THE BETTER BUSINESS OF GOVERNMENT

REFORMING PROCUREMENT POLICY & CULTURE

NOVEMBER 2016
NORM AUGUSTINE, TOM DAVIS
& BART GORDON
PROJECT CO-CHAIRS

CSPC

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INTRODUCTION

To a remarkable degree, the current federal procurement process satisfies no one; the system frustrates government officials, contractors, and taxpayers alike. The very nature of how the government "does business" and acquires things not only wastes time and money, but also, in many instances, makes it more difficult for government to leverage advanced technologies and the highly trained personnel it needs.

The government procures goods and services according to a unique and complex business model, which is significantly different from the private sector version. There are many other factors that must be considered in a government procurement decision beyond just acquiring the best quality good or service at a reasonable price. Even given those unique characteristics, there is much that government procurement officials can learn from the private sector, and much that needs to be changed in the current government procurement culture. Simply put, government procurement must better reflect the drive for innovation that has made the United States the world's preeminent economic power from the industrial age to the information age.

Over time, complex rules and regulations have attached themselves to the government procurement system like barnacles on a ship. The result has been a risk-averse, lowest-common-denominator approach to procurement and a commodities-based mindset. That approach may work well for the purchase of simple items and basic services. However, much of what the government purchases are consulting, professional services, and IT systems. Such a commodity-based paradigm is ill-suited to the purchase of advanced information technologies and cutting-edge defense systems, or to the recruitment of people with highly marketable and specialized talents—where experience and skill are far more relevant than price. In this environment, program managers need the flexibility and authority to run their programs in ways that encourage innovation and reward high performance—rather than being beholden to contracting processes. Such a paradigm shift will require reforming not just the system, but also the culture of government procurement.

Failure to reform the procurement culture will result in the U.S. government lagging further and further behind the rapid pace of technological change in the private sector. Henry Ford once said, "If I'd asked my customers what they wanted, they would have said 'a faster horse.'" With the exception of a few innovative case studies highlighted in this report, government procurement officials too often look for "faster horses" because they operate in an environment where incrementalism is rewarded and risk-taking is punished. As a massive monopsony, the government's default position is to sustain a wide range of outdated and arcane systems and software—even if there are far more efficient and effective solutions in the commercial realm. Furthermore, the massive government monopsony also finds itself dealing with occasional monopolies, as a only a limited number of contractors have the capabilities—and, sometimes, patience—to do business with the government. Thus, the private sector races ahead on the wheels of new technologies, while government whips the familiar stable of

horses. This dichotomy limits the U.S. government's ability to provide taxpayers the greatest "bangs for their bucks," and undermines its traditional reliance on technological superiority over potential rivals.

Procurement and acquisition are often thought of as two separate concepts, with procurement being the purchase of a single good or service, and acquisition covering the entire life-cycle of a platform. Thus acquisition is seen as being "more strategic" in scope, with procurement being more focused. While this is a useful technical distinction, it is important for procurement and acquisition to be less distinct, as procurements need to be more firmly linked to that agency's goals or a specific program's mission. While this report will focus on procurement, the procurement process must better reflect an acquisition mindset.

Over the past year-and-a-half, the Center for the Study of the Presidency & Congress (CSPC) has examined the issues impacting government procurement and potential reforms to the procurement system. With experts from government, academia, and the private sector participating in off-the-record roundtables in Washington, D.C.; Boston, Massachusetts; and Huntsville, Alabama, this project has drawn on the expertise of a wide range of individuals who collectively represent hundreds of years of experience in government procurement. With a new Administration taking office in 2017, we believe they offer insights that can help set a new tone in the procurement culture. We also encourage the current Administration to resist any talk of "lame duck" status and to continue implementing innovative changes to the procurement process already underway. We hope outgoing officials will work with the incoming Administration to identify those reforms that have worked, those that have not, and which reforms need more time before they can reasonably be judged.

Congress also needs to closely examine the crucial role it plays in the procurement process. In recent years, Congress has demonstrated a willingness to tackle this complex issue, though new legislative measures remain a challenge in today's deadlocked political environment. Short of procurement reform legislation, Congress can use its oversight powers to examine why the government procurement system is broken and how best to fix it. Rather than simply criticizing specific programs, for instance, Congress could constructively examine what steps it could take to encourage and protect innovative procurement practices. Beyond the procurement process, Congress must also understand how years of budgetary uncertainty have negatively impacted the procurement culture—as well as how Congress has shifted the political risk of some programs from Congress to the Executive Branch.

Procurement is a fundamental element of good governance and is as old as the nation itself. One of the first recorded government procurements was a promissory note from Alexander Hamilton to the DuPont Company to purchase the gunpowder needed by George Washington's army. Fast forwarding to today—while there may never be a blockbuster musical about procurement—it is important that we all begin to sing a different tune about it.

EXECUTIVE SUMMARY

AN UNNECESSARILY COMPLICATED SYSTEM

Inherent in any discussion about government procurement is the dissatisfaction with the process. For contractors, program managers, agency leaders, and the American voter, procurement is seen as an unnecessarily byzantine and complicated process where common sense and flexibility are seen as the exception, not the norm. Much of this complexity is driven by how our procurement is structured via a system that does not respond directly to market forces, but rather one that emphasizes a combination of political and social goals alongside the acquisition of the good or service needed. While this is a political choice that the American people and their elected representatives have accepted in order to give groups such as small businesses, veterans, and minorities advantages in the process, that choice has also resulted in added complexity to contract structures and processes. Combined with an inflexible, overly-litigious, and protest-oriented procurement culture, the procurement system is struggling under the weight of its own procedures and preferences.

TOTAL FEDERAL "ACTION OBLIGATION" VS. TOTAL "SUM OF ACTIONS"
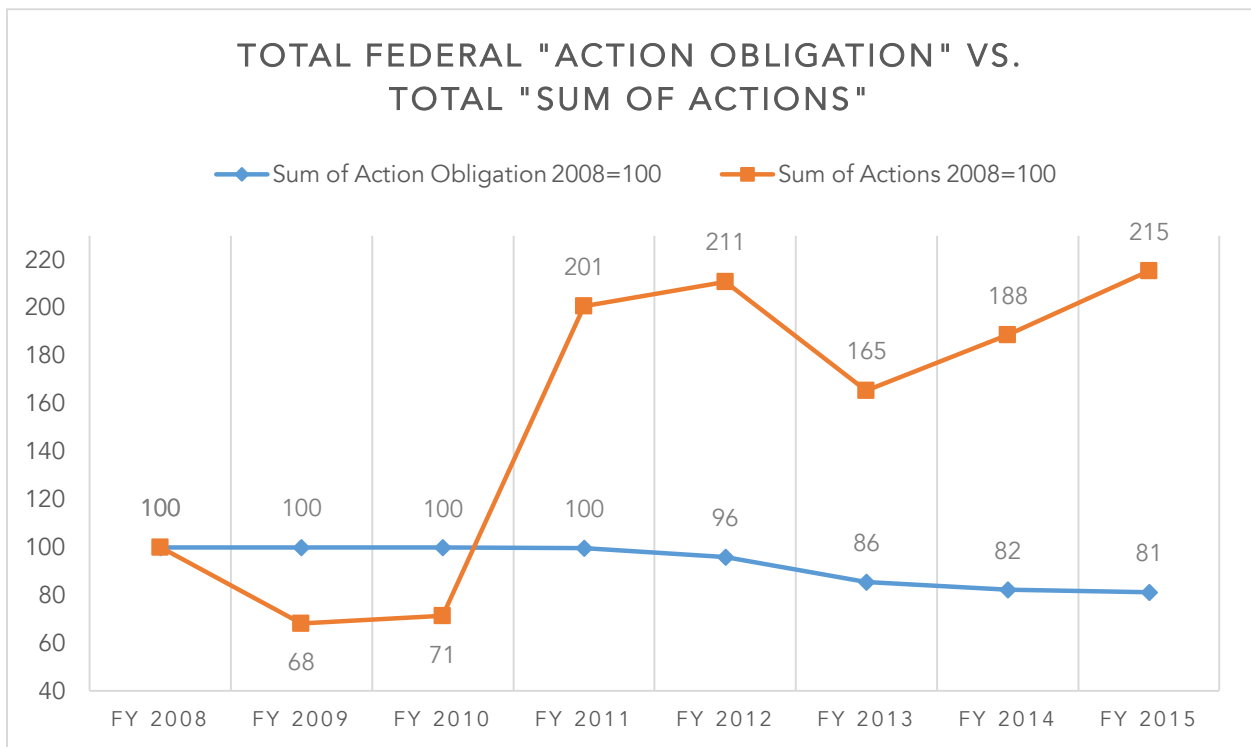
Source: Federal Procurement Data System

Examining the data supports the anecdotal evidence provided in the CSPC roundtables on the topic of procurement reform. As the above chart on procurement actions across the Federal Government illustrates, even as total "action obligation"—that is the sum of monies allocated by a specific contract action—has decreased to 81% of the FY2008 total, the total "sum of

[contracting] actions" has increased to 215% of FY2008 levels. Simply put, even as less money is spent on contracting, the process continues to grow in complexity.

In examining what ails the procurement system, it is clear that this byzantine system results from a series of decisions to further unbundle contracts for greater competition, transparency, and competitiveness, yet, as this report will repeatedly describe, the road to

Complexity and inefficiency often win the day.

procurement hell is paved with the best of intentions. Instead of affording flexibility to managers to bundle contracts and make quick paced contracting decisions—while respecting the quotas determined by procurement policy—the unbundling process has resulted in a blizzard of contracting actions that buries program managers and stifles innovation. Combine this complexity with the further budgetary uncertainty resulting from Washington's political deadlock, and a perfect storm for contracting failure has arisen. This costs the government money and delays services to the American people.

As this report will describe, it is necessary to first address the procurement culture within agencies—with an eye towards simplifying processes and providing the project manager with the tools to focus on mission success rather that procurement process. Many of these tools that can empower the program manager exist within current acquisition regulation and procurement culture must be changed so that these capabilities can be "unlocked." Second, the impact of our dysfunctional political system must be understood, as fixing the system requires both bottom-up and top-down approach. Finally, the procurement system must be better geared towards finding the innovative solutions that reflect the increased intricacy of the government's many missions. This requires an approach that thinks more of procurement in terms of complex goods and services rather than simple commodities. Furthermore, this demands that government procurement be better geared for building high-tech, innovative systems—for example, ones ranging from advanced weapons platforms for the American warfighter to state-of-the-art IT architectures that provide the veterans' services and medical care once that warfighter has returned home.

A "CULTURE-FIRST" APPROACH

A recurrent theme emerged throughout the roundtables and meetings held by CSPC: a dysfunctional culture is causing the current procurement system to fail in meeting the needs of both the U.S. Government and American taxpayer. Participants repeatedly described a procurement environment in which government personnel feel beholden to a "spirit of the law" that is much stricter than the actual "letter of the law," and, as a result, innovation and risk-taking are discouraged. Where simplicity is desired, the culture created by both procurement rules—and in many cases, the mere perception of procurement rules—complexity and inefficiency often win the day.

The genesis of that corrosive procurement mindset can be traced to laws and regulations designed to remove even the possibility or perception of corruption from the procurement process—an entirely laudable goal. In practice, the layering over time of such strict rules and regulations has created a cumbersome procurement system that both government officials and their private sector partners describe as "overly legalistic" and "unnecessarily antagonistic." The resultant strains in what needs to be a collaborative relationship have become so severe that both the procurer and the contractor are often afraid even to communicate with each other absent their lawyers.

> *Government personnel feel beholden to a "spirit of the law" that is much stricter than the actual "letter of the law," ... innovation and risk-taking are discouraged.*

One cause of this legalistic and antagonistic environment is the proliferation of actions by government and protests by industry over the outcome of contract awards. In both government and the private sector, there is an automatic assumption that there will be protests, and, as a result, there is an extraordinary amount of time spent documenting each step of a contract award and getting sign-off from multiple layers within an agency. At the same time, even the smallest changes to a program require new contract actions, tasking orders, and other modifications that increase the complexity of procurement procedures.

Even within the government workforce, this environment has created a spirit of antagonism between program managers and their teams on one side, and contracting experts and lawyers on the other. Participants repeatedly decried an environment wherein procedures and paperwork dominate the process—rather than a process focused on successful project completion.

Throughout the project, participants stressed that the problem was not necessarily with the Federal Acquisition Regulation (FAR), which allows for the use of many different types of contracts. Rather, the problem comes from a culture that discourages procurement officers from using more appropriate contract types tailored to specific programs and the breakdown in communication between program managers and contract officers in terms of setting realistic program goals and timetables.

The solution to this dilemma suggested by participants was development of a more "mission-oriented" culture, where the primary goal driving the process is putting the best equipment, goods, and services in the hands of government officials at a reasonable price—be they workers, soldiers, scientists, or health care providers. While the end state of a "mission-oriented" procurement culture is not easily achieved with legislative remedies, there are specific measures that can be taken to address this challenge.

As is so often true, meaningful reform will most depend on enlightened leadership. Project participants repeatedly highlighted the importance of agency leadership in setting the tone for the procurement culture. Leaders need to empower subordinates to take responsible risks inherent in any innovative endeavor, and they must work with Congress to ensure that the risks

are balanced with responsible stewardship of taxpayer dollars. Furthermore, they described the need for a more robust procurement workforce that boasts officials with extensive experience in procurement, as well as younger workers who bring a greater understanding of new technologies and innovative tools available to government.

Within the program office, it is important that the acquisition manager, program manager, contracting officer, financial staff, and technical experts all work together with a focus on mission outcome. A strong working relationship between all of these players can foster programs that reflect strategic vision, contracting flexibility, and innovative mindsets. The program manager must be the lead on the project, and he or she must work with their team to ensure a fair, legal, efficient, mission-oriented procurement.

In addition to having a strong project team in place, it is important that the earliest stages of the procurement are handled correctly. Throughout our discussions, participants voiced their concern with the requirements process and how poorly written requirements for a contract often lead to a poorly executed contract. Of particular concern in the requirements process is the lack of familiarity of the contracting officer with the program's needs, various contract vehicles, and the available goods and services in the private sector. A strong program office structure can ensure that the contracting officer can draw on the expertise of the program manager and technical experts to ensure that the requirements fit the needs of the program. This must be a process of constant communication between program management, technical experts, contract staff, and budget managers to decide the tradeoffs related to capability and cost in the program's requirements. In addition to strong communication within the project team, it is important for the program office to be able to communicate with the private sector to know what solutions a contractor could provide. That knowledge of the capabilities available in the private sector is vital for the program team as they determine what tools are available for mission success.

A key cause of the "adversarial culture" described in this report is the inability of procurement staff to hold informal dialogues with contractors due to concerns about perceptions of bias and corruption. While it is important to have an impartial and unbiased procurement process, many of the rules have been perceived in a manner that stifles potential informal communication between government and the private sector that would have no bearing on the awarding of a contract. Furthermore, with regards to many of the open forums and conferences where there was once dialogue between government and the private sector, there is now a byzantine authorization process for travel to and attendance at many of these events.

A key cause of the "adversarial culture" described in this project is the inability of procurement staff to hold informal dialogues with contractors due to concerns about perceptions of bias and corruption.

Once a contract is in place, the program manager often lacks the flexibility and autonomy to make minor

modifications to a contract. In current procurement processes, such modifications often require the cancellation of the contract if there are changes in the requirements due even to the natural evolution of the program. The rigidity of this process slows down the project and, ultimately, wastes money. Program managers should be empowered to make changes to their program that reflect changing circumstances. This allows for a stronger focus on the mission and less emphasis on contract details. To this end, the contracting officer and program manager should both share responsibility for program performance and delivery. It is unacceptable for the contracting officer to act only as a contract authority without a stake in the program's outcome.

Additionally, the experience level of the procurement workforce has declined over the past decade as a result of retirements and personnel cutbacks, even as government has struggled to match the allure of the private sector in attracting new talent. Given the need for strong agency leadership and a robust and well-balanced procurement workforce, government agencies now confront both a top-down and bottom-up challenge.

Building a stronger procurement workforce will require a greater emphasis on procurement education. Participants agreed that current government procurement education programs focus too heavily on regulatory and legal aspects of procurement, with insufficient emphasis on program management, business operations, negotiating tactics, and innovative thinking. The government should think less about the size of the procurement workforce, and more about its quality. The ultimate aim should be a system in which contracting officers and program managers work as a cohesive team, with the flexibility and authority needed for successful mission outcomes.

TODAY'S POLITICS & THE PROCUREMENT ENVIRONMENT

Fortunately, an instinct for reform and continual self-improvement is written into the DNA of our democratic system of government. The next Administration will have an opportunity to bring in new leadership with fresh ideas and energy, and empower them to create innovative and responsive procurement cultures within their agencies. The incoming President should see procurement as integral to the business of governing and essential for serving and protecting the American people.

Congress must also understand the critical role it plays in shaping the government procurement environment. Much of what currently ails the government procurement system can be traced to the budgetary uncertainty that results from years of continuing resolutions and last-minute omnibus spending bills. The business of procuring goods and services for the government thrives on certainty and long-term budget stability—both of which have been in short supply in recent years. In such an environment, agency personnel are forced to waste

> *By ceding much of the "power of the purse," Congress has lost the ability to support innovation and influence procurement.*

considerable time drawing up multiple budgets to reflect various political outcomes—time that would be better spent achieving core procurement goals.

Many of the participants from both government and the private sector decried the procurement environment created by frequent continuing resolutions. Multiple continuing resolutions require contracting officers to repeatedly re-issue contracts—often for 30 to 60 day terms—in order to keep programs on track. For the private sector contractor, this results in short-sighted and inefficient hiring and resourcing decisions. This environment likewise taxes an already over-stressed government procurement workforce and prevents strategic thought.

The situation is further complicated by Congress' decision to end the practice of earmarking, ceding to the Executive Branch much of the "power of the purse." Where Members of Congress could once use their political capital to support innovative programs, influence procurement decisions, and share the political risk of these expenditures, many of these decisions are now made within Executive Branch bureaucracies that grow more risk-averse by the day. Added to this loss of authority, Congress has increasingly embraced an oversight culture that highlights scandal and ignores project success. Congress thus needs to examine its own procurement and budgetary culture.

With multiple continuing resolutions, it was necessary to repeatedly re-issue contracts in order to keep programs running smoothly

Many experts have noted that the stars are aligned for government procurement reform. Many stakeholders are searching for efficiencies to offset budget cuts. There are also reform-minded leaders in key positions on Capitol Hill and at the Defense Department. We would only caution that the history of procurement reform also suggests that the best-intentioned reforms can raise the risk of unintended consequences. With that in mind, and cognizant of the current political gridlock in Washington, D.C., CSPC project participants focused more on how changes might be made within existing authorities, and how procurement staff can be empowered to better use the tools already at their disposal.

In this report, the factors that contribute to the procurement culture are grouped in terms of policy, process, people, and politics. Problems in each of these areas have contributed to the challenges we now face in government procurement. In each of these areas, small changes can have a positive and outsized impact on the procurement culture.

THE PACE OF INNOVATION VS. THE PACE OF PROCUREMENT

In light of the centrality of procurement in terms of how the government does business, the project examined current practices that impede timely procurements even as the pace of technological change quickens. Put simply, without changes to procurement culture that mitigate those impediments and allow the government to more rapidly incorporate state-of-

the-art capabilities and technologies—and foster innovative solutions for those enterprises unique to government—public services will continue to lag far behind the private sector.

The complexity of the procurement system results in the situation where advances that are made in research—perhaps pushing the envelope of technology—are undone by the delays in ultimately implementing the fruits of that research into fieldable and scalable platforms and architectures. Procurement must reflect the speed and flexibility of today's innovations. Additionally, government must look to see where there are commercial tools available that can be quickly implemented or fielded for mission success rather than assuming that a government-centric or government-customized solution is always necessary or the best answer.

As government lags behind the private sector in terms of technological innovation, government and key contractors will continue to find themselves in greater competition with both established tech companies and innovative startups for talent and capital. While compensation gaps between government and the private sector will always remain an issue, it is also important to note that the current and next generation of engineers, scientists, researchers, and other innovators increasingly look to where the state-of-the-art is being developed and implemented—too often that is not present in government.

In discussing the importance of technological innovation, project participants reiterated the need for government to think more holistically about technology. Especially in the realms of information technology and healthcare systems, the specifications of a specific piece of hardware or software are less important than a flexible architecture and coherent vision on how to leverage various technologies to execute an agency's mission.

In considering innovation in government procurement, the project analyzed the lessons from successful procurement programs administered by Defense Advanced Research Projects Agency (DARPA), Advanced Research Projects Agency-Energy (ARPA-E), U.S. Special Operations Command, In-Q-Tel, and others. These case studies reveal how strong leadership and an innovative culture have been an antidote to traditional procurement malaise. In these programs, innovative procurements are often sheltered from political pressure, and, as a result, there is a greater willingness to take risk. While the entire government cannot be run like these innovative and streamlined organizations, they offer important lessons on how agility, flexibility, and an entrepreneurial ethos can result in government acquisitions that rival, and in some cases surpass, the private sector in terms of leveraging cutting-edge technologies.

Finally, in seeking out examples of innovation in government procurement, the project analyzed how Boston, Massachusetts, and Huntsville, Alabama, developed innovation hubs based on a nexus of research, advanced education, and close ties to government contracting. While vastly different cities, both have benefited from a combination of rich local talent, an enterprise culture, and strong political support that have made them leaders in their respective fields of biotech and aerospace. These cities offer important lessons on how enlightened policies can foster "innovation hubs" and encourage a symbiotic relationship between government and the private sector.

PRIORITY RECOMMENDATIONS

- Recommendation 1: *Utilize the Inherent Flexibility in Contracting Rules*

Throughout the Federal Government, program teams should be afforded the flexibility and empowered to use tools already available within current rules and regulations to streamline programs and maximize the efficiency of the contracting process.

A common thread running through successful programs is the application of the correct contract vehicle to the procurement of a good or service. However, the emergence of more complex programs, an increase in protests and other contract actions, and budgetary uncertainty have combined to hinder the ability of procurement personnel to complete programs on time and on budget. To counter these obstacles, program managers and contract officers need a better understanding of how to use more streamlined contract vehicles available in the FAR that maximize flexibility in the contract, and limit the number of contracting actions required throughout the process.

- Recommendation 2: *End the Commodity-Based Mindset*

From the top-down and the bottom-up it should be understood that the government is no longer solely procuring commoditized goods with an industrial mindset. Program managers, agency heads, Administration officials, and Congressional appropriators and investigators must all understand this shift in approach to procurement.

Through examination of the current procurement process, it is clear that the Federal Government often uses a commodity-based mentality when buying goods and services. However, as the government continues to buy more services than goods— especially services that involve a combination of highly-trained personnel and advanced technology—this commodity-based mentality becomes more inappropriate. Procurement personnel should be empowered to use their judgement and the tools available to them to make contracting decisions based not just on cost, but also efficacy and capability. The contract structure should better reflect both the complexity of the work, as well as the nature of the good or service being procured.

- Recommendation 3: *Foster a "Mission Oriented-Culture" by Reducing the Emphasis on "Lowest Price, Technically Acceptable" Procurements*

Similar to the guidance issued by the Under Secretary of Defense for Acquisition, Technology, and Logistics, leadership at civilian agencies should likewise encourage procurement personnel to use their understanding of the program mission when

applying various contract vehicles, and to utilize LPTA narrowly and only on those programs where it is appropriate.

> *Within a "mission-oriented culture," the Federal Acquisition Regulation (FAR) allows for a wide range of contract types that are tailored to the goods or services being procured. As noted, however, government contracting personnel too often apply a rote "lowest price, technically acceptable" (LPTA) standard that may work when purchasing commodities, but acts as a disincentive when applied to programs involving cutting-edge technologies and companies with specialized and high-priced talent. Under Secretary of Defense Frank Kendall issued a March 2015 memorandum that recommended a narrow utilization of LPTA, and all agencies should heed this guidance. Actions by agency leaders or legislators that apply a one-size-fits-all contracting approach failing to distinguish between paper clips and highly-technical equipment or software, in turn, prevent contracting officers from matching the contract to the good or service needed for the mission. For example, a "firm fixed-price" contract may make sense when buying commodities or mature systems whose attributes are well understood, but a "cost plus" contract may better suit a procurement involving cutting-edge technology and significant research and development.*

- Recommendation 4: *Improve the Education & Experience of Procurement Professionals*

The President of the Defense Acquisition University and senior leaders in Federal Agencies should coordinate to craft a curriculum and set of certifications which provide procurement personnel with a comprehensive understanding of their roles and responsibilities. This must also include continuing education and conferences of senior procurement leadership to harmonize procurement approaches across varying agencies, geographic areas, and commands.

> *Building off of the education clauses found within Better Buying Power, government programs designed to train the procurement workforce should have a curriculum that goes beyond the regulatory and legal aspects of procurement. Project participants emphasize that best practices must also be taught at the Defense Acquisition University, where it is imperative that the curriculum includes contract negotiating, agile and innovative procurement practices, and other skills that encourage collaboration and enlightened leadership. Procurement personnel should also be encouraged to rotate through various commands and agencies—as well as between the government and private sector—so that they can learn best practices and innovative policies from across a wide range of missions. Through the application of a more comprehensive education curriculum and enhanced career tracks, the procurement culture can evolve away from a commodity mentality, and towards one which places an emphasis upon relevant experience and technical expertise.*

- Recommendation 5: *Restore Budgetary Certainty*

  Moving forward, Members of Congress—specifically those involved in the Appropriations and Authorization process—should work towards restoring budget stability, which is key to a more efficient procurement system that maximizes precious taxpayer dollars.

  Throughout the project, participants have described how the uncertainty of the current budgetary environment has negatively affected procurement. From the inability to conduct long-term planning to the cost pressures that have fostered an overly risk-averse system, the inability of Congress to provide budgetary stability does real harm to the procurement culture. Government contracting personnel have described the frustration and inefficiencies involved in having to prepare as many as four separate budgets in a single year out of uncertainty over how the budget impasse between the Executive and Legislature will ultimately be decided.

- Recommendation 6: *Build a Stronger Procurement Strategy & Elevate Procurement Leadership in the Executive Branch*

  The next President should appoint a procurement reform task force. The OMB Director should lead this interagency task force comprised of Cabinet representatives at a level of or equivalent to the Deputy Secretary. Their mission should be to identify a set of reforms, to be implemented at each agency, that promote innovation, ensure flexibility, and improve communication throughout the procurement system. Throughout this process, there should be communication with Congressional leadership and the agencies' respective committees of jurisdiction.

  The President, working with the House Oversight and Government Reform Committee, the Senate Government Affairs Committee, and the House and Senate Budget Committees, should elevate the OMB head of the Office of Federal Procurement Policy to the level of OMB Deputy Director for Procurement Policy to reflect the importance of the Federal procurement mission and to better ensure effective interagency coordination in implementing procurement reforms.

  The history of procurement reform suggests that the most constructive reforms were crafted when Members of Congress, the President, and agency leadership coordinated and developed a coherent strategy and comprehensive plan. Furthermore, by elevating key procurement leadership within OMB, the President empowers this leadership to work with agency heads to shift the procurement culture throughout the Federal government.

- Recommendation 7: *Build a Government Technology Strategy*

  As technology becomes ever more integral to the daily functioning of Federal Agencies, the elevated Deputy Director for Procurement policy should coordinate with the OMB Director, CTO, CIO, and CIO council to prioritize "best practices" and integrate them into the IT procurement process. Starting with the national strategies and agency plans, such a national technology strategy should be shaped with an eye towards retiring legacy systems and incorporating modern IT architectures.

  The Defense Department already uses the Investment Review Board process to this end in identifying technology architectures that are obsolescent, redundant, or otherwise in need of upgrades or replacement. For civilian agencies, such goals can be emphasized in the budget guidance. The OMB Director, U.S. Chief Technology Officer (CTO), and U.S. Chief Information Officer (CIO) can all play key roles in coordinating budgetary priorities to this end. Finally, the Deputy Director for Procurement Policy, U.S. CIOs, and agencies' CIOs will be responsible for ensuring that procurement policies and procedures are in place to implement this technology strategy through the acquisition of needed IT systems. Part of these strategies may include the use of private-sector lead system integrators to handle the systems and interfaces involved in large-scale IT architectures.

- Recommendation 8: *Further Examine the Challenges Facing Small Businesses as they Grow in Size & Revenue*

  Further examination is needed by the policy organizations, Congress, and Executive Branch leadership concerning how government agencies can better attract small- and medium-sized businesses, while allowing for those businesses to grow and innovate.

  Throughout the government procurement system, small- and medium-sized businesses play a crucial role in providing the goods and services necessary to accomplish agency missions. However, the rules and regulations of government procurement often put these firms in an untenable position where future growth makes them ineligible for further contracts. Under current procurement rules, as small- and medium-sized companies grow in terms of revenue and number of employees as a result of successfully completing government contracts, they too often find themselves unable to compete for follow-on contracts because of arbitrary definitions of what constitutes a small business.

CHANGING THE "PROCUREMENT CULTURE"

Beyond specific legislative suggestions, roundtable participants described the failures in the current procurement culture. Too often, personnel responsible for implementing programs are incentivized to avoid blame rather than deliver superior results. The culture suffers from a combination of political pressure in terms of constrained budgets; perceptions of faulty procurement processes; increased use of contract protests; and a growing trust deficit between procurement officers, program officers, and private industry. The result is a divide between industry and government that has arguably never been wider.

An overly legalistic culture discourages dialogue between users and providers. The procurement process has been designed to lower costs, eliminate the possibility of corruption, and meet numerous political and social goals. In many instances, however, the overly strict interpretation of the many laws and regulations designed to achieve those goals have stifled communication between civil servants and the private sector, even if the letter of the law does not prohibit it. A key step to changing this dysfunctional dynamic would be for political appointees and legal staff to support the Senior Executive Service civil servants in enlightened risk-taking, and to encourage dialogue with the private sector.

> *In many instances, the overly strict interpretation of the law has had the end result of prohibiting civil servants from getting necessary information from the private sector, even if the letter of the law has no such prohibition.*

Improved dialogue between government and the private sector can address the current procurement culture that tends to view high-tech products and services as simple commodities. Instead, such a dialogue could help government increasingly see technology as needed infrastructure for providing services to the American citizenry. As a result, the government will hopefully be able to better incorporate technologies that are embraced by the private sector, and prioritize using them to procure innovative, advanced systems.

A "FOUR PILLAR" APPROACH TO PROCUREMENT CULTURE

During the roundtable discussions, participants focused upon four major pillars within the government procurement and acquisition process: policy, process, people, and politics.

Policy

Even as the Executive Branch, Congress, and Secretary of Defense search for innovative ways to reform the procurement and acquisition process, the foundational policy of this process has remained. The Federal Acquisition Regulation (FAR) is used by each federal agency and, if utilized correctly, the FAR offers latitude and flexibility to find innovative solutions and develop

21st century products. However, critics of the current process argue that it has led to a risk-averse, legalistic, and overly bureaucratic culture in federal contracting.

Traditionally, larger companies had been awarded the majority of Federal Government contracts. Since 2009, the Obama Administration has encouraged competitiveness through increased small businesses participation. During roundtable sessions, participants stated that this push to expand the ability of small businesses to win government contracts has actually had a mixed impact on the system. Increased competition is to be applauded, but some of these companies with little experience doing business with the government are not equipped to deliver the requirements of a contract fully. The process of awarding prime or sub contracts to small or minority businesses should be examined to find the right balance between fostering fair competition, increasing opportunity, and delivering high-quality results.

Throughout the roundtable sessions, participants discussed the key differences between commercial and government contracting. A contractor's relationship with the Federal Government is managed by regulations, for instance, while market forces tend to dictate the terms of business contracting. To increase the effectiveness of government contracting, a more market based approach common in commercial contracting should be adopted.

Process

Many procurement personnel have turned towards interagency contract vehicles in an attempt to reduce risk and stay on budget. In many instances, utilizing common types of purchasing vehicles to streamline a complex process and save taxpayers money, especially the Government-Wide Acquisition Contract (GWAC) or Multi-Agency Contract (MAC), can be beneficial. These general purpose contracts can be advantageous to smaller Federal Agencies who may lack the budget, contracting support, and personnel to complete complicated acquisition programs on their own.

When used for the acquisition of information technology, GWACs can facilitate the integration of updated technology to replace aging legacy systems. Such common purchase contracts, however, are not a panacea.[i] Because GWACs typically rely on pre-qualified contractors, these contracts can result in a quicker evaluation process. On the other hand, they restrict bids to those contractors who have won past contracts, limiting competition. Moving forward, the Federal Government needs to closely examine the GWAC process to determine if, in fact, these contracts save taxpayer money and are more efficient, or have created artificial barriers between the government and the private sector.

Where agencies and program managers once had the flexibility to bundle contracts, adjust tasking orders, and structure contracts to match the good or service being acquired, there has

been a shift towards unbundling contracts, and one such cause is described further on in the section about politics, and the impact of legislation designed to benefit small businesses. However, the process is also further complicated by the perceptions of the role of the program manager versus the contract officer and the "conventional wisdom" within the procurement community about how the procurement process unfolds. This combines with a culture that assumes multiple, prolonged protests will inevitably result, so as a result the process is unnecessarily burdensome, litigation-focused, and prolonged.

Providing for flexibility in the process, which, in turn, requires political support and protection from the top of the agency down to the program teams—as well as understanding from Congressional leaders—to utilize flexibilities and capabilities that are inherent in the existing procurement rules, while also realizing that the processes needed for innovative procurement of advanced technology and complex services requires a paradigm shift away from a commodity-focused, industrial-minded procurement system.

People

Throughout the roundtable sessions, participants identified personnel reforms as key to changing the procurement culture. Major areas in need of reform include clarifying the roles and responsibilities of the program managers and contract officers; more advanced training and better education for contracting personnel; and stronger incentives to entice highly qualified individuals to join the procurement workforce. Many inefficiencies within the procurement process are exacerbated by a bureaucratic, "one-size-fits-all" solutions mindset that has become all too common.

Concerning procurement personnel, contract officers and program managers need to have clearly defined roles and operate as a team. As a result of past reform efforts and an increasingly risk-averse culture, a disproportionate amount of risk on programs is borne by the program officers. Many roundtable participants commented that the failure to clearly define and establish stable program requirements, coupled with an increasing amount of regulations, has worsened the tension between government procurement personnel and contractors. Moving forward, a key point of discussion should be how the Federal Government and companies can reduce this strain by increasing communication, evenly distributing risk, and reinforcing positive behavior, as opposed to "punishing" setbacks that may be inherent to an innovative process.

Key to addressing the issues is leadership that fosters innovation and risk taking by subordinates, as well as communication between key program managers, procurement officers, and private contractor personnel.

Additional personnel challenges that government officials are attempting to address include the development of a dual-track career path; coping with and reinvigorating an aging workforce; and overcoming increased resistance to working for the government among a new

generation of Americans. Many of the most talented and skilled younger workers are going directly into the private sector, and the government has had difficulty recruiting them into its workforce.

At the Pentagon, for example, Defense Secretary Ash Carter and Under Secretary Frank Kendall have addressed the challenges to the procurement workforce through multiple iterations of Better Buying Power (BBP). In Better Buying Power 2.0, Under Secretary Kendall noted that the "current certification process for the acquisition workforce does not adequately ensure that the workforce members are qualified for their positions, and proposes several measures including increased emphasis on on-the-job training to address the problem."[ii] The subsequent version, "BBP 3.0," focused upon maintaining the technical superiority of the Pentagon over competitors, such as China, by pursuing innovative technology. "BBP 3.0" proposes to take new findings and integrate them into the curriculum at Defense Acquisition University, where the next generation of procurement and acquisition personnel are trained. Unlike previous BBP initiatives, 3.0 is more "realistic" in how it targets the management of procurement. Importantly, it places a greater emphasis on the STEM fields as a way to increase the technical knowledge of the Federal Government's procurement personnel.[iii] In the final analysis, the role and composition of the procurement workforce has changed dramatically over the past decade, and a premium needs to be placed on recruiting, training, and retaining the most capable individuals.

In finding and building the right mixture of procurement talent, as well as the procurement of personnel and services, it is important to remember that quantity does not equal quality and that an emphasis must be placed on the right skillsets and experience necessary for the task at hand. Project participants agreed that building teams out of the right people for the job is far more important than having a large number of people involved on a project. Furthermore, having the flexibility to hire the right person, rather than the "technically acceptable" person is important—project participants asked, rhetorically, whether one would hire a surgeon or pilot based on technical acceptability.

In addition to empowering procurement personnel, tangible changes can be made at the agency level that can positively impact the procurement process. By elevating the OMB's Administrator of the Office of Federal Procurement Policy to the level of Deputy Director for Procurement Policy, the government could ensure more extensive interagency coordination and better management of the procurement process. With more authority, the Administrator of the Office of Federal Procurement Policy could better coordinate which goods and services need to be obtained and evaluate which existing systems need to be updated. Most importantly, the increase in bureaucratic rank would send a strong message about the priority an Administration places on procurement process and culture.

Politics

As each administration and Congress have released their own iterations of procurement reform, these layers of policies have had unintended effects upon the system. For example, the Small Business Jobs Act, passed in 2010, amended multiple provisions aimed at ensuring small business participation within the procurement process. In an attempt to increase the

> *While reflecting a laudable goal, the unbundling of contracts fed into further complexity in the procurement process.*

amount of opportunities for small businesses, the Act gave contracting officers the authority to set aside contracting opportunities for small businesses, while limiting how agencies could bundle contracts. In theory, the unbundling of contracts would increase the amount of projects that small businesses could bid on, in turn, tap into the innovation that is so prevalent within the small business sector. However, in practice, the unbundling of contracts has given companies more opportunities to protest bids and has elongated this complicated process. While a laudable goal, the political action fed into further complexity in the procurement process.

Beyond specific legislative actions, the combination of increased budget pressures and an overly bureaucratic procurement culture has resulted in the politicization of the entire procurement process. The current Administration s' directive to agencies to lower spending, combined with the Budget Control Act, has resulted in the increased use of lowest price, technically acceptable (LPTA) criteria. While an LPTA criteria could effectively be applied to basic commodities and services, the use of LPTA in highly complex procurements can lead to substandard products and services.

The instability in the Congressional budget process has also wasted taxpayer dollars. Continuing resolutions have forced contracting personnel to repeatedly issue short-term contracts that are inherently inefficient and wasteful. Not only has the lack of stable budgets restrained creativity and innovation, but it has also worked to stymie reform efforts. In addition, the inability of Members of Congress to earmark funds for specific projects has eliminated a valuable procurement tool. In many past procurement projects, political support from Congress was equally as important to its success as financial support.

As a result, many of the most successful projects in decades past have been completed via "non-traditional" procurement channels, either because they were classified or represented a top national security priority. They prove what the government/contractor team can accomplish when the focus is on finding an innovative solution, rather than on strictly abiding by rules and regulations. In each of these projects strong leadership, a talented workforce, and a "high-risk, high-reward" philosophy resulted in the development of state-of-the-art systems and platforms.

LESSONS OF INNOVATIVE PROCUREMENT PROGRAMS

CURRENT CULTURE & THE LESSONS OF WAR

Multiple factors have combined to produce the current overly bureaucratic, risk-averse procurement culture, to include a lack of strong and consistent leadership, a mindset that values low prices over quality results, and the budget instability dictated by the Budget Control Act. Roundtable participants noted that the current culture puts greater emphasis on punishing procurement personnel for making mistakes, as opposed to rewarding innovation. As a result of those misplaced incentives, personnel have become wary of taking risks in search of innovative solutions.

As the House and Senate Armed Services Committees have focused on procurement reforms, the question of how to alter this negative culture has become a prime topic of discussion. Both Congressman Mac Thornberry and Senator John McCain have offered substantive reform proposals. There is some concern among roundtable participants, however, that the Congressional reform proposals do not address the root causes of the problem, and could actually add another unhelpful layer of bureaucracy to the system.

At the same time, Secretary of Defense Carter and Under Secretary Kendall have worked to try to make Pentagon procurement more efficient by adopting methodologies and lessons learned during the recent wars in Iraq and Afghanistan. Under Secretary Kendall has "defined the problem as more than just having to cut costs in times of shrinking budgets. The Pentagon also worries about losing its technological edge to emerging powers such as China, which are developing advanced weaponry."[iv]

> *Absent the exigencies of war, deep mistrust between the government and the private sector makes rapid acquisition difficult.*

In an attempt to change the procurement culture, Under Secretary Kendall has highlighted the successes during the wars in Iraq and Afghanistan, specifically the development and procurement of Mine-Resistant Ambush Protected Vehicles (MRAPs). Secretary of Defense Robert Gates was able to expedite the purchase and delivery of the trucks because they were a security priority. Under Secretary Kendall believes that this streamlined process could be replicated for other complex technological systems. Yet, the deep mistrust that is prevalent between the government and the private sector could make this initiative more difficult to replicate absent the exigencies of war.

INNOVATION CASE STUDIES

The prevailing culture throughout the Federal Government is one that too often inhibits innovation. Innovative organizations place a premium on strong leadership, problem-solving,

and enlightened risk-taking. Consequently, notable "high-risk, high-reward" organizations operate outside the traditional procurement system, allowing them a level of flexibility and political cover not generally available to Federal Agencies. Not surprisingly many of them were forged by wartime exigencies during the Cold War or after-September 11th, when "business as usual" was insufficient and "mission success" was paramount.

DARPA

In October of 1957, the Soviet Union fired a shot that was literally heard around the world. The launch of Sputnik, the first artificial satellite to circle the globe in low Earth orbit, sent shock waves throughout the United States' military-industrial complex. For three weeks, Sputnik circled the earth emitting transmissions that could be picked up even by amateur radio operators. The message was received loud and clear in the top levels of the U.S. government: America was falling dangerously behind in the arms and space race that might well decide the Cold War.

President Dwight D. Eisenhower's response was to create an organization unlike any other in the U.S. government. Its closest predicate was the classified Manhattan Project that beat the Nazis in developing a nuclear weapon during World War II. The mission of the new agency was to expand the far frontiers of technology and science so that a potential enemy

Picture Source: Los Angeles Times

never again surprised or surpassed America in those fields. The U.S. Department of Defense christened the secretive organization in 1958 under the bland moniker the Advanced Research Projects Agency (later renamed the Defense Advanced Research Projects Agency, or simply DARPA). Author Michael Belfiore better captured the rare essence of the place with the title of his 2009 history of DARPA: "The Department of Mad Scientists."

From the outset, DARPA forged an unusually close collaboration between the U.S. government, private industry, and academia. Its first director, Roy Johnson, took more than an eighty percent cut in salary in leaving his management job at General Electric. His science adviser, Herbert York, left Lawrence Livermore National Laboratory, which conducted cutting-edge research on nuclear weapons and had close ties to academia. Together they and subsequent leaders created an organizational ethos which rewarded bold thinking and "high-risk, high-reward" projects that pushed the boundaries of scientific exploration. It relied on a lean and remarkably horizontal organization with a few hundred seasoned researchers and only a handful of managers who reported directly to the most senior officials in the Pentagon.

DARPA's focus on pioneering research and development projects attracted some of the nation's most accomplished scientists and engineers, who were often encouraged to join on a

Early ARPANET Manual
Picture Source: Department of Defense

project-by-project basis as their careers and interests allowed. It was typically not a place for long and comfortable careers slowly climbing the management ladder. Nor did DARPA particularly take pride in ownership of its projects. Rather, once a research project achieved "proof of concept," it was typically handed off to the military services, other agencies, or private industry for further development and expansion into full-up production programs. That allowed the agency to keep plowing its limited resources back into basic research that broke new ground.

A list of DARPA's successes reads like a history of the space and information age. Early work on missile defenses led to major breakthroughs in infrared and gamma ray sensing, advanced radars, and space-based surveillance, the foundation for what military experts have called a revolution in Intelligence, Surveillance and Reconnaissance (ISR). Its work on computer and communications processing – in conjunction with General Electric, Bell Labs, and the Massachusetts Institute of Technology (MIT)—led to development of the ARPANET in 1969, the precursor of the Internet. DARPA's research into "hypermedia systems" laid the groundwork for virtual reality. It made similar "leap ahead" advancements in the realms of artificial intelligence and robots. Current DARPA research programs are exploring the interfaces between humans and machines, literally creating modern-day cyborgs.

"From the creation of ARPANET, which expanded to become the INTERNET; to the Global Positioning System, whose precursor system began by showing the way for warships, airplanes and ground vehicles, and that now guides untold numbers of hikers, emergency workers, and

Impression of Hypersonic Reentry Vehicle
Picture Source: Department of Defense

cell phone users; and in countless projects in a breathtaking range of fields, DARPA has fostered and brought into existence some of the most useful technologies of the last fifty years," Michael Belfiore writes in "The Department of Mad Scientists." "At the same time, operating on an annual budget only a tiny fraction of the overall defense budget—about the price of one and a half B-2 bombers, or only about one-sixth of NASA's annual budget—DARPA today proves that the U.S. military can maintain its edge without breaking the back of the economy that tries to support it."

Skunk Works

In his books *A Search for Excellence* and *A Passion for Excellence*, author and management guru Tom Peters made a strong case for a model of acquisition characterized by independent, experienced management and small, highly motivated teams. He even gave—or, more accurately, borrowed—a name for them. "The evidence rolls in: When a practical innovation occurs, a skunk works, usually with a nucleus of 6 to 25 people, is at the heart of it," Peters wrote. "Find an industry, look at its principle accomplishments, and you'll invariably find a trail of skunks."

Skunk Works Logo
Source: Lockheed Martin Corporation

In the defense industry that trail led to Gate 119 in the shadow of the foothills of Burbank, California. In hanger-like Building 311, its windows painted an opaque lime-green, Lockheed aerospace pioneer Clarence "Kelly" Johnson made his secret Skunk Works development and production facility synonymous with cutting-edge programs. Under his guidance, Skunk Works conceived of and built the secret U-2 reconnaissance aircraft in just eight months during the 1950s. On that initial $20 million project, Lockheed underran the contract and returned 20 percent of the money to the government.

SR-71 Reconnaissance Aircraft
Picture Source: U.S. Air Force

In the 1960s, Johnson received the Collier Trophy for developing the super-secret, supersonic SR-71 "Blackbird" reconnaissance aircraft in just three short years. The stealthy "Blackbird" captured more records than any other aircraft in history. In the 1980s, roughly 10,000 Skunk Works employees built the bat-shaped F-117A stealth bomber, which flew for years out of a secret Air Force Base in Nevada before the world was even alerted to its existence by its first operational use in the Persian Gulf War of 1991.

Not surprisingly, defense acquisition experts and business management gurus have been studying the "Skunk Works Way" for decades trying to glean the secret of its remarkable success. In the 1950s, Skunk Works founder Kelly Johnson even wrote down his 14 rules of successful program management. He insisted that the manager of a skunk works-type project must have complete control of a program of limited numbers and costs, where government program offices are small,

specifications are agreed to in advance, and funding is predictable and timely. Government oversight involving outside inspections and reports should be kept to a minimum. Above all, Johnson stressed, there must be mutual trust between the government program manager and the private contractor.

If those sound like guidelines from a kinder, gentler, and far more trusting government acquisitions environment, that's because they are. They bear little resemblance to today's government acquisition landscape, which is characterized by onerous government red tape and oversight, risk-averse program managers and contracting officers, constantly shifting program specifications, and an adversarial relationship between the government and private sector. And therein lies the problem.

Still, it's worth considering some of the key ingredients of the Skunk Works Way, beginning with the fact that its relatively small and secret programs were part of the Pentagon's "black" budget, and thus freed from much of the red tape and management oversight that typifies larger programs in the "white" budget. When the Blue Ribbon Packard Commission was looking at acquisition reforms in the 1980s, it cited such black programs as models of streamlined procurement.

"On black programs we often found that a small number of very carefully selected people were able to concentrate on getting the work done and not reporting to everyone," Commission Chairman David Packard, co-founder of Hewlett-Packard, said in a 1989 interview. "Black programs were less structured simply because not so many people knew about them. And, in general, that does result in somewhat better performance."

There are other elements of the Skunk Works Way worth considering. The Skunk Works benefitted greatly from its self-described role as an independent, elite guerilla band attached to a much larger, more traditional organization like Lockheed. That allowed it to efficiently tap into a pool of existing talent and resources at will. The ability to tap a known pool of expert workers, many of whom came with preapproved security clearances, was critically important on such "special access" programs as the SR-71 and F-117A. When work slowed or there were rare delays, workers could be sent back to the main plant down the street from Building 311.

Clarence "Kelly" Johnson" and the U-2 Spy Plane Picture Source: U.S. Air Force

Skunk Works also benefited from authoritative leaders like Johnson, who had nearly complete control of his programs. Johnson's successor at Skunk Works, Ben R. Rich, once described his role as that of a "benevolent dictator." He

famously empowered his managers to act on their best judgement and make their own decisions without constantly looking over their shoulder or asking "mother may I?"

Skunk Works managers also insisted on fixed parameters on programs, without constantly shifting specifications and new requirements added after a contract was let. "The desire to change requirements has increased to the point where it seems [the government customer] always wants more goodies," said Rich in a 1989 interview. "But time is money, and at some point I have to break the pencils of the engineers and get on with it. And if I can churn an aircraft out quickly, that makes it harder for them to change the requirements."

Another benefit Skunk Works enjoyed on "black" programs was reduced government oversight and reporting and inspection requirements. "The reason Skunk Works always managed to produce in half the time and at half the cost of more standard programs was because we didn't follow the rules," said Rich. "Increasingly on programs I have military standard this and 'milstandard' that, tons of paper pollution in the form of required reports that no one will ever read; and every chance I have to innovate is questioned by a government committee that was formed to spread any blame in case something goes wrong. They've taken the fun out of this work."

Indeed, even by the late 1980s it was clear that Skunk Works was becoming a victim of its own success. Because its projects were so successful, Pentagon program managers began designating bigger and much costlier programs as "special access," viewing the Skunk Works Way as a potential panacea for what ailed the acquisition system even on programs too big to justify a guerilla acquisition approach. Added layers of oversight followed the money, slowing the process, and helping to lead to schedule slippages and cost overruns. Scandals involving shoddy record keeping, missed deadlines, and cost overruns ensued. A more adversarial relationship between government and private contractors inevitably followed, eroding the trust necessary to grease the "Skunk Works Way."

If he had been prescient enough to foresee the defense acquisition environment of 2016, Skunk Works founder Kelly Johnson might well have prefaced his 14 rules of management with a single critical axiom: "These rules hinge on trust. Once lost, it's as hard to regain as innocence itself."

The foundational philosophy which contributed to the success of Skunk Works has been replicated throughout the private sector. At Raytheon's Bike Shop and Boeing's Phantom Works, personnel have been able to develop advanced technologies such as Raytheon's Hybrid Defense Reconnaissance Assault (Hy-DRA) vehicle, Boeing's Phantom Eye, and X-51A. With top-down support starting with Congress and the Pentagon and a management structure which rewards innovation, Lockheed, Raytheon, and Boeing have had the flexibility to appropriate funds to the research, development, and rapid prototyping of moonshot products designed to increase the agility of our armed forces.

In-Q-Tel

In the 1990s, as private sector commercial innovation outpaced the capabilities of Federal Agencies, it became clear that a new technology policy was necessary. More importantly, those within the Intelligence Community acknowledged that, to ensure they remained at the cutting edge of technological advancements, a new method of obtaining technology was needed. Thus, in 1999 In-Q-Tel (IQT) was born and was "charged with accessing information technology expertise and technology wherever it exists and bringing it to bear on the information management challenges facing the Agency."[v]

In-Q-Tel Logo
Picture Source: In-Q-Tel

Even with its innovative approach, project participants described the early challenges that IQT faced from government investigators and oversight bodies. Used to a traditional procurement model, many were concerned that the leadership of IQT would steer investments to companies they were affiliated or involved with, and such rigid application of conflict of interest rules could have thwarted the IQT model. However, as IQT and intelligence community leaders described the importance of their mission to key legislators and policymakers, they were able to build the political support for IQT's innovative mission.

IQT is an independent, not-for-profit organization whose purpose is to bridge the gap between the Intelligence Community and up-and-coming commercial innovation. They seek to invest in startups that are developing technological innovations seen as vital to the Intelligence Community. The startups that IQT seeks to partner with are usually outside the reach of the Intelligence Community, and, more often than not, the company has never done work with the government before. Yet, due to the sensitive nature of many of the operations conducted by related agencies, In-Q-Tel may require that a start-up company agree to provide their services and products exclusively to the Intelligence Community for a period of time. Even though specifics regarding the current In-Q-Tel portfolio are unknown, some of the publicized investments include Databricks, Orbital Insight, Geofeedia, Dataminr, Docket, and Mesosphere.[vi]

Within the CIA, there is a facet of IQT—the In-Q-Tel Interface Center (QIC)—that is comprised of experienced CIA officers. They provide feedback directly from the Intelligence Community to ensure that IQT's strategies and investments are on target to meet the demands of the CIA. In addition, agencies such as the Defense Intelligence Agency (DIA), the National Geospatial-Intelligence Agency (NGA), and the Department of Homeland Security Science and Technology Directorate (DHS S&T) fund similar teams of staff, which enables jointly funded development, which in turn creates a collaborative environment.

Moving forward, IQT has begun to primarily focus its investments in two areas: information and communications technologies and physical and biological technologies. The first area includes "advanced analytic tools used to grapple with big data, next-generation infrastructure and computing platforms, mobile and wireless technologies, and geospatial tools and digital identity analytics like biometric tools. Inside the physical and biological world, IQT is interested in materials science, advanced genetic analysis, biological technologies used for detection and diagnostics, optics and nuclear detection."[vii] The IQT "venture capital firm" model is essential as the Federal Government, and more specifically the Intelligence Community, attempt to obtain cutting-edge technology to help them complete their critical missions.

August 31, 2016 Headline regarding In-Q-Tel
Picture Source: The Wall Street Journal

United States Special Operations Command

At the height of the wars in Iraq and Afghanistan, Joint Special Operations Command's task forces looked like no other fighting force in the US military. Driven by wartime necessity and a unique mission hunting terrorists and insurgents, they had kluged together so many disparate airframes—helicopters, unmanned aerial vehicles, modified commercial fixed-wing airplanes—that they jokingly referred to it as the "Confederate Air Force." Allowed to tailor their armaments to particular tastes, members of JSOC direct action units such as Delta Force and SEAL Team 6 sported a dizzying array of non-standard weaponry. Many of the commandoes wore special boots that had been developed specifically with their needs in mind and rapidly fielded in a matter of months. Any high-tech tool that could potentially advance their cause was quickly field-tested and, if it worked, purchased off-the-shelf commercially and deployed forward.

With the Pentagon and Congress both considering a host of reforms to streamline acquisition systems, attention has naturally focused on the buying practices that U.S. Special Operations Command (SOCOM) has adopted in a period of extended conflict. That system is characterized by innovation, rapid development and deployment of equipment to the field, a heavy reliance on readily available commercial products, and constant

SSG. Micah Hitchcock, U.S. Army, instructs Assistant Secretary of the Army for Acquisition, Logistics, and Technology Heidi Shyu on operation of the MK21 MOD 0 Precision Sniper Rifle during the 2014 Special Forces Acquisition Summit at MacDill AFB, Florida.
Picture Source: U.S. Special Operations Command

experimentation and testing by warfighters who are always kept in the loop and have the final say on purchases.

While it offers useful lessons, SOCOM's specialized acquisition system will be hard to duplicate on a more industrial scale. In purchasing equipment for nearly a million soldiers, for instance, the regular Army's acquisition system puts a priority on developing the largest pool of suppliers as a way to foster competition, and using it to get the lowest price possible. This "lowest price, technically acceptable" mindset creates a lowest common denominator dynamic that drives decision-making and rewards risk aversion. The huge cost of regular Army procurement programs also attracts additional layers of oversight, and red tape inevitably slows programs.

With its own, relatively small acquisition budget of roughly $3 billion, SOCOM has distinct advantages. It benefits from the regular Army's standard equipment purchases, for instance, and is only responsible for procuring "special operations peculiar" items that are specific to its unique missions. SOCOM's Office of Acquisition, Technology and Logistics has thus developed best practices and adopted an ethos that prioritizes rapidly delivering capabilities to the frontline, and relying on proven technologies and readily available commercial products as a means to shorten acquisition cycles. In that system, warfighters generate requirements for equipment and their input and suggestions on fielded equipment is constantly solicited in an endless procurement "feedback loop."

SOCOM's unique requirements have also led to an aggressive outreach to small businesses as a means to stay at the cutting edge of technology. As recently reported in *National Defense*, a publication of the National Defense Industrial Association, in 2014 SOCOM's Office of Acquisition, Technology, and Logistics invested more than double the funds that the Defense Department did in Small Business Innovation Research, acquiring new capabilities and technologies such as ruggedized digital cameras and miniature multi-band radar beacons.

A trusting relationship between SOCOM and its suppliers is a prerequisite to such a streamlined acquisition system that puts heavy emphasis on end-users throughout the process. "We pretty much get the direct input [from warfighters] which is fantastic, and we would have it no other way," Oakley Director of Military Sales Eric Poston told National Defense. "But it also comes with a responsibility—you have to build the best stuff."

ARPA-E

The America COMPETES Act, passed in 2007, authorized the creation of the Advanced Research Projects Agency-Energy (ARPA-E). The agency, based off of the DARPA model, works in conjunction with the Department of Energy. It was developed to help the country maintain leadership in key areas of science and technology related to energy. From DARPA's model, ARPA-E has incorporated a flat, non-hierarchical structure with empowered program managers,

a streamlined yet highly competitive project approval process, and a focus on high-potential, high-impact energy technology developments.

The first projects of the agency were funded in 2009 after President Obama allocated $400 million to ARPA-E. Since that time, the agency has funded over 400 "potentially transformational energy technology projects."[viii] Most importantly, ARPA-E leadership has stressed the importance of collaboration between themselves, the Department of Energy, and national labs.

"ARPA-E's 2017 budget document (the agency requested $350 million for 2017, and received $291 million in 2016) stated that new programs must 'be based on significant potential for transformational technological innovation…[projects] must also have an impact on the areas specified in the legislation: 'improving energy efficiency, reducing dependence on energy imports, and reducing harmful energy emissions, specifically and critically including reduction of greenhouse gas emissions.'"[ix]

Prototype Wind Turbine Kite
Picture Source: Makani Power

Many of the technological achievements that have resulted from ARPA-E projects have led to follow-on private sector funding, the development of start-up companies focused on advancing this technology, and ultimately, commercialization. However, one of the most important aspects of the ARPA-E model is the ability for program managers to quickly terminate a program if the project team believes it will not be successful. Not only does this eliminate unnecessary scandal, but also ensures that dollars are being invested in beneficial projects.

In February of 2016, ARPA-E announced that 45 projects secured more than $1.25 billion in private sector follow-on funding, in addition to 36 projects that formed new companies, and 60 projects that have partnered with other Federal Agencies for further development.[x] The success of ARPA-E demonstrates the ability for lawmakers to replicate this model for other sectors.

Veterans Affairs Center for Innovation (VACI)

The two longest wars in U.S. history in Iraq and Afghanistan have placed great strains on the Department of Veterans Affairs, which operates the nation's largest health care system, with more than 1,700 hospitals, clinics, and community living centers. The Department's struggle to cope with the influx of veterans over more than a decade of conflict has been well documented. Out of that necessity was born noteworthy innovation, however, in the form of the VAi2, or Veterans Affairs Innovation Initiative.

On June 25, 2009, the Secretary of Veterans Affairs (VA) approved a $2 billion portfolio of "transformation initiatives" designed to focus the 300,000-person agency on its mounting challenges. Specific objectives included increasing access to care and services, improving quality of care and cost efficiency, and bolstering overall veteran satisfaction. Among the 21 initiatives created that day was VAi2, which evolved into the VA Center for Innovation (VACI), a department-wide program to "lower the barrier of entry for quality innovation from the private sector into the VA and onto the frontlines of the nation's largest integrated health care system."

The thrust of the VACI was to create a leaner process that accelerated the procurement of cutting edge capability. In areas such as scope, methodology, funding, and governance, VACI transformed the VA's procurement culture, offering lessons that are applicable to other Federal Agencies and departments.

In terms of scope, for instance, VACI focused on identifying cutting-edge and "leap-ahead" capabilities that would represent game-changing improvements in veterans' access to quality health care. Promising new technologies were rapidly funded, tested, and deployed to the field where they could make a difference. The VACI charter specifically called for shrinking the chasm between the requirements spelled out in annual operating plans and investments in research and development. In practice, that required imposing a maximum test and evaluation lifecycle of 24 months for new products and services.

Using the VA's "Broad Agency Announcement" as a vehicle for articulating its needs to a broader network of private contractors, VACI embraced a new methodology and phased procurement process that encouraged open dialogue between those VA officials writing requirements and private sector companies. Because many of those companies had never sold to the government before, that open dialogue allowed requirements to evolve with less friction, reducing the risk of misunderstandings.

Prototype prosthetic socket technology is demonstrated— representing an advance in artificial limb technology, as the socket design had remained largely unchanged since the Vietnam War. Picture Source: VACI

For its first four years, VACI also benefitted from streamlined governance and decision-making. Because it operated directly out of the Office of the VA Secretary, it had the political protection and institutional legitimacy needed for the small VACI team to gain leverage and momentum in a large bureaucracy.

The founding VACI team also established a governance structure that included an Executive Selection Board (ESB), modeled on a board of directors or limited partners in a venture capital firm. The Deputy Secretary of VA chaired the ESB, whose membership also included the Under

Secretary of Health, the Under Secretary of Benefits, the Chief Information Officer, and the Chief Technology Officer. The VACI Director required majority approval of the ESB before new products and innovations could progress from initial selection to wide-scale deployment.

In terms of funding, VACI's budget drew from VA's three main appropriation sources, enabling a more corporate approach to funding solutions to VA-wide challenges. That allowed the VACI team to maximize the impact of its annual budget of approximately $75 million.

All of those innovations helped create a unique culture at VACI characterized by informed risk-taking. Owing to the willingness of VACI personnel to more creatively use the tools afforded to them under existing contracting regulations, and their more constructive engagement of the private sector, new capabilities now make it into the field quicker and with greater reliability. In that sense VACI has kept faith with both customers and shareholders—veterans and taxpayers.

The United States Digital Service

Launched in 2014, the United States Digital Service was formed to find solutions to the management challenges that hindered the progress of IT delivery. The teams' success in fixing Healthcare.gov demonstrated the necessity of developing a group to apply technology in more effective ways throughout the Federal Government, which, in turn, can improve the delivery of information, benefits, and federal services to Americans. What was once a small group of individuals has evolved into a network

U.S. Digital Service Logo
Picture Source: The White House

of teams working across the Departments of Homeland Security, Veterans Affairs, Defense, Education, State, and Health and Human Services.

The U.S. Digital Service has multiple overarching goals which include the integration of technology within the Federal Agencies to increase efficiency, productivity, and security; making existing systems user-friendly; and promoting a new philosophy towards information technology throughout the government. This 'Silicon Valley' ideology challenges the bureaucracy and takes aim at the red tape that hinders the ability of Federal Agencies to respond to problems and inefficiencies with 21st century solutions.

Currently, much of the debate surrounding the U.S. Digital Service is related to sustaining this team beyond the Obama Administration. As individuals throughout the Federal Government have acknowledged the teams' importance—including Representative Suzan DelBene, D-WA, who introduced a bill that would authorize USDS for 10 years—tangible steps have yet to be taken to form a permanent information technology "SWAT" team.[xi]

BEYOND THE BELTWAY:
INNOVATION HUBS & PROCUREMENT REFORM

Looking "beyond the Beltway," there are lessons to be learned and best practices to consider at the level of state and city procurement offices. States have always served as the laboratories of American democracy, and there are a number of state procurement hubs that emphasize streamlined procurement processes and a positive relationship between procurement personnel, program managers, and private sector innovators.

In fact, as the economies of major U.S. cities continue to adapt to the effects of the 2008 economic crisis, a new urban economic model has emerged. The innovation hub model has become a popular way for cities to spur economic growth in both traditional and emerging markets. Such hubs typically combine in close proximity universities, research institutions, investors, entrepreneurs, and private companies. As ideas are passed across sectors and disciplines, these key players are able to collaborate in a way that naturally fosters innovation and economic dynamism. Even in times of sluggish economic growth, innovation hubs have become crucial to the economies of a number of leading-edge cities.

Innovation hubs have become crucial to the economies of a number of leading-edge cities.

The twin drivers of innovation in these hubs are talent and technology. Because of the presence of leading universities and colleges, the hubs benefit from a young and progressive workforce. Attracting the best talent in turn becomes a priority for companies that have tailored their scouting techniques, outreach programs, and marketing campaigns to this young audience. Given their familiarity with new technology and understanding of how it impacts their peers, these young professionals are essential to a high tech company's workforce. Technology frontiers in artificial intelligence, next-generation genomics, advanced software development, robotics, nanotechnology, and ever-more sophisticated computer systems all rely heavily on tech-savvy workforces.

Not all lessons learned from innovation hubs at the state and city level will be directly applicable to the Federal Government. Roundtable participants discussed the different culture at the state and local levels. City officials said they operate in a more collaborative and less risk-averse environment, in which they are motivated first and foremost to obtain the best products at a reasonable price and in a timely manner. At the state level, procurement personnel also enjoy a level of flexibility that is often absent at the federal level. Many of the regulations and rules are not politicized, which allows for a more collaborative environment and more open lines of communication between government personnel and private contractors.

It has been said that "all politics is local," and, to a certain degree, much innovation is achieved at the local level, where the relationship between those delivering a government service and the customer receiving it is the closest. That said, the ideas and products

developed within these innovation hubs are critical to a vibrant U.S. economy, and a modern, effective Federal Government. Federal Agencies must learn how to adapt their procurement tools to leverage the dynamism of these innovation hubs. That means

> *There are valuable lessons to be learned from local "laboratories of democracy."*

understanding why innovation hubs are successful in the first place, and integrating their best practices into federal procurement processes. As members of Federal Agencies and Congress look to reform the federal procurement process, there are valuable lessons to be learned from local "laboratories of democracy."

During this project, two roundtables were held in Boston, Massachusetts, and Huntsville, Alabama. In Boston, the relationship and partnership between local government, the Federal Government, research institutions, and private sector firms has fostered an environment for innovative solutions in a wide range of areas including health care technology and information technology. Additionally, the leadership of the City of Boston has emphasized the use of updated and modernized procurement tools to more rapidly respond to the needs of citizens. From the Boston example, it became apparent that in order to create an innovation hub, there needs to be constant and effective dialogue amongst leaders at all levels of government, private sector leaders, and elected representatives in Washington.

In Huntsville, the key lesson gleaned from the roundtable with local leaders is the importance of continued partnership between industry and government leaders with respect to the development of innovative defense technologies and the subsequent fielding and implementation of those platforms into military use. Uncertainty about budgeting and contracting rules, as well as the perception that dialogue between government and the private sector surrounding procurement is forbidden or discouraged, has been a disservice to fostering that partnership that participants found so important to the success of Huntsville's innovative industries.

Finally, in both of these innovation hubs, it is important to note how universities and other research institutions have served as a key tool for not only fostering talent, but also providing an outlet for basic and applied research to develop innovative technologies. Key to the procurement mission is the continued support for innovation and research, yet budgetary uncertainty has created further difficulties in that mission.

BOSTON, MASSACHUSETTS

In the 1970s and 1980s, scientists from local Boston academic institutions founded Biogen and Genzyme. As a result of the success of those large companies, other global pharmaceutical giants—Novartis, AstraZeneca, and Baxter—set up labs in the Boston and Cambridge area.[xii] Building on that foundation, the city purposely worked to find synergies between industry, academia, and government, creating a successful hub for the health care and biotech sectors.

Boston's successful nurturing of the private sector was reinforced by research projects championed by local universities and colleges. A report released in 2014 by the Research Division of the Boston Redevelopment Authority (BRA) highlighted the 47 organizations, companies, hospitals, and educational institutions within the city that received 3,626 awards from the National Institute of Health in FY2013, which totaled $1.72 billion. "Organizations ranging from the National Science Foundation (NSF) to the National Aeronautics and Space Administration (NASA) to the Department of Energy (DOE) provided universities and firms millions of dollars for research. whole new industries have sprung up from these efforts: computers, biotechnology, and artificial intelligence, among others."[xiii] Building on this success, former Mayor Thomas Menino and Mayor Martin Walsh both dedicated significant resources to building innovation districts within the city as a means to sustain economic growth in the technology, health care, and biotech sectors. For Mayor Menino, transforming the Seaport District into an area open for business and investment was a way to spread economic development throughout the city, rather than have it concentrated in small clusters such as Kendall Square in Cambridge.[xiv]

Since his election, Mayor Walsh has launched initiatives to build on that innovation hub model through development of the startup community, and by integrating advanced technology into city agencies and basic public services. In the fall of 2014, Walsh formed the Neighborhood Innovation District Committee to identify practices, policies, and infrastructure improvements which will support the development of other innovation districts throughout Boston. This committee was made up of entrepreneurs, thought-leaders, public servants, and community members who were appointed by Walsh to hold public meetings and discuss the challenges and benefits of creating more Neighborhood Innovation Districts.[xv] The following year, the Neighborhood Innovation District Committee and Mayor Walsh released a report detailing plans to build on the success and lessons learned from the development of the Seaport Innovation District.[xvi]

During the Boston roundtable session, personnel from the City of Boston reiterated that there was still work to be done in terms of reducing redundancy, streamlining the procurement of goods and services, and integrating technology into the entire city government enterprise. Previously, many of the departments within the City of Boston did not coordinate their purchases, for instance, leading to wasted resources and needlessly redundant purchases. Moving forward, city officials plan to stress better communication and coordination across all agencies in an effort to streamline and simplify the procurement process.

HUNTSVILLE, ALABAMA

Huntsville has been able to grow and expand as a leader in military technology, specifically within the aerospace sector, due primarily to the success of Redstone Arsenal. Established in the 1940s, Redstone has played an integral part in developing arms and new technology to address the critical needs of the U.S. military.

The Arsenal first came into prominence when "the Secretary of the Army approved the transfer of the Ordnance Research and Development Division Sub-Office (Rocket) at Fort Bliss, Texas, to Redstone Arsenal. Among those transferred were Dr. Wernher von Braun and his team of German scientists and technicians, who had come to the United States under 'Operation Paperclip' during 1945 and 1946."[xvii] The Army's Ballistic Missile Agency was established at the base in 1956, which reinforced the research being conducted at the Arsenal and helped Redstone become an integral part of the Army's research and development sector.

Even after NASA was established by President Eisenhower and designated as a civilian agency, the Army made its most notable contributions to the country's space program due to the advanced research conducted at Redstone. During this period, the U.S. Army Missile Command (MICOM) and the Marshall Space Flight Center were established at Redstone, and researchers developed systems such as NIKE HERCULES, NIKE AJAX, HAWK, JUPITER, the first stage REDSTONE rocket that became EXPLORER I, and the SATURN V rocket, which carried astronauts to the moon in 1969. All of them were products of work performed at the base.[xviii]

Throughout the Cold War, Redstone and its tenants continued to develop advanced weapons systems and to focus on space station operations, propulsion systems, and numerous other leading-edge projects. In response to this hub of advanced research, the Congressionally-mandated Base Closure and Realignment Commission (BRAC) began consolidating other agencies at Redstone as other bases closed. "BRAC 2005 brought the Army Material Command's four-star headquarters, Space and Missile Defense Command's 3-star headquarters, the majority of DoD's Missile Defense Agency, and U.S. Army Security Assistance Command's 2-star headquarters from Northern Virginia."[xix] Other major expansions of the base included the development of a new 400,000 square-foot headquarters for the U.S. Army Security Assistance Command; the construction on the "Phase III" wing of the Von Braun Complex; and the relocation of the Army Material Command, the Army Aviation and Missile Research, Development and Engineering Center's Software Engineering Directorate, and the Bureau of Alcohol, Tobacco and Firearms National Center for Explosives Training.[xx]

"The two previous rounds of BRAC have brought significant growth on Redstone with the consolidation of the Army's aviation program management, material management, foreign military sales, contract support, test and evaluation, research development and engineering, as well as significant growth in missile defense roles and missions."[xxi] For Arsenal personnel, the recent expansion that occurred as a result of BRAC transformed the base into something beyond "just an Army base, with a friendly neighbor called NASA." It transformed into a research, development, and production hub which incorporates a variety of Federal Agencies with overlapping missions.

As home to multiple military bases—Fort Rucker Army Base, Maxwell Gunter Air Force Base, Anniston Army Depot, the Coast Guard Aviation Training Center, and Redstone Arsenal—Alabama's status as a hub of US military activity is vital to the state's economic stability.

"Military bases, the National Guard and Reserve, and defense contractors have an annual economic impact of more than $17 billion in Alabama, and more than 117,000 Alabamians work in jobs that are directly or indirectly connected to military installations."[xxii] The state legislature has recognized the importance of the defense industry and, in response, created the Alabama Job Creation and Military Stability Commission in 2011 to protect and expand the military's mission within Alabama. This commission, combined with other foundations and initiatives, helped build a collaborative environment for military installations and private sector contractors looking for new opportunities for government work.

Specifically, for Redstone Arsenal and its tenants, the success of the base laid the foundation for the growth of Cummings Research Park, which is home to more than 30 companies—including Fortune 500 companies, top contractors, and global technology firms. "Arsenal agencies and program offices currently employ more than 38,000 people who manage more than $50 billion in annual federal budgets."[xxiii] Given Redstone's status as an essential link in the military's research and development chain, major contractors such as Boeing, Lockheed Martin, Northrop Grumman, Raytheon, and Intuitive Research and Technology have established offices there.

At the federal level, the Commerce, Justice, Science and Related Agencies (CJS) Subcommittee has designated funds for several of the tenants at Redstone. In the most recent CJS appropriations bill, funding was allocated to the FBI's Terrorist Explosive Device Analytics Center (TEDAC), and the FBI's Ballistic Research Facility, which will become operational at Redstone in FY2017. The CJS also provided $76 million to finish on-going construction projects at Redstone, which include TEDAC; the FBI's Hazardous Devices School (HDS); and other operational and training programs.[xxiv] Additionally, the House of Representatives version of the NDAA for FY2017 includes provisions that would assist manufacturing and research and development taking place at Redstone. The bill includes language that prioritizes the growth of small satellite technology; development of "three-dimensional high-resolution light detection and ranging systems;" and development of an American rocket engine by 2019, which would replace the Russian RD-180.[xxv]

However, federal funding has not been limited to Redstone and its military tenants. In 2015, the University of Alabama in Huntsville was part of a team that was awarded a five-year research contract valued at $50 million to "develop, demonstrate, and verify an advanced propulsion system. The contract focuses on propulsion system design and trace studies, including liquid engine systems, propellant systems, electric propulsion, rocket-based combined-cycle propulsion systems, and advanced propulsion systems."[xxvi] The Propulsion Research Center (PRC) at UAH will conduct research and work with the Orbital Technologies Corporation (ORBITEC) to provide NASA with advanced propulsion systems technologies.

Additionally, the Economic Development Administration within the Department of Commerce recently provided a $500,000 grant to the Invention to Innovation Center at the University of Alabama in Huntsville. This technology business incubator at the university was previously

rewarded a $3 million grant for the construction of a facility that can house up to 40 start-up businesses and provide them with office and laboratory space.[xxvii]

Typical of innovation hubs, in Huntsville, the close proximity of Federal Agencies and defense contractors has given personnel the ability to interact routinely and develop relationships that often prove key to the success of projects. In addition, research universities such as the University of Alabama in Huntsville have provided these agencies and companies with an eager, talented, and technically savvy workforce. Students at the University of Alabama's Huntsville campus have developed close and positive relationships with major corporations through internships and fellowships, which often lead to full-time jobs. This hands-on experience has also helped convince many students of the benefits of working for the Federal Government, rather than transitioning straight to the private sector after graduation.

Even technology hubs such as Huntsville, however, have not been immune to the ills impacting the government procurement system. Contractors have faced multiple challenges in adjusting to new rules and regulations, for instance, and the unreliable

> *A risk-averse culture is starting to hinder innovation at the industry level.*

budgetary process has stifled innovation in many cases, leading to inevitable delays in the contracting process. Roundtable participants remarked that the decision process has become a cumbersome ordeal, in which the government is focused primarily on avoiding bid protests rather than awarding contracts to the most qualified contractors. Many of the procurement policies enacted by Congress and the Executive Branch, they say, had unintended consequences, as a risk-averse culture is starting to hinder innovation at the industry level.

In general, however, the "Huntsville experience" reveals what can be accomplished when government, industry, and academia work together to find innovative solutions to complex challenges. Roundtable participants remarked that the next Administration has an opportunity to set a new tone for the future of government procurement and acquisition. By instituting best practices found at innovative organizations such as DARPA and Skunk Works, and applying lessons learned from innovation hubs like Boston and Huntsville, the government procurement process can evolve into a collaborative endeavor where human capital is maximized and America's unsurpassed technological superiority is sustained.

APPLYING NEW PROCUREMENT MODELS
TO INNOVATIVE MISSIONS

THE GROWING HEALTH CARE MISSION

As health care providers continuously evolve to meet the needs of the American people, both government and private sector providers are searching for more efficient ways to meet this challenge. One of the most effective ways to address 21st century needs is through technological innovation. The integration of technology into the health care sector has transformed the industry through the introduction of new platforms, which streamline essential processes and ensure smooth storage and sharing of data. Health care systems have evolved to include software platforms that provide medical diagnostics, biometric devices that aggregate data, online insurance marketplaces, and aggregated electronic medical records.

As technology firms continue to develop products for integration into the health care sector, hospitals have responded by placing a greater emphasis on data management and analysis. Hospitals and health care organizations have expanded their IT departments and created new positions—Chief Health Information Officer and Chief Medical Information Officer—to manage patient information.

Agencies will have to keep up with rapid technological innovations and increased consumer demand.

At the federal level, the Department of Health and Human Services (HHS), the Department of Defense (DoD), and the Department of Veterans Affairs (VA) have had to adjust their procurement and acquisition processes to keep up with this new paradigm. Yet existing challenges in the government procurement system have combined with the rapid pace of technological change and increased demand to exacerbate many inefficiencies. Moving forward, not only will these agencies have to keep up with rapid technological innovations and increased consumer demand, but also reform many of the inefficiencies within the procurement and acquisition process.

Many of the challenges impacting the overall procurement process are heightened by the complexity of the medical and technological sectors. Roundtable participants noted that better training and education of procurement personnel was essential. Specifically, for health care and IT procurement, the Federal Government's procurement workforce too often lacks knowledge on advancements in the private sector. Moving forward, agencies need to place a greater emphasis on the technical training of personnel involved in procurement, and on the integration of new technology into existing systems.

Additionally, the government should encourage innovation where risk is acknowledged and shared among all the parties involved. Especially for the medical industry, new technologies

must be embraced as new treatments are developed. A key to meeting this challenge in health care procurement will be strong leadership from the upper echelons of the Federal Agency involved. What's needed is leadership that fosters innovation and risk-taking by subordinates, as well as free flowing communication between leaders and key program managers and procurement officers. The role of strong leadership in fostering a culture of enlightened risk-taking has stood out in all the case studies of successful government procurements.

INFORMATION TECHNOLOGY IN GOVERNMENT

Unlike the private sector, the Federal Government is hamstrung by byzantine regulations and a dysfunctional budget process. As a result, the government has routinely failed to update legacy systems with state-of-the-art technology.

With the technology sector continuing to place a premium on rapid innovation, Federal Agencies have struggled to keep pace and integrate new technology into existing systems in a timely manner. An inefficient and overly bureaucratic procurement system, coupled with a risk-averse procurement culture, have resulted in failed projects, and an increasingly tense relationship between government personnel and the private sector.

Unlike the private sector, the Federal Government is hamstrung by byzantine regulations and a dysfunctional budget process. As a result, the government has routinely failed to update legacy systems with state-of-the-art technology. Much of the government's current technology is consequently outdated and "according to the GAO, over 75 percent of the Federal Government's total information technology spending budget went to maintaining obsolete systems."[xxviii] For example, the Social Security systems that are used to estimate benefits and determine eligibility are roughly 30 years old and many still use a programming language called COBOL, which dates to the late 1950s and early 1960s.[xxix]

As these systems continue to age, agencies are forced to spend precious money and time to train young professionals to operate obsolete platforms and programming languages. Many of the initiatives to update our aging technology infrastructure have focused on shifting from "COBOL to JAVA," trading a 40-year-old programming language for a 20-year-old programming language.[xxx] Equally as important as outdated programming languages are inefficient technological architectures. Many of the legacy software systems, for instance, were specifically designed to optimize performance on a large server. Yet as technology has advanced, inexpensive servers and the development of the "cloud" have increased efficiency and resulted in a system that runs on multiple or clusters of servers. When developing initiatives to update information technology, agencies should thus address modernizing both program language and outdated technology architecture.

In an attempt to increase efficiency of information technology within the Federal Government, OMB launched an initiative in 2010 to consolidate data centers. "GAO recently reported that

agencies had closed 3,125 of the 10,584 data centers and achieved $2.8 billion in cost savings and avoidances through fiscal year 2015."[xxxi] The Federal Data Center Consolidation Initiative (FDCCI) was launched in 2010 and reinforced by the Federal Information Technology Acquisition Reform Act (FITARA). FITARA requires Federal Agencies to submit annual reports that include performance metrics and a timeline for agency activities; yearly calculations of investment and cost savings; multi-year strategies to consolidate and optimize data centers; and comprehensive data center inventories.[xxxii]

Especially regarding the procurement of new technology, the "lowest price, technically acceptable" (LPTA) standard is misapplied. Federal Agencies that apply an LPTA standard in purchasing IT and advanced cyber capabilities are treating them as commodities, sacrificing quality and long-term compatibility for short-term savings. This is the epitome of "penny wise, pound foolish."

In response to a high number of flawed, struggling, or failed IT development projects, the Obama Administration has developed multiple initiatives such as the Smarter IT Delivery Agenda, United States Digital Service, 18F, Digital Services Playbook, and TechFAR. The GAO reports that the government spends $80 billion annually on IT, yet despite this massive investment, cost overruns and inadequate results are common. As of May 2015, GAO officials conservatively estimated that 178 of the government's 738 major IT investments—or about 25 percent—were at risk."[xxxiii]

To improve the ability of the Federal Government to integrate technological innovations into essential government systems in a timely manner, the Chief Information Officers and Chief Technology Officers should be empowered to set the appropriate standards and obtain the best products for the mission. As the FITARA provisions are implemented throughout the Federal Government, the CIO in each agency should have the authority, budget, and experienced personnel to bring Federal Agencies into the 21st century.

Meeting Current & Future Technological Needs

As the needs of the Federal Government are growing more complex, vendors have had to invest more in the development of new technology. Yet due to complicated requirements and budget constraints, many companies are unable to adequately fund R&D programs or develop products in a timely manner. There have been multiple high profile examples of programs going over budget and taking years to get from prototype to testing. For example, the Lockheed Martin F-35 was requested by the Air Force, Marines, and Navy more than two decades ago. Although, after many setbacks, the Pentagon has stated that the program will soon be operational.[xxxiv]

> _Participants noted that the yawning culture gap between government and the private sector—especially the Silicon Valley culture—is a major area of concern._

In response to the need to more rapidly acquire advanced technology, Secretary Carter has developed multiple initiatives designed to forge a stronger relationship between the Pentagon and Silicon Valley. In April 2016, Secretary Carter announced a new partnership aimed at improving military technology by taking advantage of private sector innovation. This five-year, $171 million deal will create a new research institute run by FlexTech Alliance. Funding sources include the Department of Defense, state and local governments, universities, labs, and private sector companies such as Apple and Lockheed Martin.[xxxv]

Still, participants noted that the culture gap between government and the private sector—especially between the government and Silicon Valley—is a continuing area of concern. In addition to diametrically opposed cultures regarding risk-taking and innovation, the fallout from the leaks by former NSA contractor Edward Snowden has made tech companies sensitive to the perception that they are too close to the U.S. government. Furthermore, as companies seek to expand their international presence, U.S. export control measures are another area of concern.

Finally, roundtable participants also discussed the challenge with innovation that begins in the early stages of the procurement process with the writing of requirements. Given the often poor communication between the government and the private sector, those writing requirements for a good or service are often uninformed in terms of what capabilities are available in the private sector. The problem is exacerbated by barriers that prevent individuals from moving easily between government and the private sector. Such barriers—intended to close a "revolving door" between government and industry—have had the unintended consequence of reducing the experience level and expertise of government procurement personnel.

"Nunn-McCurdy" for IT

One suggestion put forward by roundtable participants was the creation of a "Nunn-McCurdy" structure for IT programs that would focus on both budget overruns and delays. Incentives could be developed to encourage government agencies to more rapidly implement IT improvements in a way that matches the pace of technological advances in the private sector. A streamlined process would need to reduce the timeframe in which policies are implemented, while also providing a process for identifying and cancelling failed programs.

Members of Congress have already attempted to codify this idea into law. In 2009, Senator Tom Carper, D-DE, sponsored S. 920, or the Information Technology Investment Oversight Enhancement and Waste Prevention Act, which sought to apply a Nunn-McCurdy style approach to information technology acquisitions. S.920 included a provision that would require notifications to Congress if an information technology program breeched 20% or 40% cost overrun thresholds. The bill passed the Senate, but died in the House.[xxxvi]

Even though the Pentagon has multiple cost overrun measures, Nunn-McCurdy has never been explicitly applied to information technology acquisitions. However, the recent declaration by

the Air Force of a Nunn-McCurdy breach may set a precedent for the Federal Government and military. "The breach comes after the Air Force concluded the Operational Control Segment (OCX) program, developed by Raytheon, would exceed the 25 percent cost overrun threshold that triggers a Nunn-McCurdy alert."[xxxvii] Factors that led to the breach include inadequate systems engineering at the program's inception; complex cybersecurity requirements; and software with high defect rates. The program will enter a review period led by Under Secretary Frank Kendall, which is scheduled to conclude in October.

Moving forward, Agency officials should integrate FITARA provisions with Nunn-McCurdy in mind to ensure that major information technology programs are being completed on time and on budget.

THE REFORM PROCESS

HISTORICAL LESSONS

Throughout this project, a common theme has emerged from the project roundtables and meetings with Congressional staffers, Administration officials, and private sector leaders: the current procurement and acquisition process is broken and badly in need of reform. However, to address the inefficiencies within the current system, it's important to understand the historical evolution of the government procurement process. By applying the lessons of history, policy makers can overcome obstacles barring procurement personnel from completing projects on time and on budget and place a premium on innovation and collaboration. While many past procurement reform efforts have focused primarily on the Department of Defense, the successes and failures of these measures can inform policy makers as they consider best practices for civilian agencies as well.

As the war-fighting capability of the military was insufficient to handle the needs of U.S. forces during World War I, new policies were put in place to increase the readiness level of the military. It was during this period that the symbiotic relationship between the private sector and Federal Government solidified in terms of equipping U.S. military forces. This relationship was based on the need for joint planning, mobilization, and production.

The need to serve as the "arsenal of democracy" during World War II fostered the public-private partnership at the core of the U.S. military-industrial complex. As a result of wartime urgency and the need for massive production runs, a heavy reliance was placed upon sole-source procurement. There was no formal acquisition policy at the time, and the majority of the contracts awarded were noncompetitive.

Assembly of 37mm Anti-Aircraft Guns
Picture Source: FDR Library Archive

The Manhattan Project that developed the first atomic weapons during World War II also highlighted the importance of research and development in maintaining the U.S. military's technological superiority. That emphasis on R&D continued into the Cold War, and led to the production of even more advanced nuclear weapons, as well as intercontinental ballistic missiles, satellites, reconnaissance aircraft, and strategic command-and-control systems. As the technological advancements proliferated, some argued that significant central planning by the Federal Government was the key to technological success.

With the Department of Defense Reorganization Act of 1958, and the leadership of former Ford Motor Company "whiz kid" and Defense Secretary Robert McNamara (1961-1968), centralized procurement authority reached its zenith. Program planning and selection, source

selection and contracting, and management of ongoing acquisition programs were all heavily centralized in the Office of the Secretary of Defense.[xxxviii] McNamara promoted the program management concept as a way to centralize decision making, accountability, and responsibility for major programs.

The centralization of the acquisition system, combined with an increase in bureaucratic regulations, led to a system focused on defense-unique solutions. "The rate of U.S. defense innovation slowed as research and development efforts were focused on making incremental design improvements to those systems originally developed in the 1950s."[xxxix] As red tape and bureaucracy slowed the traditional procurement process, many of the technological innovations in the 1970s and 1980s were developed, produced, and deployed by entities outside the traditional procurement and acquisition system.

Stealth Prototype "Have Blue"
Picture Source: U.S. Air Force

The passage of Goldwater-Nichols and the Packard Commission recommendations were fundamental to increasing the efficiency of the Department of Defense and, in turn, the procurement and acquisition process. The Commission issued a series of recommendations, including the creation of a "procurement czar," known as the Under Secretary of Defense for Acquisition; the establishment of a clear and streamlined hierarchy of acquisition managers and executives in each of the services; the adoption of best commercial practices and processes; and the appropriation of a defense budget every two years, rather than annual appropriations.

In response to the public's frustration of perceived government waste, the Clinton Administration pushed for another round of procurement and acquisition reform. The 1994 Perry Memo, followed by the 1994 Federal Acquisition Streamlining Act and what later became known as the 1996 Clinger-Cohen Act, focused upon implementing a simpler buying model based off of commercial practices.

Many have argued that sweeping reforms are once again necessary to alleviate the dysfunction that has led to failed projects, routine cost overruns, and tension between the private sector and Federal Government. Reform is all the more necessary given the evolution of the country's economy and society, and the rapid shift from an Industrial Age based on manufacturing to an Information Age built around the computer chip.

THE CURRENT POLITICAL ENVIRONMENT

In response to this increasingly complicated procurement environment, Members of Congress have called for reforms to remedy red tape, cost overruns, and an overly bureaucratic and ponderous procurement system. Roundtable participants identified major areas for reform,

including: shifting away from a "risk-averse" culture; reinforcing the authorities and responsibilities of the program managers and contract officers; more advanced training and education for procurement personnel; stronger incentives to join the procurement workforce; and greater rewards for completing a project on-time and on-budget.

> *But reform for the sake of reform could make a bad system worse.*

Within Congress, the leadership must make defense procurement and acquisition reform a priority. The recent reform effort led by House Armed Services Chairman Mac Thornberry, R-TX, and Ranking Member Adam Smith, D-WA, has been strengthened by the support from Secretary of Defense Ash Carter, Under Secretary Frank Kendall, Senate Armed Services Chairman John McCain, R-AZ, and Ranking Member Jack Reed, D-RI. This "unity" between the House, Senate, and Pentagon demonstrates the importance and timeliness of government procurement reform, and suggests that real reform could be achieved.

Much of the current legislation has been focused on the Department of Defense, as the challenges there have been laid bare by delayed, cancelled, and over-budget programs involving large weapons system platforms. However, these problems are equally found in a range of other government agencies responsible for homeland security, health care, veterans' affairs, revenue and taxation, intelligence, law enforcement, and myriad other government programs. Cooperation between the Executive and Legislative Branches, combined with dialogue with the private sector, could lead to legislative solutions. Still, the broader changes needed in the procurement culture cannot be achieved solely through legislation and must include both a new mindset among procurement personnel and the creation of new and more cooperative procurement paradigms embraced by both government and private industry.

CURRENT REFORM EFFORTS

The Role of the Executive Branch

As the Administration sets political and budgetary priorities and issues procurement guidance, it directly and indirectly impacts the ability for the Federal Agencies and the military to obtain goods and services. Past Presidents have established blue ribbon commissions, issued various reports, and urged Congress to pass legislation addressing procurement inefficiencies.

The Obama Administration has been very active in altering policies and regulations related to the procurement and acquisition process. In 2013, President Obama signed the National Defense Authorization Act (NDAA) for FY2013, which included provisions to assist small businesses in competing for government contracts. Before these provisions were signed into law, in 2012, Federal Agencies had missed their small business contracting goals for the eleventh straight year.[xl] President Obama has remarked that small businesses are more agile,

innovative, and flexible, yet still lack the financial ability to compete against larger, more established contractors.

In addition to promoting small business contracts, the Obama Administration has focused on integrating technology into systems and processes essential to the Federal Government. In 2014, 18F and the U.S. Digital Service were created. Based out of the General Services Administration, 18F is tasked with solving IT problems for other Federal Agencies, and it has developed government-wide and agency-specific platforms focused on increasing efficiency and simplifying overly complex processes.

The U.S. Digital Service, based at the Office of Management and Budget, is tasked with assisting and improving IT procurement and technology platforms. This team of experts created the Digital Service Playbook of best practices; "essentially 13 ideas on how to ensure that customer and end user needs are addressed in design and development, and that testing and delivery take place along efficient, predictable lines."[xli] Overall, this playbook focuses on agile methods of delivering new and updated platforms to Federal Agencies.

The Digital Service also published the TechFAR handbook, which acts as an instruction manual on how Federal Agencies can "execute key plays in the [Digital Services] Playbook in ways consistent with the Federal Acquisition Regulation."[xlii] This handbook encourages the agile development of software and the ability for the Federal Government to get working software platforms into users' hands quickly while being able to adjust requirements and development plans based on prototyping and competitor items.

The Role of Congress

Historically, Congress has played a crucial role in overseeing and, when necessary, reforming the procurement and acquisition process. Specifically, Congress was instrumental in the creation of the Defense Acquisition University, establishment of the (FAR), and in crafting and implementing the groundbreaking Goldwater-Nichols reforms streamlining acquisition. Congress has also helped reform the procurement and acquisition process of civilian agencies through the passage of the Federal Information Technology Acquisition Act, and with creation of ARPA-E. History teaches that meaningful reform can only be achieved by long-term collaboration between Congress, which must amend existing legislation; the Executive Branch, which is responsible for reforming internal practices; and private industry, which must play a constructive role. "[xliii]

The ability of Congress to implement meaningful reform to the Department of Defense and civilian agencies has unfortunately been constrained by the elimination of earmarks, and by the Budget Control Act. Previously, Members of Congress had the ability to set aside money to fund certain projects. Without earmarks, many worthy projects have been underfunded or ignored altogether, and Congress has been left without a key tool for influencing the procurement process. Most of these authorities now reside solely within the Executive Branch,

which no longer shares with Congress the risk associated with these programs, and has grown more risk-averse as a result.

Steep reductions in defense spending have also made it more difficult for agencies, and specifically program managers, to develop comprehensive strategies for completing projects. Procurement personnel feel increased pressure to complete complicated projects without adequate budgets, robbing them of flexibility. This has reinforced inefficiencies and created tension between program managers and contract officers, as well as between industry and the Federal Government.

H.R. 1232

As technology continues to advance, the process for procuring information technology has become more complex. Members of Congress have attempted to craft legislation to address this issue, including Congressman Darrell Issa's, R-CA, Federal Information Technology Acquisition Reform Act (FITARA). H.R. 1232 reformed the process for acquiring new technology by requiring the government to develop a new streamlined acquisition process. Aspects of H.R. 1232 were included into the NDAA for FY2015, and in June of 2015 OMB released guidance to Federal Agencies on FITARA implementation.

Under FITARA, each Federal Agency would have one Chief Information Officer (CIO) with increased authority over IT operations. Giving the CIO increased authority over IT procurement and budget was meant to simplify the procurement process and allow them to better keep up with technological innovations.[xliv] "[FITARA] also takes major steps towards positioning CIOs so that they can reasonably be held accountable for how effectively their agencies use modern digital approaches to achieve the objectives of effective and efficient programs and operations."[xlv]

The guidance released by OMB on FITARA implementation was meant to ensure the successful integration of these provisions into all the Federal Agencies. The Common Baseline section of the guidance documents outlines the roles and responsibilities of the CIO, CFO, and other agency leaders during the program planning, budgeting, and procurement processes. "The CIO defines the development processes, milestones, review gates, and the overall policies for all capital planning and project management and report for IT resources."[xlvi] These provisions reinforce the OMB view that there is a direct correlation between involvement by the CIO in a program and the success of that program.

Moving forward, agency officials in the next Administration should develop ways to continue the FITARA integration. Not only do the FITARA provisions improve the management of IT programs, but they also increase the security—cyber and physical—of essential technological platforms.

Much of the political will to make reforms to the defense procurement and acquisition process has been mustered by House Armed Services Chairman Mac Thornberry, R-TX.; Ranking Member Adam Smith, D-WA.; Senate Armed Services Chairman John McCain, R-AZ.; and Ranking Member Jack Reed, D-RI. In March of 2015, Chairman Thornberry introduced H.R. 1597, Agile Acquisition to Retain Technological Edge Act, after gathering input from defense contractors, industry professionals, and DoD employees.[xlvii] Co-sponsors Thornberry and Smith have commented that the DoD's broken acquisition system—filled with failures to deliver promised capabilities, schedule delays, and weapons costs overruns— has contributed to the loss of our military's technological edge. H.R. 1597 aimed to eliminate outdated regulations and Congressional reporting requirements, improve accountability, and streamline the process to make it easier for the Pentagon to obtain new technology to counter 21st century threats.

Referring to H.R. 1597, Thornberry said the bill was intended as a discussion draft designed to begin debate before the NDAA mark-up. The clauses within the bill fall into four main categories: people, acquisition strategy, simplified decision-making, and streamlined regulations. Specifically, some of the clauses within the bill include extending the DoD's Workforce Development Fund; making "Other Transaction" (OT) authority permanent;[xlviii] requiring that programs develop a formal written acquisition strategy which would include specifics such as how to mitigate risk, choose the appropriate type of contract, and decide whether multiyear procurement would be appropriate; simplifying the chain of command for acquisition decisions; reducing the regulatory burden on the acquisition community by eliminating unnecessary requirements and paperwork;[xlix] and raising the Simplified Acquisition Threshold (SAT).[l]

Thornberry believes there is a direct link between acquisition and personnel reform. A change in culture which emphasizes enhanced training and workforce development will streamline the entire process. The bill strengthens the "dual-track career path," which would allow military personnel to pursue a primary career in combat arms and a secondary career in acquisition. Most importantly, the bill aims to "empower Pentagon program managers: give them the tools and authority to manage the process; provide training on the ethics of military-industrial relations; and hold them accountable if they fail to deliver a program on time and on budget."[li]

Overall, H.R. 1597 gained bipartisan support in Congress and within the Obama Administration and Pentagon, yet criticisms of the bill remain. The bill stated that acquisition programs must have a strategy, but the majority of programs already do. Rather than focus on a strategy, critics argued that the bill should have attacked the root of the problem: budget constraints and instability. Many procurement personnel are unable to develop strategies due to questions regarding their budgets going forward.

On multiple occasions Chairman Thornberry has stated his desire to make DoD the "fastest integrator of commercial technology" in the Federal Government. Yet within H.R. 1597, commercial off-the-shelf technology (COTS) is only mentioned in the context of business

systems. Despite the Chairman's rhetoric, COTS was not mentioned in the scope of weapons development, and the bill fails to identify incentives needed for decision-makers to use COTS.[lii]

Additional criticisms of H.R. 1597 stem from the Weapons Systems Acquisition Reform Act of 2009, which introduced mandatory competitive prototyping and reinforced the roles of the Deputy Assistant Secretary of Defense for Developmental Test and Evaluation (DT&E) and the Deputy Assistant Secretary of Defense for Systems Engineering (DASD (SE)). Requiring multiple competitive prototypes helps the government and vendors to better understand the practical application of requirements, but it is much more expensive and not necessarily worth the extra cost compared to a paper proposal. The Thornberry legislation would make competitive prototyping an option and would empower the program managers to choose whether competitive prototyping was appropriate or not.[liii] H.R. 1597 would reduce the power of the two Deputy Assistant Secretaries as language within the bill alters their role in the "acquisition process from approving or disapproving test plans to merely advising the Milestone Decision Authority for the program."[liv] Critics have stated that this shift could result in more programs moving forward without comprehensive plans for systems engineering or developmental testing. Even with these criticisms of the bill, however, supporters of H.R. 1597 believe the legislation could lead to legitimate cultural and procedural reform within the Defense Department.

2016 NDAA

The National Defense Authorization Act (NDAA) of 2016 outlined a process to reform the Pentagon's broken acquisition system, and included many of the proposals introduced by Chairman Thornberry. However, the NDAA "contains language that would shift to the service chiefs, secretaries and acquisition executives program management authorities now held by the Under Secretary for Acquisition, Technology and Logistics (AT&L). The biggest change McCain is proposing…would make the service acquisition executives the milestone decision authority for non-joint weapon programs transferred to or started under service control."[lv]

Supporters of the language stated that these changes were not meant to attack Under Secretary Kendall, but would "decentralize" the management of major weapons programs and allow for acquisition officials to focus on big-picture strategy. Additionally, provisions within the NDAA were structured to keep the Secretary and service chiefs more informed about the progress and problems of a program. Although the service chiefs are not directly made into program managers, this language would make these officials more accountable for their weapons programs, and it would increase incentives to complete a program on-time and on-budget. Participants at roundtable sessions raised concerns about whether an increased emphasis on the role of the service chiefs would distract from the ability of the Secretary of Defense to address concerns about procurement culture and to develop a strategic approach for the acquisition of platforms and services.

Critics of these Congressional reform efforts worry that these bills would introduce unnecessary regulations and requirements. Pundits have pointed to past reforms, including the Packard Commission and the Weapons System Acquisition Reform Act of 2009, as well-intentioned efforts that nevertheless added layers of oversight instead of addressing basic problems. Project roundtable participants stated that inefficiencies within the overall process are more cultural than procedural. As a result, the Federal Government should refocus its efforts on developing a positive relationship with industry, rather than reinforcing bid protests and a risk-averse culture.

_H.R. 4741_

The Acquisition Agility Act, sponsored by Chairman Thornberry, builds upon many of the clauses within H.R. 1597 and focuses upon speeding up the development of weapons platforms and streamlining the Pentagon acquisition bureaucracy. The bill would require all major defense acquisition programs (MDAPs) beginning after October 1, 2018, "to be designed and developed with a modular open system architecture."[lvi] Considering that the current procurement and acquisition process lacks the ability to deliver advanced technology to the military in an acceptable timeframe, developing a platform designed to incorporate modular components would allow for it to be rapidly upgradeable. H.R. 4741 mandates that the Pentagon work with industry to develop "standards-based interfaces that allow system components to plug and play across weapons systems, and use standards that are commercially based to the maximum extent practicable."[lvii]

The bill encourages the prototyping of new technology and requires the development of a three-year strategic plan for prototyping; semiannual reports to Congress; and the formation of prototyping oversight boards within each service branch. "Prototyping efforts are generally restricted to a three-year duration and to cost no more than $25 million. The bill creates authority to move quickly into production on prototypes that prove successful by streamlining contracting and creating special transfer authority to provide funding."[lviii] Chairman Thornberry believes this flexible funding will allow for small- and mid-sized companies to compete against larger firms for projects.

In addition, this bill would grant the armed services more authority and accountability over their own projects and shift power from top Pentagon bureaucrats and members of Congress. Importantly, the services would have more leeway to fund technological upgrades to their platforms without Congressional permission.

H.R. 4741 was rolled into the NDAA for FY2017 during the House Armed Services Committee markup in May.

Introduced in April of 2016 by Chairman Thornberry, H.R. 4904, the National Defense Authorization Act for FY2017, addresses a wide range of topics including procurement and acquisition reform. Many of the proposals within the bill move to decentralize the acquisition system, which include "transferring Milestone Decision Authority (MDA) for joint programs from AT&L to the military services starting in FY2020; allowing the Office of Cost Assessment and Program Evaluation (CAPE) to approve independent cost estimates (ICEs) performed by the military services, rather than conducting its own ICEs; and requiring the military services to determine…that program requirements are 'necessary and realistic' before submission for approval before the Joint Requirements Oversight Council."[lix] The $610 billion defense policy bill passed the House in May.

Chairman of the Senate Armed Services Committee John McCain introduced S. 2943, which passed the chamber in June. Compared to the House proposal, which includes significant alterations to acquisition policy, S. 2943 represents a complete overhaul of the entities within DoD that manage and oversee acquisition. This proposal would eliminate the office of the AT&L—including the assistant and deputy assistant secretaries—and would shift offices, authorities, and responsibilities of the AT&L to various entities. S. 2943 would establish the Under Secretary of Defense for research & engineering (R&E), who would be responsible for promoting defense technical innovation and interrelated organizations, such as DARPA and the Strategic Capabilities Office; create "a new position, the assistant secretary of defense for acquisition policy and oversight, which would be established under the R&E, with [the] responsibility for 'setting defense-wide acquisition and industrial base policy and overseeing the development of weapons and national security systems by the military services'"; [and] "the remaining authorities and responsibilities from AT&L, focusing on key acquisition and business functions, would be moved under the purview of the soon-to-be-created Under Secretary of Defense for Business Management and Support, which builds off a new office scheduled to stand up in February as a result of provisions included in the FY2015 NDAA."[lx] As the AT&L position was created to unify the management of the full acquisition lifecycle in a single chain of command, there are unknown implications to the diffusion of the roles and responsibilities of the AT&L.

In addition to changing the acquisition management structure, S. 2943 expresses a formal preference for fixed-price contracts; establishes a financial penalty for cost-type contracts in some instances; and creates an approval mechanism for cost-type contracts over $5 million. Finally, the bill reduces "regulations on the classification and purchasing of commercial items…and improving rapid acquisition authorities, as well as rapid prototyping and fielding processes."[lxi]

Even though the House and Senate have passed their respective bills, the provisions concerning procurement and acquisition reform could be altered through floor amendments and conference negotiations.

REPORT CONCLUSIONS & OBSERVATIONS

Overall

- Conclusion 1: The primary purpose of this report is not to weigh the various procurement reform proposals now being proposed in Washington, D.C. Given the frequent dysfunction in the current system, the temptation on the part of both Executive and Congressional leaders to propose sweeping reforms is understandable. However, many roundtable participants agreed that past procurement reforms, even when made with the best of intentions, have often had an unforeseen and negative impact on government procurement and the procurement culture. There is no doubt that the current procurement culture needs to change, but reforms need to be very carefully thought through. Reform for the sake of reform, or to simply give the appearance of action, could make an already dilatory government procurement system even worse. Wherever possible, it is recommended to look anew at authorities and procurement tools that are already in place, but are too often underutilized or misapplied.

- Observation 1: Beyond executive action and legislative reforms, the broader issues regarding culture require a longer-term approach that addresses the role of procurement staff and the incentives that influence them. Leaders in government procurement should empower both program managers and procurement officers to take reasonable risks in procurement decisions. Greater attention must also be paid to recruiting and sustaining a balanced procurement workforce that combines the energy and tech-savvy of new professionals with the institutional memory and expertise of more experienced workers. Only a procurement workforce that combines energy and tech literacy with experience will be able to adequately keep pace with rapid changes in technology and the ever-greater reliance on modern IT and cyber capabilities in government systems.

- Conclusion 2: The procurement process is now bedeviled by the proliferation of protests to contract awards. This reinforces an antagonistic and legalistic culture in both government and the private sector, and unnecessarily delays procurements. While bid protests can be an important tool when there is a clear failure or mismanagement of a contract award, they cannot continue to be a routine part of "doing business" in the procurement space. Furthermore, this proliferation of protests has incentivized the use of LPTA contracts, as it limits the grounds for contesting a decision. Instead of structuring the contract to avoid protest, policymakers must foster better communication between government and contractors to explain the outcome of a procurement decision, as well as incentives and penalties that discourage frivolous protesting of decisions.

Executive Branch & Federal Agencies

- Observation 2: Within Federal Agencies, it is important that, from the highest levels of leadership downward, procurement is seen as an integral part of that agency's mission. Too often, procurement is viewed as an activity that is separate and apart from an agency's core function, when in fact it is central to every government organization's success. Only by making a flexible and innovative procurement system a top priority will agency leadership deliver successful outcomes to their customers, and, ultimately to the taxpayer.

- Observation 3: A "mission-oriented culture" would necessarily reduce the adversarial relationship that exists between government and private sector contractors (see case studies on Skunk Works and US Special Operations Command, pages 22 and 26, respectively). Too often, rules designed to ensure fairness and transparency are interpreted in a way that prevents necessary communication between government and the private sector. For both government and private contractors to successfully execute the mission, leadership within agencies must encourage dialogue that complies with legal standards, while also allowing for the free flow of information and ideas needed for program success. This allows procurement teams to discuss current problems and consider solutions that are available or under development by the contractor. Such open dialogue can improve articulation of the contract's requirements and better inform the contract award process. Once a contract is awarded, there needs to be a strong partnership between government and industry for the successful execution of the program.

- Observation 4: A "mission-oriented culture" must also foster cooperation and dialogue between the program manager and contract officer. Throughout the process, communication between the program office and the contract office can ensure that requirements are properly written, bids are thoroughly evaluated, contracts are correctly structured, and outcomes are successfully managed. Too frequently, private contractor proposals disappear into a contracting office for extended periods, leaving the program manager and his team, as well as the companies bidding on the work, in the dark about decisions and timelines. Therefore, a program manager should be empowered with the flexibility to modify contract scope and/or task orders without the burden of canceling and reissuing contracts. The contract officer should support the program manager to this end, and, thus, share in the responsibility for the mission outcome.

- Observation 5: The procurement workforce has shrunk over the past ten years—in some estimates by as much as twenty percent. As a result, expertise has been lost, and fewer contracting officers have been left dealing with a greater workload. At the same time, perceptions of government work as overly bureaucratic have discouraged talented individuals from public service. In both the Defense Department and civilian agencies, it

is important that a procurement career track be fostered in a way that attracts and retains talented program officers.

- Conclusion 3: While the reduced procurement workforce has created a bottleneck in the contracting process, this does not necessarily mean that a larger procurement workforce is the solution. Instead, program managers should be given greater authority to modify task orders under an awarded contract, and well-trained, technically-proficient procurement officers should assist the program manager with the administrative tools necessary to achieve this flexibility. Simplifying contract processes and bundling various actions will also reduce the workload of contracting personnel by reducing the complexity of the process.

- Conclusion 4: Mistakes will happen, especially on programs with a high quotient of advanced technology and research and development. Such mistakes should be seen as a learning opportunity. While stewardship of taxpayer dollars requires a higher standard of accountability than that which exists in the private sector, agencies can still foster procurement cultures that reward innovation. The case studies of government success stories contained in this report offer ample proof of this fact.

- Conclusion 5: For many Federal Agencies, the indefinite delivery/indefinite quantity purchasing vehicles can be useful, as they streamline a complicated procurement process to efficiently deliver necessary goods and services. However, as the needs of Federal Agencies have evolved in response to technological innovations and societal shifts, a closer examination of these vehicles, specifically the Government-Wide Acquisition Contract (GWAC) structure, must be conducted. As with many aspects of the procurement process, there was good intent behind the use of GWACs. Yet amendments to this contract structure and its implementation have resulted in increased protests of task orders, over-regulated competition, and friction between the Federal Government and private sector. The utility of GWACs—given that they restrict contracting opportunities for an extended period of time, limit new entrants from contract competitions, and result in what some participants considered as frivolous bids by contractors—should be examined to determine potential reforms to the process.

Congress

- Observation 6: Just as Federal Agencies have seen a deep reduction in the number of procurement personnel, so too have many Congressional staffs responsible for oversight and procurement policy. Congress needs to better develop and retain staff with expertise in often complex and arcane procurement policy, recognizing the need for compensation at a level that reflects their importance in this critical area.

- Conclusion 6: As with many other positions in the Executive Branch, key procurement positions often remain unfilled or filled with "acting" leaders due to delays in the confirmation process. With respect to the Senate's responsibility for "advice and

consent," qualified and vetted appointees should receive prompt confirmation. Additionally, further examination of the rules surrounding vetting, the disclosure of conflicts of interest, and rules about time spent in government and the private sector must be reevaluated, as in many cases they discourage talented leaders from entering public service.

- Conclusion 7: There are good intentions behind proposals to fundamentally reform the procurement system, but there is a high risk of unintended consequences. Some experts are concerned about the current proposal to split the duties of the Under Secretary of Defense (USD) for Acquisition, Technology, and Logistics. Under this proposal, a USD for Research & Engineering would be tasked with technology policy and innovation, while a separate USD for Management & Support would tend to the more day-to-day aspects of Pentagon program management. Based on our roundtables and other discussions with acquisition experts, there are significant concerns about how this could further complicate an already byzantine procurement process. Such a split could increase conflicts between bureaucracies over which Under Secretary a particular program reports to, and when a program transitions from the R&D innovation phase to regular production. Arguably, the purpose of any efforts to reform procurement should be to foster innovation across the entire procurement landscape, rather than to bifurcate it further by separating research & engineering and management & support. Further discussion and examination of this proposal and other proposed reforms to procurement structures are necessary.

- Conclusion 8: While the decision to end earmarking reflects the current political environment, it amounts to an abrogation of Congress's constitutional and institutional prerogatives. It has shifted political risk for innovative programs away from Congress and to the Executive Branch, removing an important stakeholder from the process. While certain programs may receive Congressional buy-in through traditional appropriation and authorization processes, Congress must restore its ability to more broadly support innovative programs with the risk shared between the Legislative and Executive Branches. In addition to many of the political tools that restored earmarking would provide to legislators, it would allow for Congress to reassert its role in directly funding innovative research, advanced systems, and timely initiatives.

- Observation 7: In addition to budgetary uncertainty, Congressional oversight has long focused overly on procurement failures, rather than rewarding success in the procurement mission. While key Congressional leaders have quietly supported innovative procurement programs, Congressional attention is overwhelmingly focused on assigning blame after a program runs into trouble. Stewardship of taxpayer dollars is vital, but an innovative procurement culture also requires support and understanding from Congress.

- <u>Conclusion 9</u>: One of the key tools that Congress wields in procurement oversight is the Nunn-McCurdy structure for reporting project overruns and delays. While it is important for Congress to exercise oversight of programs that are over-budget and behind schedule, these tools must also take into account an increased reliance on innovative technology, research and development, and other mitigating factors. The concern is that program success or failure does not necessarily correspond with the traditional scheduling and cost estimates that were derived from building major platforms and weapons systems in the 1980s. A next generation Nunn-McCurdy might allow for tailored oversight, combined with a more nuanced appreciation of the nature of state-of-the-art acquisitions. One model may be the Federal Information Technology Acquisition Reform Act (FITARA), which streamlined IT acquisition management and procurement processes and created a "scorecard" to evaluate agencies' IT performance.

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FINAL CONCLUSION

The "business of government" cannot continue with a "business-as-usual" approach. For the increasingly advanced array of goods and services the government needs to procure, the current culture fails to provide the flexibility and innovation needed. When looking to the next set of reform efforts developed by policy makers and agency leadership, it will be important to include clauses pertaining to current economic and societal trends.

With an upcoming Presidential transition, there is an opportunity to set a new tone for how government does business, and to ensure that taxpayers receive both the best performance from government, as well as the responsible stewardship of their tax dollars. It is important for the next Administration to address obstacles hindering an efficient procurement process which involves reevaluating small business regulations, stressing information technology integration, and eliminating unnecessary bid protests into any reform efforts. Through the implementation of these structural reforms, which stress collaboration and competition, procurement personnel will be empowered to find innovative solutions to 21st century problems.

Most importantly, the President should work from the top down to set in place an innovative culture that stresses a "mission-first" mentality throughout the U.S. government. The Executive Branch can work in tandem with Federal Agencies to identify best procurement practices, which can be codified and proliferated throughout the Federal Government. In addition, Congress can address a range of false incentives that exist in the procurement process, while also strengthening its oversight role and restoring predictability to the budgeting process.

For the policy organizations examining the issues of procurement, it is important to continue the research in this area and understand how the rules put in place—and, sometimes more importantly, the perception of those rules—affects the procurement culture. "Reform for the sake of reform" may do more harm than good, and it may be better for policy tools to recommend a fresh look at existing capabilities and tools in place to improve procurement. Additionally, there must be continued examination of how the government can better meet the challenge of procuring innovative technologies, as well as the challenges posed for how current regulations affect the opportunities and desire for small businesses, innovative startups, and tech leaders to do business with the government.

There is a clear opportunity to implement a "better business of government" approach, and many of the tools to do so are already in place. The next President and Congress must do so, or risk perpetuating a procurement culture that will grow in complexity and inefficiency—with America lagging behind.

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