedures at
http://www.acq.osd.mil/dpap/policy/policyvault/USA007183-10-DPAP.pdf

3 SURVEILLANCE CHALLENGE WHITE PAPER EVALUATION CRITERIA

Offeror Experience, Offeror Management Approach, Approach to PWS, and Supporting Information are the non-price technical factors used in the evaluation. In determining the best overall technical response using these non-price factors, the Approach to PWS is more important than all of other non-price factors when combined.

3.1   Offeror Experience

a. Evaluation of the Offeror's general technical capabilities and relevance to the objectives presented in the PWS.

b. Evaluation of the Offeror's experience developing products which have been successful in the marketplace.

3.2   Offeror Management Approach

a. Evaluation of Offeror's management approach for timely submission of status reports, ability to accurately project and reliably follow schedules, produce and submit quality deliverables on time and budget, and overall program management of the contract to include achievement of cost, schedule, and performance objectives.

b. Evaluation of whether or not the Offeror provided an intellectual property strategy to include what (if any) intellectual property rights the Offeror may be willing to provide the Government and what (if any) rights the Government may already have in the Offeror's solution from previous development contracts.

3.3   Approach to the PWS

White paper submissions will be evaluated based on the quality of the explanation of how the Offeror expects to perform or deliver the following during the Surveillance Challenge:

a. Execution of the tasks in PWS Section C.6, Culvert Denial Program Tasks, and PWS Attachment A, Surveillance Challenge

b. Solution to the Surveillance Challenge

c. Identification of suspicious or nefarious activity taking place in the vicinity of a culvert while minimizing false-positive identifications

d. Time it takes solution to identify and then report (latency) suspicious or nefarious activity – the less time the better

e. Level of human attention required to operate solution – the less time the better

f. How the solution reports suspicious or nefarious activities

g. Number of personnel required to operate solution – the less personnel required the better

h. Amount of set-up time is required to prepare solution for operation, resources required, and its concept of emplacement – the less set-up time the better

3.4   Supporting Information

White paper submissions will be evaluated based on the quality of the explanation of how the Offeror intends to address the following:

a. Resistance of solution to weather and its ability to operate in darkness

b. Communication approach

c. Size, weight, and power requirements of the solution

d. Training, skills, knowledge, and experience required to operate solution.

e. Resistance of your solution to tampering and approach to concealment.

f. Amount of time the solution can be expected to operate without operator intervention.

3.5   Price

Evaluation of the estimated per culvert deployment price for the solution.

4 INSPECTION CHALLENGE WHITE PAPER EVALUATION CRITERIA

Offeror Experience, Offeror Management Approach, Approach to PWS, and Supporting Information are the non-price technical factors used in the evaluation. In determining the best overall technical response using these non-price factors, the Approach to PWS is more important than all of other non-price factors when combined.

4.1   Offeror Experience

a. Evaluation of the Offeror's general technical capabilities and relevance to the objectives presented in the PWS.

b. Evaluation of the Offeror's experience developing products which have been successful in the marketplace.

4.2   Offeror Management Approach

a. Evaluation of Offeror's management approach for timely submission of status reports, ability to accurately project and reliably follow schedules, production of quality deliverables on time and budget, and overall program management of the contract to include achievement of cost, schedule, and performance objectives.

b. Evaluation of whether or not the Offeror provided an intellectual property strategy to include what (if any) intellectual property rights the Offeror may be willing to provide the Government and what (if any) rights the Government may already have in the Offeror's solution from previous development contracts.

4.3 Approach to the PWS

White paper submissions will be evaluated based on the quality of the explanation of how the Offeror expects to perform or deliver the following during the Inspection Challenge:

a. Execution of the tasks in PWS Section C.6, Culvert Denial Program Tasks, and PWS Attachment B, Inspection Challenge

b. Solution to the Inspection Challenge

c. Time it takes solution to determine the presence or absence of a weapon concealed in or around a culvert – the less time the better

d. How expeditiously the system identifies and locates multiple simulated IEDs, trigger devices, and other objects of interest and how this information is plotted on a map

e. Location accuracy when item of interest is found – the greater accuracy the better

f. Number of personnel required to operate solution – the less personnel required the better

4.4 Supporting Information

White paper submissions will be evaluated based on the quality of the explanation of how the Offeror intends to address the following:

a. Resistance of your solution to weather and its ability to operate in darkness.

b. Communication approach

c. Size, weight, power requirements of solution.

d. Training, skills, knowledge, and experience required to operate solution.

e. Amount of time the solution can be expected to operate without operator intervention.

4.5 Price

Evaluation of the estimated deployment price of Offeror's solution.

White Paper Evaluation Process

Phase I: SSEB Evaluator Individual Sub-Factor Evaluation

- Each Evaluator will use an Individual Sub-Factor Evaluation Form to record the results of their sub-factor evaluation for each white paper.
- Each evaluator will read each white paper and assess the merit of each sub-factor using the Sub- Factor Guidance and Definitions Matrix as guidance.
- For each sub-factor, the evaluator provides a rating of significant strength, minor strength, significant weakness, minor weakness, deficiency, or clarification using the Sub-Factor Guidance and Definitions Matrix as guidance.
- Each evaluator will provide supporting textual comments on the Individual Sub-Factor Evaluation Form that supports each sub-factor rating and specifically references the White Paper.

- If a factor does not contain sub-factors, the evaluator will evaluate at the factor level.

Phase II: SSEB Evaluator Individual Factor Evaluation

- Each evaluator will use an Individual Factor Evaluation Form to record the results of their factor evaluation for each white paper.
- Each evaluator will read Section M.2, White Paper Evaluation Criteria, of the RFP and will use the color-coded ratings (Outstanding, Good, Acceptable, Marginal, or Unacceptable) and associated definitions to assess the merit of each factor for each White Paper.
  - o Reference RFP Sections M.3.1 – M.3.4 for the Surveillance White Paper
  - o Reference RFP Sections M.4.1 – M.4.4 for the Inspection White Paper

- Each evaluator will provide supporting textual comments on each factor rating using the Individual Factor Evaluation Form for documentation. Evaluator should also provide a reference to the RFP and White Paper for each textual comment and associated rating provided. Each evaluator will provide textual comments that answer three things:
  - o What: This includes listing the specific strengths and weaknesses of the sub-factors about the Offeror's approach to the factor and discussion of the sub-factor(s) that influenced the rating.
  - o Why: The evaluator, using their listing of strengths and weaknesses of the sub-factors, will call out specific examples and specific references from the proposal that explain why you liked or disliked the Offeror's approach (include specific references to White Paper).
  - o Impact: The evaluator will describe the impact of this approach to the Government's stated requirement. Does it enhance or detract from the desired results? How important is the impact? Does it increase or decrease the Offeror's ability to perform?

Phase III: Consensus Evaluation

- The SSEB Chairperson leads the consensus evaluation and brings the evaluators together forming the Consensus Team.
- The SSEB Chairperson uses the Consensus Factor Evaluation Form to record the Consensus Team's discussions and final evaluations of each factor for each White Paper.
- The Consensus Team will us the White Paper Evaluation Criteria in Section M.2 of the RFP and associated color-coded ratings (Outstanding, Good, Acceptable, Marginal, or Unacceptable) and definitions to assess the merit of each factor for each White Paper.
- Evaluators will analyze and discuss individual factor ratings as a group.
- Evaluators will come to a consensus on color evaluation rating for each factor and select a representative what, why, and impact statement for each factor.

Phase IV: Recommendation

- The SSEB Chairperson, with help from the evaluators, will develop Evaluation Report for submission to the Source Selection Authority (SSA). Evaluation Report should show the results from the Consensus Factor Evaluation Form and Consensus meeting notes.

Appendix E   Case Study: Army Cyber Innovation Challenge Using OTA

E.1   Background

As cyberspace grows more complex and increasingly contested with sophisticated threats able to exploit known and unknown vulnerabilities, cyberspace operations and cybersecurity are exceptionally critical to national security.[77] The Army's portion of the cyberspace domain requires an effective understanding of the technology landscape as it relates to current and future cyberspace capability needs. At all levels, the Army seeks to build, operate, and maintain secure and defensible networks, protecting them against specific threats to achieve mission assurance while denying the adversary freedom of action in the cyberspace domain. New and creative processes and models are required to mature holistic Army Cyberspace operations, comprising offensive, defensive, and DoD Information Networks (DoDIN) capability areas. Army perspective points, or pillars, to achieving a future vision of Army Cyberspace Operations consist of:

- Integrated *Offensive Cyberspace Operations (OCO)* providing degradation, disruption, or destruction effects;
- Transformed *Defensive Cyberspace Operations (DCO)* enabling maneuver, passive and active defense;
- Improved *DoD Information Network (DoDIN)* for a robust and assured defensive cyber posture; and
- Integrated *Cyberspace Situational Understanding* capability providing analytics, storage, and correlation to reduce risk.

As a response to the operational community, the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) Systems of Systems Engineering & Integration (SoSE&I) Directorate developed the Army Cyber Innovation Challenge model. The model leverages existing authority, enabling an agile and flexible process to investigate priority Army cyberspace requirements. The challenge model provides a rapid prototyping capability to aid developmental acquisition strategies.

E.1.1   Problem Set

The Army continually seeks to mature and operationalize the cyberspace domain. General Milley, U.S. Army Chief of Staff, when testifying before the Senate Armed Services Committee, stated that one of the Army's top priorities is "…to invest in the technologies, organization, and doctrine that will allow us to maintain overmatch against future adversaries while retaining the ability to adapt to unforeseen challenges." Army networks and information systems are large and complex, creating a large cyberspace "footprint" within the Department of Defense (DoD). The Army relies upon secure and resilient networks to support Army and joint forces at the tactical and strategic levels. The Army must continue to modernize its networks and information systems by applying a threat-informed defense model capable of reacting

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[77] House Armed Services Subcommittee on Emerging Threats and Capabilities. 2015. Testimony of Lieutenant General Edward C. Cardon, Commanding General U.S. Army Cyber Command and Second Army.

to incidents and recovering and adapting in support of Unified Land Operations. The Army's portion of the DoDIN is the technical network that encompasses all Army information management and information systems that collect, process, store, display, disseminate, and protect information worldwide. In the pursuit of increasingly defensible networks, the Army must apply technical solutions that improve the overall security posture for creating a defensible cyber terrain that is resilient and adaptable in support of Army and Joint operations.

As an integral part of addressing this problem space, the Government has partnered with organizations such as the Consortium for Command, Control, and Communications in Cyberspace (C5) and Defense Innovation Unit Experimental (DIUx) to access leading edge technology and vendors with the collective expertise in the following technology areas specifically related to Army Cyberspace Operations:

Innovative technologies, processes, methods, facilities, and capabilities – These are sought to identify, develop, test, provide access to, and improve technologies resident in universities, private and federal labs, incubators, and industry that focus on Army cyberspace requirements (offensive, defensive, and DoDIN) related to weapons and weapons systems. At all levels, the Army seeks to build, operate, and secure defensible networks, defending them against specific threats to achieve mission assurance while denying the adversary freedom of action in the cyberspace domain.

Offensive Cyberspace Operations Objectives – Technologies supporting operations to project power by the application of force against enemies and adversaries in and through cyberspace.

Defensive Cyberspace Operations Objectives – Technologies supporting operations conducted to defend DoD or other friendly cyberspace and preserve the ability to utilize friendly cyberspace capabilities.

- Technologies to gain and maintain situational awareness through the visualization of key cyber terrain and an understanding of the actions occurring within that terrain;
- Technologies that actively predict and hunt for (search and discover) advanced internal cyber threats and vulnerabilities that do not trigger or generate warnings using routine detection measures;
- Technologies that allow friendly cyber forces to outmaneuver adversaries by performing preapproved, automated, agile, internal countermeasures that stop or mitigate cyber-attacks; and, when authorized, to conduct response actions external to friendly networks in order to create effects that deny the adversary use of offensive cyber capabilities;
- Technologies to conduct DCO mission planning and protection that identify and assure the availability of key cyber terrain and critical infrastructure for the Army, DoD, host nation, and civil authorities that support Army missions;
- Technologies that protect networks, information technology platforms, and data by controlling inbound/outbound traffic, dynamically managing locations of critical services, and hardening information systems;
- Technologies to conduct mission assurance actions that dynamically re-establish, re-secure, re-route, reconstitute, or isolate degraded or compromised networks;
- Technologies to conduct site exploitation and forensic analysis and determine technical and operational impacts of intrusions; and

- Technologies to evaluate the defensive posture of networks and information systems using vulnerability assessment methods and threat emulation in order to recommend or direct changes to ensure operational readiness.

DoDIN Operations Objectives – Technologies supporting operations to design, build, configure, secure, operate, maintain, and sustain networks.

- Technologies to build (plan, engineer, install) secure, resilient, and defensible networks;
- Technologies that support global, secure, adaptive, and rapid access across trusted and authenticated domains to authorized entities;
- Technologies that allow for the secure operation of networks (i.e., automated scanning and remediation of vulnerabilities);
- Technologies that support the integration with mission partners during garrison and deployed operations; and
- Technologies that support the discovery, delivery, and storage of data to provide awareness and access to information in a timely and efficient manner.

E.1.2 Acquisition Approach

To ensure the full scope of Army requirements and technology objectives would be accommodated through various consortium communities and associated models, ASA(ALT) engaged with the Army Armament Research, Development and Engineering Center (ARDEC) to adequately scope technology objectives and utilized an existing community, the Consortium for Command, Control, and Communications in Cyberspace, known as C5. Membership in the consortium is open (on a rolling basis) to all companies and academic institutions with associated capabilities, with annual dues of $500 annually. Academic institution fees are waived. The consortium approach allows for cross-sector collaboration among industry, university, and Government entities, offering diversity of subject matter expertise focused on addressing the most critical cyberspace operational challenges. The Army's vision is to leverage various organizations such as C5, DIUx, and potentially others to help guide the development of next-generation defensive, offensive, and DoDIN cyberspace operations capability.

The Government has established a Section 845 Prototype Other Transaction Agreement (OTA) with an existing consortium, the Consortium for Command, Control, and Communications in Cyberspace (C5) that has significant non-traditional contractor participants. The goal of this consortium community is to assist in maturing Army Cyberspace Operations through re-use, augmenting existing cyber technologies, and fostering relevant cyber weapons systems and awareness in the newly established Cyber domain. Cyberspace is a global domain within the information environment consisting of the interdependent network of information technology infrastructures and resident data including the Internet, telecommunications networks, computer systems, and embedded processors and controllers (JP 1-02). Maturing the Army Cyberspace domain requires an effective understanding of the technology landscape as it relates to current and future cyberspace capability needs.

The mission of the consortium is to establish the Army as a leader in cyberspace operations, capability development, R&D, education and training programs, and policy development. Additional goals include:

- Be a thought and action leader across the cyberspace operations stakeholder community;

- Serve as proof-of-concept test bed and blueprint for requirements articulation and capability development;
- Facilitate the advancement of membership cyber maturity levels (as this domain knowledge grows, the probability of warfighter technological advantage increases);
- Create a cyber center of gravity as incubator and engine for a cyberspace capability; and
- Shape and enable cyberspace operations education.

E.1.3   Consortium Business Model and Other Transaction Authority (OTA)

To execute each Cyber Innovation Challenge, the Army works through a consortium, a voluntary organization with members from industry, academia, and Government, utilizing a flexible acquisition mechanism known as Other Transaction Authority (OTA). This approach allows the Army to quickly solicit, evaluate, and purchase limited quantity prototypes of equipment from a wide range of non-traditional sources, including small and micro companies, who may lack the resources to engage in the traditional Government contracting process.

The C5 consortium acts as a conduit and marketplace linking the Army and industry (members of the consortium). The relationship between the Army and C5 is established through an OTA, while C5 translates the Army's requirements into commercial agreements with members of the consortium. Figure E-1 depicts the relationships and overarching process flow of the consortium business model[78] used by the Army and C5.
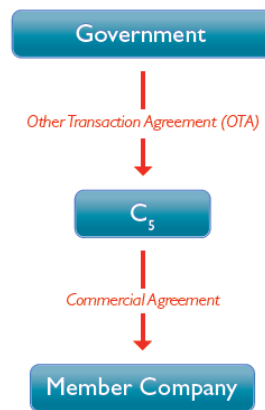
Figure E-1. Consortium Relationship Flow

Historically, Government has difficulty leveraging leading-edge technology and capability developed by small and mid-size businesses. The Cyber Innovation Challenge seeks to change that by using the OTA mechanism. By using OTA, which focuses on quickly delivering limited quantity prototypes, the Army eliminates barriers found in the typical federal contracting process that can diminish participation by non-traditional companies. In a fiscally constrained environment, the consortium community leverages the

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[78] C5 Technologies. 2015. Consortium for Command, Control, Communications, and Computer Technologies. Available at: http://c5technologies.org/wp-content/uploads/2015/01/2015-C5-Brochure.pdf.

investments and innovation of all participating members to improve cyberspace operations return on investment.

Section 845(a)(2) of the National Defense Authorization Act (NDAA) for Fiscal Year 1994, Public Law (P.L.) 103-160, as amended (Title 10 United States Code (U.S.C.) Section 2371 note), authorizes the Secretary of the Army to carry out prototype projects that are directly relevant to weapons or weapon systems. In accordance with the above-referenced law, the Government must ensure that no official of an agency enters into an OTA for a prototype project under this authority unless there is significant non-traditional defense contractor(s) participation in the prototype project; or at least one-third of the total cost of the prototype project is to be paid out of funds provided by parties to the transaction other than the Federal Government. There have been several amendments to this authority over the years, specifically the FY16 NDAA, which includes additional guidance in Section 815 that is relevant to follow-on production contracts or transactions.

As part of continued development of a holistic approach to cyberspace operations capability, the use of OTA through the C5 consortium will improve Army acquisition innovation and responsiveness in the defense and countering of the emergence of dynamic cyber threats. The maturing and repeatable challenge-based model, utilizing OTA and a consortium, supports efficient and effective requirements analysis and evaluation of technology. Ultimately, the challenge-based model reduces the burden placed upon the commercial and non-traditional vendor community to engage the Government and vice versa.

Figure E-2 provides a high-level view of the two-phase down-select process, illustrating how a well-articulated requirement initiates the process to efficiently investigate new and emerging requirements areas. This repeatable process allows for both a traditional white paper response (to the synopsis, Request for Information, or Request for White Paper) from interested vendors in addition to a hands-on "challenge-based" technical exchange and demonstration event (typically held in a laboratory) with results evaluated for technical feasibility, raising the Government's confidence that the technology adequately addresses the requirement. After these assessments, other transaction awards are made to the most promising vendors, and the solutions (the prototypes) are provided to users for operational testing and feedback for further procurement and follow-on production and fielding decisions.
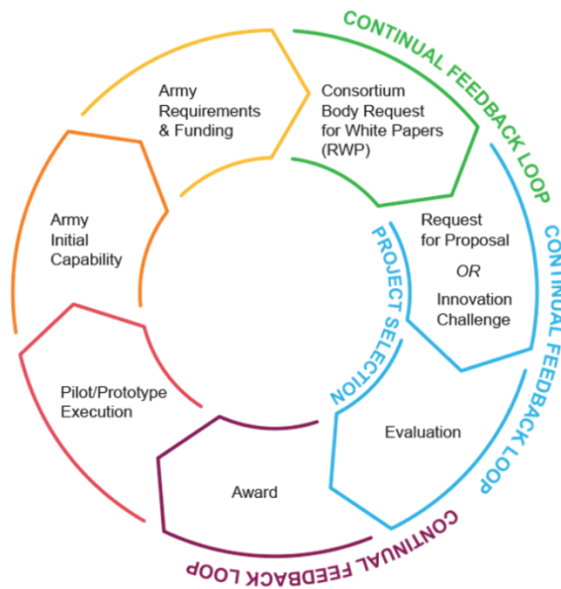
Figure E-2. Down-Select Process

Some of the highlights of this process, shown in Figure E-3, include a goal of 90 days from the identification of the requirements and funding profile to Army Contracting Command (ACC)-NJ's execution of the initiative. The typical white paper model is executed in approximately 60 days. This allows Program Executive Offices (PEOs) to effectively reach the innovative vendor community, mature cyber capability areas, provide statistical analysis on requirement capacity shortfalls, and deliver limited-quantity pilots or prototypes.

Figure E-3. OTA Process Highlights

The model is designed to be flexible for both the Government and vendors while maintaining enough due diligence and rigor to ensure confidence that the investment in prototype solutions is providing leading-edge technology and innovation in the requirements space. As shown in Table E-1, the entire process is designed to go from requirement to vendor award in approximately 90 days.

Table E-1. Estimated Process Timeline

(R) Requirement	Requirements Synopsis Advertised to Community
(R) + 14 Days	Vendor White Paper down-select and invitation to challenge demonstration
(R) + 35 Days	Conduct Technical Exchange and/or Demonstrations
(R) + 60 Days	Vendor(s) Proposal Requests
(R) + 90 Days	Vendor Awards Issued

E.1.4 Cyber Innovation Challenge Evaluation Framework

The typical evaluation framework is tailored for each specific requirement and consists of an integrated assessment of the factors below:

- Ability to develop, demonstrate, implement, and transition a solution based on adequacy, reliability, and relevance of the proposed technological solution in meeting the minimum requirements and objectives as outlined within the requirements synopsis.
- Scientific and/or technical benefits of the approach described in the white paper and/or technical benefits of the proposed technological solution. Soundness of the technical approach, including complete and clear processes to deliver a comprehensive software solution. Evaluation of proposed software necessary to meet the requirements of the proposed technological solution.
- Resources required and level of expertise of the proposed personnel to meet the requirements of the proposed technological solution. This also involves the availability of facilities necessary to ensure related people, processes, and technologies can operate at appropriate classification level commensurate with applicable information or capabilities.

E.1.5 Acquisition Team Approach

Success of the Cyber Innovation Challenge depends on an enduring partnership and on-going collaboration between Army Cyber Command (ARCYBER) (the operational element), the Cyber Center of Excellence (CoE) (the requirements element), and ASA(ALT) (the acquisition element). A mix of personnel from each of the stakeholder organizations comprises a technical team that works together throughout the entire process to develop challenge requirements, identify evaluation criteria, evaluate vendor white paper proposals, conduct vendor technical exchange and demonstrations, and, ultimately, provide a recommendation to the requirement champion for vendor awards.

ASA(ALT) engages the ARDEC and C5 early in the planning process to develop the challenge execution framework, which involves issuing of high-level solicitations; identifying and aligning a lifecycle manager, typically a PEO Project Manager (PM); and identifying a resourcing profile for each specific challenge. ASA(ALT) provides personnel to the technical team and the PM to facilitate the execution of the white paper evaluation and recommend the vendor for selected prototype capabilities.

The Cyber CoE is responsible for analyzing, determining, and championing cyberspace operations requirements influenced by Army concepts, strategies, analyses, and lessons learned that are investigated through the Cyber Innovation Challenge framework. Support by the Army's Training and Doctrine Command (TRADOC) involves additional resources related to experimentation, assessments, and data collection that include, but are not limited to, hosting events to evaluate candidate technologies.

ARCYBER is responsible for articulating cyber needs from the operational perspective in an Operational Needs Statement (ONS) that frames early requirements language as a bridge to the enduring Joint Capabilities Integration and Development System (JCIDS) requirements documents. As part of the planning process, ARCYBER also assists in identifying appropriate cyber units to evaluate the delivered prototypes in an operational environment.

With these organizations and other partners working in tandem, the Cyber Innovation Challenge will continue to provide the means for agility and cross-sector collaboration in addressing priority requirement areas in the cyberspace domain.

E.1.6 Results and Outcomes

In structuring the challenge framework, ASA(ALT) collaborated with the operational and requirements communities, specifically ARCYBER and the U.S. Army Cyber CoE, to identify priority operational needs and align capabilities to formal gap analysis and requirements. To date, the Cyber Innovation Challenge has proven an effective mechanism to engage non-traditional vendors and quickly procure prototype technologies for operational evaluation.

The Army has initiated several Innovation Challenge events designed to investigate new and emerging priority requirements. The first requirement effort was kicked off in May 2015 with several follow-on requirements focused across a broad scope of Cyberspace Operations. The status of each challenge is as follows:

Innovation Challenge - Deployable Defensive Cyberspace Operations [DCO] Infrastructure [DDI]): The winning vendors from Challenge #1 delivered prototype solutions to Army cyber forces in April 2016 (10 months after formal release of the requirement), totaling ~$4.5M in awards.

Innovation Challenge - Cyberspace Analytics: The updated requirement was formally released through C5 on April 5, 2016. The solicitation generated 47 vendor white papers, and technical evaluations were completed.[79]

Innovation Challenge - Persistent Cyber Training Environment: The requirement was released through C5 early 2nd quarter FY17. The Government technical team reviewed vendor white papers and conducted the technical evaluations, ultimately recommending seven vendors for follow-on technical exchange and final recommendation of award.[80]

Innovation Challenge - Use Activity Monitoring (UAM) as a Service: The request for white papers was closed by C5 in July 2017.

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[79] United States Army. 2015. Army Innovation Challenge Industry Day. Available at:
https://www.fbo.gov/index?s=opportunity&mode=form&tab=core&id=2624a821003e97ba368836f697e533f7&_cview=0

[80] United States Army. 2016. Persistent Cyber Training Environment Challenge Article. Available at:
https://www.army.mil/article/178005/

E.1.7   Lessons Learned / Best Practices

As the process continues to mature, it is important to note that this model is based on two "absolutes" or imperatives that are necessary for enduring success. First, the pace of change in the relatively new cyber domain demands a culture of continual collaboration and information exchange in order to maintain a common understanding of perspective points supporting the future vision of Army Cyberspace Operations. These perspective points enable stakeholders to envision how investment decisions for priority requirements contribute to achieving the Army's vision for Cyberspace Operations. The second absolute speaks to building an enduring capability, which means prototyping efforts are not executed in a vacuum but are aligned with a requirements champion inside the acquisition community who will ultimately perform lifecycle management of the capability. This allows users to evaluate prototype solutions and provide critical feedback to the Cyber CoE and the lifecycle manager to mature the requirement, addressing the operational need.

Appendix F   What Is Case Management?

F.1   Background

A "case" can be defined as a transaction, service, or response that is "opened" and "closed" over a period of time to achieve resolution of a problem, claim, request, proposal, development, or other complex activity. Cases typically require the involvement of numerous persons inside and outside the organization that initiated the case, with varying relationships to each other. Moreover, a case typically requires the use of several types of artifacts that contain data needed to complete the case. Often this may be a mix of electronic and physical data.[81]

Case management consists of the collection and organization of numerous types of content in support of a case. It includes the information, processes, advanced analytics, business rules, and collaboration streams associated with a case. Case management may include information in the form of communications, forms, process documents, reports, supporting documentation, and many other types of data. A workflow or business process must be put in place to move the case to its conclusion.[82]

A case management system (CMS) is a collection of computer software that allows access to a shared database of case files, documents, and data. This information is stored in a common location so that it is accessible to all personnel who have authorization to work on a given case. The information stored varies by system, but typically includes anywhere from a few dozen to several thousand fields of information about each case. Aside from providing access to basic biographical information (names, addresses, phone numbers, etc.), many systems also allow users to view and instantly retrieve any document related to a specific case. Within the Federal Government, this means that users can routinely gain access to information across departmental and/or organizational boundaries that had been previously unavailable from a single system.

Document handling and document generation are central defining capabilities of a CMS. Integrating a vast array of data and documents previously spread across a range of disconnected and independent systems into a single system gives users several significant advantages. Most important, shared access allows authorized individuals across multiple organizations to work within a given case file at the same time and maintain configuration control while executing their respective portions of the business process. Another important advantage of a centralized CMS is that a distributed workforce can support execution of the case. Even when not all authorized users are physically located in the same place or employed by the same office, department, or organization, they can still maintain access to the current case file and perform their job functions remotely. By contrast, typical disconnected IT systems hinder adequate maintenance of complete case files and may prevent execution of business processes because information is not centrally stored and not available to all those who must work with it as part of their day-to-day jobs.

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[81] https://www.aiim.org/What-is-Case-Management#

[82] IBID.

F.2 Problem Set

Federal acquisition in general is complicated, rules based, and execution is highly difficult. With roughly $3.9 trillion in spending for FY16, the Federal Government of the United States represents one of the largest and most complex business and management operations in the world.[83] In addition to the tremendous volume, scope, scale, and criticality of the work performed by the Federal Government, the acquisition process involves a seemingly never-ending, and constantly changing, set of rules, regulations, policies, etc.[84] Oversight by organizations such as the Government Accountability Office (GAO) as well as department-level Inspectors General (IGs) brings an added layer of complexity and sensitivity to the Federal acquisition process. For example, in an article published by The Institute of Electrical and Electronics Engineers (IEEE) several years ago, referencing numerous information technology (IT) acquisition failures within the government, the author concluded that "…because of their enormous complexity, large IT programs rarely succeed and program managers have a tendency to put a rosy spin on projects even when they're clearly in trouble."[85] The GAO stated, "Although the executive branch has undertaken numerous initiatives to better manage the more than $80 billion that is annually invested in IT, federal IT investments too frequently fail or incur cost overruns and schedule slippages while contributing little to mission-related outcomes."[86]

Acquisition of CMSs is especially difficult for many reasons. To begin with, the nature of CMS development inserts a high level of complexity associated with the range of competing stakeholders from across the Government. Government CMSs typically represent consolidations of old, legacy systems containing a vast amount of disparate information that the new CMS must bring together. Moreover, due to their sheer age and diversity, these systems are often unable to easily share information with one another or to interface directly with newer technology.

Further complicating the situation, Government organizations have no standardized acquisition processes to follow when acquiring a CMS, as each system is unique in terms of the capabilities sought and diversity of users. "Federal chief information officers may have one of government's hardest jobs: protecting our country's largest networks against rapidly evolving cyber threats, while being stuck with technology that's often decades old. Add to the mix a set of bureaucratic rules dictating how they buy IT, and it's nearly impossible for them to upgrade to the modern, best-in-class technology they need."[87]

Technology is rapidly changing, and acquisition speed must keep up with this dynamic environment, as program offices do not want to engage in a three- or four-year process to acquire a CMS that is already outdated by the time it is put into service. "Nonetheless, agencies continue to have IT projects that perform poorly. Such projects have often used a "big bang" or "waterfall" approach—that is, projects are broadly scoped and aim to deliver functionality several years after initiation. According to the Defense

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[83] https://www.gao.gov/assets/690/682764.pdf

[84] https://www.fedscoop.com/really-needs-done-acquisition-reform/

[85] https://www.computer.org/cms/Computer.org/ComputingNow/homepage/2012/0712/rW_CO_WhytheFBI.pdf

[86] https://www.gao.gov/highrisk/improving_management_it_acquisitions_operations/why_did_study#t=0

[87] https://federalnewsradio.com/commentary/2017/06/government-it-cant-modernize-without-reforming-procurement-practices/

Science Board, this approach is often too long, ineffective, and unaccommodating of the rapid evolution of IT."[88]

CMS acquisitions are typically more complex, from both an acquisition and technical perspective, than standard IT procurements due to the strategic role of CMSs in the overall system of systems and the multiple systems with which they must interface. This complexity calls for increased collaboration across the stakeholder community, and this community is naturally larger and further reaching due to the interdependencies and data collection inherent in a CMS. Furthermore, in order to be successful, this complexity requires the Government to truly partner with industry and tap into its innovation and expertise. This has always proven challenging for the Government.

Another challenge when acquiring a CMS stems from the need to develop the new system while ensuring that legacy systems remain operable. The Office of Personnel Management has a backlog of over 10,000 retirement claims due to "…a lack of automation, a struggle to connect legacy systems, and difficulty finding information on retirees…."[89] One former government acquisition expert described this challenge as "laying the tracks in front of the train while it was rolling."

An added complication in acquiring a CMS results from the overarching belief that a program should build a system that solves all problems for everyone (over-reaching scope), combined with a Government-wide scarcity of personnel with critical skill sets. Acquisition teams are often overwhelmed by the sheer number of acquisitions in which they must participate. According to Federal Computer Week, "IT modernization is a top priority for the current administration and is expected to transform activities as diverse as cybersecurity, citizen services and data analytics. So it's not surprising agency IT teams are being pulled in a dozen different directions."[90] Chad Sheridan, Chief Information Officer (CIO) of the U.S. Department of Agriculture's USDA's Risk Management Agency, shared this opinion, stating, "We don't have enough time, money, energy or people to solve all of our problems…."[91] Again, the challenge is that a CMS acquisition often results in too much work with not enough people with the right skill sets.

Striking the right balance among cybersecurity, flexibility, and functionality adds yet another level of difficulty when acquiring a CMS, as noted in the Department of Homeland Security's (DHS's) U.S. Computer Emergency Readiness Team (USCERT) website, which states, "[i]n addition to expanding functionality and complexity, mounting expectations for software systems to be flexible and interoperable add to acquisition challenges, notably in terms of ensuring their security."[92] From an acquisition perspective, much research is being conducted on how to capture resilience against the cybersecurity threat in IT acquisitions. This is difficult, as there are no templates to follow, and as Sonia Kaestner, Adjunct Professor at Georgetown's McDonough School of Business, stated at the Naval Post-Graduate School's 2016 13th Annual Acquisition Research Symposium, "The accelerated growth in cyber/digital technology development has changed the way we direct our lives, business, and countries…Understanding and

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[88] https://www.gao.gov/highrisk/improving_management_it_acquisitions_operations/why_did_study#t=0

[89] https://fcw.com/articles/2014/12/10/opm-case-management-system.aspx

[90] https://fcw.com/articles/2018/04/06/fcw-perspectives-it-modernization.aspx

[91] https://fcw.com/articles/2017/05/08/cloud-acquisition-schneider.aspx

[92] https://www.us-cert.gov/bsi/articles/best-practices/acquisition/acquisition-overview--the-challenges

recognizing the cyber threats inherent in procuring complex modern systems with significant cyber components is a challenge."[93]

Last, and most important, one of the most common themes stressed by both Government and industry is that the current procurement process may function well for procuring simple supplies or services but is ill suited for requirements as complex as the development of a CMS. "It takes too long, it's way too slow, and there is no transparency or visibility. Today's federal CIOs must focus on improving the procurement process."[94] In her testimony to Congress, Deidre Lee, Chair of the Section 809 Panel, stated, "The global threat is rapidly changing, the relevance of the unique defense industrial base is waning, the processes for acquisition are no longer efficient or effective, and implementing these processes is left to a workforce that is mired by constricted thinking and risk aversion."[95] Finally, in his testimony, A.R. "Trey" Hodgkins III, Senior Vice President of IT Alliance for Public Sector, stated, "…Moore's Law drives a new dynamic where capabilities and computing power evolve rapidly and the need to upgrade, as well as improve, happens in shorter and shorter increments. To deliver these new capabilities, modernize IT, and better secure the governments' networks, the time is right to re-imagine our acquisition process."[96]

F.3   Acquisition Approach

The Challenge-Based Acquisition (ChBA) strategies described in this handbook can be tailored specifically for acquisition of CMSs, as described below.

As executed, this approach consists of three increasingly difficult down-select process steps in the pre-award phase: initial white papers, the challenge event, and full proposals supported by a technical exchange. The subsections below provide additional information on how to execute each of these steps as part of the CMS ChBA approach. The following list outlines the proposed CMS acquisition process flow and the various down-selects that programs can execute. Please note that this is a highly tailorable process:

White Paper:

- Government develops a Statement of Need (SoN) and releases it to the consortium via a Request for White Paper (RWP).
- Consortium members respond to the SoN via a white paper.
- Government evaluates white papers.
- Government *down-selects* vendors to move on to the challenge(s).

Challenge:

- Government releases challenge script and evaluation criteria to down-selected vendors.
- Government holds a Challenge Logistics Call for all Government stakeholders and down-selected vendors.

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[93] http://www.dtic.mil/dtic/tr/fulltext/u2/1016746.pdf

[94] https://breakinggov.com/2012/02/17/five-challenges-for-federal-procurement-and-the-agencies-that/

[95] https://oversight.house.gov/wp-content/uploads/2017/03/Lee_Deidre_Testimony_for_2017-03-28.pdf

[96] https://oversight.house.gov/wp-content/uploads/2017/03/ITAPS-Testimony-OGRC-20170328-Hodgkins-FINAL-EMBARGOED-20170328-1400....pdf

- Government conducts and evaluates results of challenge.
- Government *down-selects* vendors to move on to the technical exchange.

Technical Exchange:

- Government holds technical exchanges with down-selected vendors to discuss capabilities and the Request for Proposal (RFP).

RFP and Final Selection:

- Government develops RFP and releases it to down-selected vendors
- Down-selected vendors develop proposals and provide them to the Government.
- Government evaluates proposals and *down-selects* final vendor for award of CMS contract or agreement.
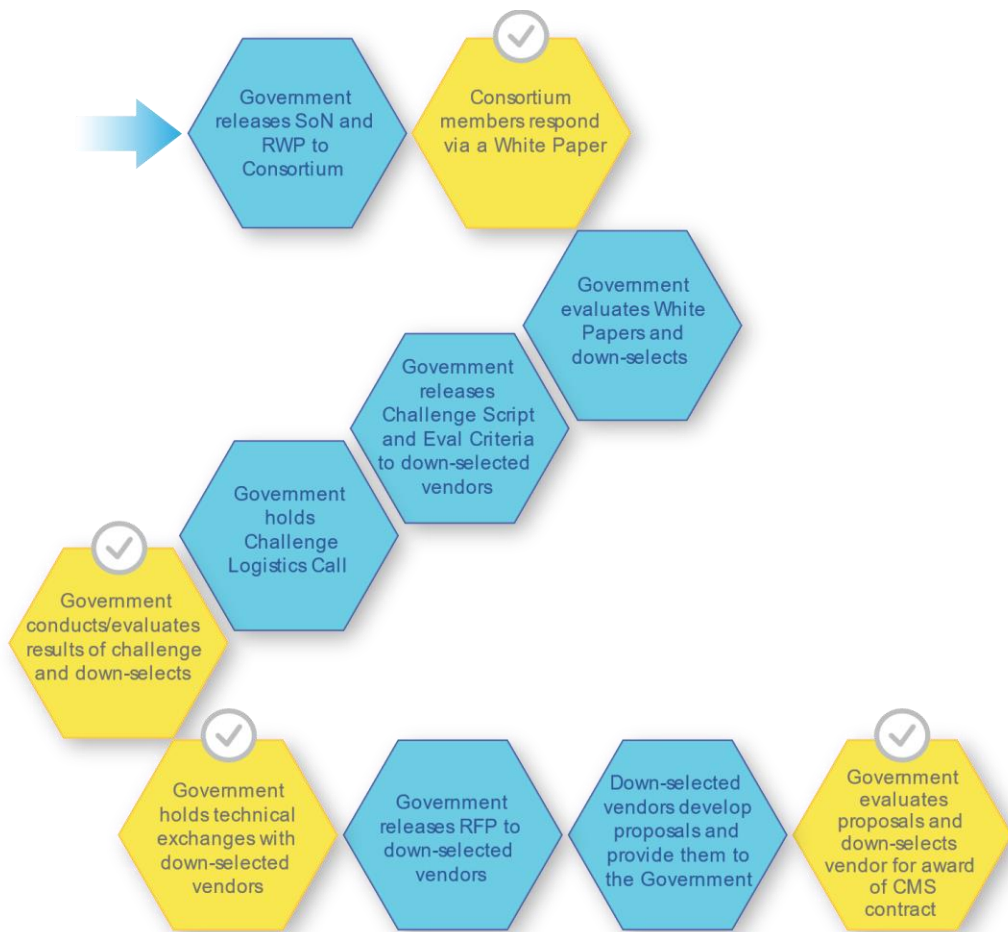
Figure F-1. Challenge-Based Acquisition Approach

F.4   White Papers

The first step in the CMS ChBA acquisition process is the solicitation of white papers from potential vendors from the consortium. The white papers, limited to 10 pages, provide a highly efficient opportunity for consortium members to describe their proposed approach and technical capabilities, based upon the program's objectives as outlined in the Government's SoN and associated Functional Description Document (FDD). More specifically, the white papers give vendors an opportunity to describe how they might succeed in the challenge event, should they be invited to participate. Criteria for evaluating the white papers are provided to the vendors along with instructions. Consequently, MITRE strongly recommends that the RWP include the entire the challenge script and its associated evaluation criteria. Programs can execute an initial down-select based on these initial industry responses and can choose a set number of vendors to move to the next phase (or next down-select) of the pre-award evaluation: in this case, participation in the challenge event itself.

F.5   Challenge

The challenge event constitutes the second step in the CMS ChBA acquisition process. This pre-award down-select opportunity further "stress-tests" the already down-selected vendor pool to help the Government identify the strengths and weaknesses of the product/technical integrator and the best alternative to move on to the next down-select mechanism. The challenge should concentrate on having vendors show how they could respond to the SoN in real time, through demonstration of their product in line with the challenge scenarios and associated script(s). The challenge should identify specific operational, functional, cybersecurity, and platform flexibility capabilities that vendor solutions should address, and it should align with the provided SoN. MITRE recommends that evaluations occur *during* the challenge execution and that programs reach consensus immediately after each vendor finishes the challenge. The evaluation of this phase results in a subset of the vendors entering the next phase (RFP) and supporting technical exchange.

F.6   Technical Exchange

The Government should hold a separate technical exchange with each of the down-selected vendors to collaborate on the Government RFP and vendor-proposed solutions: a win-win for Government and industry alike. This exchange enables the Government to identify areas, from both the white paper responses and the challenge event, where offerors can improve their prototype solution. To facilitate discussions, the Government should send various draft program documents, such as the Statement of Objectives (SOO), FDD, Draft RFP, Interface Strategy Document, etc., to the down-selected vendors. Vendors should be made aware of any changes to the documents during the RFP phase. The Government should conduct these exchanges in an impartial and consistent manner. During the technical exchange, the Government should make every effort to communicate areas of potential improvement and innovation to all the vendors and provide the same level of detail in the exchange of information. This will give all vendors the same opportunity to enhance their prototype solution. The following information in Figure 2 below depicts a sample agenda for an all-day technical exchange with a single vendor.

Time Box	Topic Area	Goal	Areas of Consideration
8:00 to 8:10		**Government Introduction and Objectives Review**	
8:10 to 8:20		**Vendor Introduction and Objectives Review**	
8:20 to 10:05	Review Provided material	Vendor will lead a discussion of the provided draft documentation to gather additional context and identify opportunities and constraints the technical exchange must work within while molding the ultimate RFP SOO and other acquisition artifacts.	Minimal Viable Product Phasing Draft Artifacts
		Morning Break	
10:15 to 11:10	Platform & Scalability	Vendor will lead a discussion on the best way to understand and structure the acquisition to maximize the adaptability of the platform's architecture and support the anticipated load in a rapid manner.	Vendor: System Architecture Vendor: Workflow Diagrams
11:10 to 11:55	Cybersecurity	Vendor will lead a discussion on the best way to understand and structure the acquisition to maximize the value of its cybersecurity processes and capabilities.	
		Lunch Break	
12:40 to 1:30	DevOps & Implementation	Vendor will lead a discussion to understand and identify how to structure the acquisition to maximize the offeror's ability to support DevOps-based delivery, deployment, and operational support.	Vendor: Process Workflows Vendor: Inventory of DevOps Tool Selection
1:30 to 2:30	User Experience	Vendor will lead a discussion on the best way to structure the acquisition to maximize the vendor's ability to construct a compelling user experience to include mobility requirements.	
2:30 to 3:30	Business & Sustainment Considerations	Vendor will lead a discussion to understand and identify how to structure the acquisition within the maintenance approach to maximize the government's ability to maintain the system to include licensing, user engagement, and provide an exit strategy should it prove needed in the future.	
		Afternoon Break	
3:45 to 4:25	SOO Recommendation Review	Government will lead a discussion to consolidate the Vendor's recommended changes to the Statement of Objectives (SOO)	
4:25 to 5:05	FDD Recommendation Review	Government will lead a discussion to consolidate the Vendor's recommended changes to the Functional Description Document (FDD)	
5:05 to 5:45	Other Recommendation Review	Government will lead a discussion to consolidate the Vendor's recommended changes to other acquisition documents	
		Concluding Remarks	

Figure F-2. Sample Technical Exchange Agenda

F.7   Proposal

Following completion of the technical exchange, the Government can ask the remaining offerors to provide full technical and cost proposals. MITRE recommends that the Government utilize a SOO and have the offerors provide a Statement of Work (SOW) with their solution. This encourages innovation because it allows the Government to stipulate its overall objectives (i.e., the SOO), and gives the vendors freedom to propose their solutions (i.e., the vendor SOWs) for *how* they would meet these objectives. The Government does not specify how to do the work, and each SOW is tailored to the vendor's specific

innovative solutions to achieve the Government's objectives. Proposal evaluation is the last step in selecting a single vendor to provide the CMS solution.

F.8 Summary of Acquisition Approach

From SoN to final contract or agreement, this ChBA approach using OTA and a consortium should reduce acquisition lead time as compared to the typical Federal Acquisition Regulation (FAR) procurement process. However, the ultimate benefit of this ChBA approach is enhanced collaboration between and among industry and the Government to minimize the complexities of acquiring a massive CMS. The flexibilities of the OTA combined with the ChBA approach allow agencies to tailor the acquisition process using three down-selects, which should energize collaboration. This collaboration can be highlighted in the first down-select of white papers as it enables vendors to team with other partners to describe their solution. The short length of the papers gives the agency the opportunity to efficiently review, evaluate, and select capabilities and potential solutions to move onto the next evaluation phase.

The challenge gives vendors a forum to demonstrate, through real-world scenarios, their CMS product and solution sets, while affording both Government and industry time to collaborate, ask questions, and learn from each other. Finally, the technical exchange and proposal are collaborative as well in that they can help Government programs understand the vendor's solutions and focus their efforts on the development of a better RFP, and also can help industry clearly understand the Government's requirements and focus efforts on providing a sound and tailored proposal. By using a deliberate tiered acquisition approach such as ChBA, the Government can mitigate some of the risks associated with more traditional acquisition processes, which can be cumbersome and lengthy and thus may suppress innovation and discourage leading-edge industry players from providing tailored and somewhat mature solutions.

F.9 Best Practices, Lessons Learned, and Recommendations

This section presents a series of recommendations for the acquisition of CMSs using the ChBA approach.

Recommendation #1: Increase engagement with the user and user stakeholder community.
Compared to a traditional acquisition, the Government must increase engagement with all stakeholders within and outside the program office during the development of the RWP, challenge, technical exchange, and RFP for a CMS ChBA. This engagement can be executed using collaborative sessions, standing weekly meetings, formal quarterly meetings, and ad hoc meetings as needed. The Government team can perform internal dry runs for such events as the demonstrations, evaluations, and technical exchanges. Furthermore, programs can enhance collaboration by establishing a "War Room" with multiple projectors, white boards, VTC capability, voice, and various other brainstorming tools. It should be large enough to hold and conduct larger meetings and discussions and can be utilized extensively by the program office, users, and stakeholders alike.

Recommendation #2: Increase engagement, communication, and transparency with the vendor community, seeking feedback at all opportunities.

The Government must increase engagement, communication, and transparency with the vendor community and seek feedback at all opportunities during the CMS ChBA process. Programs can accomplish this by using a pre-kick-off demonstration meeting, answering questions on the spot,

communicating logistics, and clarifying any points raised by vendors. Holding a technical exchange prior to the release of the RFP with the down-selected vendors that would submit proposals is another valuable collaborative action. It allows industry to provide feedback to the Government on how to structure a "better" RFP with regard to CLINs, deliveries, IP, incentives, etc., and helps the Government to ask specific questions and garner additional information regarding the vendor's capabilities. Furthermore, industry can ask questions and gain additional information about the Government's needs, the RFP, and overall intent, as necessary.

Finally, MITRE recommends that the Government hold an Industry Day at the very beginning of the acquisition during strategy development. This will allow the Government not only to communicate its objectives and overall approach, but also to receive feedback from industry and make vendors aware of the Government's intentions and way ahead using ChBA, which is different than a traditional acquisition.

Recommendation #3: Structure acquisition support for enhanced collaboration.

MITRE recommends that the acquisition team, to include the Contracting Officer and Program Manager, level-set the entire program office and stakeholder team from the very beginning. It can do so by using a formal kick-off meeting with all Government parties involved to discuss the acquisition strategy and approach, schedule, key milestones and dates, points of contact (POCs), roles and responsibilities, inputs and outputs, and overall process flow(s), and to receive the team's full buy-in on the approach. This will provide context to the Government team regarding the end-to-end process and will establish a common understanding and concerted effort to move the acquisition forward.

Furthermore, MITRE recommends that the in-house acquisition team hold a weekly meeting with stakeholders throughout the program office. The meetings will also allow these parties to enhance communication, share best practices and templates, address any disruptions or changes to strategy or schedule, and foster an overall working relationship that promotes efficiency and collaboration.

Recommendation #4: Develop and execute a structured acquisition strategy and approach with multiple pre-award down-selects.

MITRE highly recommends that the Government develop and execute a structured Acquisition Strategy and Approach with multiple pre-award down-selects. As described above, this would include a white paper evaluation down-select, challenge down-select, and proposal down-select. The combination of these down-selects along with the challenge event and technical exchange will provide the Government with a powerful process for selecting the most qualified vendor. Furthermore, it will save the vendors that do not move on the costs associated with bids and proposals and save the Government evaluation teams from expending time and resources on reading numerous proposals from vendors that were not down-selected.

Recommendation #5: Identify the Product Owners as key evaluators with support from advisors drawn from other important stakeholders.

The Product Owners should serve as the evaluators of the white papers, challenge, and proposals. They should own a specific area of the effort and be "experts" in that particular area. Advisors, including users and other external stakeholders, should be identified and should provide inputs to the evaluators prior to the evaluation and consensus sessions. This will enhance ownership and collaboration, as the Advisors can have input to the evaluation process as they should, while the evaluators, or Product Owners, will ultimately "own" the final evaluation.

When programs use ChBA, MITRE recommends that the Government be as transparent as possible about the evaluation criteria and evaluation trade space for the white paper, challenge, and RFP. The more information the program provides to the vendors, the better they can prioritize their actions during the challenge and focus their writing for the white paper and proposal, which all should lead to a better acquisition and product in the end.

Recommendation #6:   For the challenge, conduct timely evaluations and consensus applying a consistent method to each vendor.

During the challenge event each of the evaluators should use a quantitative scoring sheet to assess each vendor's performance. The Government should block off time between each vendor demonstration to receive Advisor input and should conduct consensus meetings at the end of each day. This can help evaluators become organized, stay focused, assess each vendor demonstration separately, and apply consistent evaluative strategies across the board, thus ensuring fairness and equity and potentially reducing the risk of protests and litigation.

Recommendation #7: Ensure the pre-award challenge, or demonstration, used to down-select allows vendors to truly differentiate themselves and display their product in a realistic scenario environment.

For a CMS ChBA, the Government should incorporate specific language in the instructions for participation in the challenge. This is different than traditional acquisition and is a nuance of ChBA. While partnering is highly supported, the Government may encounter a situation when a subcontractor on one demonstration may be the prime contractor on another and, thus, the Government will see virtually the same presentation twice. Instructions must be thoroughly detailed and all "one-offs" must be dealt with immediately, communicated to all participants, and applied consistently.

Recommendation #8:   In a fast-paced, dynamic acquisition environment, conduct documentation sprints with the essential personnel and stakeholders and establish a process for review.

The Government can conduct documentation "sprints" for the development of the challenge event. These sprints can be held daily in the War Room. All key stakeholders should be present to ensure collaborative development of the challenge scenarios. Furthermore, the Government can assign "homework" each night, and use the beginning of each new "sprint" day to go over the results, review them, and collaboratively agree on the documents and the way forward.

Recommendation #9: In a fast-paced, dynamic acquisition environment, designate a POC for ensuring that acquisition documentation is continuously updated as needed.

MITRE recommends that the Government designate a POC for ensuring documentation (to include such items as the CDD, FDD, SoN, Acquisition Strategy, RFP, and OTA) is up-to-date and consistent throughout the lifecycle of the acquisition. Throughout an acquisition, the Government may make decisions that include different acquisition options and paths, terminology and taxonomy of milestones, and schedules. It is imperative that acquisition documentation be kept current and shared across the program office and beyond.

Recommendation #10:   Consider using a SOO versus a SOW to allow vendors to inject innovative solutions to the program's capability gap(s).

By utilizing a SOO instead of a SOW, the Government allows vendors to inject innovative solutions to fulfill the Government's objectives rather than respond to a Government-dictated specification that could

possibly drive design constraints. Each vendor can propose a SOW based on the Government SOO and can describe its approach and capability to meet and/or exceed the objectives.

Recommendation #11: When developing and continuously updating the Acquisition Schedule, ensure that all key internal and external stakeholders are part of the process and there is full transparency as to any changes made (to include shifting the schedule and/or a milestone to the left and/or the right).

The Government must continuously involve all key stakeholders in the development of the Acquisition Schedule. This includes not only the Acquisition and Program Management staff, but also other stakeholders inside and outside the program office. While acquisition schedules are typically tight, containing no slack, MITRE recommends that the schedule be communicated, collaborated on, and agreed upon by all parties, especially the acquisition community, which is often viewed as the bottleneck in the process if acquisition professionals have little insight into or shared accountability for the schedule.

Recommendation #12: Become familiar with and educate personnel and organizations on ChBA and OTAs to include when to use them, benefits and drawbacks, and associated processes.

ChBA, OTAs, and the use of a consortium are relatively new, innovative concepts to most acquisition organizations. Often, it is difficult for these organizations to work outside their comfort zones. MITRE recommends that acquisition organizations take training, attend seminars and conferences, or hold brown bag educational sessions on such topics. While the OTA brings much flexibility, acquisition organizations often want to inject the unneeded discipline of the FAR into it because they are uncomfortable with such flexibilities. As a result, they lose the inherent power of the OTA. Education and training can help resolve these issues and help program office and acquisition staff become more familiar and comfortable with using this innovative tool.

Recommendation #13: Bring ChBA and OTA expertise in-house for future acquisitions.

While consortia market their ability to quickly and efficiently churn acquisitions in very short timeframes, this is not necessarily always true. As OTAs become more and more widely known and used, the consortiums have started to feel the administrative burden. Without the ability to prioritize their customers and without growth in their own organizations, they are becoming bogged down and lead times are starting to extend. MITRE recommends that Government acquisition organizations, through a disciplined approach, bring OTA execution in-house to their contracting division. Rules of Engagement, templates, a handbook, and training can be easily stood up so that in-house OTA Contracting Officers, known as Agreement Officers (AOs), can garner the full power and efficiency of the OTA. Furthermore, MITRE recommends that the acquisition team be "stacked" with individuals who have not only a great breadth and depth of experience, but also the ability to think creatively, collaborate, and make acquisition success a high priority. It is imperative that the Government have the right team and personnel with the right education, training, and mindset!

Recommendation #14: Scale the depth and sophistication of the challenge to the overall value, importance, and complexity of the acquisition.

ChBA is not "easier" than traditional acquisition per se. It requires far more in-depth, upfront planning than a traditional acquisition. The development of a meaningful challenge event(s) is critical to overall success of the ChBA. If the Government has properly scoped, executed, and evaluated the challenge event(s), vendors deemed "successful" in the challenge event(s) should be successful in the overall acquisition. The Government should execute the challenge event for each vendor in a similar operational

environment with the same architecture, similar data and scenario inputs, interfaces, field environment, end users, and end user requirements. For larger, more complex, and highly important requirements, the depth and sophistication of the challenge event(s) should mirror these attributes. For less important and sophisticated requirements, the challenge event should require less planning, less time, fewer inputs, etc. Both sides of this equation have value. For more important and highly sophisticated requirements, the challenge event(s) should reflect a higher level of sophistication and reality; for less important and less sophisticated requirements the Government should rely on a simple, easily executed and evaluated challenge.

F.10 Additional Reference Material

The following is a generic Challenge Description for CMS XYZ: Each offeror will have approximately 90 minutes to demonstrate their product's ability to meet the government's need for a CMS as described in the offeror's white paper.

Challenge Process
1. Offerors will be provided with a high-speed public internet connection (wired or wireless) at the MITRE facility in McLean, VA. Access to the McLean, VA facility and challenge room will be provided to the offeror prior to the challenge event. Offerors will be allowed access to the challenge room one week prior to the start of challenge event to test out any remote data services from the site. The room will be available 45 minutes prior to start of the challenge for setup. Photos of the challenge facility and room equipment are also available upon offeror's request to the government.

2. The offeror is expected to bring all required hardware to run the challenge as no additional hardware (e.g., laptops, servers, etc.) will be available at the challenge event facility for offeror's use. Only external large display screens will be available, and a minimum of two will be available in the room.

3. The offeror will be expected to do all live reconfigurations from within the challenge room as there will be no virtual audio participation allowed for off-site offeror support. If off-site support is required for an offeror's solution, then exceptions will be taken under consideration on a case by case basis.

4. At least 1 week prior to their challenge, offerors are required to provide the IP address range that their capabilities will be hosted on for white-listing their access to the test Application Programming Interface (API).

5. The government is requesting the offeror access an external web service for the challenge event. URL will be provided prior to the challenge event.

6. The government will provide completed sample case data in the expected format (for example XML format). The URL will be provided prior to the challenge.

7. The order of scheduling for selected offerors will be provided based on a random drawing by the government. A maximum of six offeror participants will be allowed into the challenge room to participate in the challenge event.

8. The entire process will be monitored by the government, and on-site IT and AV administration support will be available.

Scenario Actor Descriptions for Challenge
The scenario descriptions reference the following actors. The scenario descriptions will require the offeror to demonstrate their system's case management functionality from these actor's perspectives. This will help the technical team gauge how easily user roles can be configured in the offeror's proposed solution. **The actor descriptions below are for the purposes of this challenge event only:**

- **Agency 1 User:** A user from an agency that can create and track status of a case.
- **Agency 2 User:** A user from a different agency that can create and track status of a case.
- **Office Manager:** Has the ability to access and see current status of all assignments for a case and for personnel assigned to that field office. Field office manager has the ability to audit, edit, and advance a case if necessary.
- **Case Researcher:** Can only see a small subset of the case information necessary for their assigned research task. The task is assigned to them by the Office Manager.
- **Quality Reviewer:** Ensure quality of the work conducted before closing the case.
- **System Administrator:** Manages the operation of the CMS including the ability to make changes to the business logic. There may be various levels of access a particular system administrator has over another.

Challenge Scenario (6 Parts): Securely Initiate, Ingest, Schedule, Store, Process, Quality Review and Integrate Data Sources (Total: 90 minutes)
The offeror will be required to participate in a challenge designed to evaluate achievement of the following technical objectives using their software solution to demonstrate functionality. The challenge will be divided into a six-part scenario. Each part will require the offeror to provide a functional demonstration. The detailed scenario narrative is available in this appendix after the technical objectives section. The scoring for each item will be based on points as explained below. Each criterion will award a point based off the following Likert scale. Total maximum score achievable during this challenge is 128 points.
1. Failure to demonstrate the criteria (0 pts)
2. Criteria demonstrated with significant issues or concerns (1 pts)
3. Criteria demonstrated with minor issues or concerns (2 pts)
4. Criteria successfully demonstrated (3 pts)
5. Criteria successfully demonstrated with significant additional benefits to the government (4 pts)

Total Score Calculation: ***Scenario Score = ∑Part 1 + ∑Part 2 + ∑Part 3 + ∑Part 4 + ∑Part 5 + ∑Part 6*** *(Max Total Score Possible: 120 Points)*

Scenario: Was the offeror able to initiate 2 cases for 2 different agencies, ingest and store case information, case scheduling, case processes and case information, submit case for quality review & adjudication, and demonstrate integration into external data source? The maximum possible score for the Scenario is 120 points, the Scenario has six parts to it each with a maximum score possible noted below using the Likert scale:

Evaluation Criteria (6 Parts) (Max Score: 120 Points)

Scenario Score = ∑Part 1 (24 Points) + ∑Part 2 (32 Points) + ∑Part 3 (16 Points) + ∑Part 4 (20 Points) + ∑Part 5 (16 Points) + ∑Part 6 (12 Points) = Max Total Score Possible: 120 Points

Part I - Initiate 2 Case for 2 Different Agencies (Max Score: 24 Points)
>   Principal User Role: Agency User

*Part I Total Score Calculation for **Part 1 = Criteria 1-1-1 + Criteria 1-1-2 + Criteria 1-1-3 + Criteria 1-1-4 + Criteria 1-1-5 + Criteria 1-1-6***

Description
Multiple Federal Agencies may request the opening of a case. To do so, each Agency has 1 or more staff with an assigned role in the CMS. Once authenticated to the system using 2-factor authentication, Agency Users will be presented with a guided interface where they may request a new case. The Agency User will provide the case subject data. During the challenge, the government may request the offeror to add new fields to the agency's user interface. The demonstration must also show the addition of a new business process step as defined by the government during the challenge event.

For security and confidentiality, Agency Users can only see cases pending for subjects requested by their own agency; in other words, Agency Users cannot initiate cases for other Agencies nor can they see any information about other Agencies in the system and the cases they may have initiated.

The demonstration must include at least 2 Agency users from different Federal Agencies and must show each user initiating at least 2 cases.

Part I Evaluation Criteria:
   • **Criteria 1-1-1: Authentication** - 2 different Agency Users authenticate to the system using 2-factor authentication. (Max Score: 4 Points)
   • **Criteria 1-1-2: Initiation** - Each Agency User initiates at least 2 cases. (Max Score: 4 Points)
   • **Criteria 1-1-3: Data Segregation** - Each Agency user can see only those cases that were initiated for his or her agency. (Max Score: 4 Points)
   • **Criteria 1-1-4: Role Based Access** - Each Agency has multiple users in a structured hierarchy with aggregated privileges as you go up the hierarchy. (Max Score: 4 Points)
   • **Criteria 1-1-5: Field Creation** - Offeror was able to add a new field based off the government's request during the challenge. (Max Score: 4 Points)
   • **Criteria 1-1-6: Business Process Step Creation** - Offeror was able to create a new business process step and demonstrate the new end to end workflow. (Max Score: 4 Points)

Part II - Ingest and Store Case Information (Max Score: 32 Points)
>   Principal User: Agency User

*Part II Total Score Calculation for **Part 2 = Criteria 1-2-1 + Criteria 1-2-2 + Criteria 1-2-3 + Criteria 1-2-4 + Criteria 1-2-5 + Criteria 1-2-6 + Criteria 1-2-7 + Criteria 1-2-8***

Description
Once a case has been initiated, a case subject will be notified that they must complete a standard form pertaining to that case. For the purposes of this challenge, the government will assume that the correct standard form has already been completed outside the CMS. The government will provide a file containing

multiple completed case forms in XML format, PDF files of signed waivers, and other attachments in various image and document-based formats. The offeror is to demonstrate that their case management solution can ingest the entire set of government provided data and store it within the case management solution in a format or schema of the offeror's choosing. Additionally, the offeror is to demonstrate how their case management solution can be used with a 3rd party data storage solution (e.g. database, big data repository, or other data storage solution).

The government is very concerned with protecting Personally Identifiable Information (PII). The demonstration should illustrate how the offeror's native data storage solution protects data from unauthorized access and exfiltration such as might occur if:
   a) an adversary was to gain elevated privileges on the CMS.
   b) a properly credentialed system or database administrator became an insider threat and attempted to use their access with malicious intent.

The system must generate an alert if there is any attempt to access unauthorized data or if data exfiltration is detected.

Part II Evaluation Criteria:
   • **Criteria 1-2-1: Ingest** - CMS ingests all provided XML data. (Max Score: 4 Points)
   • **Criteria 1-2-2: SF86 Storage** - CMS stores all valid XML data in its "native" data storage solution in an offeror specified format or schema. (Max Score: 4 Points)
   • **Criteria 1-2-3: Document/Image Storage** - Demonstration shows how the CMS stores documents and images associated to the case in a repository. (Max Score: 4 Points)
   • **Criteria 1-2-4: Access Control** - Demonstration shows how the document/image repository implements fine-grained access control so that researchers can access only those images and documents associated to their assigned cases. (Max Score: 4 Points)
   • **Criteria 1-2-5: Data Protect** - CMS stores information in such a way as to prevent unauthorized disclosure and exfiltration of PII even if an adversary were to have elevated privileges. (Max Score: 4 Points)
   • **Criteria 1-2-6: Insider Threat** - CMS stores information in such a way as to prevent disclosure of PII and exfiltration from a rogue (insider threat) properly credentialed system or database administrator. (Max Score: 4 Points)
   • **Criteria 1-2-7: Exfiltration Detection** - CMS generates an alert if unauthorized access occurs or data exfiltration is detected. (Max Score: 4 Points)
   • **Criteria 1-2-8: 3rd Party Data Storage** - CMS demonstrated that it can be integrated with a 3rd party data storage solution. (Max Score: 4 Points)

Part III - Case Scheduling (Max Score: 16 Points)
         Principal User: System is the user (e.g., fully automated), Case Researcher, Office Manager

*Part III Total Score Calculation for **Part 3 = Criteria 1-3-1 + Criteria 1-3-2 + Criteria 1-3-3 + Criteria 1-3-4***

Description
The offeror is to demonstrate how their case management solution can break a case down into discrete work items for users, researchers, and managers. Work items are assigned to researchers to balance workload across all researchers. The offeror is asked to show how the system schedules those items to investigators and show a business process for each to be notified that there is work to do and how the field office managers can track the status of their work.

Part III Evaluation Criteria:
- **Criteria 1-3-1: Work Assignment** - Offeror was able to demonstrate auto-generation of work items and assignment. (Max Score: 4 Points)
- **Criteria 1-3-2: Assignment Accuracy** - Assignments were appropriate to balance workload. (Max Score: 4 Points)
- **Criteria 1-3-3: Case Schedule** - Offeror was able to produce a case schedule. (Max Score: 4 Points)
- **Criteria 1-3-4: Executable Business Process** - Offeror's case management solution has an executable business process to notify researchers and managers to track item completion. (Max Score: 4 Points)

Part IV - Investigator Processes and Case Information (Max Score: 20 Points)
Principal Users: Case Researcher, Office Manager

*Part IV Total Score Calculation for **Part 4 = Criteria 1-4-1 + Criteria 1-4-2 + Criteria 1-4-3 + Criteria 1-4-4 + Criteria 1-4-5***

Description
Once the case information is stored in the system, the system will create discrete units of work that will be assigned to multiple case researchers, office managers, or automated system functions. For the purposes of this challenge, the government will assume that all case researchers in the system are authorized to see all case information from only their assigned subjects, only for those topic areas they are working on. The demonstration must include a user interface that allows for the completion of assigned work to include item issues and status. Case researchers must be provided with a free-text field to describe the case item as well as predetermined list of possible issues.

Some case researchers can only see a small subset of the case information necessary for their assigned research task. The offeror should demonstrate that at least one case researcher can use 2-factor authentication to remotely access complete case information for only their assigned cases in the system. The offeror should also demonstrate that at least one case researcher can use 2-factor authentication to access only basic case information.

For this challenge, office managers are not allowed to see any standard form data. They are limited to basic case information and "meta" information about the cases. For the purposes of this challenge, the offeror should show at least one office manager accessing the system using 2-factor authentication. The challenge should illustrate how an office manager can customize the information displayed on a management dashboard to track cases in progress, their phase of completion, high priority cases, overdue cases, and other information. Case managers can only see information about researchers assigned to them.

The challenge must show how the images and documents in the test data set are stored in a document management system, either internal to the CMS or using an integrated 3rd party document/image repository. The challenge must show how the document/image repository supports fine grained access control so that investigators can only see documents associated to cases they are assigned.

Part IV Evaluation Criteria:

- **Criteria 1-4-1: Case Researcher Case Access** - At least 1 case researcher users 2-factor authentication to access the CMS and is able to see all standard form data for only their assigned cases. (Max Score: 4 Points)
- **Criteria 1-4-2: Case Access Data Transfer Security** - Case researchers are able to use a web browser to access the system using 2-factor authentication. The connection is able to provide confidentiality and integrity of the data in transit between the CMS and the browser. (Max Score: 4 Points)
- **Criteria 1-4-3: Case Researcher Interface** - Case researchers have a user interface showing all assigned investigative items, a free-text field to describe each item, and a list of possible issues for each item. (Max Score: 4 Points)
- **Criteria 1-4-4: Access Control** - Once authenticated, case researchers are able to see only Basic case information. (Max Score: 4 Points)
- **Criteria 1-4-5: Case Researcher Interface Configuration** - At least 1 office manager is able to use 2-factor authentication to access the system and is able to access only basic subject information and customize a management dashboard. (Max Score: 4 Points)

Part V - Submit Case for Quality Review (Max Score: 16 Points)
> Principal Users: Case Researcher, Quality Reviewer

*Part V Total Score Calculation for **Part 5 = Criteria 1-5-1 + Criteria 1-5-2 + Criteria 1-5-3 + Criteria 1-5-4***

Description

Once a case has been completed, the case researcher submits the case for quality review. The offeror is asked to demonstrate how a case is submitted for quality review and demonstrate a hypothetical quality review process. The quality reviewer has to access the system using 2-factor authentication. The quality reviewer has the ability to annotate the case, and the offeror is asked to show the evaluation team the quality reviewers queue. Offeror should be able to show how the platform interprets and displays case element status and results. In the event that the business logic of query results changes, the offeror is requested to demonstrate how their solution would be reconfigured.

Part V Evaluation Criteria:
- **Criteria 1-5-1: Quality Review Submittal** - Case researcher submits case for quality review. (Max Score: 4 Points)
- **Criteria 1-5-2: Adjudication Submittal** - Demonstrate a case where quality reviewer submits a satisfactory case for adjudication and demonstrate the format of the case material presented to the adjudicator. (Max Score: 4 Points)
- **Criteria 1-5-3: Quality Reviewer Kickback to Field Investigator** - Demonstrate a case where the quality reviewer is not satisfied and further action is needed by the case researcher and demonstrate the case researchers perspective once the request is submitted. (Max Score: 4 Points)
- **Criteria 1-5-4: Quality Reviewer Kickback to Field Office Manager** - Demonstrate a case where the quality reviewer is not satisfied and further action is needed by the office manager and demonstrate the office managers perspective once the request is submitted. (Max Score: 4 Points)

Part VI - API Integration (Max Score: 16 Points)
> Principal Users: System Administrator

*Part VI Total Score Calculation for **Part 6 = Criteria 1-6-1 + Criteria 1-6-2 + Criteria 1-6-3***

Description
The government will provide a test Application Programmer's Interface (API) in the form of a RESTful web service for gaining access to external data required to complete a case.

Offeror is requested to demonstrate how their solution is configured to automatically query known authoritative data sources for a case. Offeror should be able to show how the platform interprets and displays case element status and results. In the event that the business logic of query results changes, the offeror is requested to demonstrate how their solution would be reconfigured.

Part VI Evaluation Criteria:
- **Criteria 1-6-1: Integration** - The platform is able to connect and interpret the simulated API response. (Max Score: 4 Points)
- **Criteria 1-6-2: Reconfiguration** - The platform's business logic is easily reconfigurable. (Max Score: 4 Points)
- **Criteria 1-6-3: Reconfiguration Verification** - The platform is able to successfully interpret the API responses based off the new business logic. (Max Score: 4 Points)

Appendix G Background on OTA and the Consortium Model

G.1 Other Transaction Authority

Congress has authorized 11 federal agencies to use Other Transaction Authority (OTA). "Other Transactions" (OT) are other than the Federal Acquisition Regulations (FAR). OTs are legal binding agreements between the U.S. Government and industry, including traditional and non-traditional Government contractors, small businesses, and academia. Because they are not subject to the FAR, OTs are, by design, more flexible and responsive to atypical Government procurement requirements. Indeed, Congress provides the authority in recognition that, from time to time, boilerplate procurement methods are at odds with the Government's need to innovate.

The 11 agencies with OTA apply it in different ways, but with the common theme that a primary goal is to reduce barriers to participation by firms not typically willing to subject themselves to the typical Government acquisition bureaucracy. In particular, the Competition in Contracting Act, Bayh-Dole & Rights in Technical Data, Truth in Negotiations Act, Contract Disputes Act, Procurement Protest System, and the Procurement Integrity Act do not necessarily apply.[97] Thus, for example, agencies can streamline competition and cost accounting, and agree to forgo intellectual property considerations. OTA for most, but not all, agencies is primarily associated with some form of research, development, test and evaluation (RDT&E). OTA for many agencies requires some level of cost sharing between Government and industry, or some other consideration in lieu of cost share. By way of example, the Department of Defense (DoD) is authorized, per 10 U.S.C. 2371 to use OTA for basic and applied research, and 2371b for prototyping projects. As of the Fiscal Year 2016 National Defense Authorization Act (NDAA), the following are characteristics of OTs executed within DoD:

- Senior Acquisition Executives (SAEs) of DoD departments and agencies may authorize OTs of $50M–$250M and may delegate authorization authority for OTs of less than $50M. The OSD SAE may authorize OTs for larger amounts. Authorization must explain why use of OTA is essential to project objectives and be in writing.
- Typically, commercial partners must pay a third of the development costs. That requirement may be waived if the commercial team includes small business(es) or non-traditional Defense contractors. Non-traditional Defense contractors are defined as companies that have not contracted with DoD and fully complied with Cost Accounting Standards (CAS) within the last 12-month period.
- The term "prototype" is not defined by statute. Generally, it refers to how a thing is used, not what it is. "Prototypes" are design models used to evaluate potential solutions. They may be physical or virtual and may address technology or processes.
- In addition to executing OTs with individual firms and teams, DoD departments have executed OTs with open consortia. The term "open" means that barriers to membership and dialog between Government and industry are low. When an "umbrella" consortium-type OT

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[97] United States Department of Defense. 2001. Department of Defense Prototype Guide. Available at: http://www.acq.osd.mil/dpap/Docs/otguide.doc.

is in place—with established funding ceiling and period of performance—transactions for individual projects can be solicited and awarded very quickly. Thus, consortium-type OTs can effectively establish a marketplace around Government requirements.

- If an OT for prototyping has been established under competitive procedures, and the prototyping project is deemed "successful," the Government may make a direct award of a traditional contract, or an OT, for production. Further competition is not required.

OTA is used much less frequently, and is much less constrained, than the FAR. For these reasons, anecdotally, procurement via OTA is typically considered "riskier" than procurement under the FAR. It is, therefore, not surprising that procurement professionals who are familiar with contracting under the FAR benefit from additional training regarding why and how OTA may be applied.

G.2 Consortium Model Using OTA

A consortium is defined as "…an association of two or more individuals, companies, organizations, or Governments (or any combination of these entities) with the objective of participating in a common activity or pooling their resources for achieving a common goal."[98] Consortia are open to all entities and entrance and participation is based on an entity's approval of an application, payment of a small annual fee, and the execution of a Consortium Member Agreement. This agreement provides rules and operating procedures that govern activity within the consortium to include procedures for handling Intellectual Property and Data Rights.[99] Consortia are often established for conducting shared research and development on technologies for the consortium's member companies, and in this case, also for the Government.

The consortium model gets its statutory authority from the National Cooperative Research and Production Act of 1993 (NCRPA),[100] which encourages innovation and collaboration between industry, academia, and the Government. The Act also facilitates trade and helps to promote competition within the marketplace and is "…aimed at reducing Governmental obstacles to the commercialization of new technology."[101]

The consortium model helps participants to avoid duplication of effort and to be more efficient by sharing resources, information, resources, talent, and expertise. Furthermore, results of the research within the consortium are typically shared, making all members more competitive within the marketplace. It can be said that industry starts consortia for the same reasons that the Government does. John M. Eilenberger Jr., Chief of the Contracting Office at the Army Contracting Command – New Jersey, noted some additional benefits of this consortium approach. These include that it creates relationships where they may not have

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[98] http://www.ndia.org/Divisions/IndustrialWorkingGroups/ChemicalBiologicalDefenseAcquisitionInitiativesForum/Documents/16-ACC%20NJ%20OTA.pdf

[99] http://www.ndia.org/Divisions/IndustrialWorkingGroups/ChemicalBiologicalDefenseAcquisitionInitiativesForum/Documents/16-ACC%20NJ%20OTA.pdf

[100] United States Department of Justice. 1993. National Cooperative Research and Development Act. Available at: https://www.justice.gov/atr/national-cooperative-research-and-production-act-1993.

[101] Reference for Business. 2017. Research and Development Consortia. Available at: http://www.referenceforbusiness.com/encyclopedia/Pro-Res/Research-and-Development-Consortia.html.

otherwise occurred, allows for ease of communication, leverages capabilities, provides for clearer communication of needs and priorities, and can more easily obligate funds.[102]

The Government establishes consortia for performing work within a given area of interest, technology profile, or capability gap. The Government's relationship with a consortium is typically solidified through a business agreement using OTA with a single point of contact: the Consortium Agent, a non-profit business entity. The Consortium Agent, or prime contractor, has a direct relationship with consortium members (industry, academia, small businesses, and non-traditional suppliers), or sub-contractors, typically through a Consortium Member Agreement and makes payment to these entities through a commercial or technology initiative agreement. The Consortium Member Agreement is referenced within the OTA, but it is not part of it. The Consortium Agent works directly with the consortium members, as shown in Figure H-1.
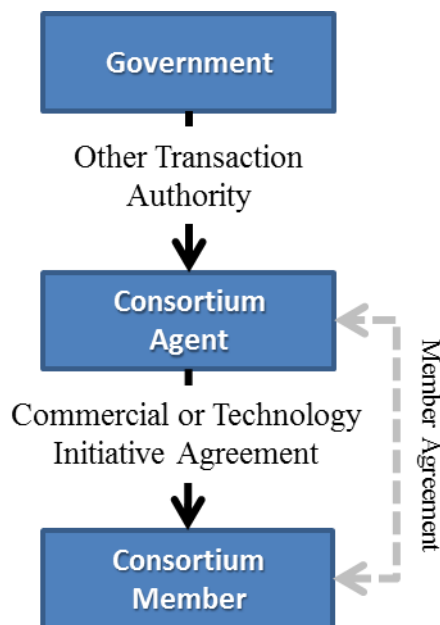
Figure G-1. Government–Consortium Relationships

Once a consortium model using OTA is established, the Government can start work. The Consortium Agent earns a small administrative fee and is paid for the work accomplished by its members. The Consortium Agent then passes the remaining funds on to the consortium entity that "wins" the work through a commercial or technology initiative agreement. It is important to note that the Government can utilize both RDT&E and Operations and Maintenance (O&M) funding, which offers flexibility in choosing the work and initiatives to be accomplished, executed, and, ultimately, funded. Using this model, the Government can purchase prototypes, conduct intensive R&D, and even execute a sole source follow-on procurement for additional products.

The process enabled by the consortium model lowers the barriers to entry for industry, non-traditional suppliers, small businesses, and academia that tend to be very innovative but may shy away from the

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[102] http://www.ndia.org/Divisions/IndustrialWorkingGroups/ChemicalBiologicalDefenseAcquisitionInitiativesForum/Documents/16-ACC%20NJ%20OTA.pdf

bureaucracy of Government acquisition. This model allows the Government to tap into colleges and universities, laboratories, and small innovative companies, experts, and teams without the typical barriers put forth by federal regulations and policies that do not apply when using OTA. Furthermore, this model incentivizes innovation, collaboration, and communication, and has proven a win-win for both the Government and member entities of the consortium. Using this model, the Government can purchase prototypes, conduct intense R&D, and even execute a sole source follow-on procurement for additional product.

Appendix H   Sample DevSecOps and Agile Challenge

H.1   Purpose and Intent

Challenge-Based Acquisition (ChBA) offers a low-risk and high-reward strategy for tapping into industry's innovative capabilities and keeping end-users closely engaged in the acquisition process. It acts as an acceleration strategy, reducing execution risk early in the acquisition lifecycle and increasing the likelihood of more quickly delivering capability that the end-user needs. Moreover, ChBA helps ensure that the Government is able to integrate leading-edge technology and deliver solutions deliberately targeted to meet end-user needs, with end-users providing immediate and continuous feedback throughout the acquisition process.

Ironically, for Agile and DevSecOps software acquisition the biggest impediments to success are often imposed by the Agile and DevSecOps execution processes themselves. ChBA allows the Government to compress the time for delivering useful capability by front-loading risk reduction into the challenge or demonstration event. This drives industry to innovate and increases the probability that the selected development vendor can produce the needed Agile and DevSecOps solution, and ultimately increases the probability that end-users have a capability delivered to them in the field that actually works and meets their needs.

Working through a ChBA framework allows the Government to directly evaluate vendors against the highest risk aspects of an Agile and DevSecOps program _before_ awarding the final contract. Ultimately, the ChBA approach mitigates known risks, exposes unknown risks, and empowers vendors to innovate very early in the acquisition, during the phase when industry has the most incentive (and most to gain) from reducing the Government's risk profile. This means that once a program actually begins executing the Agile and DevSecOps solution, many of the initial hurdles will have already been overcome, addressed, or at least identified. The program will already have traversed part of the learning curve, and the Government will have "bought down" execution risk.

By bringing end-users into the process and exercising a vendor's Agile and DevSecOps approaches, the Agile and DevSecOps challenges increase the likelihood that Agile and DevSecOps solutions will meet the Government's need. Further, they increase the probability of producing higher-quality capabilities, and they often accelerate the speed of delivering meaningful capability.

H.2   Defining Agile and DevSecOps

> _"Agile is based on values and principles that encourage frequent delivery of working software to users in order to gain fast feedback and continuous learning that is supported by a culture of collaboration."_[103]

Agile and DevSecOps practices allow the Government to meet evolving needs; however, these approaches change the Government's risk profile. Specifically, Agile and DevSecOps are radically different from traditional methodologies; they require a different set of vendor skills, tools, and

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[103] DoD's Contracting for Agile Software Development. 28 August 2019.

processes. Performing challenges specifically focused on vendor Agile and DevSecOps approaches reduces the Government's risk by validating the vendors' Agile and DevSecOps approaches.

Agile development enables the continuous development and delivery of capability that responds to user feedback and is predicated on the expectation that requirements will evolve throughout the development lifecycle.[104] This approach differs from traditional software development models where technical requirements are often rigidly defined upfront, demanding significant effort devoted to clearly, thoroughly, and specifically defining and articulating requirements and then refining them. Under the Agile construct, requirements and priorities evolve and are re-prioritized throughout the process and lifecycle.

DevSecOps is a software development culture, closely tied to Agile, that integrates Software Development (Dev), Security (Sec), and Operations (Ops) processes to achieve continuous development and continuous delivery. This approach brings testing and security into the development process, using tools, workflows, and processes that provide a continuous delivery pipeline.[105] [106] In order for DevSecOps to function effectively, automated tools must be integrated into the delivery pipeline.[107] While Agile approaches focus on the organizational structure and approach, DevSecOps provides the pathway for delivering working software. DevSecOps emphasizes the value of software delivery and defines key steps to continuously deliver that value.[108]

DevSecOps brings development, testing, security, and operations teams together to work collaboratively across the entire development lifecycle. By encouraging automation and emphasizing configuration control, activities such as testing, integration, and deployment can be easily repeated by "implementing automated tests along the delivery pipeline, taking advantage of automated deployment to consistent environments that are instantiated with the use of automated code, configuration and other cloud technologies such as containerization, orchestration and as noted, automation."[109]

H.3   Organization and Logistics for Demonstration

Executing a challenge under ChBA can be difficult. To receive the maximum benefit of the challenge, the Government team, including all stakeholders, must maintain organizational discipline, focusing on transparency and logistics planning. First and foremost, the procuring organization must develop and execute a Challenge Plan that defines critical milestones, dependencies, roles, responsibilities, and industry engagement steps. Although the plan is an important step toward ensuring the success of critical events, a "perfect" plan can be the enemy of one that is "good enough." The team must devote care, attention, and collaboration to developing the Challenge Plan; however, creating the plan should not become an organizational burden. The plan should be an evolving, "living" blueprint for success.

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[104] Defense Science Board, Design and Acquisition of Software for Defense Systems (2018)

[105] Department of Defense Enterprise DevSecOps Reference Design (2019)

[106] Acquisition of Agile Development Use Case, Contracting, AIDA. 2019.

[107] Acquisition of Agile Development Use Case, Contracting, AIDA. 2019.

[108] DoD's Contracting for Agile Software Development. 28 August 2019.

[109] DoD's Contracting for Agile Software Development. 28 August 2019.

When developing the Challenge Plan, the Government team must understand the full scope of the approach and build a solid planning foundation that provides a clear view of the entire effort but is also flexible enough to adapt to the inevitable changes that occur during the selection process. To achieve this, the planning team should adopt a three-phase approach: Prepare, Design, and Conduct. The Prepare Phase focuses on the essentials of the requirement, such as defining the problem, identifying goals and outcomes, and understanding the resource limitations. The Design Phase focuses on defining the details of the plan to include logistics, rules of play, evaluation criteria, and communication plans. Finally, the Conduct Phase establishes how the ChBA will be executed. See Appendix 2 for more detail.

In addition to methodical planning, open communication and transparency are essential to success. In an Agile and DevSecOps challenge, the Government is responsible for identifying and transmitting information about key development objectives, Agile user stories, focused questions, and other critical Government Furnished Information (GFI). The team should address these GFI requirements early, assign the points of contact responsible for that GFI, and share GFI artifacts openly among the Program's internal stakeholder community. The Acquisition Team should be fully open in its communications with all stakeholders – user groups, associated organizations, leadership, the contracting team, etc. – to ensure that everyone has an opportunity to provide meaningful input into the ChBA approach and its execution. Without buy-in and support from internal stakeholders, the Agile and DevSecOps challenge is less likely to meet its objectives.

Transparency is also the key to successful industry engagement. The Government must communicate its objectives, acquisition approach, and desired results to its industry partners as early as possible. In many cases this specifically means releasing draft challenge scripts and other draft documents in the Request for Whitepapers (RWP) with a stated intention to update those artifacts prior to the formal challenge invitation. Early transparency with industry gives the vendor community the necessary resources to succeed in delivering *the best possible* challenge solution. Early communication provides vendors with adequate time to prepare their solutions and gives those industry partners an opportunity to provide input to the Government's proposed approach. While such input is often discouraged in traditional acquisition, ChBA encourages such two-way engagement, which ultimately improves the quality of the final product.

H.4 Demonstration Script and Evaluation Criteria

H.4.1 Demonstration Introduction

While it is necessary to clearly explain how ChBA can improve the benefit of DevSecOps and Agile approaches, these concepts may seem overly abstract and difficult to apply to real-world problems. With this in mind, the Government may find it useful to create a sample scenario that applies these concepts. The Agile Scenario provided herein shows how these general concepts work together and how they would be applied to a real-world problem.

Scenario 0 demonstrates the vendor's ability to execute Agile software development within its particular DevSecOps maturity level. The scenario begins with the Government providing a program backlog containing three draft user stories and designating a Team-level Product Owner with whom the vendor will interact. The Government must designate the same Product Owner for every vendor, and the vendor must provide a Scrum Master to facilitate the demonstration scenario.

The vendor begins the scenario by demonstrating (through a video) its overarching Agile process, and then describes its role and participation in the Program Increment Planning workshop (in a manner similar to an oral proposal). The vendor then conducts mock team-level sprint planning that is based upon the Government-provided user stories. After completing sprint planning, the vendor employs the user stories to simulate the approach (in a manner similar to an oral proposal) to sprint execution, sprint review, and sprint retrospective.

H.4.2   Scenario Scoring Approach

This scenario has multiple parts that will be scored using the scale below. The total score for this scenario will be the sum of the scores from each part associated with the scenario. All parts of the scenarios are considered equal in weight.

Table H-1. Scenario Scoring

Scoring Criteria				
0 points	**1 Point**	**2 Points**	**3 Points**	**4 Points**
Failure to demonstrate the criteria or criteria demonstrated with significant issues or concerns	Criteria demonstrated with minor issues or concerns	Criteria successfully demonstrated	Criteria successfully demonstrated with additional benefits to the Government	Criteria successfully demonstrated with significant additional benefits to the government
Scoring Formulation				
Total Score Calculation for Scenario 0 = ∑Part A + ∑Part B + ∑Part C + ∑Part D (Max Total Score Possible for Scenario 0 = 16 Points)				

Government Furnished Information and Resources
- Three draft user stories
- A Government Product Owner
- Questions to be answered by the vendor in Parts B, C, and D

H.4.3   Part A – Agile Approach

Table H-2. Agile Approach Scenario

PART A – AGILE APPROACH
SCENARIO DESCRIPTION
Scenario 0 begins with a 10-minute demonstration video. This video must describe the vendor's software development process, consistent with DevSecOps. The vendor must focus on innovative Agile development approaches or other unique Agile development capabilities that will enhance development activities. At a minimum, the video must address: • How planning, design, and development are performed   • How the Agile development approach is scaled up from the team level to higher levels (e.g., Program and/or Portfolio)   • How code branch management is performed   • How product builds are performed (to included frequency)   • How testing is accomplished to ensure quality   • How the product is moved from development to production reliably and consistently

- How monitoring, reporting, and user feedback are captured to enable continuous improvement
- An introduction to the Agile development team and Key Personnel (including roles/responsibilities)
  - How the vendor prioritizes "people over processes"
  - How teams are empowered to change requirements if user feedback were provided
  - How Agile teams are empowered to change their processes based on what they learn

The video must be no longer than 10 minutes (at least 720p, a.k.a. "High Definition" at 60Hz format encoded in H.264/MPEG-4 Advanced Video Coding for playback on Windows and Mac OS X). The Government will only assess video content; production quality is not an influencing factor to delivering a successful video.

PART A – AGILE APPROACH
SCENARIO EVALUATION

The vendor demonstrates thorough and innovative end-to-end SAFe and DevSecOps software development approaches and processes that are implemented by a highly competent Agile development team. (Max score: 4 points)

To evaluate this scenario, the Government will consider the following elements. These considerations may be included in the Government's analyses and tradeoff decisions in order to help identify potential issues, concerns, risks, opportunities, and benefits:

- ✓ Coverage of complete software lifecycle
- ✓ Scaling of agile approach
- ✓ Application of branch management
- ✓ Approach to product building
- ✓ Approach to testing
- ✓ Promoting to production
- ✓ Incorporating ser feedback
- ✓ Empowering agile development teams
- ✓ Applying innovation

H.4.4   Part B – Sprint Planning

Table H-3. Sprint Planning Scenario

PART B – SPRINT PLANNING
SCENARIO DESCRIPTION

The Government will deliver three draft user stories to the vendor. The vendor must utilize the user stories to simulate the sprint planning process, involving the Government-provided Product Owner as an integral part of the planning process. Sprint planning must simulate a comprehensive "real-world" approach detailing how the vendor utilizes the Product Owner's intent behind each user story. Topics of discussion could include testing, software quality, infrastructure, security, user story decomposition, scripting, standards, or any other key feature of the software development pipeline. The vendor must demonstrate, through simulated means, the products that result from sprint planning. During this part of the scenario, Government personnel may ask questions about topics that include, but are not limited to, infrastructure, performance, testing, vulnerability assessments, and software quality.

PART B – SPRINT PLANNING
SCENARIO EVALUATION

The vendor successfully plans an Agile development sprint using both Agile and DevSecOps practices, transforming draft user stories into sprint planning artifacts and adequately preparing for Part C, Sprint Execution. (Max score: 4 points)

To evaluate this scenario, the Government will consider the following elements. These considerations may be included in the Government's analyses and tradeoff decisions in order to help identify potential issues, concerns, risks, opportunities, and benefits:

- ✓ DevSecOps Pipeline Approach
    - ➢ The pipeline supports continuous integration (CI) and automated static testing is performed to ensure code quality and security
    - ➢ The pipeline supports continuous delivery/deployment (CD)
        - ▪ The pipeline deploys the code to a test environment
        - ▪ The pipeline runs various dynamic QA and security tests
        - ▪ The pipeline supports a decision point (manual or automated) for deployment into production
- ✓ Quality Assurance
    - ➢ Correct level of testing for the sprint, as well as an indication of how testing for an integrated product would be accomplished
    - ➢ Performance and reliability testing
    - ➢ Acceptance criteria and inclusion of non-functional requirements (NFR)
- ✓ Security Planning
    - ➢ Included within acceptance criteria
    - ➢ Security included up front as part of planning
- ✓ IT Infrastructure
    - ➢ Implementation of infrastructure-as-code as an application
    - ➢ Is infrastructure code treated the same as application code?
    - ➢ Implementation of IT standards
- ✓ Suggesting user stories to the Government
- ✓ Any scripts required to deliver into [required to be delivered to? required for incorporation in?] the DevSecOps toolchain (testing, infrastructure as code, etc.)
- ✓ Automated testing
- ✓ Baking in software security and quality
- ✓ Working with the product owner
- ✓ Includes six types of code: Application code, application test code, application security test code, infrastructure code, infrastructure test code, infrastructure security test code
- ✓ Vendor includes both functional and nonfunctional requirements, such as Government accessibility testing, Section 508 standards, or Web Content Accessibility Guidelines (WCAG) 2.0
- ✓ Implementation and inclusion of mock-ups, illustrations, and/or wireframes
- ✓ Applying innovation

H.4.5   Part C – Sprint Execution

Table H-4. Sprint Execution Scenario

PART C – SPRINT EXECUTION
SCENARIO DESCRIPTION
In the context of sprint planning output, the vendor must conduct a simulated walk-through of the Agile development process. The approach must include discussions of daily activities. No coding will

be performed; however, the vendor must discuss the approaches used to develop sprints. During this part of the scenario, Government personnel may ask vendors about sprint execution activities. The simulated walk-through must address:

- How the Agile Development team maintains progress and momentum
- How user story refinements are integrated into the process
- How geographically dispersed team members are integrated and supported
- How build, test, and deployment automation are used to eliminate manual steps and integrate security
- Which processes are automated and why certain tool suites and repositories were chosen:
    - Unit test, regression test, and functional test
    - Security scans and deployment certification
    - Continuous integration and continuous deployment
    - Configuration management
- How and what metrics are gathered in the continuous delivery process

PART C – SPRINT EXECUTION
SCENARIO EVALUATION

The vendor demonstrates a controlled process to execute Agile sprints, integrating tools and DevSecOps principles that maximize efficiency. (Max score: 4 points)

To evaluate this scenario, the Government will consider the following elements. These considerations may be included in the Government's analyses and tradeoff decisions in order to help identify potential issues, concerns, risks, opportunities, and benefits:

- ✓ Effects on agile momentum
- ✓ Inclusion of automation
- ✓ Application of tools
    - ➢ Testing -- automated testing, unit testing, code quality testing, Test Driven Development (TDD), automated accessibility testing, Behavioral Driven Development (BDD) and support tools, and API testing
    - ➢ Security
    - ➢ CI/CD
    - ➢ Configuration management of code
- ✓ Application of cumulative flow diagrams
- ✓ Including branching and continuous integration
- ✓ Managing with metrics, such as burn-down charts
- ✓ Applying innovation

H.4.6   Part D – Sprint Review and Sprint Retrospective

Table H-5. Sprint Review and Retrospective Scenario

PART D – SPRINT REVIEW AND SPRINT RETROSPECTIVE
SCENARIO DESCRIPTION

In the context of the output of sprint execution, the vendor's identified Scrum Master (or other team member(s)) must conduct a simulated walk-through of the techniques and procedures used in the sprint review and sprint retrospective. These walk-throughs must describe the steps in the vendor's pipeline that are typically used to assess and evaluate a sprint. This description must also include discussions of contributions to any follow-on activities (such as further development). During this part

of the scenario, Government personnel may ask vendors about sprint review and sprint retrospective activities.

PART D – SPRINT REVIEW AND SPRINT RETROSPECTIVE
SCENARIO EVALUATION

The vendor demonstrates an approach to sprint review and sprint retrospective that measures effectiveness, demonstrates capability, and prepares for future sprints. (Max score: 4 points)

To evaluate this scenario, the Government will consider the following elements. These considerations may be included in the Government's analyses and tradeoff decisions in order to help identify potential issues, concerns, risks, opportunities, and benefits:

- ✓ Including measures of effectiveness (e.g., Successfulness)
- ✓ Focusing on the customer – (e.g., demonstrations, validations, and feedback)
- ✓ Structuring the retrospective
- ✓ Applying sprint and product performance metrics (e.g., feature and capability burndown charts)
- ✓ Synthesizing retrospective outputs into meaningful approaches
- ✓ Applying innovation

H.5 Conclusion

While the use of DevSecOps and Agile approaches offers numerous tangible benefits to the Government, these approaches carry their own complications and risk. Untrained and improper application of either or both concepts could result in more problems than solutions if not executed correctly. To mitigate this risk, organizations should consider applying a ChBA approach to awardee selection to ensure that vendors prove that they are experienced and sophisticated enough to these execute these complicated DevSecOps and Agile approaches through clear demonstrations ***prior to award***. This reduces the risk of an organization making an award to a firm that makes extravagant claims but cannot execute when it counts.

Appendix I   Toolkit for Developing a Challenge/Demonstration

Key questions and Guidance for preparing, developing, and conducting a challenge

I.1   Introduction

I.1.1   Purpose

This appendix offers a toolkit for organizations that are considering leveraging a ChBA approach for procurement. This toolkit provides questions and considerations that organizations should address when preparing for, developing, and executing a challenge. For purposes of the toolkit, a pre-award challenge or demonstration (i.e., white paper, on-site inspection, sandbox demonstration, live fly, etc.) is provided as one example leading to a down-select process and the ability to test and acquire innovative solutions in an operational-like environment using both FAR and non-FAR acquisition approaches.

I.1.2   Background

Designing a challenge has many elements, which include identifying resources, planning the activities, and considering both outputs and outcomes.
- Resources include human and financial resources required to support the challenge.
- Activities include all action steps necessary to produce program outputs, which are the products/services procured by the ChBA stakeholders.
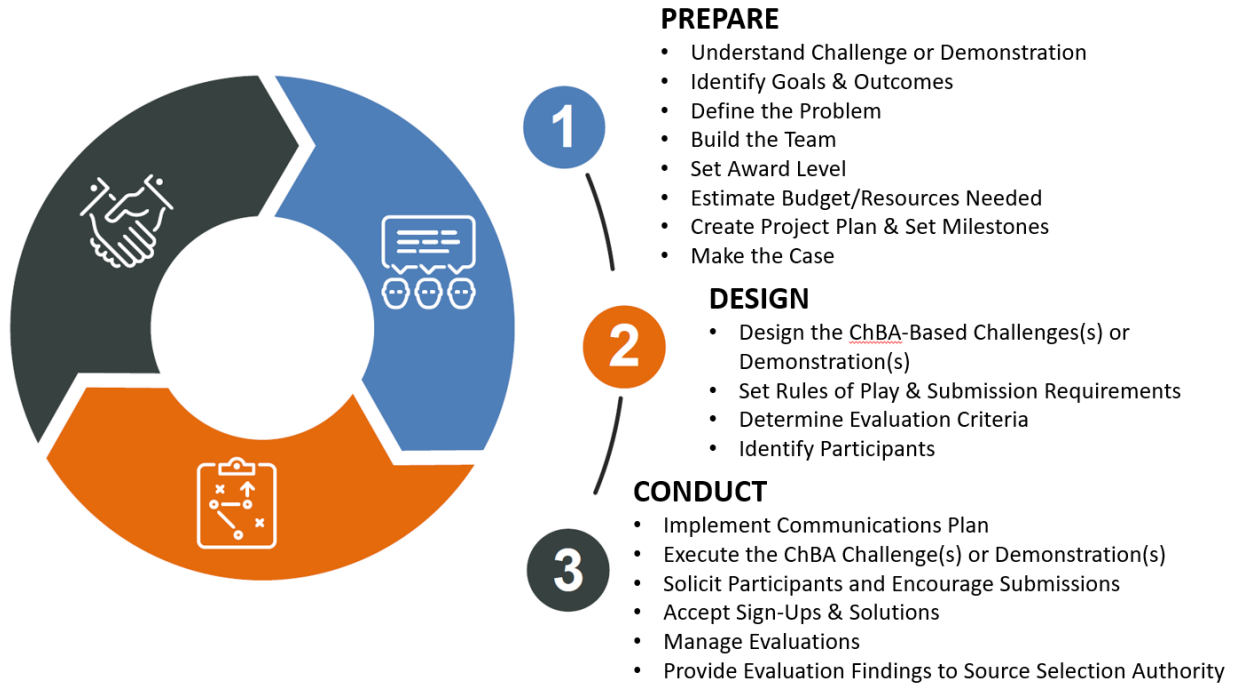- Outcomes are changes or benefits resulting from the challenge.

The checklists that follow focus on the activities needed to prepare and execute a challenge or demonstration for a pre-award down-select process. They present key questions to consider when preparing for, developing, and conducting the challenge or demonstration.

I.1.3   Challenge or Demonstration Definition in Context with ChBA

Several types of challenges or demonstrations can be executed, to include sandbox demonstrations and use of prototypes within an operational or simulated environment. Again, these are not "show and tells." These challenges and demonstrations are dynamic and are executed in an environment that represents operational circumstances as closely as possible (with interfaces, Government Furnished Information, etc.). During execution, the Use Case is performed by the vendors and evaluated throughout.

I.1.4   Three-Phased Approach

This toolkit applies a three-phased approach to planning a challenge or demonstration event composed of three phases: Prepare, Design, and Conduct. Additionally, the toolkit identifies the critical steps to include in the plan and the key questions that must be examined to ensure all items are considered, and it presents clear guidance that includes suggestions and best practices. When viewed from the lens of the major steps in ChBA execution (see page 2-1 – 2-25 and Figure 2-1. Challenge Strategy), this toolkit addresses aspects of both the Pre-Challenge and Challenge Activities with special emphasis placed on understanding, designing, communicating and conducting the challenge event. These correspond to Steps 1, 2, 4 and 6 of the major steps in ChBA Execution.

PREPARE
- Understand Challenge or Demonstration
- Identify Goals & Outcomes
- Define the Problem
- Build the Team
- Set Award Level
- Estimate Budget/Resources Needed
- Create Project Plan & Set Milestones
- Make the Case

DESIGN
- Design the ChBA-Based Challenges(s) or Demonstration(s)
- Set Rules of Play & Submission Requirements
- Determine Evaluation Criteria
- Identify Participants

CONDUCT
- Implement Communications Plan
- Execute the ChBA Challenge(s) or Demonstration(s)
- Solicit Participants and Encourage Submissions
- Accept Sign-Ups & Solutions
- Manage Evaluations
- Provide Evaluation Findings to Source Selection Authority

Figure I-1. Prepare, Design and Conduct ChBA

I.2   Checklists

I.2.1   Phase I – Prepare for ChBA Challenge(s) or Demonstration(s)

Table I-1. Checklist: Preparing for ChBA

Step	Key Questions	Guidance
a. Understand ChBA Challenge or Demonstration	- What type of acquisition is the organization contemplating (FAR-based vs. non-FAR-based acquisition)? - Does ChBA conform to the rules of specific FAR-based authorities (parts 8.4-GSA 13-Simplified Acquisitions; 15.3-Negotiations; 16.5-Fair Opportunity, other-OTA)? - What type of ChBA demonstration does the organization want to run? - Who can participate? - What intellectual property (IP) will the Government need?	- Focus on whether traditional or emerging technologies are required to determine acquisition approach. - Do not reinvent the wheel. Instead, borrow templates and other artifacts from past ChBA challenges. - Give organizations clear and unambiguous guidance on what IP is needed. - Document team process/lessons learned as the ChBA demonstration progresses to share with the next challenge team.
b. Identify Goals and Outcomes	- What is the purpose of the ChBA challenge/demonstration? - What are the benefits of conducting the ChBA? - What risks are being mitigated by conducting a ChBA? - What is the desired output/ outcome of the ChBA demonstration?	Identify the goal and outcome early in the planning stage to avoid scope creep. -- Designs of ChBA events can vary greatly depending on the primary outcomes an organization wants to achieve, such as research advancement, operational integration, external use, education/public outreach, state-of-the-

	• Why is this ChBA challenge/demonstration important to stakeholders? • What are some possible solutions to the problem (e.g., strawman prototype to show possibilities)?	art advancement, enabling a product to be brought to market, creation of new companies, etc.
c. Define the Problem	• What problem is the organization trying to solve by leveraging ChBA? • How will the organization define the problem statement? • Who owns the problem? • Who is affected by the problem? • Does the problem focus on the ultimate impact desired by the organization? • Does the problem allow industry to apply emerging technologies and its own commercial solutions? • Does the problem consider context and constraints?	• Design a clear and concrete problem statement. To achieve this, get input from stakeholders; this drives the whole challenge. • Meet with internal SMEs and internal/external stakeholders to refine problem statement and obtain stakeholder validation. There is no such thing as over-socialization at this stage. If the problem is not well defined, the participants may not be able to provide applicable solutions.
d. Build Team	• What talent is needed internally? • What talent is needed externally? • What partnerships are needed internally? • What partnerships are needed externally? • What role will partners have? • Do the team members have accountability/ownership in the solution?	• Establish a multifunctional integrated product team consisting of all functional representatives (e.g., communications, legal, risk, security, finance, oversight, etc.). • Identify the SMEs that are needed throughout the process for various efforts. Identifying SMEs is an evolving process. They can be part-time or full-time team members, depending on the phase/step of the process. • Decide if any tasks should be outsourced.
e. Estimate Budget/ Resources Needed	• What is the budget for the award? • What type of funds can be used for the demonstration, if any? (or will challenges be conducted prior to awarding any contracts?) • How many contracts/agreements will be awarded? • What are the success/evaluation criteria for the offerors? • Will there be cost-sharing incentives? • Will the down-select use subjective or objective evaluation factors? • What budget and resources are needed to initiate and plan the ChBA challenge/demonstration?	• Identify the minimum obligated amount. The minimum obligated amount should be commensurate with the level of effort required to participate in the demonstration. • Consider cost sharing incentives with commercial entities. • Leverage objective ratings when meaningful (i.e., targeting desired benefits). Use subjective ratings for other considerations (i.e., management plan, staffing plan, key personnel qualifications). • Commit funding before executing a ChBA challenge/demonstration to flesh out the specifics and level of effort to plan and manage the ChBA challenge.
f. Create Project Plan and Set Milestones	• When is the ChBA challenge/demonstration expected to begin and end?	• Identify the resources and activities required to run the ChBA challenge/demonstration, the length of time needed, and major milestones.

Step	Key Questions	Guidance
	• Are there any concerns for staging and timing of the ChBA challenge/demonstration (e.g., holidays/government conflicts, etc.)? • How will the project be managed?	• Create high-level project and acquisition plan. • Consider designating a project leader role for the team.
g. Make the Case	• What information does the multifunctional integrated project team need to inform stakeholders so they can approve the ChBA challenge/demonstration, budget and resources?	• Develop messaging and presentations for stakeholders and partners.

I.2.2 Phase II – Design ChBA Challenge(s) or Demonstration(s)

Table I-2. Checklist: Designing ChBA Challenges/Demonstrations

Step	Key Questions	Guidance

a. Design the ChBA based Demonstration	• Should technical evaluation support of the ChBA challenge/demonstration be outsourced to a third-party vendor or partner?
	 • What IP will require protection?
	 • Are there any classification considerations?
	 • What materials (classified or not), training, GFI, or sample data are needed?
	 • How can you make the challenge or demonstration as real or operational-like as possible?
	 • Are there established interfaces?
	 • Is there an established testbed?
	 • What location and infrastructure are available for demonstration?
	 • Is there sample or mock data and/or other GFI that the Government needs to produce and provide to the vendors?
	 • If so, what, and when is this information provided?
	 • Plan for logistics considerations:
	   • Date, location and infrastructure
	   • AV, seating, and internet for demonstrations
	   • Holding rooms for vendors
	   • Space for evaluation/consensus activities
	   • Required Government-Furnished Information (GFI)
	   • Security and vendor access
	   • Invitations/instructions to vendors
		• Set scope; determine target audience; determine participant rights; develop method of evaluation in instructions to offerors to describe the process.
		 • Review initial project plan; verify assumptions, timeframe, and cost—is the plan realistic?
		 • Engage security personnel early as part of the IPT.

Step	Key Questions	Guidance
	• Parking • Food availability • Consensus meeting location/facilities • Completed and published agenda • Documentation templates (e.g., evaluator and consensus sheets) • Evaluation Training • Demonstration Script • Logistics communication with industry (including answering questions) • Internal demonstration dry run/review	
b. Set Rules of Play and Submission Requirements	• What should a proposal/offer include? • Who can participate? Are any groups ineligible? • How should the offerors' IP rights be protected? • Can participants collaborate with each other to create the solution? Is partnering promoted? • What information should be requested in a submission template? • How will the IPT communicate with offerors (exchanges, clarifications, discussions)? • How will offerors submit their solutions? • Is a dataset required to participate (actual or historical data)? If so, how will it be generated? • Should any offerors be excluded from participating due to conflicts of interest?	• Ensure all participants have access to the same information at the same time. • Consider the use of non-disclosure agreements to avoid potential conflicts of interest. • Transmit all solicitation documents and communications IAW FAR or other laws and regulations (e.g., FBO.gov).
c. Determine Evaluation Criteria	• What are the demonstration rules for selection and award? • What is the demonstration script for the vendors? • What is the demonstration script for the Government? • What criteria will be used to evaluate offerors? • Will the submission acceptance review be automated (using algorithm) or manual using rating scales? • What rating scales will be used (subjective)? • How will the rating scales be administered?	• Collaborate with partners/agencies to determine what they consider important in a solution. • Ask SME(s) to develop a rating scale/scoring matrix with the Contracting Office. • Ensure evaluation and judging criteria are reviewed by risk management and legal SMEs to ensure objectivity. The process should be transparent, well communicated, and clearly explain how the evaluation will take place. • Because ChBA events can be subjective in nature, decide if require human judges are needed to determine whether solutions answer the challenge.

Step	Key Questions	Guidance
	• What does a strawman submission look like? • Will consensus among the evaluators be required? • Do the evaluation factors align to the needs of the Government? • Do the evaluation factors favor a particular solution? • Do the factors allow for parity of evaluation across multiple vendors? • Do evaluation factors align to expected areas of risk or vendor differentiation? • Are the subjective rating factors clearly defined?	• Use both full AND consecutive days to familiarize judges with criteria and cadence. • Allow extra time if consensus among judges is required. • Limit criteria to 5–6 of the most critical topics to evaluate. • Evaluate each submission separately based on the merit of each proposer. • Consider weighting the evaluation criteria based on their importance.
d. **Develop Comms Plan**	• Will a communication plan benefit the government? • What message does the organization want to convey about the ChBA challenge/demonstration? • Who are the target audiences for the various messages and what are the best communication channels for them? • How far in advance should the ChBA challenge/demonstration be introduced to target audiences to maximize benefit for government?	• Consider who the target audiences are. • Is the anticipated end solution something that is feasible for an individual contributor, small business, etc. (i.e., traditional defense contractor vs. non-traditional) to produce?
e. **Identify Participants**	• Who is the intended target audience? • Who might participate in the competition? • Who should participate—what characteristics should they have?	• Consider using a third party to conduct market research. • Leverage consortia, conferences, memberships, etc., to identify potential offerors. • Recognize who the broader range of stakeholders could be to help engage participants.

At this point of the ChBA challenge or demonstration, the evaluators should have completed all background work and preparation needed to launch the challenge. Phases I and II are time consuming, and organizations should plan on taking several months to complete them.

I.2.3 Phase III – Conduct ChBA Challenge(s) or Demonstration(s)

Table I-3. Checklist: Conducting ChBA Challenges/Demonstrations

Step	Key Questions	Guidance
a. **Implement Communication Plan**	• How will information on the ChBA challenge/demonstration be published? • Where will information on the ChBA challenge/demonstration be published?	• Inform all interested parties about the ChBA challenge/demonstration at the same time.

Step	Key Questions	Guidance
	• How will participants ask questions about the ChBA challenge/demonstration? • How will the organization respond to crises? • What role will federal agencies/partners have as part of the communication roll-out?	• Maintain a communications plan and update it as the ChBA challenge/demonstration evolves.
b. Execute the ChBA Challenge/ Demonstration	• How will "the unexpected" be handled? • What are the risks (technical, cost, schedule, reputational, etc.) to the ChBA challenge/demonstration?	• Ensure ChBA challenge/demonstration is broadly announced, and information is provided to interested offerors. • Consider holding a series of pre-solicitation conferences and/or Vendor Logistics Day to explain the ChBA challenge/demonstration and have federal agency/partner participation. • Identify potential risks to the ChBA challenge/demonstration and periodically check assumptions and mitigations. • Create a process for handling/ responding to issues. Be prepared to make quick decisions to adjust the ChBA challenge/demonstration.
c. Solicit Participants and Encourage Submissions	• What mechanism will be in place to capture questions and provide responses to participants? • How will participants be encouraged to register, submit a proposal, and participate in the ChBA challenge/demonstration?	• Attract and engage participants throughout the launch and review of submissions. • Do not respond to inquiries individually; instead, follow Contacting- Agreement Officer instructions
d. Accept Sign-ups and Solutions	• How will registrations and offers be reviewed? • Will there be a graduated process to eliminate unqualified/non-competitive offers prior to demonstration?	• Verify companies and individuals once they submit agreements. • Implement down-selects prior to demonstrations to maximize demonstration opportunities for most qualified offerors.
e. Manage Evaluation	• Who are the evaluators? Are they qualified/SMEs in their respective domains? • What training do the judges need to be successful?	• Ensure rating criteria directly align with the Government needs in areas of highest risk. • Train evaluators about the evaluation criteria. The evaluators should receive training 1–2 weeks prior to review sessions so that the criteria are fresh in their minds.

Step	Key Questions	Guidance
		• Consider using a strawman proposal and use it to train the evaluators.
f. Provide Evaluation Findings to Source Selection Authority	• Do the evaluations strictly conform to what was in the solicitation? • Did the IPT fairly evaluate proposals across all offerors?	• Consider using a source selection tool to facilitate evaluations. • Consider using a facilitator to capture evaluations. • Consider conducting a consensus meeting immediately after each challenge or demonstration is performed.

I.2.4   Conclusion

This toolkit provides a comprehensive foundation for agencies to apply in their planning efforts. As with every checklist or toolkit, this product does not address every detail involved in planning a challenge or demonstration event. Each agency requirement has specialized aspects that must be considered in the plan. Additionally, plans must be flexible and able to evolve in response to changing conditions. With this in mind, agencies should first customize the toolkit and then maintain it to meet the specific requirements of the agency and procurement. Investing resources in the development of a robust and deliberate challenge/demonstration event will produce huge dividends during the execution phase.

Appendix J   Case Study: USDA's Farmers.gov Portal Development

J.1   Introduction

The following case study exhibits how ChBA has been successfully implemented under a Blanket Purchase Agreement (BPA) to enhance the acquiring agency's source selection process. This case study provides sample language, lessons learned, and key takeaways that can be leveraged to support other ChBA activities and initiatives. ChBA and the use of technical challenges or demonstrations during the source selection phase are an opportunity for the procuring activity to witness the vendor's practices rather than merely read about them via "paper promises". The Government can garner a much better understanding into the merit of the solution being offered through the ChBA approach. Furthermore, the Government, through the use of a technical challenge or demonstration can assess if the vendor is a good fit for the project by observing how the vendor uses the technology for their response to the prototype scenario with additional insights gained into the Offeror's team dynamics, creativity, thought processes and the depth of development to the provided challenges. This "try before you buy", "test drive", "fly off", or "bake off" approach puts integrity and discipline into the process while reducing risk for the Government and affording Industry the ability to be more creative, collaborative, and innovative as they build out the solution space.

J.1.1   Acquisition Background

In July 2018, the USDA awarded a single BPA call order from the General Services Administration (GSA) Salesforce Implementation, Integration, and Support Services (SIISS) BPA, using innovative procurement techniques, including ChBA, for agile software development requirements.

The USDA conducted the acquisition tapping into a multi-step method as well as several best practices and non-traditional techniques summarized as follows:
1. Digital Services Best Practice: <u>Use of a Statement of Objectives (SOO)</u>
   - Goal: Industry advises the Government on what is required and how to best execute using commercial practices.
2. Technique: <u>Perform Due diligence</u>
   - Goal: Increase industry-government communication during the solicitation process regarding the solicitation and requirements to receive better proposal submissions, reduce assumptions, and, ultimately, attain better, potentially more innovative technical solutions.
3. Technique: <u>Execute a technical challenge</u>
   - Goal: Increase likelihood of successful evaluations by letting vendors demonstrate their capabilities rather than only write about them.
4. Technique: <u>Select the best and finalize</u>
   - Goal: Enable technical evaluation outcomes to take precedence by collaboratively defining and refining the requirements of the performance work statement and the contract terms and conditions one on one with the vendor selected for contract award that was based on best overall value to the Government.

J.1.2   Case Study Case Write-Up Approach:

- In writing this case study, we convey the process used by the Government, including language from the solicitation itself.
- In the spirit of "build once, use many" and "continuous iteration" we hope you find value in the information included below, feel free to adopt as your own and improve upon it.
- We also attempt to reference Federal Acquisition Regulation (FAR) citations when appropriate.
- This acquisition was conducted in accordance with FAR Part 8 procedures however we may reference other parts of the FAR demonstrating application of these techniques beyond Part 8 and further solidify the soundness of the approach throughout more rigid or prescribed federal acquisition process.
- Key terms unique to agile software development are defined the bottom of this case study.

J.1.3   Project Background and Statement of Objectives

USDA Agencies (bureaus are known as "agencies" at the USDA), execute the Department's mission, and serve Farmers, Ranchers and Landowners through a variety of programs. Often, the agencies' work is not integrated and does not take advantage of opportunities to improve efficiency and effectiveness. A "Portal" was ideated where USDA customers could access USDA programs in a centralized online space. This portal is called "Farmers.gov" located at www.farmers.gov.

Sample Language – Statement of Objectives:

- *Currently, there is limited or no access to USDA systems for the 8.5 million Farmers registered with USDA.*
- *To apply for assistance or check the status of a claim, Farmers commonly visit one of the ~2,600 USDA field offices in person.*
- *Not all USDA field offices offer the same services. Farmers commonly must visit different USDA offices depending on which programs and Agencies they must connect with.*
- *Agency data on farms and farmers is siloed. Every time Farmers apply for a program or its renewal, they must provide the same crop data and personal information, even if it has been previously collected by the USDA. Additionally, the Agencies have no way to check individual farm data for inconsistencies.*
- *USDA employees often manually retype all applications in a variety of systems.*
- *It is difficult to verify if a Farmer applied for a program and doing so makes them ineligible for another, increasing the possibility of duplicate payments.*

As a result of these challenges and others, online customers and the USDA employees that serve those customers encounter inconsistent digital information and resources spread across agencies. Systems and applications providing these services do not necessarily follow current design and customer-centric best practices, often using outdated technology, thus increasing the cost of conducting business with USDA and reducing customer and employee satisfaction.

__Product Vision:__ Our vision is to create a "wowing" unified digital experience for those supporting our Farm Production and Conservation (FPAC) customers and our customers directly. We believe providing on-line, intuitive, self-service options for our customers and seamless, intuitive tools and information for our employees will support our customers' journey to discover and sign up for the most valuable services provided by FPAC and USDA.

FPAC objectives for overall product experience and the underlying Transactional Portal:

- *The product - and its features - will provide our customers with usable tools, resources, and information that support their business activities;*
- *Our customers will have the ability to access the product and complete transactions, such as completing forms/applications, from any connected device;*
- *The product interactivity and functionality will be built around the customer's needs and industry best practices;*
- *Our customers will have the ability to easily access their USDA authenticated information and accounts through the web-site's front door;*
- *The product will engage new and existing farmers through modern design and digital media;*
- *The product will educate customers about FPAC programs and resources with streamlined information and plain language.*
- *Transactional Portal will work together as a seamless experience for the customer and employee, with an emphasis on local content and personalized customer information.*
- *The Transactional Portal will operate seamlessly with the website.*

CASE STUDY KEY INNOVATIVE TECHNIQUE: SOLIDIFY THE DEFINITION OF DONE

- A Definition of Done (DoD) is critical in Agile software development contracts. The DoD can be initially stated by the Government in the solicitation and then finalized with the vendor prior to contract award.
- The Definition of Done provides a checklist which usefully guides pre-implementation activities: discussion, estimation, design. The Definition of Done limits the cost of rework once a feature has been accepted as "done" having an explicit contract limits the risk of misunderstanding and conflict between the development team and the customer or product owner.
- Please see the Reference: AgileAlliance.org/definition-of-done for more thorough information on expected benefits and common pitfalls.

Sample Language – Definition of Done
The resulting task order will be considered successful when the following outputs have been delivered:
- *The product vision is validated through continual build and testing of hypotheses, user research, and success metrics.*
- *The build and launch of new digital products into production through agile development methods, including the creation of Minimum Viable Products (MVPs) and continued development, enhancements, and problem resolution for those products once in production.*
- *Usability research with end users has been used to determine whether success was met through validated learning.*
- *Products and investments into products are prioritized and their business value is validated based on user/customer research and usability research.*
- *The product road map, user stories, system documentation, usability testing results, and any additional documentation is up to date and maintained regularly.*

J.1.4 Applicable Conditions

The USDA chose Salesforce as the platform enabling accomplishment of these requirements. Salesforce is a Platform-as-a-Service (PaaS) specializing in customer relationship management. Additionally, a lean-agile approach to software development was chosen per recognized best practices. Given the low technical maturity of the USDA and the magnitude of the project, a Scaled Agile Framework (SAFe)

approach was determined to be necessary.   This approach provided structured processes and clear responsibilities for government and contractor personnel.

J.2   Problem Set

The Secretary of Agriculture announced this initiative publicly prior to this acquisition and product launch. Given this visibility and the importance of this project in accomplishing the USDA's mission, the project needed to rapidly and continuously deliver increased functionality. The acquisition had to support this without setbacks.

J.3   Multi-Step, Interactive ChBA Approach

The USDA engaged experienced vendors highly capable of developing on the Salesforce platform using SAFe Agile methods via the GSA Salesforce Implementation, Integration, and Support Services (a.k.a. "SIISS") Blanket Purchase Agreement (BPA). The Request for Quote (RFQ) was issued directly to GSA SIISS BPA holders for the USDA's Portal Salesforce Development Project. The USDA considered award of at least one (1) and up to two (2) BPA Call (Task) Orders from this RFQ.

The RFQ Followed a six (6) step approach:

    Step 1   -- Industry Day
    Step 2   -- Opt. In
    Step 3   -- Due Diligence Sessions
    Step4A -- Technical Solution and Price
    Step4B -- Submit Presentation
    Step 5   -- Demonstration Evaluations Completed
    Step 6   -- Announce Award

The details of each step are described in the subsequent sections of this appendix.

As described in the solicitation, The Offeror's proposals were evaluated on a Best Value Source Selection of the Offeror's response to the factors listed the RFQ. <u>Non-price factors were significantly more important when compared to price.</u> BEST VALUE will be evaluated based on:

- Non-Price Factors
    - o Written Technical Solution
        - SAFe/Agile Approach
        - Design Process Approach
    - o Prototype Demonstration
- Price: Prices for mandatory deliverables

NOTE: Past Performance was not considered. The GSA SIISS BPA was selected due to the perceived importance of experience with the Salesforce Platform. When the BPA was established past performance/experience was evaluated. Further evaluation of past performance/experience would be redundant given the prior evaluation of vendors at the BPA level.

<u>Sample Language – Industry Challenge</u>

Step 1   Industry Day:
Industry Day and the associated teleconference with the USDA was open to all SIISS BPA holders for participation. The intent of the call was to provide an overview of the Statement of Objectives (SOO), explanation of the RFQ steps, and answer any questions.

Step 2   Opt. In:
Open to all SIISS BPA holders to confirm further quote participation. Opt. In is required to participate in steps 3, 4A, 4B, 5, and 6. Failure to Opt-In excludes participation in further RFQ steps. SIISS BPA holders reserve the right to Opt-Out at any point. Prototype Scenario, Final SOO, and Final RFQ will be released only to those offerors who have Opted in by the required date and time.

Step 3   Due Diligence:
This is an in individual meeting with each SIISS vendor who has elected to Opt. In. This meeting is considered a site visit and is a non-evaluated step. No comments, information, or questions presented by the vendor will be considered in the evaluation. This time is open to the vendor to ask questions in order to limit the amount of assumptions included as part of the offeror's technical or price solutions. This is a non-evaluated step.

Step 4   This step has been broken into two (2) parts:
4A, Submittal of Technical Solution & Price.
4B, Technical Capabilities Demonstration.
The culmination of these two are to be evaluated in step 5.

Step 4A   Submittal of Technical Solution & Price:
Submit the following:
- *Written Technical Solution limited to 15 pages excluding cover letter and table of contents from page count in PDF Format.*
- *Price*
- *The Technical Solution should demonstrate the Offeror's ability and expertise to deliver a solution that meets the established needs and purpose of the RFQ. Offeror's proposed solution should identify how the goals will be met as stated in the Statement of Objectives. Within the Technical Solution, the Offeror should demonstrate its:*
    1. *Overall methodology and approach to the build and design of Salesforce solutions for a variety of potential end users, both internal and external to the USDA.*
    2. *Identification of what the offeror would need from the Government to ensure success as well as identifying any barriers that would reduce or delay success.*
    3. *How will success and end user satisfaction be determined, and what is the strategy for capturing both product metrics and process metrics?*
    4. *Knowledge, experience, and approach to SAFe/Agile Portfolio Management, including but not limited to the following:*
        a) *Agile Release Train (ART) Formation*
        b) *Program Backlog Management*
        c) *Governance and strategy of multiple teams*
        d) *Organizational change management*
        e) *Team*
        f) *Integration and management*
        g) *Prioritization and Business Value consultation*
        h) *Common tools and practices*
        5. *Knowledge, experience, and approach to User Centered design, including but not limited to the following:*

a) *Utilizing Epics and hypotheses to identify and validate MVPs or Product Features*
b) *Defining and prioritizing user needs*
c) *Designing solutions*
d) *Soliciting user feedback on solutions*
e) *Documenting and applying user feedback*
f) *Assessing outcomes for users*
6. *Knowledge, experience, and approach to Agile implementation, including but not limited to the following:*
a) *Management of a SAFe/Agile software development methodology*
b) *Definition of Done*
c) *Program Increment Planning*
d) *Program Backlog Management; Feature Prioritization*
e) *User Story management (Team backlog), sizing, and estimation method*
f) *Techniques for release planning*
g) *Approach to operations & maintenance of products released into production*
h) *Methods for capturing and applying lessons learned, testing processes, reasons behind the composition of their Agile teams*
i) *Rationale behind the proposed development talent and project oversight (tied to Product Vision)*
This factor will be evaluated based on the above, to determine the extent to which the Offeror's proposed approach will ensure successful implementation of the stated objectives. This factor will assess the Offeror's overall approach to the project and what, if anything, it would need from the Government to ensure success as well as identifying any barriers that would reduce or delay success.

Technical Assumptions, Conditions, or Exceptions – Technical submissions shall include all (if any) technical assumptions, conditions, or exceptions related to any of the requirements or terms and conditions of the Statement of Objectives. If not noted in this section of Offeror's quote, it will be assumed that there are no assumptions, conditions, or exceptions for award, and that the Offeror agrees to comply with all of the terms and conditions set forth in this RFQ. It is not the responsibility of the Government to seek out and identify technical assumptions, conditions, or exceptions buried within the Offeror's submission. The Government reserves the right to reject any quote that includes any technical assumptions, conditions, or exceptions that impact or affect the Government's objectives or requirements.

Offerors shall submit a price volume which shall include the following:
- *Firm Fixed Price per iteration*
- *Firm Fixed Price by CLIN*
- *Supporting documentation*
- *Assumptions, conditions, and exceptions related to price*

Supporting documentation - Documentation is required to support the pricing proposed. This shall demonstrate the correlation between the proposed technical solution and the pricing submitted. The supporting documentation shall also include a Basis of Estimate (BOE) which aligns to how the

pricing methodology is applied within each iteration. The BOE should include, but is not limited to, such things as:

- *Number of Teams proposed*
- *Size of Agile Teams*
- *Labor categories used to comprise each team*
- *User Story sizing methodology*
- *Any discounts applied*

Price assumptions, conditions, or exceptions – Submit all (if any) price assumptions, conditions, or exceptions related to any of the terms and conditions of the Statement of Objectives. If not noted in this section of the Offeror's quote, it will be assumed that the Offeror proposes no price assumptions, conditions, or exceptions for award, and agrees to comply with all of the terms and conditions set forth in this RFQ. It is not the responsibility of the Government to seek out and identify price assumptions, conditions, or exceptions buried within the Offeror's quote. The Government reserves the right to reject any quote that includes any price assumptions, conditions, or exceptions that impact or affect the Government's objectives or requirements.

Price will be evaluated to determine whether the firm, fixed price proposed is reasonable. This determination will be based on the review of the technical solution in comparison to the total proposed price and the backup documentation submitted.

Step 4B   Technical Capabilities Demonstration:
Open to only those SIISS BPA holders who have elected to Opt. in to RFQ and completed step 4A.

The goal of the Technical Capabilities Demonstration (TCD) will be for the Offeror to walk the Government through their proposed solution and provide a working prototype in response to the scenario. It is the opportunity to determine how team dynamics will work as the Offeror is required to utilize the scenario to demonstrate how the proposed User Centered Design, SAFe Agile Portfolio Management, Salesforce technical capabilities, and Agile Software Development Methodology will function if the Task Order is awarded. The process used to develop the prototype should demonstrate the technical solution as proposed in the Technical Capabilities Document. The vendor shall submit any presentation material and artifacts created in the design & development of the prototype. Examples may include wireframes, user stories created, end user questions, etc. Artifacts, additional technical solution materials, or other non-germane documents not directly related to the design & development of the prototype will not be accepted.

The contracting officer has the ability to remove any documentation submitted that does not support the TCD. The Government will schedule the demonstrations by drawing lots among those Offerors who opt in to this RFQ. The Government will advise Offerors of the date and time for the presentation of their TCD.

The Government will have the ability to ask clarifying questions specific to the offeror's proposed solution during the time allotted for the TCD. These do not count as discussions and no revised Technical Capabilities Documents will be accepted, unless otherwise directed by the Contracting Officer.

The TCD will be evaluated to determine the Offeror's capability and suitability to perform the work required in the Technical Solution. Through the walk through of the scenario, the technical capabilities demonstration will be assessed to determine if the overall solution is feasible, will result in the continued delivery of high-quality product, and will meet the objectives for digital strategy implementation.

Step 5 Evaluation*:*
Contracting will be evaluating your responses by BEST VALUE based on:
- *Non-Price:*
  - *Written Technical Solution*
    - *SAFe/Agile Approach*
    - *Design Process Approach*
  - *Prototype Demonstration*
- *Price*
  - *Prices for mandatory deliverables*

Non-price factors are significantly more important than price factors. Additional Value- Added Deliverables may be used as trade-off for non-price factor to determine the Best Value to the Government.

Step 6   Finalization & Award:
Final technical solutions may be worked out with only those offerors that have provided the highest value solutions as determined in step 5 as in the best interest of the Government.

Items that may be worked out are the Performance Work Statement (PWS), Quality Assurance Surveillance Plan (QASP), and associated minor price adjustments. This Step will be opened to the highest value offerors as determined in step 5. Award or awards will be made to the best value offeror as determined to be in the best interest of the Government. If a solution cannot be worked out or fails to provide best value solution award(s) then the Government may select the next highest value vendor as determined in step 5.

SIISS BPA Task Orders will be placed with at least one, but may go up to two (2), responsible Offeror(s) whose proposals and demonstrations contains the combination of those factors offering the best overall value to the Government utilizing a tradeoff process. This will be determined by comparing differences in technical capability with differences in price to the Government. In making this comparison, the Government is more concerned with obtaining superior technical merit. However, the Government will not make an award at significantly higher price to the Government to achieve slightly superior technical merit. The Government reserves the right to make an award to other than the lowest priced Offeror or to the Offeror with a higher technical score if the Contracting Officer determines that to do so would result in the best value to the Government.
Government reserves the right to:
- *Award SOO task areas to one or more vendors*
- *Conduct future acquisitions related to overall program objectives which fall under the scope*
- *Repeat all or some of Step 4A, and/or 4B, and/or Step 5 and/or Step 6 for non-exercised options.*

J.4 The Challenge

The technical challenge for this procurement was a "Prototype Scenario" occurring during Step 5 – Evaluation. The challenge occurred after written submissions were submitted and reviewed.

CASE STUDY CHALLENGE SELECTION:

- The Technical Capabilities Demonstration (TCD) was designed as an opportunity for the Offeror to walk the Government through their proposed solution and provide a working prototype in response to the scenario. It was also an opportunity for the evaluation team to demonstrate how the Offeror's proposed User Centered Design, SAFe Agile Portfolio Management, Salesforce technical capabilities, and Agile Software Development Methodology would function. The Government had the ability to ask clarifying questions specific to the offeror's TCD presentation which did not count as discussions nor were revised TCDs requested/accepted. The TCD was a "test drive" of the Offeror's approach and vision for the project to determine if the Government had confidence in each Offeror's ability to successfully perform.
- The Offeror was asked to demonstrate how they would take the provided scenario "epics" (defined below) from concept which was provided in the RFQ to a working Minimum Viable Product (MVP) along with a demo.
- The epics were related to a fictious banking scenario taking customer interactions from brick-and-mortar to virtual applications focusing on how the customer and bank employees could use the back end transactional platform to help view and process customer loans as well as the power of a Customer Relationship Management (CRM) platform. Five sample "personas" (defined below) and a sample current state workflow of the customer's interaction with the bank for a loan were released with the RFQ. Offerors were given latitude to create new personas as seen fit for sample persona's user needs.
- Creativity was encouraged in researching and identifying users and create fictitious data as needed for the prototype.

Sample Language – The Challenge

Current Context: A banking organization delivers its loan services using a traditional customer visit to a brick and mortar store front, and paper forms. The bank conducts some customer transactions via phone, with little to no visibility into what those transactions are. The bank has a hypothesis: customers are interested in viewing their current loan information as well as being able to apply for loans on-line, and self-service options for existing loans. Employees of the bank who service customers directly have little to no visibility into the customers' interaction with the bank. For example, the home loans department doesn't know who has auto loans or personal loans, etc. Also, none of the loan organizations identified above know if customers have existing bank accounts or consume other banking services. No information from other banking services are shared across the Bank's organizational silos, causing the customer to report the same information over and over to the bank.

Strategic Themes:
- *Appeal to younger customer segments.*
- *Positive customer brand image.*
- *Employee operational excellence to serve customers.*

Table J-1. Epic Hypothesis Samples

Sample Epic Hypothesis Statement	
For	Organizational employees
who	Service customers directly
the	Employee portal
is an	interactive data analytics experience
that	Provides the ability to understand customer interactions no matter the channel or existing store brand
Unlike	our existing lack of shared cross brand information
our solution	Provides a multi-channel view of our customers interactions
Business outcome hypothesis:	Majority of customer interactions visible to servicing employees Better customer service experience
Leading indicators:	Better visibility into customer interaction channels (counter, phone, web) Increased Net Promoter scores
Non-Functionals:	10 ms response time for customer information screen load

Supporting Information:
This sample problem is related to loans in the banking industry. The strategic themes were developed in relation to 3 organizational problems and hypotheses as follows:

- *Customers do not have a multi-channel experience, meaning the customer largely has one method, an in-person location visit, to do business with the Bank. The Bank has a hypothesis that customers are interested in more on-line interactions.*
- *Employees who service customers have limited to no visibility into customer interactions across the loan departments (home, auto, personal) and other Banking services, which affects employee morale, productivity, and the customer experience.*
- *Organizational leadership does not have metrics to drive strategic business cases for investment into other customer channels (phone, on-line) or other methods to improve the customer's experience.*

Instructions:
You will have approximately 4 weeks to generate at least 2 epic hypotheses, supporting user stories, and a working prototype. You will have approximately 1 hour to demonstrate how you would take the Epic(s) from concept to a working Minimum Viable Product along with a demo. As mentioned in the Statement of Objectives, this work is centered on a transactional portal and interacts with an informational website. For this prototype, you can assume the integration already exists. The development is utilizing human centered design patterns.

Prototype:
Develop a working prototype that shows how the customer and bank employees could use the back end transactional platform to help view and process customer loans as well as the power of a Customer Relationship Management (CRM) platform. Attached to this scenario are five sample personas and a sample current state workflow of the customer's interaction with the bank for a loan. Feel free to create new personas as you see fit as you engage real people to understand user needs. Be creative in researching and identifying users and create fictitious data as needed for the

prototype. The prototype should include customer facing components since authenticated customers will directly interact with Salesforce (Transactional portal). Integration with is not required. The prototype is to be an example of the technical decisions that would be made related to the Salesforce application itself.

Technical Solution Demonstration:
The goal of the Technical Capabilities Demonstration (TCD) will be for the Offeror to walk the Government through their proposed solution and provide a working prototype in response to the scenario. It is the opportunity to determine how team dynamics will work as the Offeror is required to utilize the scenario to demonstrate how the proposed User Centered Design, Agile Portfolio Management, Salesforce technical capabilities, and SAFe/Agile Software Development Methodology will function if the Task Order is awarded. The process used to develop the prototype should demonstrate the technical solution as proposed in the Technical Capabilities Document. The vendor shall submit any presentation material and artifacts created in the design & development of the prototype. Examples may include: wireframes, user stories created, end user questions, etc. Artifacts, additional technical solution materials, or other non-germane documents not directly related to the design & development of the prototype will not be accepted. The contracting officer has the ability to remove any documentation submitted that do not support the TCD. This is your opportunity to showcase how your company's processes would help the Department of Agriculture build and refine the product vision and deliver solutions for the Salesforce transactional portal.

Table J-2. Personas to Consider

Name	BIO	NEEDS	HAS
Jack Smack	*Existing Customer who is on the go and active with their banking information. Always up to date with the latest gadget, likes service improvements.*	*Quick anywhere access to info.* *All banking on-line.* *To send the bank emails, not talk on the phone or visit a location.*	*Business loan* *Checking and Savings accounts.* *Good financial status.* *Home Loan*
Nelly New	*She's a new Customer who travels, especially overseas a lot. Shops around for best deals. She understands the internet is now part of our lives.*	*Help understanding loans.* *Help applying for loans.* *Personalized service.* *To be able to go to any branch, anywhere.*	*No existing relationship with the bank.*
Larry Leisure	*Existing customer who finds comfort in interacting with staff face to face.*	*Stability in the way services have been offered.* *Help with technology.* *A friendly voice on the phone.* *Not be transferred around.*	*Car, will drive.* *No access to a cellular phone.* *Auto loan.*
Sam Super	*She is a bank location employee who is always*	*The latest and greatest tech.*	*Appetite for learning.*

	looking for ways to improve the customer experience. Very up to date with technology.	*As much information about the customer she's working with. Metrics to drive change.*	*Extensive knowledge of the entire organization.*
Paul Bunyan	*VP Bank Loans. Leads all loan operations for the bank. Is a new leader who is looking for data to drive positive customer outcomes.*	*Metrics on customer tact time, customer wait times, etc. Customer experience metrics. Channel metrics (in-person, phone, on-line). Technology to help drive positive customer experiences.*	*No information existing customer. Smart phone, will work anywhere, anytime. Drive for continuous improvement.*

SAMPLE CURRENT STATE CUSTOMER WORKFLOW:
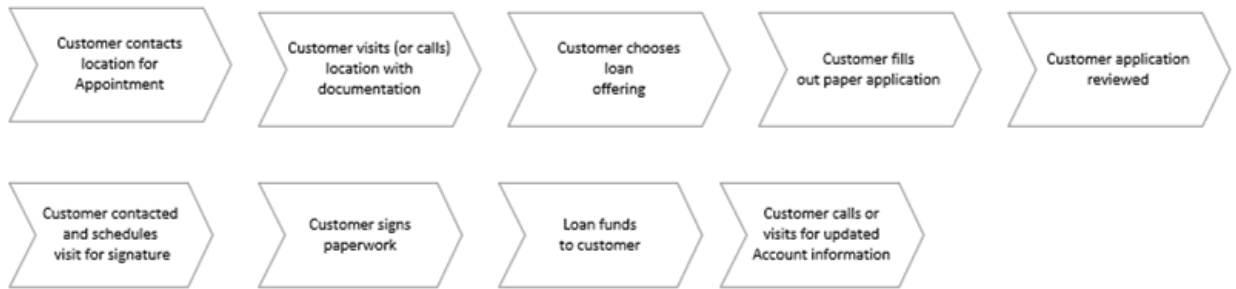
Figure J-1. Customer Workflow

CASE STUDY WRITE-UP FINAL THOUGHTS

- Overall evaluation was easier due to the multiple data points observed during the assessment (written, discussed, demonstrated). There was less likelihood of making assumptions about what the offeror meant by a cryptic statement or inference of ability via regurgitation of the solicitation or recitation of industry "buzzwords."
- The technical challenge approach provided clear data the company could execute successfully in the manner they promised in the write-up.
- The evaluation team had higher confidence in their decision and viewed the evaluation beneficially.
- One technical evaluator made the statement: "In over 10 years of evaluating IT vendors this is the first time I feel truly confident the evaluation team has made the right recommendation."

CASE STUDY TAKEAWAY: DEMO VALUE

- The TCD evaluation determined the Offeror's capability and suitability to perform the work required in the Technical Solution. Via a walkthrough, the technical capabilities demonstration assessed if the overall solution was feasible, would result in the continued delivery of high-quality product and meet the objectives for digital strategy implementation.
- The ability to see the development approach and agile maturity of the company was key to correlating the stated capabilities related in their respective written submissions.

J.5 Summary of Best Practices, Key Techniques, Recommendations, and Lessons Learned

CASE STUDY BEST PRACTICE

Don't over complicate the RFQ by asking for items without clear value. Role play the value an item will add and how it will assist drawing conclusions about an approach compared to the requirements. Example: don't ask for past performance if it was already assessed in a relevant manner at a higher order of contract (SIISS BPA for example). If past performance/experience assessment is desired, ensure reference inquires very specific to the information you require and not general or broad questions about overall quality of performance.

CASE STUDY RECOMMENDATION: ISSUE DRAFT DOCUMENTS

Issue draft RFQ as soon as possible to interested vendors. The Government should revise drafts if during the sessions a vendor points out areas that are not a commercial best practice or other areas of improvement. The final RFQ is issued after the due-diligence and prior to technical submission. This practice will limit the amount of RFQ amendments.

CASE STUDY KEY INNOVATIVE TECHNIQUE: DUE DILIGENCE SESSIONS

Hold due diligence sessions with vendors individually. This provides an open forum for the vendor to ask questions more directly than they would in front of competitors.

It's very important to note this is a "non-evaluation" step. The Contracting Officer should conduct a short pre-brief to government participants highlighting this and conduct another short debrief afterwards to discuss any changes to the RFQ required based on new information provided to a vendor so other vendors have equal information.

These sessions limit assumptions made by the vendor in quote preparations with the goal of the Government receiving better quality technical and price responses to the RFQ. As referenced above, any new information provided to a single vendor during these sessions should be published as soon as practicable in a solicitation amendment. Approaching information release in this manner doesn't "give-away" any technical information from a single vendor, is efficient and collaborative, and ensures the playing field is leveled across the competition of Offerors.

Note: This technique is provided for in "FAR Part 15.201(f) Exchanges with industry before receipt of proposals" and "FAR Part 15.202 Advisory multi-step process."

CASE STUDY RECOMMENDATION: TECHNICAL CHALLENGES

Technical challenges are an opportunity to witness the vendor's practices rather than merely read about them. The Government can garner a much better understanding into the quality of work and if the vendor is a good fit for the project by observing how the vendor uses the technology for their response to the prototype scenario with additional insights gained into the Offeror's team dynamics, creativity, thought processes and the depth of development to the provided challenges. This "try before you buy", "test drive", "fly off", or "bake off" approach puts integrity and discipline into the process while reducing risk for the Government and affording Industry the ability to be more creative, collaborative, and innovative as they build out the solution space.

CASE STUDY RECOMMENDATION: FINALIZATION

The finalization step refines minor details of the best-value offeror's approach, assumptions, and price. It is very important to understand, and state in the solicitation, this is not considered "discussions" nor establishing a "competitive range." It may be another opportunity to remind offerors the part of the FAR the solicitation is pursuant to (if Part 8 you can expound that Part 15 doesn't apply).

In this step, the actual PWS to be incorporated into the order is refined and agreed upon and does not constitute a quote revision. The RFQ states "This Step will be opened to the highest value offerors as determined in step 5" but this doesn't mean you have to open this step with multiple offerors if your decision is to award only one order. Your best-value decision was made in Step 5, this does not backtrack on that determination. This provides an opportunity to create a better contract with reduced/clarified assumptions and have a final ability to avoid "land-mines" that may still exist despite thorough exclamation and review of assumptions.

This step avoids the requirement to modify the contract or have other "meeting of the minds" talks after award as often happens in traditional practices when there isn't perfect alignment on approach to the situation "on the ground."

If during this finalization step an agreement cannot be reached on the minor points requiring refinement the government may pause talks with the first vendor and enter the finalization step with the next best suited vendor.

In the case of Farmers.gov the finalization step was successful with the "best value" vendor and additional finalization was not required with other vendors.

CASE STUDY LESSON LEARNED #1: CLIN STRUCTURE

Structure CLINs based on the purchase of sprint team capacity rather than being based on the sprint roadmap. This will allow for the roadmap to be a separate living document and to be able to adjust iterations without a contract modification.

Don't state: "CLIN 0001: Sprint 1 Period of Performance Month XX 20XX – Month XX 20XX

Instead include a "CLIN 0001: Development Sprint" leaving the CLIN non-timebound.

This way you can scale capacity up and down at different time as well as "buy more" sprints when required if funds are available for additional software functionality at any given time.

CASE STUDY LESSON LEARNED #2: EVALUATION TEAM PARTICIPATION

Ensure your project is sponsored effectively and chartered appropriately, laying out expectations of team members throughout each step.

This approach will take a while to work through the steps and involves in-depth participation from the Government's technical team. This may not be appropriate for all types of requirements. Value of all elements considered should be well thought out during the solicitation development.

While the steps do take some time to complete, the acquisition was fairly streamlined and only took about 10 weeks to complete between the acquisition project starting and award – indicated by green filled rows in the schedule below.

This did not require a 100% dedicated team the entire time, rather this was a part time responsibility of all participants until days of heavy evaluation. Participants were distributed between Washington, DC; Kansas City, MO; and Fort Collins, CO. Participants travelled to Washington DC for evaluation activities only.

Table J-1. Milestone Schedule

Description of Procurement Activity	Point of Contact	Start Date	End Date
Start Acquisition activities:	Program	5/2/2018	5/2/2018
Draft Requirements (SOO) Complete	Program	5/7/2018	5/14/2018
Draft Prototype Problem	Program	5/7/2018	5/14/2018
Requirement Finalized	All	5/15/2018	5/15/2018
Independent Government Cost Estimate (IGCE) Complete	Program	5/14/2018	5/14/2018
Acquisition Approval Request	Program	5/2/2018	5/2/2018
Acquisition Plan Complete & 91D Form	Contracting	5/14/2018	5/18/2018
Evaluation Criteria Complete	All	5/18/2018	5/24/2018
Draft RFQ Complete	Contracting	5/24/2018	5/31/2018
Funding request	Program	5/2/2018	5/22/2018
Requisition Completed	Program Budget	5/22/2018	6/5/2018
Industry Day Teleconference (step 1)	Contracting	5/24/2018	5/24/2018
Opt in Due (step 2)	Contracting	5/31/2018	5/31/2018
Release Final SOO/RFQ & request Opt in	SIISS BPA Holders	6/1/2018	6/1/2018
Due Diligence (step 3)	All	6/6/2018	6/7/2018
Procurement Approach Review	Contracting	6/7/2018	6/12/2018
Submit Proposals (step 4a)	SIISS BPA Holders	6/19/2018	6/19/2018
Read Tech, Prototype, RoM	All	6/21/2018	6/22/2018
IPT Meets prior to Demos	All	6/26/2018	6/26/2018
Demo/Design Challenge (step 4b)	All	6/27/2018	6/27/2018
Evaluations (Step 5)	All	6/28/2018	6/29/2018
Draft PWS for Task 1 & Task 2 submission for Govt Review	Vendor	7/11/2018	7/11/2018
Read Draft PWS & Review Completed	Program	7/12/2018	7/13/2018
Finalization (2 days)	All	7/16/2018	7/19/2018
Awards Complete and Announced	Contracting	7/20/2018	7/25/2018
Post-Award (Kick-off) Meetings Complete	All	8/8/2018	8/8/2018
Performance Start	Contractor	8/22/2018	8/22/2018

J.6 Attribution of Credit

Authors of this section include Jason Kattman (USDA) and Mandie Lee (USDA). Special thanks and credit are due to Traci Walker and Brent Maravilla from the US Digital Services (USDS). The USDA worked with the USDS extensively through the farmers.gov procurements. Many of the ideas, approaches and the technical challenge were developed by USDS and implemented with their guidance.

Appendix K   Acronyms and Glossary

Acronyms

ACAT	Acquisition Category
ACC	Army Contracting Command
AO	Action Officer
ARCYBWER	Army Cyber Command
ARDEC	Armament Research, Development and Engineering Center (U.S. Army)
ART	Agile Release Train
ASA(ALT)	Assistant Secretary of the Army for Acquisition, Logistics and Technology
BAA	Broad Agency Announcement
BDD	Behavioral Driven Development
BOE	Basis of Estimate
BPA	Blanket Purchase Agreement
C5	Consortium for Command, Control, and Communications in Cyberspace
CD	Continuous Delivery
CI	Continuous Integration
CLIN	Contract Line Item Number
CMS	Case Management System
CO	Contracting Officer
CoE	Center of Excellence
COR	Contracting Officer's Representative
CRM	Customer Relationship Management
DARPA	Defense Advanced Research Projects Agency
DCO	Defensive Cyber Operations
DevSecOps	Development, Security and Operations
DFARS	Defense Federal Acquisition Regulation
DoD	Department of Defense
DoDIN	Department of Defense Information Networks
FAR	Federal Acquisition Regulations
FBO	FedBizOpps

FDD	Functional Description Document
FPAC	Farm Production and Conservation
GAO	Government Accountability Office
GC	General Counsel
GFE	Government-Furnished Equipment
GFI	Government-Furnished Information
GPR	Government Purpose Rights
GSA	General Services Administration
IAW	In Accordance With
IDIQ	Indefinite Delivery Indefinite Quantity
IED	Improvised Explosive Device
IEE	Institute of Electric and Electronics Engineers
IG	Inspector General
IGCE	Independent Government Cost Estimate
IP	Intellectual Property
IPT	Integrated Product Team
IR&D	Independent Research and Development
IS	Information System
IT	Information Technology
JIDA	Joint Improvised Threat Defeat Agency
JIEDDO	Joint Improvised Explosive Device Defeat Organization
NFR	Non-Functional Requirement
OCO	Offensive Cyber Operations
OMB	Office of Management and Budget
OSA	Open Systems Architecture
OT	Other Transaction
OTA	Other Transaction Authority
PEO	Program Executive Office
PM	Program Manager
POC	Point of Contact
PWS	Performance Work Statement

QA	Quality Assurance
QASP	Quality Assurance Surveillance Plan
R&D	Research and Development
RDT&E	Research, Development, Testing, and Evaluation
RFP	Request for Proposal
RFQ	Request for Quote
RFTOP	Request for Task Order Proposal
RoM	Rough Order of Magnitude
RWP	Request for Whitepapers
SAFe	Scaled Agile Framework
SIISS	Salesforce Implementation, Integration, and Support Services
SME	Subject Matter Expert
SoN	Statement of Need
SOO	Statement of Objectives
SOW	Statement of Work
TCD	Technical Capabilities Demonstration
TDD	Test Driven Development
TO	Task Order
UAV	Unmanned Aerial Vehicle
USDA	United States Department of Agriculture
WCAG	Web Content Accessibility Guidelines

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