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Industry Study

Final Report

Private Sector Support & Services

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National Security and Resource Strategy

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ABSTRACT: The Department of Defense (DoD) spends over 50% of its acquisition budget on services, and contractors play a critical role in US military operations. This Industry Study Report finds that the Private Sector Support and Services (PS3) industry is robust and healthy, despite a recent tumultuous period of decreased demand, budget constraints, and market upheaval. While the DoD continues to refine and improve its acquisition of services, more work remains. This report assesses the PS3 industry, analyzes government policies and practices, and makes recommendations for continued improvement.

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Agility, Alexandria, VA
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Jeffries LLC, New York, NY
JF Lehman, New York, NY
Goldman Sachs, New York, NY
Leidos, Reston, VA
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INTRODUCTION

The private sector support and services (PS3) industry has been an indispensable component of the national defense apparatus since the nation's birth. While PS3 support to the Department of Defense (DoD) is not new, in recent decades the industry has taken a more prominent role in providing critical capabilities in support of our national interests. A 66 percent reduction in troop strength from 1990 to 2000, combined with demands from contingency operations in Iraq and Afghanistan, resulted in increased reliance on defense contractors.[1] Today, PS3 represents 46-56 percent of the deployed operational workforce, with more than 50 percent of the current DoD acquisition budget spent on the critical services they provide.[2] The DoD's heavy reliance on the PS3 industry is unlikely to change in the foreseeable future, and contracts for services will remain not only a critical component to expeditionary, stability, and reconstruction operations,[3] but also a key role in maintaining US preeminence in defense technology and battlefield dominance.[4] Recognition of this criticality is reflected in the previous Undersecretary of Defense for Acquisition, Technology and Logistics (AT&L) initiative to conduct an ongoing Sector-by-Sector, Tier-by-Tier analysis to inform its Annual Industrial Capabilities Report to Congress.[5]

This industry study report synthesizes information gathered from independent research, classroom instruction, domestic and international field studies, and interviews with US Government and industry representatives. It analyzes and assesses the health of the industry and its preparedness to meet both current and future needs of the DoD. The report defines the PS3 industry, assesses the current condition of the industry, addresses challenges faced by the industry, projects the short and long term outlook of the future health of the industry, analyzes the government's goals and roles, and provides policy recommendations. The report also includes essays on major issues within the PS3 industry and the DoD.

THE INDUSTRY DEFINED

The Private Sector Support and Services (PS3) Industry is not a well-defined industry such as shipbuilding, aircraft, or advanced manufacturing, but represents a broad range of services acquired by the military and other US government agencies. Under Title 10, United States Code section 2330, "contract services" is defined as "all services acquired from private sector companies by or for the Department of Defense, including services in support of contingency operations."[6] For the purpose of this paper, the term does not include services related to research and development or to military construction, but does include items covered under service contracts as defined by the Federal Acquisition Regulation.

The PS3 Industry covers a wide range of services from administrative to logistics to security personnel. On August 27, 2012, the Under Secretary of Defense for Acquisition, Technology, and Logistics [USD (AT&L)] issued a memorandum titled, "Taxonomy for the Acquisition of Services and Supplies & Equipment."[7] This memorandum outlined the Department of Defense's approach to services, organizing them into nine portfolio groups and 40 services portfolios (see Appendix A).

Firms within the PS3 industry are diverse. The PS3 firms range from government services divisions of large publicly traded corporations to small businesses. In addition to large firms with multi-billion dollar valuation and small firms qualifying under the US Small Business Administration, there is an extensive range of mid-sized companies. For the purpose of this report, mid-sized companies are those that are not "Big Five" companies, do not qualify for small business designation, and typically have a market value of one to two billion dollars.[8] Appendix A shows the portfolio taxonomy.

As discussed above, there exist nine broad groupings of services in which the PS3 companies operate. Many are tied directly to the maintenance, repair and overhaul of equipment, vehicles, aircraft and ships used by the US military and the various other government agencies in both contingency and peacetime operations. The firms that provide these services are not necessarily in competition with all other firms due to the wide specialization present across the industry. One firm could focus solely on transportation and logistical services while another could offer program management, strategic planning, and other similar professional services. Still others could provide security personnel guarding installations overseas.

CURRENT CONDITION AND HEALTH OF THE INDUSTRY

The PS3 industry supports our national military strategy and contributes to the health of the US economy. While the PS3 industry experienced significant transition in the past five years, the state of the industry is strong; among its strengths is a robust, fluid and mobile workforce. This section examines not only the PS3 workforce—the backbone of the service support industry—but also PS3 firms operating in the industry.

Current State and Health of the PS3 Industry

Within the diversified government services market segment, the presence of only one buyer, the USG, drives individual companies to engage in price-based competition, creating downward pressure on profit margins. The professional, scientific, and technical services sector comprises establishments that specialize in performing professional, scientific, and technical activities for others. These activities require a high degree of expertise and training and cover a wide variety of different knowledge based services (See Appendix E).[9]

Companies operating in the PS3 industry exist in essentially a three-tiered system: large firms, consisting of familiar names such as Booz Allen Hamilton (BAH), Science Applications International Corporation (SAIC), Leidos, and CACI International, Inc.; mid-sized firms such as Mantech, and small companies such as Itility. Although no definitive classification exists for what constitutes a mid-sized company within the PS3 industry, one possible definition provided by *National Defense Magazine* states that a mid-tier government contractor is "larger than government defined 'small businesses,' but having less than 1-2 billion dollars in revenue."[10] Small, non-employing firms (businesses with no paid employment or payroll, mostly set up by self-employed individuals) comprise over 80 percent of the market, with the remaining 20 percent ranging from mid to large companies. Given the large numbers of companies operating

in the market, market share for any single company is miniscule with the three largest service companies accounting for only 7 percent of market share.[11]

While many entities within the USG contract individually for services within the industry, all are representatives of the government. The PS3 industry represents a monopsony for the most part revolving around the USG as its sole customer. Accordingly, this industry is the quintessence of a monopsony. Each company within the industry must develop a business strategy that provides a competitive advantage to differentiate itself from its competitors.

This became increasingly important during sequestration, whereby Congressional spending limits were put in place, leading the USG to engage in contract services based on the lowest price technically acceptable (LPTA). This practice reduced the contractors' ability to: 1) invest in research and development (R&D); 2) provide professional training to its employees; and 3) reduce profit margins to the low single digits (See Appendix B). Consequently, while contractor profit margins were reduced, the USG failed to reap the anticipated savings due to diminished quality and efficiencies of contractor services.

Mergers & Acquisitions

Over the past five years, the Budget Control Act (BCA), as well as reduced forces in Iraq and Afghanistan led to reduced profit margins for PS3 companies. To mitigate the impact of these adverse conditions, many PS3 companies have merged and/or acquired other companies to attain innovation/obtain a competitive advantage. These mergers and acquisitions have led to some slight growth in the PS3 industry, even though concentration in the industry has been low. Additionally, establishment figures have grown more quickly than enterprises during this timeframe, indicating that some larger companies are purchasing smaller counterparts, folding them into their establishment portfolios, and eliminating existing enterprises (See Appendix G).

A good example of how PS3 companies can experience growth through mergers and acquisitions can be found in KBR's acquisition of Honeywell Technology Solutions, Incorporated. That acquisition enabled KBR to move into the higher-end technical services offering increased margins and lower risk.[12] This acquisition followed on the heels of KBR's acquisition of Wyle, Inc., during which KBR rebranded the company as KBR Wyle, creating a government services business segment specializing in technology- and science-driven sources of revenue.[13] ManTech represents an example of a services pure company that has achieved growth and expertise through mergers and acquisitions as opposed to organic growth.

In May of 2016 ManTech's acquired Ocean's Edge cyber capabilities business. ManTech had previously positioned itself as a provider of subject matter expertise in the fields of management consulting, engineering, and other complex services. The acquisition of Ocean's Edge now provides ManTech the capability to expand into the emerging and highly competitive cybersecurity and network administration market – a market in which ManTech had previously been unable to compete. Effectively, the acquisition of Ocean's Edge served as an R&D effort that grew a new capability for ManTech.

Industry Revenue

The PS3 industry is comprised of nearly 715,000 businesses. Additionally, between 2011 and 2016, the industry has experienced steady growth – from 173.7 billion dollars in 2011 to nearly 230 billion dollars in 2016. Over the next five years, revenue is projected to increase an annualized 2.4 percent to 258.5 billion dollars in 2021 (See Appendix F).

Key success factors for consulting companies are: 1) the ability to compete on tender (be competitive on price and services offered); 2) access to highly skilled workforce (must have specialized knowledge that relates to clients' operations); 3) access to niche markets (many firms maintain specialized skills to serve niche markets); and 4) having a good working relationship with subcontractors (ensure ability to surge while maintaining quality input that is on time and budget).[14]

Domestically, the companies in the PS3 industry primarily serve the DoD and other government agencies (See Appendix D). Some companies, such as BAH, derive almost all revenue from contracts with USG agencies. In FY16, this amounted to 97.7 percent of BAH's revenue. For CACI, 93.5 percent of its revenue came from US government sources, with a full 63 percent coming from DoD alone. This high dependency on the federal government revenue streams makes companies such as these vulnerable during times of budgetary constraint. This forced many companies in this industry to begin expanding their client portfolios, seeking private sector as well as international clients. Within the context of PS3 industry firms, larger companies who possess greater access to capital and who possess more attractive profitability prospects due to diversification in revenue streams are better able to endure the vagaries of DoD budget cycles.

One good example of this is Fluor, an American construction and engineering firm who had over 1.4 billion dollars in contracts with the US government in FY15. This amount seems staggering, but when compared to Fluor's total revenues of over 18 billion dollars, the amount is only 7 percent of Fluor's revenue stream. Fluor has partnered with foreign governments, including the United Kingdom, Canada, Azerbaijan, and the Philippines, to increase revenues and diversify their client markets.[15] Another example is KBR, with business operations in over 70 countries accounting for 57 percent of total revenue for 2015. While the United States is still their largest single market, accounting for 43 percent of revenues, the next three (Australia, Middle East and Europe) nearly match it with 41 percent.

It is not just domestic companies that participate in the PS3 industry. Companies such as Bollore-Africa, Sodexo, and Garda World provide personnel and services to USG agencies operating in Europe, Asia, Africa and the Middle East. Their international makeup and presence forward in regions vital to the national interests of the United States makes them invaluable partners in our operations across the globe. Similarly, companies such as Sodexo, headquartered in France, find the US market more appealing because of written regulations that make operating with the US easier to navigate and understand as relative to other countries. From logistics, trucking, sustainment operations and security personnel, the critical services provided are key

enablers that are not readily duplicated within the military system of the United States or by any other government agency.

The operational landscape has evolved considerably from the early days of the republic to the modern-day battlefields and hometowns that the PS3 industry now supports. From the start of the second Gulf War in 2001 to 2008, contractors from the PS3 industry have provided over 50 percent of the personnel on the ground in Afghanistan and Iraq. During this period, there was a sharp increase in PS3 contracts and higher profit margins. However, the 2011 BCA coupled with the drawdown in Iraq and Afghanistan led to a reduction in the number of PS3 contracts. These factors primarily impacted smaller PS3 companies while medium and large companies continued to see growth during this timeframe (See Appendix B). However, the Bipartisan Budget Act of 2015, along with projected normalization of DoD future budgets, has allowed for some recovery of contracts and profits throughout the entire PS3 industry.

PS3 contracts are now an invaluable and irreplaceable part of how the government conducts business. With smaller civil service and uniformed military workforces, the USG relies heavily on contractors to provide much needed services to deploy, sustain and employ our fighting forces and diplomats worldwide. The DoD has recognized the importance of PS3 contracts and contractors and responded with the Total Force concept. The DoDI 5124.09 defines the DoD "Total Force" as Active/Reserve military, DoD civilians, contracted support, and host nation support personnel. The recent changes to instructions and doctrine incorporate contractors has early as Phase 0 operations and reinforces the use of PS3 contractors through all five phase of operations.

This support is not simply the large, well-known pieces of military hardware such as carriers, submarines, fighter jets and tanks that the average person on the street probably knows about, but also includes the beans and bullets, and uniforms and laundry facilities used by our Soldiers, Sailors, Airmen and Marines each day. Contracting service and support from private sector businesses benefits the government in the long run by reducing costs for hiring, training, and maintaining civil service or uniformed personnel to accomplish the same tasks. Anywhere our troops deploy and operate, support contractors are there as well. The PS3 Industry fills a vital role, supporting the USG while adding billions of dollars per year into the economy.

CHALLENGES

In today's fiscally constrained environment, challenges abound for the defense services market. Fully 53% of contracting dollars ($143.1B) were spent on services in FY15 – more than ships, aircraft, ammunition or other weapon systems combined (See Appendix D). During the course of the Private Sector Services and Support (PS3) industry study, several key themes and associated challenges were voiced by Government agencies, industry, financial analysts, and academia. Shortcomings within the Defense Acquisition System – specifically within the requirements generation process – hamper efforts to efficiently use scarce resources to contract for services. Further, the incorporation of contractors into the total force also represents a unique challenge when planning for contingency operations and subsequently executing Operational Contract Support (OCS) in support of combat operations.

Challenges in Generating and Defining Services Requirements

One of the single largest challenges facing the defense services industry from the government perspective is the ability to spend available contracting dollars both efficiently and effectively. Nowhere is this dilemma more pronounced than in the Defense Acquisition System (DAS) requirements generation and definition process. When looking at both current contingency operations and ahead toward future contingencies, it is apparent that contractor support will play a significant role in augmenting the DoD's organic capabilities. Consequently, the challenge in the realm of services acquisition will be for planners to incorporate requirements into campaign plans early – and find opportunities to synergize with other components/agencies to fuse requirements at a Joint level. To fuse service contracting requirements at a joint level, a culture change must occur. This change must seek to marry policy and guidance in such a way that it codifies agile, repeatable processes that enable robust and efficient contract execution. Moreover, it must engender a chain of command that possesses the necessary skills and abilities to review requirements and ensure maximum efficiency.

The DoD must undergo a culture change when it comes to services acquisition. A notable aspect of the needed change is the current lack of rigor applied to requirements development for service contracts. While DODI 5000.74 attempts to correct for this deficiency through the establishment of Service Acquisition Categories (S-CAT) and the Service Requirements Review Board (SRRB), the culture will not truly change until the DoD truly grasps how much of its resources goes toward the acquisition of services.[16] In FY15, the DoD spent $143.7B on services – 53% of available contract dollars.[17] That is more than the DoD spent on ships, aircraft, submarines, weapons and ammo combined during that fiscal year!

The DoD must apply the same rigor to service acquisitions that it applies to the acquisition of hardware platforms. From requirements generation and definition, to review boards overseeing the acquisition strategy, to teams responsible for implementing strategy, services acquisition cannot be treated as an afterthought. The need for a culture change is discernible throughout the acquisition process. However, to be truly effective, the change must begin within the operational community responsible for service requirement generation. To help achieve the desired culture change, policy and guidance must be updated to direct planners to look at services acquisition differently.

To deliver the needed processes, policy and guidance must be updated to include contractor support requirements in Theater Campaign Plans and an update to DODI 5000.74 to specifically address requirements development. Additionally, policy and guidance must do more than just ensure that services requirements are identified. Policy and guidance must also ensure that – to the maximum extent possible – joint requirements are merged to gain the maximum efficiency possible. The best way to accomplish this objective is through the establishment of a slightly different chain of command or review board than what is currently identified in DODI 5000.74.

Regulatory & Acquisition Processes Impeding Technological Innovation

For decades, the DoD's internal capacity to innovate exceeded that within the commercial sector and other nations around the globe. However, in recent years the velocity of technological change has outpaced the DoD's ability to maintain currency; as a consequence, the primacy of

our military is no longer unassailable. Indeed, the former USD (AT&L) noted the "technological superiority of the United States is now being challenged by our potential adversaries and we must turn our attention increasingly to our ability to innovate, achieve technical excellence and field dominate capabilities (See Appendix H)."[18]

In the past, the Department of Defense (DoD) was the principal source for discovering, incubating, and exploiting the innovative technologies that potentiated the prowess of the nation's military. However, senior leadership now concedes the locus of innovation has shifted from the government, particularly DoD; and leveraging commercial innovation will be key to continuing US military-technological preeminence.[19] This sentiment was corroborated by a RAND study that concluded DoD no longer dominates the market for information technology, research & development and systems.[20]

Some areas within the commercial sector and non-traditional government firms are reluctant to conduct business with the DoD. A 2012 study, commissioned by the House Armed Services Committee, illuminated the private sectors' disinclination to work with the DoD. The source of this resistance emanated from the following factors: complying with the large degree of federal regulations, expense of procuring government-unique accounting systems, a protracted procurement process, statutory limitations on profit and potential exposure of coveted intellectual property (IP) rights to governmental claims.[21] Multiple firms articulated these concerns throughout the completion of the industry studies. These factors represent powerful disincentives for private industry to transact with the USG; and consequently, limits the infusion of technological advancements from industry to the nation's warfighters.

OUTLOOK

Industry Support of National Security

For the past two decades the PS3 industry has been framed by a repetitive boom, bust, and normalcy cycle. This period began with a period of rapid growth during the Afghanistan and Iraq wars and is now punctuated by a slow return to steady state business cycles where industry firms remain cautiously optimistic. During the beginning of the boom cycle demand for services was high, and Congress supported robust Overseas Contingency Operations (OCO) funding. Congress also supported increased use of contractors in theater; eventually the contractor to service member ratio grew to three to one.[22] Industry revenues also grew as the US contracted everything from security services, to base support and maintenance, logistical support, transportation, training, intelligence, and communications during overseas operations.[23] Later, Congress implemented sequestration, defense budget caps, and decreased OCO funding as operations decreased and public pressure to reduce the deficit and debt mounted.[24] Although the PS3 industry experienced some decline, spending on services has been resilient; it declined less than spending on materiel, and research and development (R&D) and is currently enjoying slow growth.[25]

Impediments to Industry Achieving Capacity Potential

The 2015 Bipartisan Budget Act (BBA) gave the DoD budget a level of stability not seen in the recent past, providing the PS3 industry and investors clarity in government spending.[26] The PS3 industry self-corrected in recent years by realigning priorities, shedding less profitable business segments, and seeking more strategic combinations.[27] The industry consolidated through mergers and acquisitions, adjusted strategies, and innovative products and services development to meet new market needs (see Appendix C).[28] However, Congress and the DoD, concerned about competition, are enforcing stricter regulatory reviews, which may impact future market self-corrections.[29]

Short Term (1-5 Years) and Long Term Outlook (through 2030)

While the current trend of industry growth is expected to continue, the new administration's unconventional approach to traditional government practices has introduced a level of uncertainty regarding the short-term industry outlook. In recent years, the PS3 industry experienced market consolidation through mergers and acquisitions; this trend will continue.[30] The PS3 firms that endured this period of market upheaval and exist today comprise a solid core of very strong companies that are lean, well-run, and responsive to government needs (See Appendix G).[31] It is anticipated that the industry will continue seeing competitors partnering on contracts to realize mutual benefit among firms.[32] This partnership among competitors may dull the robust competition sought by the DoD, ultimately resulting in higher DoD PS3 spending.

United States discretionary spending and continued demand for PS3 from the US Government affect the long term outlook. The US economy has shown strong growth over the past year, unemployment rates are near record lows, and the economy is near full employment. With Republicans in control of both houses of Congress and the White House, it is possible there will be some movement on long continuous issues such as non-discretionary entitlements and the national debt and discretionary spending for defense and infrastructure.

The increasing trend in the demand for high tech skill sets will remain strong, as the US government continues to pursue points of relative advantage in the areas such as cyber defense and technologies necessary to implement its Third Offset strategy. Human capital may become the new limiting factor in the PS3 industry's ability to support the DoD, as competition for critical skills between the government and PS3 industry and private enterprise and commercial sector, drive up the cost of some services. Despite this competition for resources, the government's demand for the PS3 industry will likely remain strong.

Political / Social Factors

Threats to global security and US national interests range from state actors such as Russia, China, North Korea and Iran to non-state concerns such as international terrorism, transnational crime and cyber attack.[33] As threats in the volatile, uncertain, complex and ambiguous global environment emerge, the national security resource requirements change with it. The US must be prepared to take lead in the effort to provide the resources and innovative ways to address these threats, and the PS3 industry performs an integral role in this effort.

The PS3 industry is an integral part of the DoD total workforce in overseas operations for several reasons.[34] First, contractors are politically appealing because it prevents government insourcing or "big government." Second, deployed contractors reduce deployed troop strength requirements, which also enjoy popular and political support. Finally, contractor presence in operational areas is increasing among non-US Government clients, as more non-US Government clients are hiring private military contractors (PMCs) to protect their business interests, provide logistical support, and provide security.[35] These political and social preferences will remain for the foreseeable future, ensuring continued demand for PS3 industry capabilities.

Industry Positioned to Maintain Preeminence

The trend of the US government relying on the private sector to provide critical services in support of our national interests shows no sign of abating. The PS3 Industry will maintain preeminence by serving critical functions of the DoD, maintaining well run companies that evolve with new government needs, and maintaining a highly qualified workforce.

The DoD is incapable of conducting expeditionary operations without the assistance from private service contractors in numerous critical areas. For example, in 2007 over 190,000 contractors worked in Iraq on US-funded contracts; in 2008, the DoD spent around 316 billion dollars on contracted services, about as much as the total amount it spent on weapons systems and equipment; and in 2009, private contractors outnumbered military personnel in Afghanistan and nearly equaled the number of military personnel in Iraq.[36] The PS3 industry is critical to military operations, and this important role will continue for the foreseeable future.

PS3 firms maintain competitiveness by adapting to evolving technologies and services in order to meet new governmental needs. For example, PS3 firms such as ManTech understand the increased demand for cyber security, healthcare, and global environmental protections, successfully adapting its company to meet these new evolving governmental demands.[37]

The industry sustains preeminence by attracting and maintaining highly qualified human capital with specialty skills. The industry currently saves money by capitalizing on a veteran workforce that is trained by the military and knowledgeable about government needs. As the military continues to downsize, this skilled workforce pool will eventually decrease. The industry will need to strategically plan for new training programs in order to maintain a robust, high quality workforce over the long term.

GOVERNMENT GOALS AND ROLES

The US Government has several goals with respect to the acquisition of knowledge-based services. The industry responsible for providing these services to the US Government, its partners, and allies fulfill a critical role in enabling the government to achieve the principal objectives laid out in the National Security Strategy. These objectives include enabling security, prosperity, democratic values and international order. These goals are expressly laid out in the Federal Acquisition Regulations (FAR). Specifically, the vision for the Federal Acquisition System is to deliver on a timely basis the best value product or service to the customer, while maintaining the public's trust and fulfilling public policy objectives. Participants in the

acquisition process should work together as a team and should be empowered to make decisions within their area of responsibility.[38]

Periodic inefficiencies are an unavoidable consequence of a system which aims to leverage the acquisition process to attain public policy goals and objectives. For example, statutory goals are erected to ensure that small businesses retain a share of contracted work with the federal government. Some of the statutory goals established by federal executive agencies are: 23% of prime contracts for small businesses, 5% of prime and subcontracts for women-owned small businesses, 5% of prime contracts and subcontracts for Small Disadvantaged Businesses, 3% of prime contracts and subcontracts for HUBZone small businesses, and 3% of prime and subcontracts for service-disabled veteran-owned small businesses.[39] These goals sometimes lead to longer procurement cycles, and fewer economies of scale, however, they are essential to achieving specified policy goals of the US Government. Furthermore, these goals are consistently reinforced by policymakers as evidenced by statements made by the House Small Business Committee Chairman Rep. Sam Graves (R-Mo.) when he said, "the US Government must make meeting small business goals a priority because its efficient governance, and not just a law that makes small businesses feel good. Furthermore, improving small business opportunities through federal contracts creates jobs and saves taxpayer money."[40]

The range of the US Government's policy goals and objectives and its necessary impact on acquisition practices is both far reaching and varied. Many widely popular and highly cherished acquisition policy objectives and practices that are deeply ingrained into the US acquisition workforce are not universally shared by other democratic governments. One salient example of this difference occurs with one of the US Government's closest allies, the U.K., which practices a markedly different approach to defense acquisitions.

During engagements with the U.K. Ministry of Defense (MoD), the MoD discussed the merits and challenges of its public/private financing model that it has leveraged to achieve critical acquisition priorities. The U.K. model partners with large prime contractors, large businesses, and in some cases companies such as Leidos Inc., which control significant resources and who initially bear the predominance of the risk during the acquisition process. The U.K. MoD awards long-term contracts, some extending as long as 30 years, that focus on sharing risk with their contractors. Though most contractors typically resist accepting excessive cost, schedule, and performance risk without commensurate financial incentives, the considerable contract duration and contractor exclusivity involved in this method of procurement are factors which entice contractors into accepting disproportionate up front risk. Moreover, the fact the contracts are with the U.K. government allow winning contractors to attain more attractive financing rates than would otherwise be available through more traditional contracting approaches.

The U.K. model is not underwritten by statutory or regulatory requirements that obligate the use of small or medium sized businesses in government contracting nor does the Ministry track the use of small or medium sized business as subcontractors in government contracts. Conversely, the growth and health of small and medium sized businesses are factors important to the United States government due to the positive contributions these practices convey to the health and overall size of the US defense contracting industry. While there are advantages to the U.K. model such as shared risk between the U.K. MoD and industry, and improved overall

efficiency, the model is not well suited to the US market due to our desire to address policy objectives related to the growth and sustainment of our small and medium business enterprises.

U.S. Government Roles

Within the context of the procurement of knowledge-based services, the government has three primary roles; provide leadership, adequately prepare and train its personnel to carry out the goals assigned, and determine what functions can be contracted out and what functions must remain inherently governmental. By setting and communicating specific acquisition and policy goals, the US Government functions as a leader in directing the path and trajectory of the entire services industry. Many stakeholders follow the lead of the US Government and the industry benefits as a result. The Government's role in articulating direction and desired outcomes also mean that Government acquisition professionals, program managers, and requirement owners bear the cost of the inefficiencies occurring within the system.

Many of the priorities set forth by the US government entail the pursuit of public policy objectives via the Government's acquisition of goods and services. This marriage of policy and process often results in inefficiencies and suboptimal outcomes in the acquisition process. As a consequence, procurement actions often take longer, occur more frequently, and are more costly to deliver. This phenomenon is particularly evident in the acquisition of services, where requirements are often more challenging to define than is the case when acquiring finished goods.

The US acquisition process could benefit significantly from authorities which provide the ability to leverage large private commercial organizations who possess sufficient resources to take on increased levels of up front risk in return for long term contract agreements that provide long term, predictable, revenue. A potential benefit of implementing this model is the encouragement of industry firms to more widely invest in research, development, and innovation. These are outcomes US Government wants to achieve without sacrificing its public policy agenda.

Other targets for achieving desired outcomes in this space include increasing the capacity, capability, and stature of the acquisition workforce with emphasis on the procurement of services. The government can fulfill this role by assigning its most talented professionals to service based acquisition positions, and providing more robust training programs to its acquisition workforce. Additionally, operational personnel who leverage acquired services in support of their mission requirements must gain a greater understanding of the acquisition process to more effectively oversee contracted services. Essentially, operational personnel must become more sophisticated consumers with respect to knowledge-based services. A more educated customer will help improve requirement definition upfront, and quality of service on the back end.

Finally, and most importantly, the government must continue to fulfill the role of determining inherently governmental functions. This role is delineated in our most fundamental document, the U.S. Constitution. While the Constitution does not specifically identify the definition of inherently governmental, it does establish the foundational authorities to determine the responsibilities of the public and private sector in articles I and II. In the latest effort to carry this role out, the Office of Federal Procurement Policy (OFPP) published Policy Letter 11-01, in 2011, with the intent to define inherently governmental tasks. The policy letter states, the single

definition of inherently governmental is set for the 1998 Federal Activities Inventory Reform Act stating, "a function that is so intimately related to the public interest as to require performance by Federal Government employees."[41] Explicitly, OFPP Policy Letter 11-01 lists 24 items as examples of inherently governmental functions. These are "functions that require either the exercise of discretion in applying Federal Government authority or the making of value judgments in making decisions for the Federal Government, including judgments relating to monetary transactions and entitlements.[42] Thus far, the US Government has done well in this role and this area does not currently constitute an area of significant concern; however, this area requires continual examination as the role of contracting for knowledge-based services increases in the execution of the Department of Defense's mission.

The government has delineated goals for its workforce and the private sector. The goals include procuring knowledge-based services required to support the execution of mission tasks in support of the National Security Strategy, as well as implementing public policy and its agenda. In order for the goals set forth by the US Government to be achieved, the government must play three critical roles; provide leadership, adequately prepare its personnel to carry out the goals assigned, and determine what functions can be contracted out and what functions must remain inherently governmental.

ESSAYS ON MAJOR ISSUES

Essay #1: Lowest Price Technically Acceptable (LPTA)

Best Value Continuum

The DoD Source Selection Procedures Memorandum describes two acquisition processes, Trade-off and LPTA that may be used to craft a competitive acquisition strategy.

The Federal Acquisition Regulation (FAR) authorizes the trade-off source selection process to allow agencies the ability to select a contractor based upon quality factors such as past performance and technical expertise as well as cost. Dependent upon the type of acquisition, cost may or may not be the primary driver. For example, when requirements are well defined and easily obtainable, the risks are low and therefore support a source selection strategy focused on driving down cost. Conversely, when requirements are not well defined and the program is complex, these factors correlate with higher risk and thus necessitate a high priority placed on technical expertise and past performance. This process allows "trade-offs" on cost/price and non-cost factors in accordance with the FAR. It also allows the DoD to accept a higher priced proposal if the benefits of the higher price merit the additional cost.

It should be noted that "trade-off" as it pertains to source selections is often inappropriately used synonymously with the term, "best value" suggesting that LPTA source selections sacrifice value to obtain the lowest price. However, in accordance with the FAR, LPTA's may only be used when "best value" can be achieved from the selection of a technically

acceptable proposal with the lowest price.

While trade-offs are appropriate when the requirements are well defined, the FAR explicitly prohibits trade-offs during an LPTA source selection process. In an LPTA procedure, once the source selection authority has deemed the proposal(s) technically acceptable, he or she must make a selection based solely on the lowest price.[43]

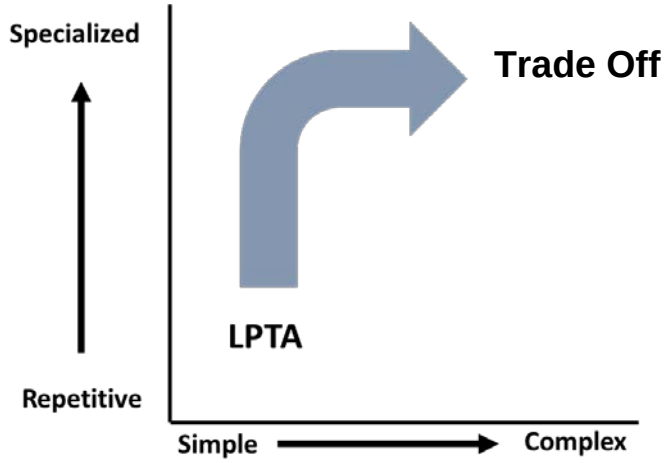
When is LPTA Appropriate

LPTA source selections and procurements are most appropriate for non-technical service contracts or commodities where they are an effective way of driving down costs. When combined with the proper contract type and healthy competition within the market industry, LPTA can provide the best value to the government.

The Under Secretary of Defense for Acquisition, Technology, and Logistics stated, LPTA source selections should only be used with DoD procurements that meet the following specific conditions:

1.) The requirements are well defined;
2.) The risk of unsuccessful contract performance is minimal;
3.) Price is a significant factor in the source selection; and
4.) There is neither value, need, nor willingness to pay for higher performance

In a separate interview at a Bloomberg Government event, the Under Secretary stated, "lawn mowing services are an excellent example of when an LPTA would be most appropriate. The DoD can adequately define the lawn mowing requirement, the risk of unsuccessful performance is low, there is little to no additional value from a higher performance than specified, and the price is a significant factor in the down select and award of the contract."[44] However, this example is the antithesis of how the DoD has used LPTA source selection over the past few years. The figure below should be referenced when contemplating source selection methodologies.



Advantages

There are several advantages associated with the LPTA source selection process. The first and perhaps driver behind this strategy is lower cost. Second, LPTA source selections are much simpler than trade-offs because contracting officers can identify all technically acceptable proposals, go through the list of proposals, and identify the lowest bidder out of the technically acceptable offers. There is no analysis of cost or performance trade-offs. This simple source-selection process also reduces the source-selection timeline, which might also fit neatly into acquisition leadership's objectives. Third, LPTAs processes are less prone to protest. This is because award decisions are based solely on price and involve minimal subjective source selection criteria. Finally, LPTAs processes offer clarity regarding decision justifications because judgements must be documented and explained during the source selection debrief.

Disadvantages

LPTA source selection popularity, misuse, and arguably abuse first arose as an overreaction to budget cuts imposed by sequestration and budget caps.[45] During these lean years, DoD procurement leaders overemphasized the importance of cost in the source-selection process, often to the detriment of technical performance. Historically, DoD's overemphasis on cost has resulted in industry being more aggressive at risk taking, and more willing to underestimate their cost of performance to be the LPTA low bidder during a source selection.[46] Ultimately, the expected savings are usually erased by cost overruns, contract modifications, show cause letters, and even contract terminations.

In addition, LPTA was also an easier and quicker process for evaluation of proposals because it made source selections more streamlined and avoided protests because proposals were evaluated on a pass/fail basis. With a government tendency to give every bidder a pass, the LPTA process mandates an award to the lowest priced offer assuming there was no adverse responsibility determination.

Since all bidders passed and the award went to the lowest priced offer, there was nothing for the losing bidders to protest. It would seem like the perfect approach to a procurement if you could ignore the fact that it stripped away performance innovation. As Mr. W. Allan Ballenger, Jr. of Engility stated, "[LPTA] has placed industry on a death spiral or race to the bottom to be the lowest priced offeror."

While it's true that LPTA procedures can drive down cost, industry has expressed serious concerns regarding the use of this methodology for complex services. In fact, the PS3 Seminar asked each company visited their opinion of LPTA source selections and the feedback from all companies was largely consistent. Companies stated that the pressure of price reduction will, eventually, result in lower quality delivered to the government. Recent industry reports support their concern stating, "an over-reliance on the LPTA approach may deprive the government of quality and value, resulting in increased overall cost in the end."[47]

LPTA Decision Criteria

The DoD must thoughtfully consider the effects of utilizing the LPTA methodology as a factor in source selection. There are many examples where pursuing a LPTA approach has created challenges for both the government and industry. The following factors must be incorporated as decision criteria when contemplating a LPTA approach.

1. Requirements definition – The government has historically done a poor job of developing solid statement of works when requesting complex services from industry. This has led to multiple change orders to contracts with each one driving up costs from the initial request for proposal (RFP).
2. Market Research – Evidence suggests that insufficient rigor has been apportioned to thorough market research in the LPTA environment. This has resulted in contracts awarded to companies that lack both the workforce and knowledge to deliver the services requested in the contract.
3. Workforce turnover – Contractors competing in a LPTA environment seek to drive down cost in order to remain competitive. Data suggests that many times, incumbent contractors underbid contracts by as much as 40-60% in the services industry. This cost savings is largely achieved by drastic reductions in salaries. The consequence of these behaviors is a flight of expertise and experience within the company. Costs are reduced but at the expense of losing experienced staff in possession of vital expertise. The most experienced staff members often opt to leave the company for higher pay in other firms. This leaves entry level and less skilled labor to fill the gap. The remaining workforce is often required to learn new skill while attempting to execute the basic job functions associated with their assigned tasks. This is an environment that is not conducive to optimal contract support.
4. Assessing costs – Many times the government uses rigid cost factors when assessing workload and the costs associated with the requirements. Government acquisition professionals must engage in more open dialogue with incumbents and industry participants to capture real world costs and align expectations with the funding necessary to accomplish contract requirements.

If all these factors are considered and thoughtfully planned, the requiring activity fully understands the impacts of using the LPTA methodology, and the requirements are simple and repetitive, then LPTA will serve the agency and taxpayers well.

Conclusion

Budgetary pressures shows no signs of easing. Therefore, seeking prudent measures for achieving cost savings wherever possible is everyone's responsibility. However, it is critical to consider the long-term costs associated with adopting the LPTA methodology for complex service contracts. Evidence from the previous eight years clearly indicate that LPTA is not a one size fits all solution. Specialized and complex services are better suited to a "Trade-off" source selection approach. By refusing to make distinctions between these two approaches, agencies risk substantial cost growth associated with exclusively pursuing an LPTA methodology.

This approach has proven to ultimately cost the government more money over time and deliver less capability to the warfighter.

Lt Col. William (Bill) Hunter and Lt. Col. Mike Scales, USAF

Essay #2: The Current Political Environment and its Effects on Department of Defense Service Support

The year 2017 has brought about undeniable and unexpected political change with the election of President Donald J. Trump. Within the first three months of taking office, the President created both change and uncertainty within the US government (USG) as well as private industry. Through the use of social media, executive orders, and formal public and intergovernmental engagement, the President and his administration have made it clear – they are going to change the way things are done in order to get the best deal for the United States and its people. But what does this mean for the USG, the Department of Defense (DoD) and its Private Sector Support and Services (PS3) industry?

As reported in an article by Federal News Radio in late February of 2017, "…services now make up the lion's share of what the Pentagon buys. In 2016, it spent $119 billion to procure products and $156 billion on services ranging from lawn care to complex information technology integration projects."[48] Despite these numbers, most acquisition reform has focused on material and platforms. As this fact becomes more widely evident and pressing, both Congress and the Executive branch must decide and act to refine and improve the acquisition and sustainment of services.

With a recently passed National Defense Authorization Act, the highest impact players for affecting any services acquisition reform are those within the Executive branch. It is likely that Congress will have higher national security and domestic priorities, as it attempts to overcome partisan discord to pass legislation. With Congress not focused on defense acquisition as its main priority, firms in the services industry will likely be relegated to using their influence with mid-level and senior acquisition officials who may not have the ability to make any significant change to existing policies and practices.

The President, who time and again, has stated that he wants the best deal, could serve as the driving force for a pragmatic approach to defense acquisition. He has made his intentions clear by calling out key defense industries on social media just before taking office. In shots at Boeing and Lockheed Martin over Air Force One and the Joint Strike Fighter, the President signaled his clear desire to reign in seemingly bloated costs for these national security platforms.[49] The President went so far as to state that he would "…personally negotiate the Air Force One price with Boeing" as a demonstration of his commitment to the "art of the deal."[50] Knowing that PS3 contracts have cost the government more than it spends on high-dollar platforms, it's a safe assumption that the President will have no problem taking the same approach to the services industry.

The President has appointed an equally no-nonsense Secretary of Defense. Former General James Mattis stands as the living embodiment of military pragmatism – a trait clearly favored by

the administration over bureaucratic prowess. With the reorganization of Acquisition Technology and Logistics (AT&L), and the establishment of two separate undersecretaries, one for research and engineering and another for acquisition and sustainment; Secretary of Defense Mattis has the ability to seize an initiative and institute meaningful change.

There is evidence that some resistance to significant or creative change within the DoD exists. It is unclear what recommendations the Section 809 Panel (named for the 2016 National Defense Bill that authorized it) will make. However it is clear that change will come from one of two groups – those who advocate for small refinements and validate the need for existing regulations, or those who see problems with some processes and regulations with strong advocacy for substantial pragmatic change.

With all of this in mind, the outcome will depend on which group gains or maintains influence within the DoD. The 809 Panel would be doing a disservice to recommend anything other than significant and creative acquisition changes, considering that both the President and Secretary of Defense demand a high level of accountability, efficiency and buying power in favor of the US government. All of these acquisition areas are lacking in some way within the defense services industry. The current political environment is ripe for impactful positive change, however the DoD institution may be the greatest challenge to achieving it.

LtCol. Michael P. Del Palazzo, USMCR

Essay #3: The Impacts and Applicability of Innovations within PS3 and the Military

The world environment; and the associated political, economic, and military landscapes have drastically changed as compared to the previous twenty years. Moreover, the changing landscape has often resulted in many countries aggressively pursuing avenues to gain comparative advantages (usually in reference to the United States) in both products and services via innovative technology. The United States has remained the world's dominant technological, economic, and military superpower, based largely upon a combination of its citizenry work ethic and a prevailing "spirit of innovation". But, can America's dominance, specifically in technology, continue even in this volatile, uncertain, complex, and ambiguous world environment? What steps should be taken to ensure innovative technology continues to promulgate throughout the commercial sector and the Department of Defense (DoD)?

Logistics

Logistics is the planning, execution and control of the procurement, movement, and stationing of personnel, material, and other resources to achieve the objectives of a campaign, plan, project or strategy.[51] More specifically, within the PS3 industry, logistics is closely aligned with Third Party Logistics (3PL). 3PL companies provide outsourced logistics services to clients. Operators typically provide integrated supply chain solutions, which include, but are not limited to, warehousing, forwarding, packing, consulting, brokerage and transportation documentation.[52]

The logistics sector is a profitable portfolio group, with expected revenues of $166.5B; and an associated projected annualized growth rate of 3.6% (years 2016-2021).[53] Innovations

within logistics, specifically, transportation and supply have the potential to increase industry profits and performance.

Transportation (Unmanned Aerial Vehicles)

Unmanned Aerial Vehicles (UAV) have primarily been used by the military for intelligence, surveillance, and reconnaissance (ISR) activities, and come in an array of sizes and configurations. Initially, the advantages of UAVs were its low cost (as compared to manned aircraft), and endurance capability. However, due to increase requirements and "mission creep" per unit and overall costs have increased. For example, the UAV "Global Hawk's" per unit cost is $211M, and its overall program cost has eclipsed $13B for the purchase of 66 aircraft. This amount now rivals manned aircraft program costs and resulted in two Nunn-McCurdy breaches.[54]

As mentioned above, UAV usage has occurred mostly within the military domain, while conducting ISR activities. There exist further opportunities to exploit the larger UAV's capability by using UAVs for cargo and maintenance parts resupply. The larger UAVs and drones could be outfitted with special attachments, or configurations, that would allow the UAV to pick up standardized (ISO) containers and deliver cargo longer distances, and at a faster rate than previous intra-theater methods. This employment concept may serve to reduce the number of convoy vehicles, vessels, and personnel on the roads/sea, and the time spent in hostile/enemy territory. Moreover, the UAV operators can program and accurately pinpoint the destination, and deliver the cargo anytime, anyplace, and under adverse conditions. UAV usage could drastically reduce the large signature of manned vehicles operating in/around base clusters. Finally, Special Operation Forces (SOF) may employ smaller UAVs or drones, which may be equipped with stealth technology, and rapidly deliver specific parts to operators within a specified area.

Transportation (Autonomous Vehicles)

An AV is described as a vehicle that can guide itself without human conduction; a driverless car, a robot.[55] The AV has similar capabilities to the UAV: AVs can travel in various weather conditions and terrain; and AVs utilize GPS technology to travel and arrive at multiple points of origin/destination. However, AVs differ from UAVs; wherein autonomous vehicles can be manned, while in transit, UAVs are not manned while in transit.

The current technology of AVs seemingly has more advantages in the commercial sector than the military domain: AVs have reduced energy use and fuel emission rates; and AVs have a reduced cost of "traffic congestion" (per individual), thereby, increasing passenger mobility/productivity.[56] The disadvantages of AV technology are applicable to both the commercial and military sectors of service: The AV has an expensive per unit cost, and due to its heavy dependence on wireless technology, is highly vulnerable to cyber-attacks.[57]

Though there are several disadvantages to AV usage, the benefits outweigh the disadvantages. There are several areas where AV holds potential for military applications. For example, a manned AV can drive itself to the destination, and while in transit, all passengers (Soldiers) can conduct environmental scans and provide convoy security. Users can pre-program AV to travel at various rates of speed while traversing known danger areas. In the event of an ambush, where passengers sustain injuries, the AV can to travel to the nearest medical-aid station.

These actions can occur without user input, thereby, allowing users to administer first-aid to the injured personnel while the AV is in transit.

Supply

Key innovations in the supply sector; specifically, in materiel handling and logistics (MH&L) used in the commercial market, are robotics, and three-dimensional printing/manufacturing. These innovations are important because each can be a major contributor to reducing manufacturing/repair parts processing times; thereby, improving responsiveness, and product inventory and availability rates.

Supply (Robotics)

Research indicates that only 15% of warehouses are mechanized, with the remaining 80%-85% operated manually.[58] An innovation that can bridge the gap between manual and robotic operations in warehouse/distribution centers is the "Effibot". The Effibot is a robotic logistic assistant that can transport up to 200 kilograms (~ 400 pounds); and is capable of automatic person tracking, on-land steering, and can be operated indoors/outdoors. An immediate advantage of the Effibot is the physical reduction of employees' exertion during lifting and transporting parts throughout the warehouse.[59]

The Effibot has applicability for military use. The Effibot, as it is similarly being used at Dalsey, Hillblom, and Lynn (DHL) Corporation, can follow Soldiers throughout the warehouse/distribution center and once repair parts loading has been completed, transport the parts to the drop-off point. Also, as the technology develops, personnel can incorporate the different robot types (e.g. multi pieces picker) to accomplish tasks.

Supply (Three-Dimensional Printing/Manufacturing)

Three dimensional-printing/manufacturing (3D); also, known as additive manufacturing (AM), refers to processes used to synthesize a 3D object in which layers of material are formed under the control of a computer.[60] Numerous industries currently use 3D printing/manufacturing technology including the medical, automotive, aerospace, and housing Industries.[61]

There are many benefits to using 3D technology in manufacturing; five prominent advantages are the following: a decreased time to get a product to market; reduced manufactured unit costs; increased product customization; and the ability to "fail fast for cheap".[62] The disadvantages to 3D printing/manufacturing are the fixed cost (the cost of the printer) and variable costs (labor and materials).

The 3D technology can be used by DoD and the US Department of Homeland Security, Federal Emergency Management Agency (FEMA). For example, units can deploy with the 3D printer and associated items (materials) and "print" (repair parts, prosthetics, small housing structures) on-site. This new capability can reduce resupply processing time, reduce inventory and associated delivery costs, and thereby, reduce the "logistics tail". Also, medical units would be able to print and customize items for use during medical emergency situations. In reference to FEMA, 3D technology could be used to manufacture (on-site) small affordable housing for displaced individuals during natural disasters.[63] Thus, the only limiting factor in 3D printing is the boundary of the person's imagination.

Medical

The medical industry, specifically telehealth services, is an expanding market with an expected annual growth rate of 39.9% (years 2015-2020); resulting in potential revenue in excess of $3B.[64] Telehealth service is defined as the use of electronic information/telecommunication technologies to support long distance health care, administration, and education; consisting of diagnosis, assessment, monitoring, and treatment. Innovations within this industry can have positive impacts toward budget reforms/reductions.

There are several medical innovations, both mobile and stationary, that have the potential to catapult quality health care services and increase industry revenue: the Tricorder, Vetigel, Vein Viewer, and Disinfectant Lightbulbs.

The above-mentioned medical innovations can have both positive and immediate impacts within the DoD domain. Medics and combat lifesavers in both garrison and combat environments can use the Tricorder. The device has the potential to reduce the lines and waiting time service members experience at garrison "sick-call", as well as the ability to provide immediate diagnosis and increase the time for further life-saving care. Finally, Hospitals could use the Vein Viewer and Disinfectant Lightbulbs to monitor injections, and continuously destroy/prevent bacteria and its growth, respectively.

Cyber

The PS3 industry has increased its usage of web services, cloud servers, and internet activities. The increased use of wireless technology has also increased the opportunities for persons/corporations/nation-states to engage in nefarious activities; stealing technical and financial information, in order to gain competitive advantage and increase world prominence. Thus, to counter these security breaches, many firms are investing resources into Information Technology (IT) Security Consulting. IT security includes passive (defense) and active (offense) security measures. This industry has a projected growth rate of 5.7% for the next five years (2016-2021); resulting in expected revenues totaling $15.3B.[65] There are numerous innovations within this industry that can serve as the basis for huge gains and growth; specifically, Block Chain technology and Biometrics.

Cyber (Biometrics)

Another significant cyber innovation is Biometrics technology. Biometrics is described as the measurement and analysis of a person's unique physical or behavioral characteristics (e.g. fingerprints, voice patterns) as a means of identification and verification.[66] This technology is not new, and has been in use since the 20th century. Also, the technology is incorporated in multiple industries, including finance and DoD, to verify transactions and data.

DoD currently uses Biometrics via the issuance of Smart Cards. As technology evolves, biometrics use within DoD will increase; whereby, the Smart Card will no longer be needed. Verification and operation of major systems will be done by combinations of retina, fingerprints, and voice recognition.

Challenges

Several organizations both within and outside the government investigate and provide funding for innovative products and services; particularly as it relates to or may have applicability to national security or the military (e.g. Defense Advanced Research Agency (DARPA)). However, the challenges that DARPA and similar organizations experience include the following: timely delivery of the innovation (i.e. inordinate amount of time from concept acceptance/contract award to product development); organizational and/or program culture; and established rules, regulations, and taxes.

Inherent within the seemingly excessive amount of time used during the concept to final development and product delivery phases, is the Defense Acquisition System process; specifically, the requirements determination phase. A proposed method to minimize requirement changes, promote clarity and understanding of government requirements is to have the program lead write and submit a draft Request For Proposal (RFP) to the appropriate industry clients and schedule time wherein each client can consult the lead for clarification on program requirements.[67] This method, though tedious and time consuming (per the program lead's perspective), facilitates/promotes a transparent process (contract award and process/product development); and ultimately fulfills DoD's requirements.

Another challenge that may impede innovation is the culture surrounding program acquisition. Program or organization leaders may have the correct innovative product, rules, and strategies to ensure successful implementation; however, if the people within the organization do not believe in the product's worth or perceive that they are valued, the innovative product will never be developed. During a recent industry visit, leaders and classmates remarked that the military services often do not place its "best and brightest" officers and civilians on its programs. This could have significant impact upon product development, as a leader's lack of understanding or education could affect crucial and innovative products/services resourcing or development. Organizational leaders can resolve this impediment by screening potential leaders for each program and establish a system that equitably awards leaders (regardless of program size) with schooling and promotion (where applicable).

The final impediment to innovation may be established rules, regulations, and taxes. This challenge along with industry "barriers to entry" are usually beyond the scope of DoD, and require congressional legislation to change. However, the above-mentioned impediments are within the scope and responsibility of DoD, and if implemented, may positively impact growth and decrease the amount of time innovative products move from concept through development and delivery.

COL Farrell Duncombe, USA

Regulatory & Acquisition Processes Impeding Technological Innovation

For decades, the DoD's internal capacity to innovate exceeded that within the commercial sector and other nation's around the globe. However, in recent years the velocity of technological change has outpaced the DoD's ability to maintain currency; as a consequence, the primacy of our military is no longer unassailable. Indeed, the former USD (AT&L) noted the "technological superiority of the United States is now being challenged by our potential adversaries and we must turn our attention increasingly to our ability to innovate, achieve technical excellence and

field dominate capabilities."[68]

In the past, the Department of Defense (DoD) was the principal source for discovering, incubating, and exploiting the innovative technologies that potentiated the prowess of the nation's military. However, senior leadership now concedes the locus of innovation has shifted from the government, particularly DoD; and leveraging commercial innovation will be key to continuing U.S. military-technological preeminence.[69] This sentiment was corroborated by a RAND study that concluded DoD no longer dominates the market for information technology, research & development and systems.[70]

Some area within the commercial sector and non-traditional government firms are reluctant to conduct business with the DoD. A 2012 study, commissioned by the House Armed Services Committee, illuminated the private sectors' disinclination to work with the DoD. The source of this resistance emanated from the following factors: complying with the large degree of federal regulations, expense of procuring government-unique accounting systems, a protracted procurement process, statutory limitations on profit and potential exposure of coveted intellectual property (IP) rights to governmental claims.[71] Multiple firms articulated these concerns throughout the completion of the industry studies. These factors represent powerful disincentives for private industry to transact with the USG; and consequently, limits the infusion of technological advancements from industry to the nation's warfighters.

Congressional leaders have acknowledged the imperative to rapidly reconstitute the warfighters technical superiority. In Section 845 of the FY16 National Defense Authorization Act, Congress equipped the DoD with multiple approaches to rapidly acquire cutting-edge research & development and rapidly prototype innovative commercial technologies that can enhance the nation's security capabilities.[72,73] One authority that has proven effective in allaying industry's trepidations while speeding the insertion of innovative technological advancements into the DoD is Other Transaction Authority (OTA).[74]

OTA is a special acquisition authority granted to federal agencies to accelerate obtaining cutting-edge research and development (R&D) or prototypes from commercial entities or non-traditional government contractors. OTAs provide procuring agencies greater flexibility as the resulting agreements are not subject to the Federal Acquisition Regulation (FAR), Agency supplements and laws that are applicable to traditional procurement contracts, grants or agreements. Via OTA, procurement officials are vested with the flexibility to craft unique, non-standard, fully customized agreements to alleviate industry's concerns associated with IP, Cost Accounting Standards, statutory limitations on profit & FAR clauses. Additional benefits of OTAs include: exemptions from DCAA audits, streamlined transition from concept development to fielding of prototypes; and awards cannot be protested to the Government Accountability Office (GAO).[75] This flexibility has proven successful in attracting a greater pool of small businesses and non-traditional contractors as it eliminates many of the disincentives associated with government procurement. With the abovementioned impediments removed, the DoD is afforded expedient access to the innovative solutions, cutting-edge research & development and technological advancements residing within the commercial and private sectors.

OTAs have demonstrated great efficacy in garnering private sector support to accelerate fielding of critical capabilities to the warfighter. Three examples evince the power OTA has in expediting the acquisition of revolutionary commercial solutions that enhance our national defense. The Army has successfully leveraged OT authority to accelerate the development and deployment of cutting-edge sensors, communications and electronic solutions to the warfighter.[76] Utilizing the flexibilities of OTA, multiple efforts exceeding $50M have transitioned from

conceptual / exploratory initiatives to competitively awarded projects within 90 days![77]

Similarly, In-Q-Tel leverages OTAs, to identify and invest in companies developing nascent, cutting-edge technologies that enhance U.S. national security. To date, In-Q-Tel has engaged with more than 90 companies and delivered more than 130 technology solutions to the Intelligence Community.[78] In-Q-Tel is leveraging its existing relationships and applying its investment approach to solve DoDs most challenging problems.[79]

Finally, the Defense Innovation Unit Experimental (DIUx) recently initiated a pioneering Commercial Solutions Opening (CSO) initiative. CSO's purpose is to solicit and award OTAs to access and leverage the enormous amount of commercial research and development (R&D) investment; and quickly access cutting-edge technology from nontraditional vendors.[80] DIUx opened its CSO in June 2016 and three months later, had awarded 12 OTs totaling ~ $36M. These awards took an average of 59 days to complete - from a company's initial submission of a solution brief to the awarded OT; with the first award being made in as little as 31 days![81]

In today's world of dynamic change, acquisition officials must pursue and embrace procurement practices that optimize DoD's ability to identify, rapidly acquire, and deliver innovative solutions for those at that the tip of spear. While OTA is not the panacea to rectify all aspects of the government's existing acquisition process, the DoD should considering expanding its use to acquire critical private sectors solutions to reconstitute the military's technical superiority.

Mr. Brian Walters, Dept of the Air Force

CONCLUSION

The last 15 years saw a boom-to bust-to normalcy cycle occur in the PS3 industry. The PS3 industry is currently experiencing a period of normalcy which is framed by cautious optimism. This renewed optimism comes as a consequence of the new administration's indication that it desires to significantly increase military spending. This has somewhat been filled by the recently passed budget bill which saw defense spending increase by $12.5B

This current environment of normalcy was preceded by the period in 2011-2012 where operations in Iraq and Afghanistan were reduced and in which sequestration and the BCA caused significant market disruption. Since 2015, a relative state of normalcy ensued, as DoD requirements and budgets have become clearer.

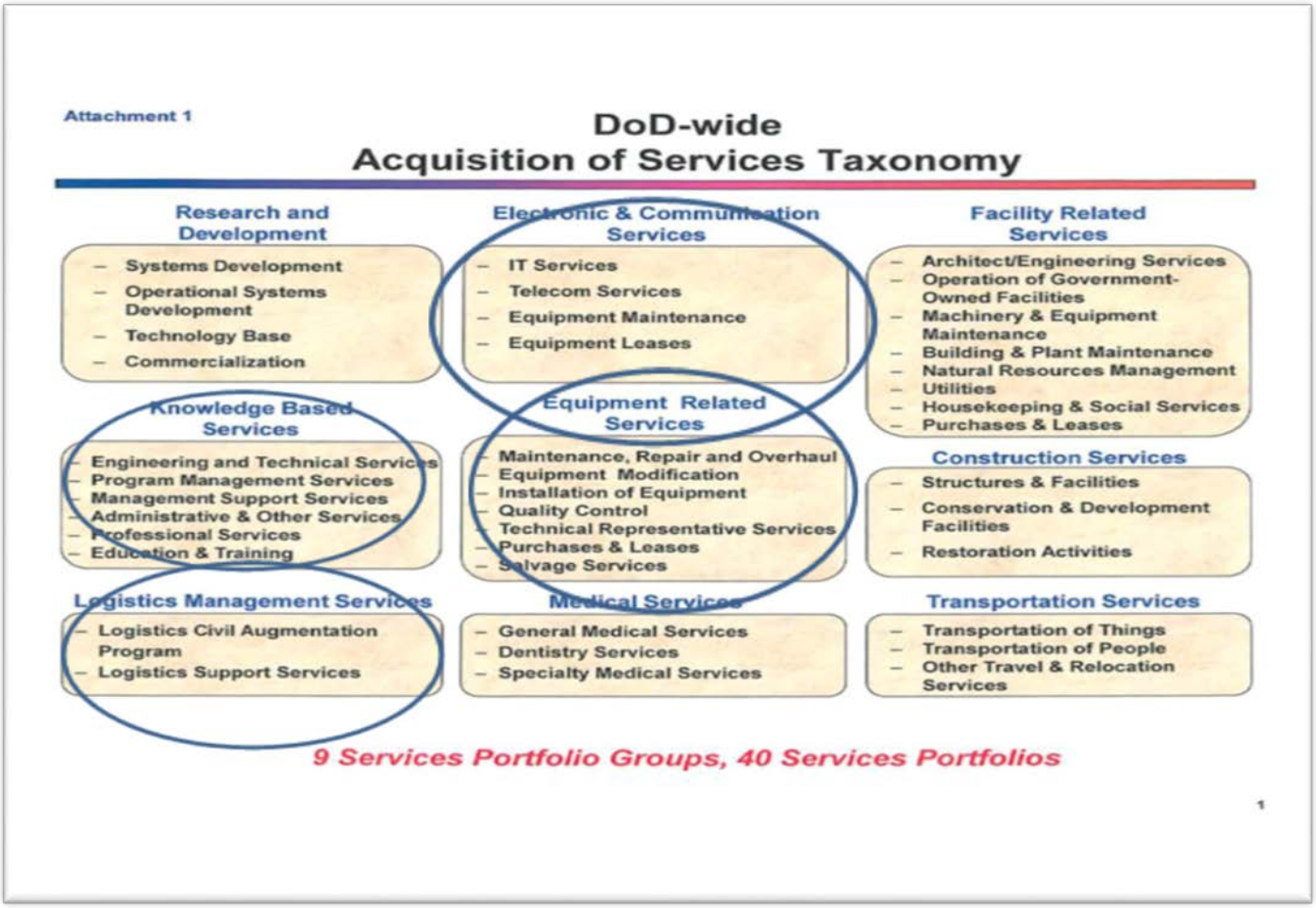
This market cycle caused several significant events: a period of enhanced mergers and acquisitions in the PS3 industry, and the emergence of strong PS3 firms enduring this disruption; an era of cost-conscious acquisition of services by the DoD, with cost playing a larger role; sharp competition within the industry for fewer contracts, resulting in adjustments by the PS3 industry with partnering and sub-contracting practices increasing; and cultivation of new opportunities within the PS3 industry, notably in cyber and health care. Throughout this time, the DoD continued to normalize and institutionalize its processes in OCS, improve requirements development, and evolve its acquisition strategy for service contracts.

The PS3 industry is strong, but must continue to evolve in order to meet market demands. Government acquisition of services and OCS management is vastly improved, but these

improvements are incomplete and must continue. It is imperative that both the DoD and the PS3 industry evolve to meet new challenges, capitalize on new opportunities, and communicate clearly with one another.

APPENDICES

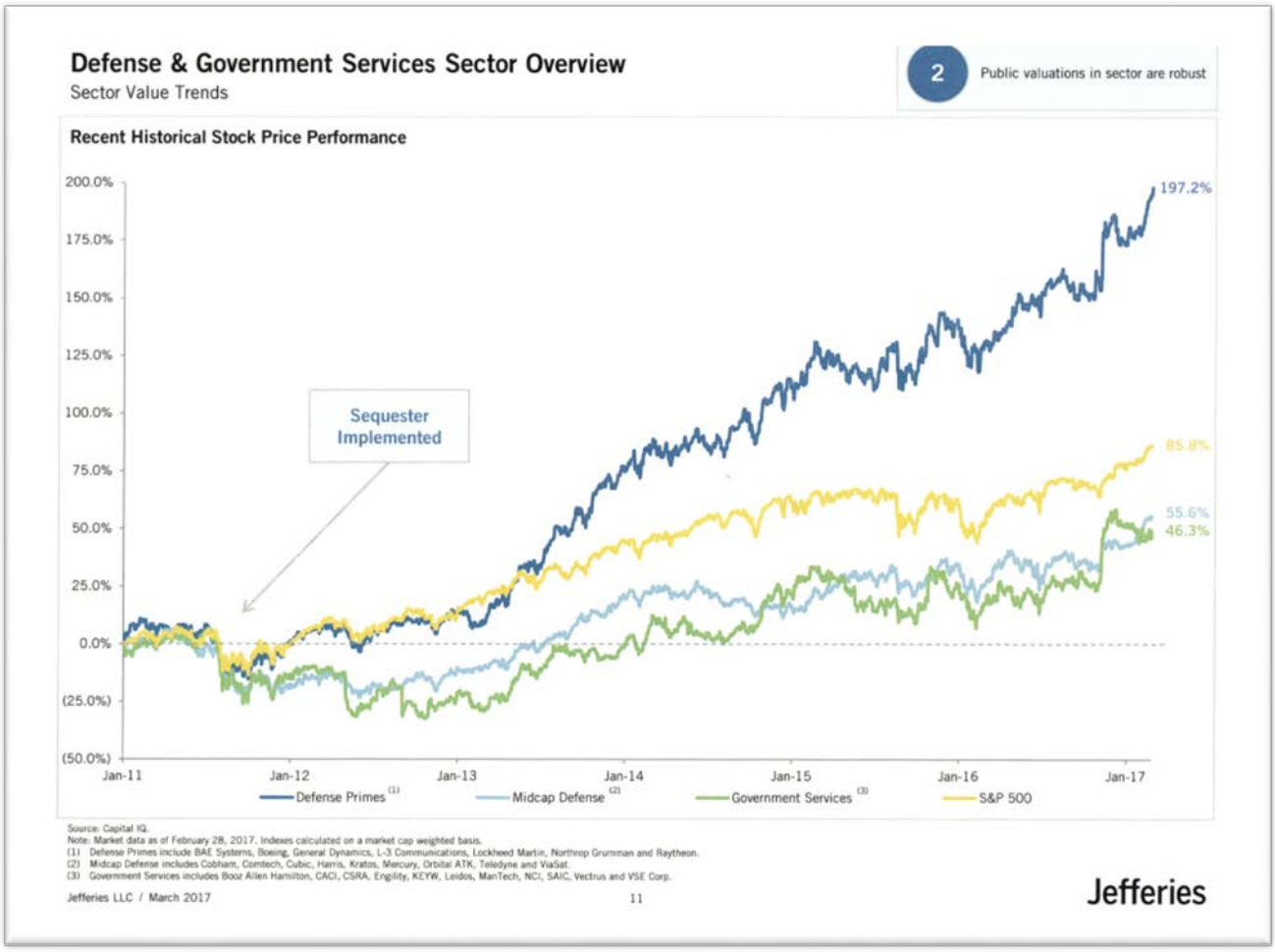
APPENDIX A



DoD-wide Acquisition of Services Taxonomy

(Attachment 1 to the USD(ATL) Memorandum, dated 27 August 2012, Subject: Taxonomy of Services and Supplies & Equipment)

APPENDIX B



Five-Year Comparison of Stock Price Performance between Defense Primes, Mid-Cap Defense Firms, Government Services (i.e., PS3 firms), and the S&P 500

(Information from Jeffries presentation to the PS3 Industry Study, 17 March 2017)

APPENDIX C

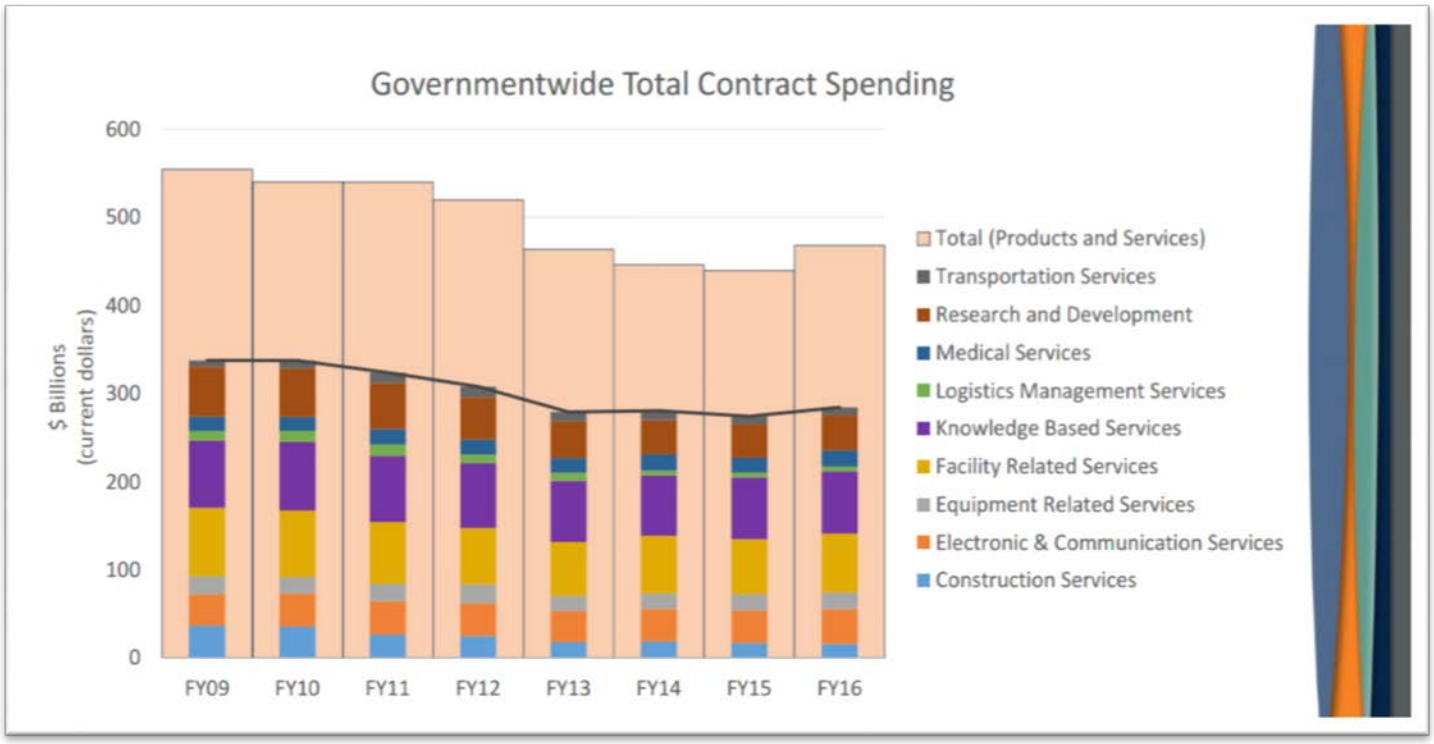
Recent Transactions

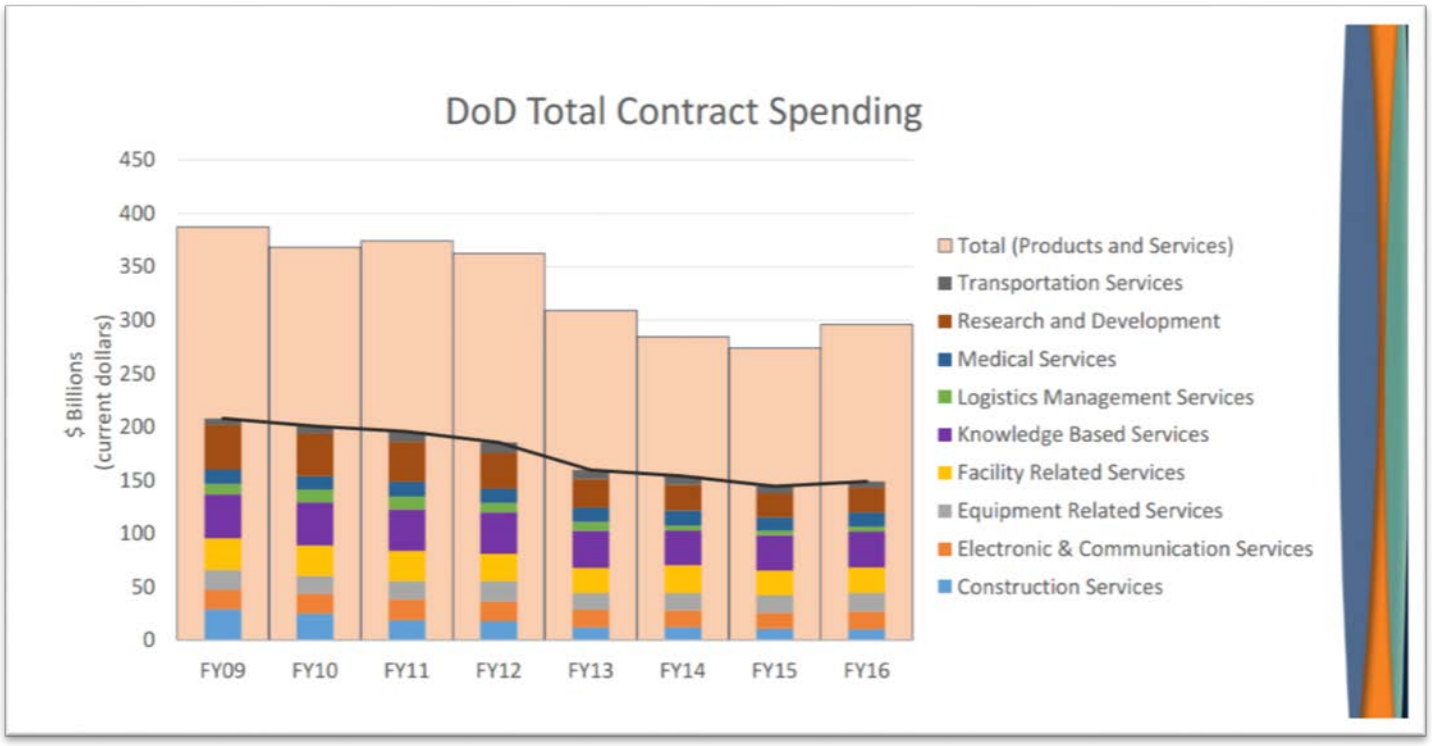
Announced	Acquirer	Target	Transaction Value ($/£ M)	EV / LTM EBITDA	Description
Feb 2017	MDA	DigitalGlobe	$3,600	9.0x	Leading global provider of high-resolution Earth-imagery products and services sourced from its own satellite constellation and third-party providers
Feb 2017	Aerojet Rocketdyne	L3	15	NA	Provides a variety of suborbital launch vehicles, payloads, and launch services, also develops and integrates ballistic missile targets and mission planning
Feb 2017	BAE Systems	IAP	NA	NA	Engineering company focused on the development and production of electromagnetic launchers, power electronics, and advanced materials
Jan 2017	Veritas Capital	Harris Services Business	$690	~8.5x	Provides IT and engineering managed services to U.S. government agencies across the space, intelligence, civil, healthcare and defense sectors
Jan 2017	Security	MISS	NA	NA	Provides tailored, private armed and unarmed security services focused in the Mid-Atlantic region
Jan 2017	LLR partners	BLUVECTOR	NA	NA	Cyber security business that utilizes machine learning to provide network-based advanced threat detection
Dec 2016	HDT	DRS Technologies Env. Systems	NA	NA	Manufactures rugged and transportable mobile enclosures, environmental control units, power generators and other ground support systems
Dec 2016	Teledyne Technologies	e2v	£625	10.9x	Designs and manufactures technology for high performance systems and equipment for healthcare, industrial, and aerospace applications
Nov 2016	Huntington Ingalls Industries	Camber	$405	9.2x	Provides engineering and technical services, cyber operations technology, mission critical support services, and training solutions
Oct 2016	DigitalGlobe	the radiant group	$140	NA	Provides technical solutions and systems engineering and services to defense and government sector
Sep 2016	L3 communications	Implant Sciences	NA	NA	Develops, manufactures, and sells sensors and systems for the security, safety, and defense industries
Sep 2016	Apollo	constellis	NA	NA	Leading provider of operational support and risk management services to government and commercial clients worldwide
Aug 2016	L3 communications	micreo	NA	NA	Designs and manufactures microwave, millimeter-wave, and photonic products for commercial, telecommunications, and aerospace applications
Jul 2016	KBR	Honeywell Technology Solutions	$300	7.1x	Leading professional, technical and mission support services organization providing an array of mission-critical services and customized solutions
Jun 2016	AAR	SPACEMAX	NA	NA	Produces high-tech, hard-wall, rapid-deployment mobile shelters used in commercial, military, and humanitarian operations
Jun 2016	ACP	EOIR	NA	NA	Provides state-of-the-art technology solutions to the Department of Defense and Intelligence Community
May 2016	ManTech International Corporation	oceans edge	NA	NA	Leading provider of cyber network operations solutions critical for U.S. cyber operations and cyber defense

Recent Mergers and Acquisitions in the PS3 Industry

(Information from Jeffries presentation to the PS3 Industry Study, 17 March 2017)

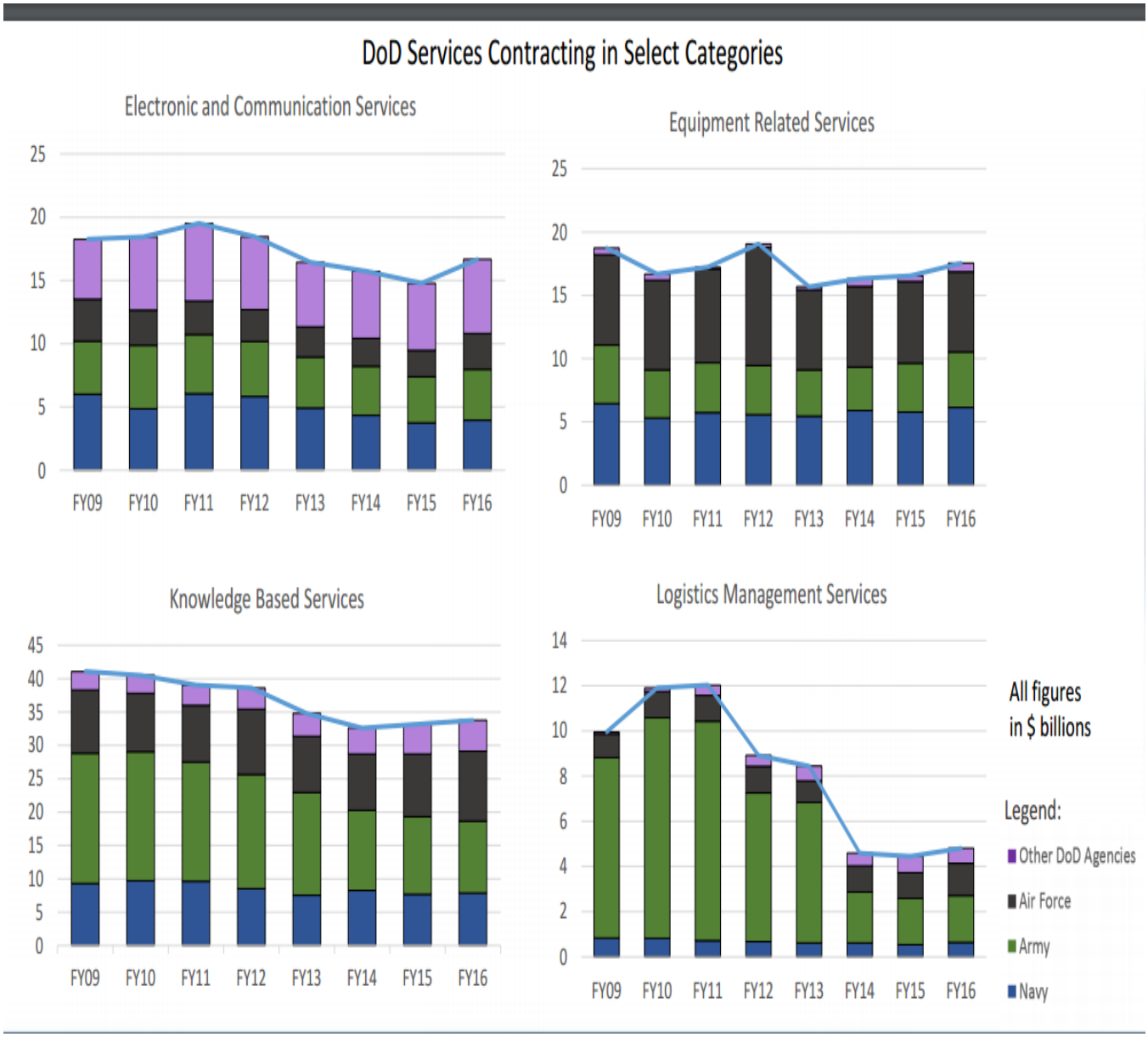
APPENDIX D





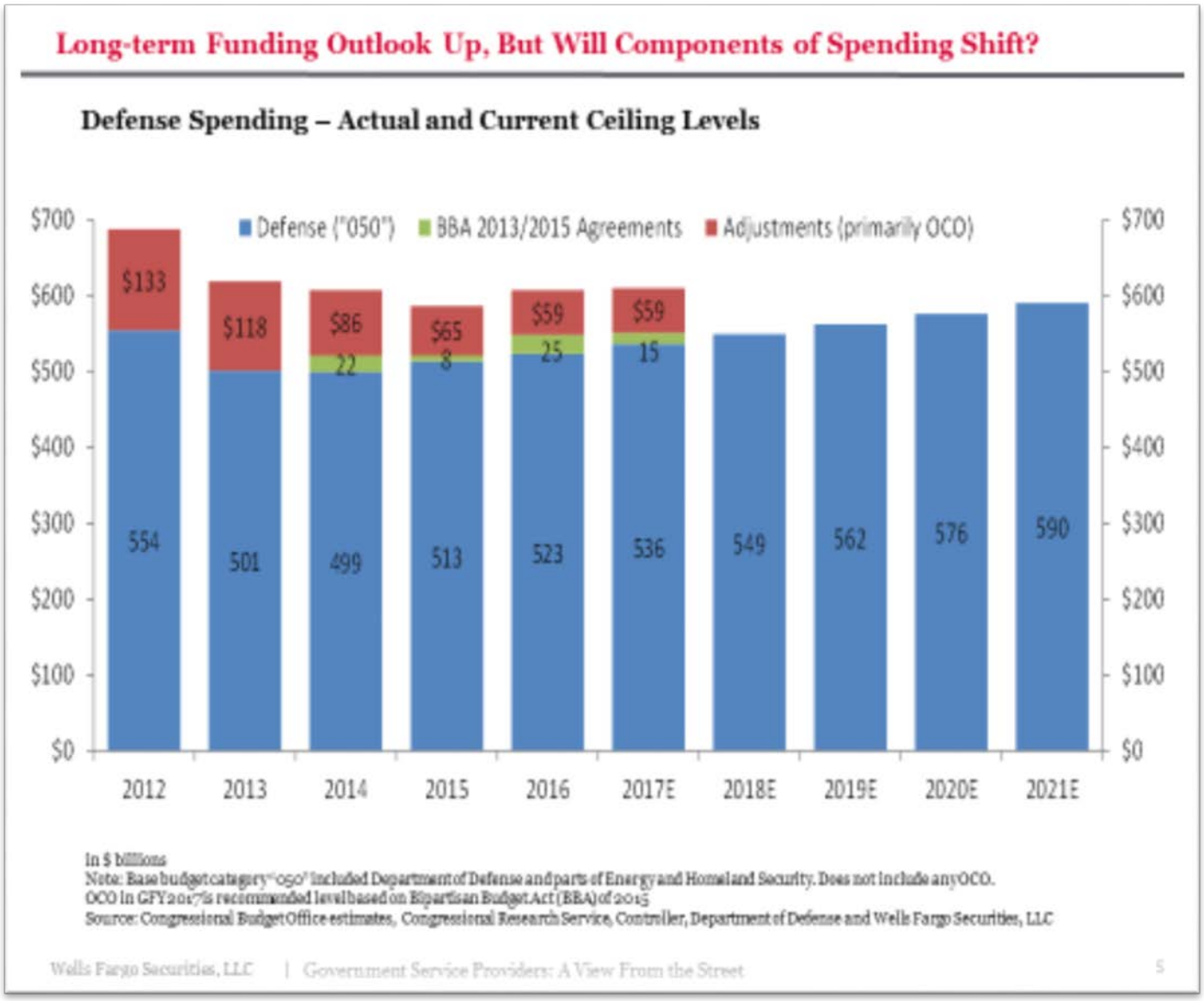
Government wide & DoD Total Contract Spending
(Information from David M. Wennergren presentation to the PS3 Industry Study, 19 Jan 2017)

APPENDIX E



Government wide & DoD Total Contract Spending
(Information from David M. Wennergren presentation to the PS3 Industry Study, 19 Jan 2017)

APPENDIX F



Long-term Defense Funding Outlook
(Information from Ed Caso Managing Director, Equity Research Wells Fargo Securities, LLC - 21 March 2017)

APPENDIX G

The Market: "Designated Survivors"

We see the emergence of seven government service providers with $5 billion+ in revenue

Will the benefit of size carry through to results? Or offer an opportunity for smaller peers?

Name	Ticker (if public)	Revenue ($ in billions)	Period	Operating Margin
LDOS	LDOS	$10.3	CY17E	9.1%
GD IS&T	GD	9.2	CY16A	10.8
NOC IS	NOC	6.0	CY15A	10.5
Booz Allen	BAH	5.6	CY16A	8.1
CSRA	CSRA	5.0	CY16A	11.1
SAIC	SAIC	4.5	CY16E	6.3
CACI	CACI	4.2	CY16A	7.2
KBRwyle (+ Honeywell)	KBR	2.5	NA	NA
Englity	EGL	2.1	2016 Guide	NA
Accenture Federal Services	ACN	2.1	FY16	NA
PAE	Private	2.0	NA	NA
DynCorp	Private	1.9	2015A	NA
ManTech	MANT	1.6	CY16A	5.7
BAE I&S	BAE	1.6	NA	NA
CGI Federal	GIB.A	1.4	CY16A	NA
Vencore	Private	1.2	NA	NA
Vectrus	VEC	1.2	Guide	3.75
ICF International	ICFI	1.2	CY16A	7.1
Harris	HRS	1.1	FY17 Guide	12.5
NCI	NCIT	0.3	CY16E	6.6
KEYW Holdings	KEYW	0.3	2016 Guide	NA
Total		65.4		

Note: All estimates are Wells Fargo Securities, LLC estimates

Note: KBR data per August 2016 management presentation; BAE and PAE per articles in Washington Business Journal (in April 2015 and June 2015, respectively); Vencore per Washington Technology article in July 2014)

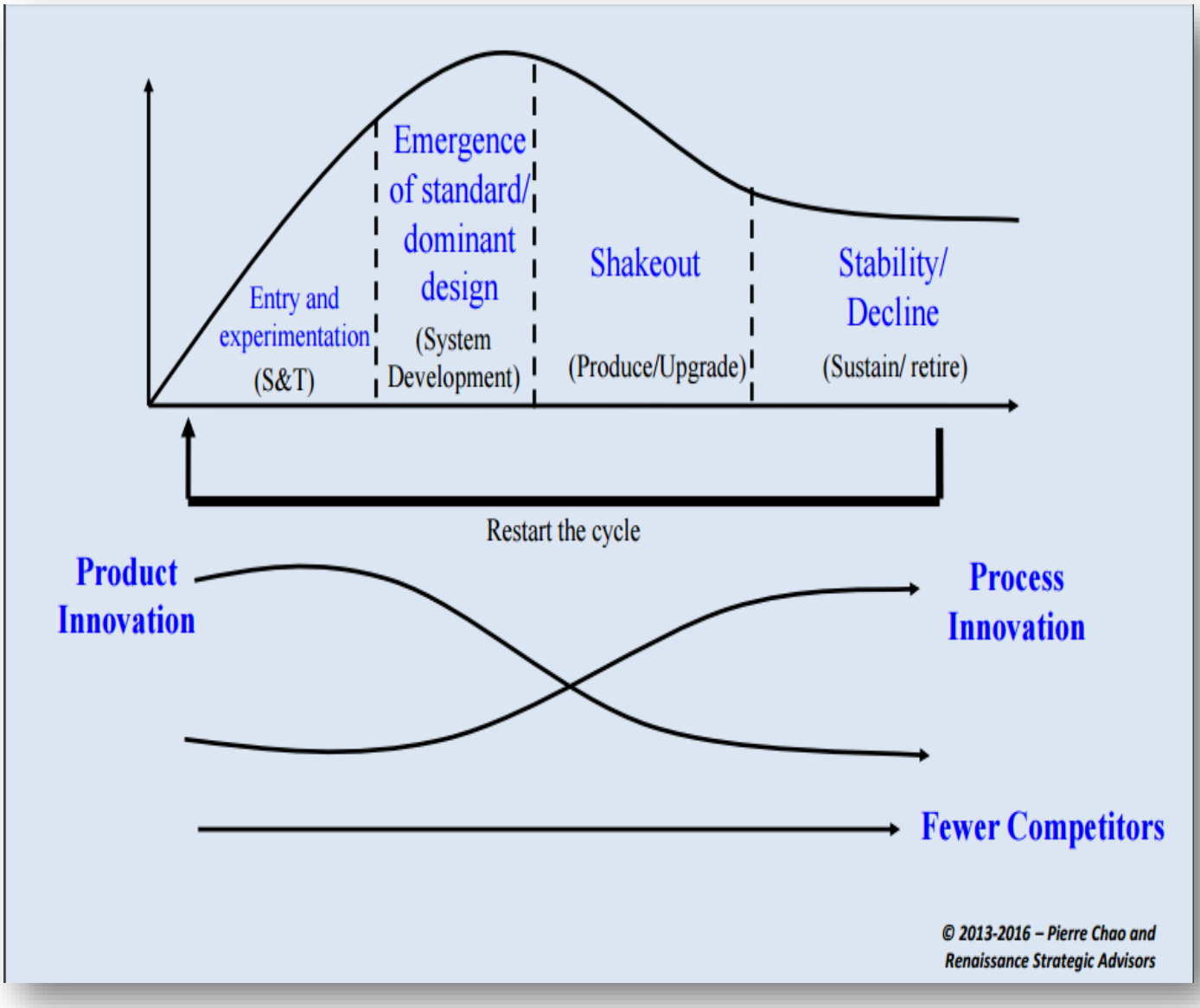
Note: Guide figures represent the midpoint of guidance

Source: Company data and Wells Fargo Securities, LLC estimates

Wells Fargo Securities, LLC | Government Service Providers: A View From the Street 18

(Information from Ed Caso Managing Director, Equity Research Wells Fargo Securities, LLC - 21 March 2017)

APPENDIX H



The Lifecycle of the technology/industry sector

(Information from Pierre A. Chao, Renaissance Strategic Advisors - 12 January 2017)

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