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**Managing the Service Supply Chain
in the Department of Defense:
Implications for the Program Management Infrastructure**

27 November 2007

by

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Abstract

The services acquisition volume in the US Department of Defense (DoD) has continued to increase in scope and dollars in the past decade. In fact, in recent years, DoD has spent more on services than on supplies, equipment and goods, even considering the high value of weapon systems and large military items. In our previous exploratory research on the challenges and opportunities in service supply chain in DoD, we concluded that although the DoD spends more on acquiring services than goods, the program management infrastructure for the acquisition of services is less developed than that for the acquisition of products and systems.

In this paper, we present the findings of our current research that continues our exploration in the area of services acquisition while it focuses on the implications of applying a program management structure to services acquisition. After discussing some continuing issues in services acquisition, we develop a conceptual model of a service lifecycle that can be used to analyze and design DoD's services acquisition process. We also discuss the program management approach, identify basic project management concepts, describe how these concepts are being used in the acquisition of defense weapon systems, and recommend how they can be adapted in the acquisition of services in DoD.

Keywords: Service Supply Chain, Services Acquisition, Service Lifecycle, Project Management, Program Management



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1.0

Introduction

The services acquisition volume in the US Department of Defense (DoD) has continued to increase in scope and dollars in the past decade. In fact, even considering the high value of weapon systems and large military items, in recent years, the DoD has spent more on services than on supplies, equipment and goods (Camm, Blickstein & Venzor, 2004). The acquired services presently cover a very broad set of service activities—including professional, administrative, and management support; construction, repair, and maintenance of facilities and equipment; information technology; research and development, and medical care.

As DoD's services acquisition volume continues to increase in scope and dollars, the agency must give greater attention to proper acquisition planning, adequate requirements definition, sufficient price evaluation, and proper contractor oversight (GAO, 2002). Recently, the Director, Defense Procurement and Acquisition Policy (DPAP) has identified inappropriate use of services contracts in the DoD (Director, DPAP, 2007, March 2), and is taking action to improve contracting for services throughout the Department (Director, DPAP, 2006, August 16).

In our previous exploratory research on the challenges and opportunities in the service supply chain in DoD (Apte, Ferrer, Lewis, & Rendon, 2006), we concluded that although the DoD spends more on acquiring services than goods, the program management infrastructure for the acquisition of services is less developed than that for the acquisition of products and systems. In many service acquisition programs, a trained and dedicated program manager and program management team does not exist, and the services contracting officer becomes the de-facto program manager.

The lack of a developed program management infrastructure for the acquisition of services is a critical research finding that warrants further study.



Review of the current literature shows that the use of a well-defined, disciplined approach and infrastructure for the management of projects is critical for a project's success in meeting cost, schedule, and performance objectives (Kerzner, 2006). In the absence of a well-defined management infrastructure, project teams are left to create an ad-hoc approach to managing the project. Based on our exploratory research, we believe that this is the current situation in many DoD services acquisition programs. Both the lack of a well-defined program management infrastructure and the lack of a lifecycle approach to services acquisition project management are putting the success of these critical services at risk. The risks of not meeting the service acquisition's cost, schedule, and performance objectives are, consequently, higher in critical DOD service projects. As the DoD increases its acquisition of services—particularly in light of anticipated budget cuts and dwindling resources—the DoD must ensure that its service acquisition projects are effectively and efficiently managed.

The purpose of this research is to continue our investigation of the service supply chain in DoD, with a focus on the implications of applying a program management structure to services acquisition. We will first discuss some continuing issues in services acquisition that we identified in our initial research and that have surfaced in recent GAO reports. We will also discuss the unique characteristics of service operations and how they affect the market formation and contracts in services acquisition. At this juncture, we propose a conceptual lifecycle model of services that can be used as a foundation in developing approaches to managing services acquisition. Next, we will discuss some basic concepts of program management and then discuss how these concepts are currently being used in the acquisition of systems and products, specifically defense weapon systems. We will then discuss the application of program management and project management concepts to services acquisition. Finally, we will illustrate how program management concepts can be effectively applied at the various levels of the DoD to successfully manage service acquisition programs.



2.0 Continuing Issues in Services Acquisition

2.1 Conclusions from the Prior Research

As mentioned previously, last year we conducted exploratory research on the service supply chain in the Department of Defense. The conclusions of that research are stated below.

1. The Department of Defense's services acquisition volume has continued to increase in scope and dollars in the past decade. The GAO found that since FY 1999, DoD's spending on services has increased by 66%, and in FY 2003, the DoD spent over \$118 billion or approximately 57% of the DoD's total procurement dollars on services (GAO, 2005, March). DoD procures a variety of services, including both the traditional commercial service and services unique to defense. In terms of amount spent, the following four service categories together represent over 50% of total spending on services: (a) professional, administrative, and management support services, (b) construction, repair and maintenance of structure and facilities, (c) equipment maintenance, and (d) information technology services.
2. Presidio of Monterey (POM) has contracted maintenance of about 155 buildings and structures to Presidio Municipal Services Agency (PMSA), a consortium of the cities of Monterey and Seaside. The PMSA agreement has allowed the two cities to apply their expertise to routine municipal services and the Army to focus on its military mission. Through this partnership and contract with PMSA, the POM has realized a 41% reduction in expenses when compared with previous base operation costs and private contracts. We recommend that DoD explore and evaluate the possibility of establishing such synergistic contractual relations with cities adjacent to other bases in support of their respective operations.



3. Proactive and frequent communications are essential for a successful services contract. We found a successful example of this at Travis AFB, where 60th CONS uses Business Requirement Advisory Groups (BRAGs) as the mechanism for conducting such communications. BRAGs are cross-functional teams made up of personnel representing the functional organizations involved as customers in the services contracts. These cross-functional teams plan and manage the service contracts throughout the service's lifecycle. As the DoD increases the use of centralized contracting organizations and regional contracts, the use of proactive and frequent communications will be even more essential for the successful management and performance of these contracts.
4. Our visits and interviews at Travis AFB, Presidio of Monterey (POM), Naval Air Station Whidbey Island (NAS WI), and the Naval Support Detachment Monterey (NSDM) confirmed GAO's finding that:

[W]hile the Army's and Navy's creation of centralized installation management agencies can potentially create efficiencies and improve the management of the facilities through streamlining and consolidation, implementation of these plans has so far met with mixed results in quality and level of support provided to activities and installations. (GAO, 2005b)

5. The centralization of contracting offices and the use of regional contracts will result in additional dynamics for DoD's acquisition of services. The Department's use of centralized contracting organizations and regional contracts will require even more proactive and frequent communications between the contracting organization and the customer. Although it is still too early to assess the effectiveness and efficiency of centralized contracting organizations and regional contracts, this research has indicated that centralization and regionalization of services contracts are growing trends in the DoD, and will significantly change how services contracts are managed.



6. Given the unique characteristics of services (such as intangibility, co-production, diversity and complexity), establishing service specifications, and measuring and monitoring the quality of delivered service is inherently more complex than with manufactured goods. Hence, it is critical to have onboard a “knowledgeable client” and the necessary number of skilled contracting personnel to define the requirements and to supervise vendors and assure quality of outsourced services. The DoD has been aggressively complying with OMB’s *Circular A-76*, which directs all federal government agencies “to rely on the private sector for needed commercial services” (OMB, 2003) This has resulted in dramatic growth in DoD’s spending on services with a simultaneous downsizing of the DoD civilian and military acquisition workforce. We believe that the downsizing trend is not in sync with the critical need to have a necessary number of skilled contracting personnel onboard. This could mean that in DoD’s outsourced services, either the needs are not being fully satisfied, or the value for the money spent is not being realized.

7. As the DoD acquires more services than goods, the acquisition of services and the use of service contractors are becoming increasingly critical aspects of the DoD mission. However, the management infrastructure for the acquisition of services is less developed than for the acquisition of products and systems. For example, there is a less-formal program management approach and lifecycle methodology for the acquisition of services, which is confirmed by the lack of standardization in the business practices associated with the services acquisition process. This results from the fact that the functional personnel currently managing the services programs are not considered members of the DoD acquisition workforce and are typically not provided acquisition training under *Defense Acquisition Workforce Improvement Act (DAWIA)* requirements.



2.2 Service Characteristics and Their Implications for Contracting

Intangibility of service outcomes makes it difficult to clearly describe and quantify services and, therefore, to contract for services. Consider, for example, the difficulty of writing a contract for an educational service involving academic lectures. How does one define a “pound of education,” and how can one be sure when the contract is fulfilled satisfactorily? As Karmarkar and Pitbladdo (1995) explain, this is the reason why, in such cases, we do not contract around quantities at all; rather, we contract around process delivery. In general, the more information-intensive the service, the more difficult it is to develop clear and meaningful contracts addressing it. This difficulty is somewhat reduced in services in which physical objects play a dominant role.

Intangibility of outputs also makes it difficult to define and measure quality (Apte, Karmarkar & Pitbladdo, 1996). For example, even for a simple custodial service such as cleaning, it is not easy to define the desired level of cleanliness. The level of cleaning needed for an office is certainly different than that for a hospital operating room. The desired time duration for maintaining a clean status can also be an important matter to one writing a contract for cleaning service. As research in service quality has found, customers typically evaluate the quality of service based on the outcome of a service as well as on their experience with the process of service delivery. For example, in a dining facility, not only must the food be tasty, but the manner in which the food is served must also be courteous, prompt and friendly. This means that the contracts for many services should not be based solely on outcomes but should include specifications on both the outcome and the customer’s experience with the process.

Co-production requiring presence and participation of customers in the creation of many services is an important characteristic of services. For example, in an IT service such as software development, a customer’s input in terms of desired specifications of a software system is critical. For example, however competent the



software developer may be, the developed software will not be satisfactory if the specifications do not accurately reflect the true needs of the customer. Hence, the contracts for services should ideally specify not only what the service provider should do, but also what the customer should do. Otherwise, a satisfactory service outcome may not be realized.

Diversity of Services also makes it difficult and undesirable to use the same contract vehicles or procedures for different services. For example, given the differences in medical services versus custodial services, it is important that the contracts for these services are customized to suit the lifecycle needs of each individual service.

Finally, services are complex and may involve multi-stage processes. This makes it important, yet challenging, to write contracts that are flexible enough to cover all relevant scenarios and eventualities. Moreover, if such a contract cannot be satisfactorily defined, it may be desirable to obtain certain services using internal resources as opposed to outsourcing for them.

2.3 Service Markets and Contracts

The above-discussed special features of services lead to significant differences in the process of production, sale and consumption of services. These, in turn, have implications for market structure, pricing, and contracting for services. While the operational implications of service characteristics have received some attention (Fitzsimmons & Fitzsimmons, 2006), there have been very few attempts to capture the implications for markets. The large majority of papers dealing with service competition have addressed issues like queues and congestion, and their consequences for customer waiting time. While queuing is certainly an issue central to services—customers must access service systems because of the *lack of portability* of services—the difference relative to manufacturing is primarily one of degree. There are, on the other hand, several important characteristics of services which remain untreated in terms of market models. For example, there is little to be



found on the subject of models with joint production. Similarly, the inability to measure and meter service output renders standard price-quantity mechanisms untenable. The result is that prices must be set on a case basis, by specific bilateral contracting based on inputs rather than outputs, or by repeated renegotiation and contracting. While these are not individually all new issues, there does not seem to be an integrated treatment of service markets from this viewpoint.

Karmarkar and Pitbladdo (1993) present some key features regarding service contracting that are relevant to the development of a service-quality model. First and foremost, service operations are always post-contractual (with the possible exception of New York City automotive window washing). Fixed-price contracts centered on output specifications can fail on two accounts. First is the difficulty of conceiving or verifying meaningful output specifications, and second is the variability of customer inputs and joint production—which makes fixed-price contracts risky for the firm even when the output specifications can be well-defined. Alternatively, contracts based on process specifications, such as time and materials, can turn out to be unsuitable since these contracts can be risky for customers. These dual risks for firms and for customers can be addressed via stage-wise (or contingent) contracting, in which the process is broken into stages, and the price for a given stage is made dependent on the outputs of previous stages. For example, there may be a fixed fee for a diagnosis, and a fixed fee for treatment—which, however, depends on the outcome of the diagnosis. The uncertainty in customer inputs is resolved by the diagnosis before it materializes in terms of treatment cost.

2.4 Services Lifecycle: A Stage-wise Decomposition of Services

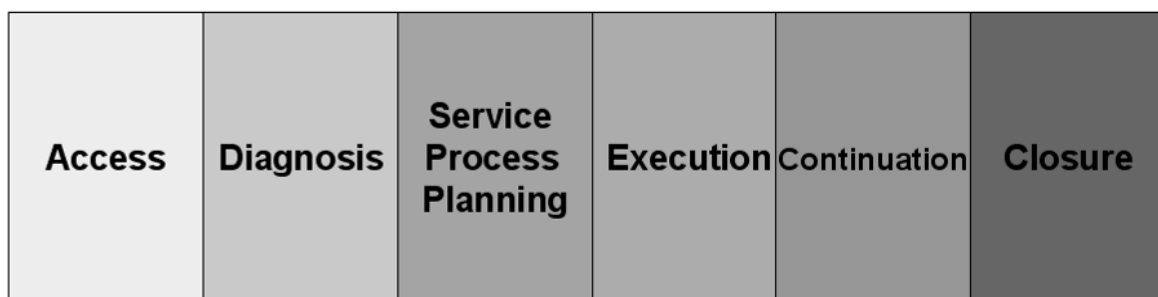
The presence of a tangible, portable output which can be quantified by both vendor and buyer allows for a simplified sales process for manufactured goods. Contracts for manufactured goods are centered on a clearly defined junction between production and use, at which point responsibility is transferred from producer to customer. While the value of a product to a customer may actually



depend on the customer-specific uses to which the product is put, such information is not needed at the market interface, where customers can reveal their preferences through price-quantity negotiations. Similarly, specifications of the production process have no relevance at the market interface apart from their impact on the specifications of the product.

For services, the transaction between customer and provider must be represented in a greater detail. Figure 1 shows the sequence of steps involved in a service transaction as seen by a customer. At the end of each step, a new state is reached, as observed by either the buyer or the vendor of the service. Karmarkar and Pitbladdo (1995) discuss why: 1) contract terms for the next stage are typically contingent on the states reached in the previous stages, and 2) switching to competing providers is an option at the end of each stage. We hasten to note that not all services necessarily involve all these steps. In the following sections, we will discuss each of these steps involved in the services lifecycle and use an example from a plausible DoD services acquisition to illustrate the activities that are performed in that specific step. The services acquisition example used in this discussion will be the acquisition of air refueling services by the Air Force.

Figure 1. Services Lifecycle (Conceptual)



The first phase is access to the service; this may involve either bringing a customer to the service system or the reverse. In the air refueling service example, the access phase would be part of the acquisition/procurement planning process. In this



phase, the customer (represented by the Air Force organization needing the refueling services) meets with the acquiring organization (and possibly potential service providers) to discuss the refueling requirement and the acquisition of this specific service.

The second phase is *diagnosis*. For our purposes, diagnosis is defined as the mapping of customer requirements of a service into a technical or process specification. For example, a customer at a car-repair facility may describe certain problems that he or she has experienced based on which repair needs can be assessed. In our Air Force refueling services acquisition scenario, this phase would entail the customer and acquiring organizations defining the refueling requirement and identifying any specific regulations, specifications, and process requirements related to the acquisition of this specific service. The process of diagnosis identifies the underlying technical problem—perhaps as a syndrome (collection of symptoms) or perhaps in terms of the underlying mechanism. The medical analogy is obvious. Similarly, a client of a financial planning service may describe problems in terms of college payments and retirement. The planner may convert the statement to needed cash flows, risk attitudes and preferences. While in some cases the diagnosis step is performed by the customer alone, diagnosis is likely to be an interactive or joint process.

The third phase, *process planning*, is the generation of alternative service processes or treatments to meet the output requirements defined by the diagnosis. This may be a joint-production process. In some cases, the alternatives available are already stated and fixed. A menu at a restaurant is an example. In others, processes or alternatives can be highly specialized to the customer's needs. It is conceptually useful to note that diagnosis, coupled with process planning, is the dynamic equivalent of Quality Function Deployment (QFD) (Hauser & Clausing, 1988). In manufacturing, QFD consists of mapping generic customer needs into clearly defined product specifications. Diagnosis and process-plan generation consists of mapping specific customer needs and desires into clearly defined process specifications particular to the



customer. In our Air Force refueling services acquisition scenario, process planning would include the evaluation of the various proposed approaches to acquiring the refueling service, as well as the selection of the refueling service provider.

The fourth phase is the *execution* of the service process itself. Once again, this may or may not involve joint production. In this phase, using our Air Force example, the refueling service provider is executing the services contract and providing the refueling service to the specified customer at the required schedule and location.

We then add a fifth phase, *continuation*, which represents the continuing consumption or consequences of service outputs (the provider's role in this stage can be characterized as long-term service support). The reason for this is that the outputs or consequences of many services (e.g., health care, financial planning, consulting) cannot be completely evaluated immediately. It is instructive to note here that, in the manufacturing case, the counterpart of this fifth stage constitutes the entirety of the customer involvement with the product. The service provider may continue to have a role in this stage in the form of direct interaction and consultation, or a set of instructions along the lines of a "users' manual." Surgery provides a clear example— involving a schedule of required and proscribed activities, along with follow-up checkups and telephone consultations. In our Air Force air refueling service scenario, in this phase, the refueling service provider is continuing the performance of the services contract and providing the refueling service to the specified customer at the required schedule and location. In addition, the customer, or the acquiring organization (represented by the Air Force organization needing the refueling services), is evaluating the refueling services program to determine if it meets the mission requirement of the organization. This evaluation is focused on the scope of services required by the customer's organization, as well as on the performance of the service contractor in providing the service. Based on this evaluation, a decision is made to either change the requirement scope and/or the services provider.

Finally, in the sixth phase, the service operations come to a *close*, and the process is completed. Based on the evaluation conducted in the previous continuation



phase, if a need for the air refueling service or a modification of this service is identified in the future, the process is initiated again with the *access* phase.

As can be seen in this discussion of the activities involved in services acquisition, a disciplined and methodical approach is necessary if an organization is to manage these service acquisition activities. In the next section, we build on some concepts discussed above to propose a program management approach for services acquisition.



3.0 Towards a Program Management Approach to Services Acquisition

This research in the management of the DoD service supply chain focuses on the application of a program management approach and project management concepts to services acquisition. In this section, we first present some basic concepts of program management and then discuss how these concepts are currently being used in the acquisition of systems and products, specifically in defense weapon systems. In the next section, we will discuss the application of a program management approach and project management concepts to services acquisition.

3.1 An Overview of the Program Management Approach

Review of the current literature shows that the use of a well-defined, disciplined methodology and infrastructure for the management of complex projects is critical for a project's success in meeting cost, schedule, and performance objectives (PMI, 2004; Kerzner, 2006). We use the term "program management" to describe the approach and methodology needed for the management of complex projects. A program management approach includes the infrastructure that facilitates the successful attainment of cost, schedule, and performance objectives, and refers to the centralized, coordinated management of a group of projects to achieve the program's strategic objectives and benefits (PMI, 2004). In addition, programs themselves consist of related projects managed in a coordinated way to obtain benefits and control (2004). Thus, a disciplined program management approach includes the following project management concepts: project lifecycle, integrated project processes, empowered cross-functional project teams, an assigned and dedicated project manager, and an appropriate project organizational structure. These project management concepts will be briefly discussed.



3.1.1 Project Lifecycle

An effective way of managing a project is to divide it into phases; this provides better management and control. These phases make up the project lifecycle. The phases of the project lifecycle can be used to manage and control the activities that are conducted within each project phase. By using the phases of the project lifecycle and establishing control gates or milestones between project phases, the project manager can control the progress of the project. Although project lifecycles are different for each specific type of project, many organizations establish a standardized lifecycle for their projects. Typically, the project lifecycle of a system consist of the following phases: conceptual, planning, testing, implementation, and closure (Kerzner, 2006). Later in this report, we will discuss how the project lifecycle is used in defense weapon system projects. We will also discuss the development of a project lifecycle for service acquisition projects.

3.1.2 Integrated Processes

A disciplined program management approach includes the integration of various project management processes used throughout the project. These various project management processes typically include such processes as requirements development, scheduling, cost management, quality management, risk management, and contracts management (PMI, 2004). Although each of these specific project processes reflects different functional areas, a disciplined program management methodology would integrate these various processes to ensure that each of these areas are coordinated and integrated within the total program management effort. In addition to integrated processes, the PMI *Project Management Body of Knowledge* establishes five project management process groups. These project management process groups include initiating processes, planning processes, monitoring and controlling processes, and closing processes (PMI, 2004). Each of these project management process groups includes various functional phases that are part of that specific process group. For example, the planning process group would include such phases as scope planning, quality



planning, risk management planning, and procurement planning and solicitation planning processes. In order to effectively and successfully manage projects, project managers must coordinate and integrate these various functional processes throughout the total project effort. Integrated project processes are vital to successful project management.

3.1.3 Project Team Structure

Just as integrated processes are essential for effective project management, integrated project teams are also critical. A disciplined program management methodology includes the establishment of integrated project teams consisting of project team members representing each of the different functional areas that are part of the project effort. For example, a project team may include functional experts representing the various processes used in the project, such as risk management, requirements management, and contracts management. These functional experts on the project team are responsible for providing their expertise in support of the project objective. Although the project team consists of these various functional experts, the activities of these project team members must be coordinated and integrated to ensure accomplishment of the project's objective. The coordination and integration responsibility belongs to the project manager.

A critical aspect of a disciplined project management methodology includes the assignment of a dedicated project manager to oversee the activities of the project. We have already stated that the project effort includes various functional processes conducted by functional experts on the project team. We have also stated that there are project management process groups that are used to help integrate these various functional processes. The role of the project manager, therefore, is to coordinate and integrate the various project activities to ensure successful completion of the project (Kerzner, 2006). The project manager is responsible for ensuring that all members of the project team support the project's objectives. Thus, a dedicated project manager, who is responsible for managing the



project activities and ensuring the achievement of the project objectives, is an essential part of a disciplined project management methodology.

3.1.4 Organizational Structure

An appropriate organizational structure is also an essential element of a disciplined project management methodology. An organizational structure that supports the integrated project management processes, integrated project teams, and the roles and responsibilities of the project manager will significantly contribute to the success of the project. Large organizations typically utilize one of the three main types of organizational structures—functional, matrix, and pure project (PMI, 2004). The degree of project manager authority, resource availability, and budget control will be affected by the type of organizational structure (PMI, 2004). Some of the factors to consider in selecting the appropriate type of organizational structure include: the number of functional areas involved in the project, the level of integration needed within the functional areas and between the organization and the customer, the nature of the technology used in the project work, and the organization's previous experience in performing the work required by the project.

3.2 Application of Program Management Concepts to Weapon Systems Acquisition

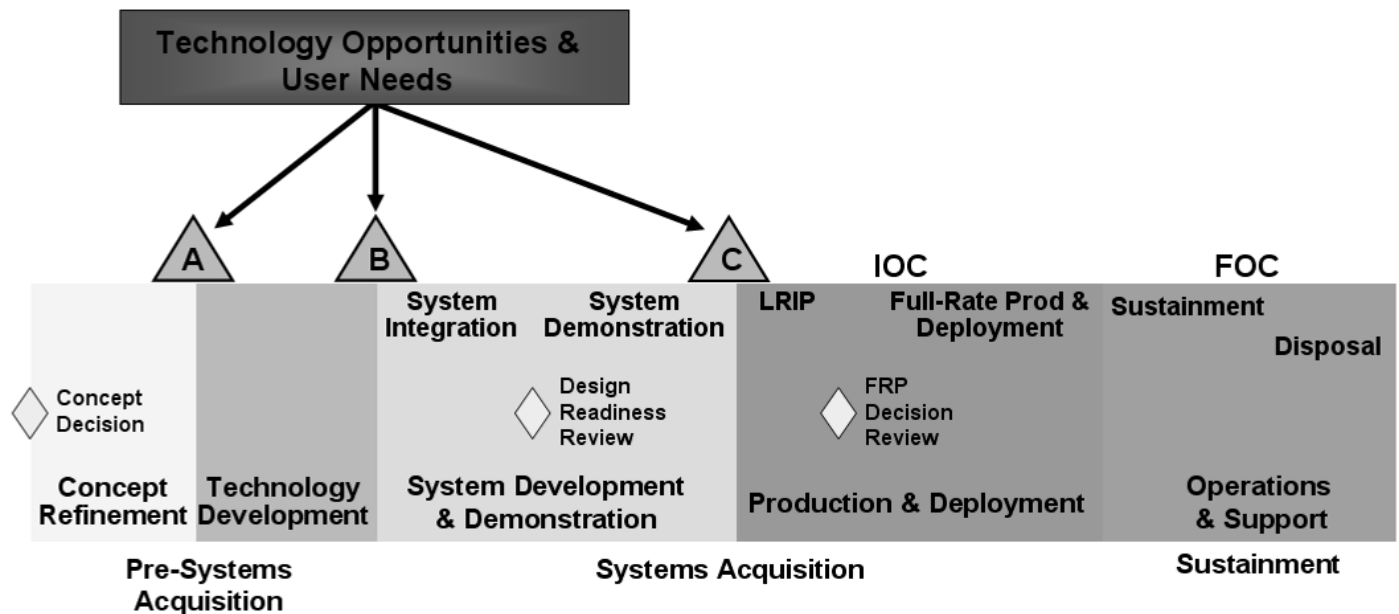
The previous section discussed the basic project management concepts such as the project lifecycle, integrated processes, project teams, project manager, and organizational structure. These program management concepts are well-established in weapon systems acquisition environment in the Department of Defense. In fact, many of today's modern project management tools and techniques were developed during the Cold War. Weapon system programs such as the land-based ICBM and sea-based ballistic missile programs became the proving grounds for some of today's modern program management processes (Kerzner, 2006). In today's DoD weapon systems acquisition environment, program management concepts continue to be integral to the successful management of these critical and high-technology projects.



The *Department of Defense Directive 5000.1* establishes the defense acquisition system as the management process by which the DoD provides effective, affordable, and timely systems to the users (USD (AT&L), 2003a). This directive establishes the role of the program manager as the designated individual authorized and responsible for accomplishing the program objectives. The program manager is the designated individual that is accountable for costs, schedule, and performance reporting to the milestone decision authority (MDA) (USD (AT&L), 2003a).

The *Department of Defense Instruction 5000.2* establishes the defense acquisition management framework as the project lifecycle for major defense acquisition programs (USD (AT&L), 2003b). This lifecycle consists of the various phases, decision points, and project review points that are part of the project lifecycle. See Figure 2 for an illustration of the DoD Acquisition Management Framework.

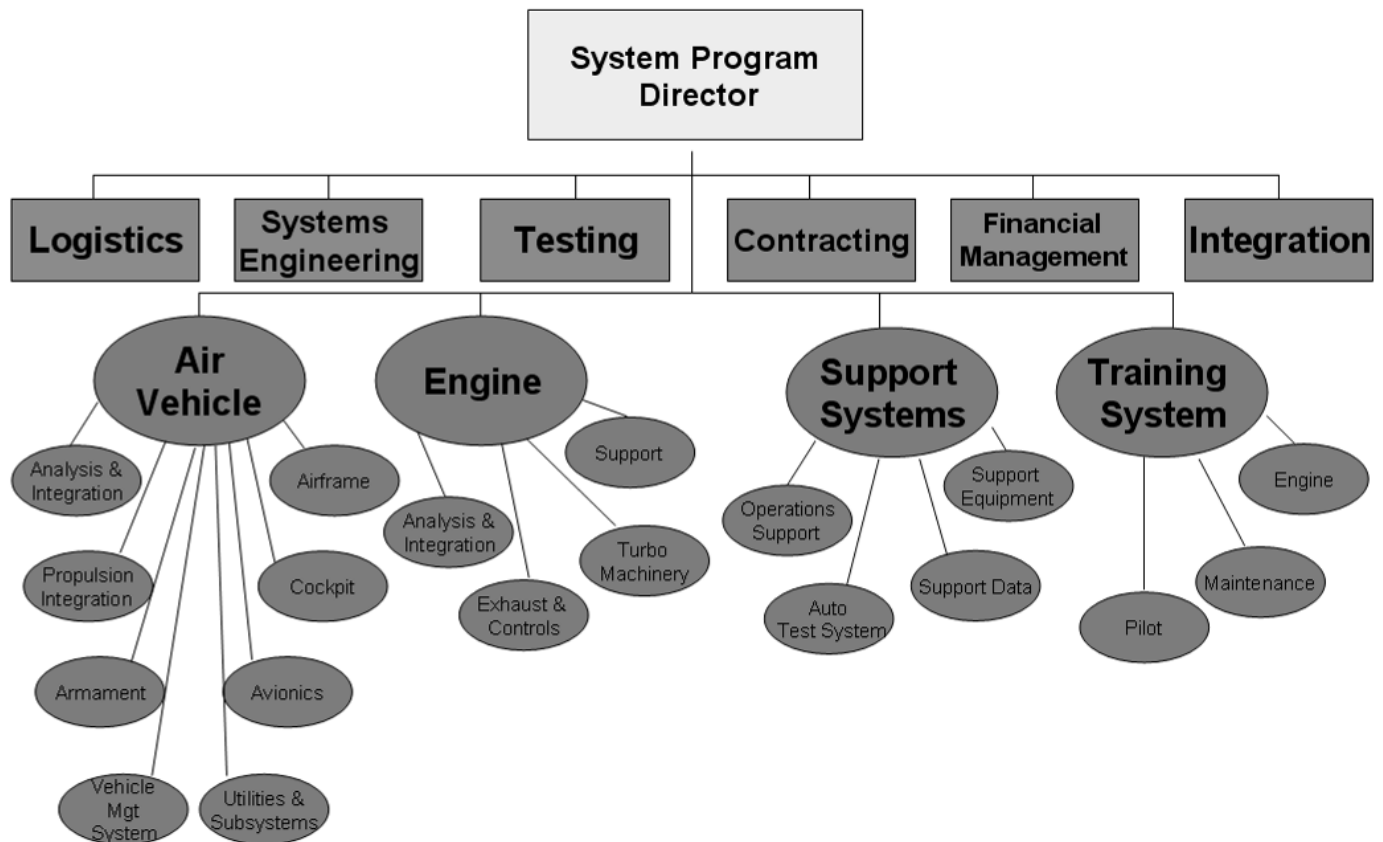
Figure 2. The Defense Acquisition Management Framework



In addition, the *DoD 5000* regulations also establish the use of integrated product teams (IPTs) and integrated processes throughout the weapon systems acquisition management lifecycle. Through the use of effective collaboration, program managers are responsible for making project decisions and leading project execution. They must also maintain continuous and effective communication through the use of integrated project processes.

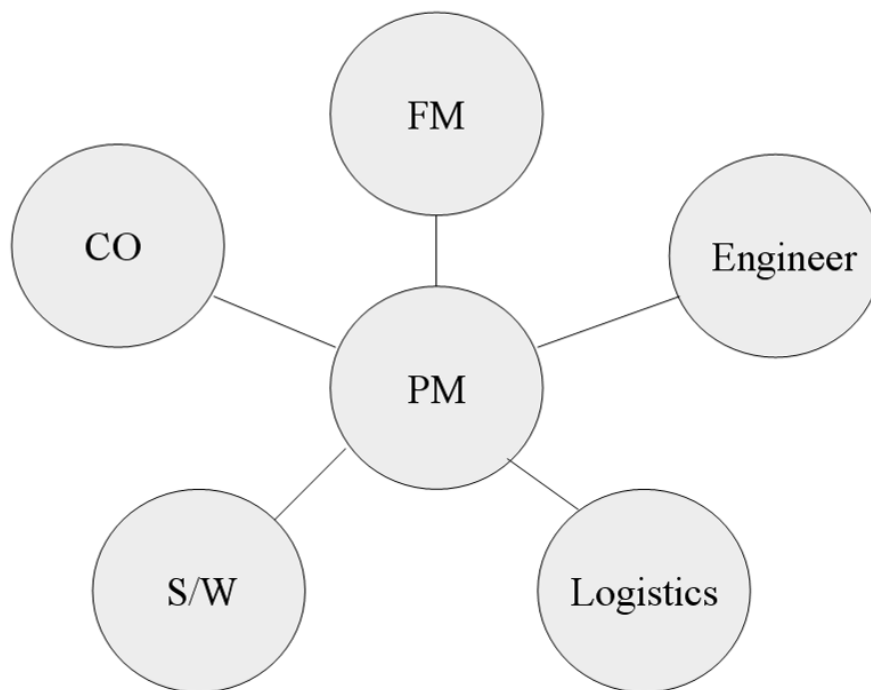
Finally, in weapon systems acquisition, the DoD relies heavily on unique organizational structures, such as matrix or project-type organization structures, for the management of defense acquisition programs. Figure 3 is an example of an organizational structure for a weapon system acquisition program.

Figure 3. Sample Weapon System Acquisition Program Organizational Structure



Embedded in these organizational structures are the traditional project management team structures. This structure includes a designated project manager with the authority to lead and manage the project team in accomplishing the project's objectives. The project team is a cross-functional team with representatives from the various functional areas that are involved in the project effort. These functional areas typically include engineering, contracting, financial management, logistics and any other functional area involved. Figure 4 reflects this traditional project management team structure. As illustrated in Figure 4, the project manager leads the members of the project team in performing the project work and in achieving the project objectives. Typically, the project manager has informal supervisory authority over the project team members. The project team members are matrixed from their functional organizations and are on loan to the project manager for a specific project. It should be noted that the matrix or projectized organizational structures would include various cross-functional project teams that are involved in the project effort.

Figure 4. Traditional Systems PM Structure



Thus, the basic concepts reflective of a program management approach are well-established in DoD weapon systems acquisition management. The use of project lifecycles and control gates, integrated processes, established project managers and project teams, and an effective organizational structure have been successfully used in this specific sector of the Department of Defense. The next section of this research discusses how this program management approach (consisting of these basic project management concepts) can be used by the DoD in the acquisition of services.



4.0 Applications of Program Management Concepts to Services Acquisition

Our previous discussion focused on the use of a program management approach and its related project management concepts found in the current literature. These project management concepts included the use of a project lifecycle and control gates, integrated processes, a dedicated program manager and integrated project teams, and an organizational structure conducive to the integration of project activities. We also discussed how these program management approaches and these project management concepts have been well-established in the weapon systems acquisition management environment. We identified Department of Defense Directives and Instructions that support, and even mandate, the use of some of these project management concepts. This section focuses on the acquisition of services within the Department of Defense. Specifically, we consider the acquisition of services at the installation level, command level, and service level. The purpose here is to illustrate how a program management approach and project management concepts can be effectively applied at each of these levels to successfully manage service acquisition programs.

4.1 Department of Defense Policy on Services Acquisition

In October 2006, the Undersecretary of Defense (AT&L) published a memorandum on acquisition of services policy. This memorandum required the establishment and implementation of a management structure for the acquisition of services in the Department of Defense. The purpose of this policy is to strengthen the DoD acquisition management at the strategic and tactical level (USD (AT&L), 2006, October).

The DoD's policy on the acquisition of services states that acquisition of services should be based on clear performance-based requirements, and the expected cost schedule and performance outcomes should be identifiable and



measurable. The policy also states that the acquisition of services should be properly planned and administered to achieve outcomes consistent with customers' needs; services should be acquired by business arrangements which are in the best interest of DoD and in compliance with statutes and regulations, policies and other requirements; and, finally, that services are to be acquired using a strategic enterprise-wide approach, which is applied to both the planning and execution of the acquisition (USD (AT&L), 2006, October).

The DoD acquisition of services policy memo also identifies both the duties of senior DoD officials, as well as the duties of the Director, Defense Procurement and Acquisition Policy. Finally, the policy memo defines the categories of services, dollar thresholds of the estimated value of the services acquisition, and the decision authority level for management of the services acquisition (USD (AT&L), 2006, October).

It should be noted that this October 2006 memo on acquisition of services policy will be included in the next revision of the *DoD Instruction 5000.2: Operation of the Defense Acquisition System*.

4.2 Current Practices and Innovative Approaches in Services Acquisition

In exploring the current practices in services acquisition within DoD, we studied basic installation-level types of services that are commonly acquired in support of the installation mission. The installations studied included Travis Air Force Base, California; Randolph Air Force Base, Texas; Presidio of Monterey, California; and the Naval Postgraduate School, California. As we visited the installations and interviewed the personnel for this research, we determined that although some project management concepts were applied, they were not applied in a consistent manner, or were not institutionalized throughout the organization. In addition, at many of these locations, the project management tools and concepts



being applied did not necessarily result in a program management approach to acquiring services.

We found that typically, at the installation level, the acquisition of services is managed using more of an ad-hoc approach, as opposed to a program management approach.

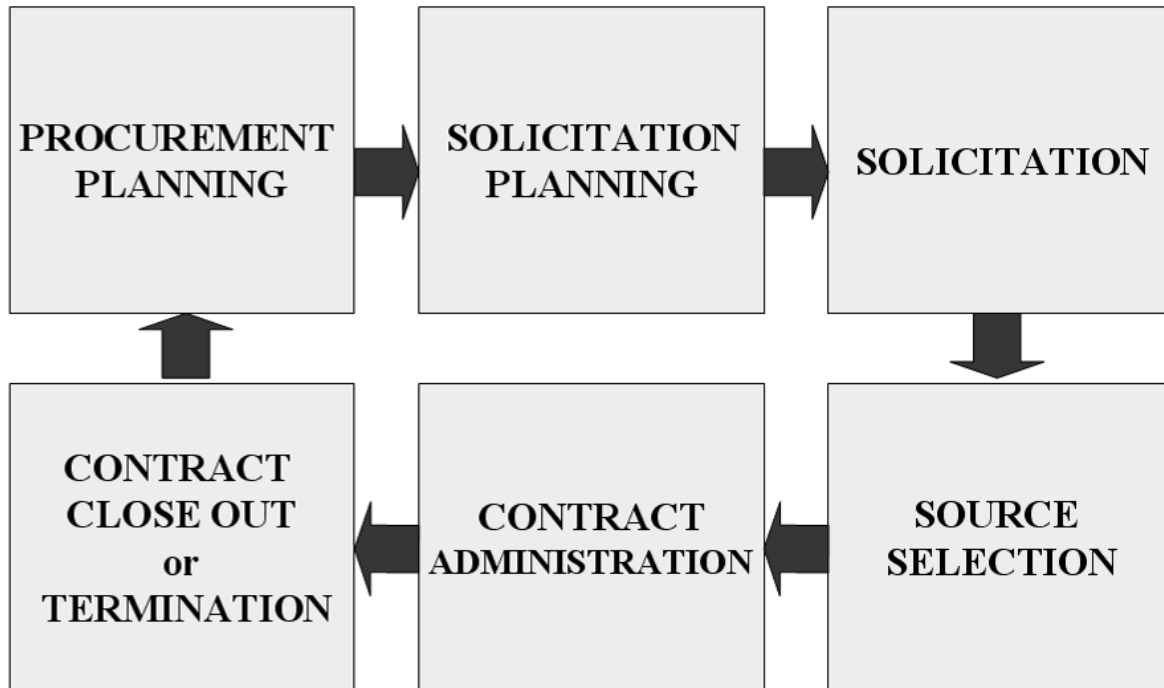
In addition, our study identified two specific organizations which are providing innovative approaches to the acquisition of services: the Air Force Air Education and Training Command (AETC) and the Air Combat Command (ACC). Our discussion below will also include how these two organizations have used innovative approaches in terms of organizational structure, project lifecycle, integrated processes, and project teams in the acquisition and contracting of services.

4.2.1 Project Lifecycle

In terms of using a project lifecycle, our research indicated that the contracting process was typically used as a substitute for the project lifecycle. Figure 5 represents the contract management process. The contracting process is certainly an integral part of the acquisition lifecycle for DoD services acquisition. However, the concept of project lifecycle is not the same as the concept of contracting process lifecycle and should not be viewed as such.



Figure 5. The Contract Management Process



Our research indicates that AETC uses a project lifecycle for services acquisition. This lifecycle, as reflected in Figure 6, is similar to the process defined in *Air Force Manual (AFMAN) 64–108, Services Contracting*, which had been cancelled in 1999 and was replaced with *Air Force Instruction (AFI) 63-124, Performance-based Service Contracts*, now titled *Performance-based Services Acquisition*. This project lifecycle consists of the various project phases, including: define, source, buy, ensure a quality, administer, and release. The use of this project lifecycle provides the AETC organizations with a disciplined and structured approach for managing services acquisition programs. This project lifecycle also reflects the integration of various processes involved in services acquisition management. These processes include requirements development, contract management (as defined in the previous section), quality assurance, and risk management.



Figure 6. Services Lifecycle



4.2.2 Integrated Processes

Our research also indicated that although various project management processes were used at the installation level, these processes were not necessarily integrated into the management of the services contracts. For example, we did find the use of various project management processes such as contracting, risk management, quality assurance, and contract funding, but we did not see the integration of these processes.

4.2.3 Project Team Structure

Furthermore, informal project teams were being used in these installation-level organizations. Although these project teams existed, they were structured more on an ad-hoc basis than as formal, established project teams.

Closely related to the above was the informal approach to the establishment of a project manager for services acquisition. In many cases, the project manager (or program manager, as sometimes called) existed at the major command-headquarters level as opposed to the installation level. As we will discuss in the next section on Major Command-level management of services acquisition, we found that many service acquisitions were centrally planned at the headquarters level and then de-centrally executed at the installation level. In this situation, if there was an assigned program manager, that individual was typically assigned at the major command level, with oversight responsibility for the installation-level activity.



In these instances, because the program manager was located at the headquarters level, there was no program manager at the installation level. In this case, although the quality assurance evaluators (QAEs) represented the program manager, the QAEs did not carry-out the program management responsibilities. In addition, the contracting officer at the installation typically functioned as the de-facto program manager due to the lack of any program manager at the site. It should be noted that the procuring contracting officer (PCO) at the Major Command headquarters, where the services acquisition was centrally planned and executed, delegated the contract to the administrative contracting officer at the installation where the contract was administered. Thus, the PCO—responsible for providing contracting support for the centrally planned and executed services acquisition—would delegate the administration tasks to the ACO for the decentralized administration of the services contract. However, the program manager retained the program management functions of the services acquisition.

In terms of project team structure, the AETC uses a centralized planning structure for pre-award activities and a decentralized execution structure for post-award activities.

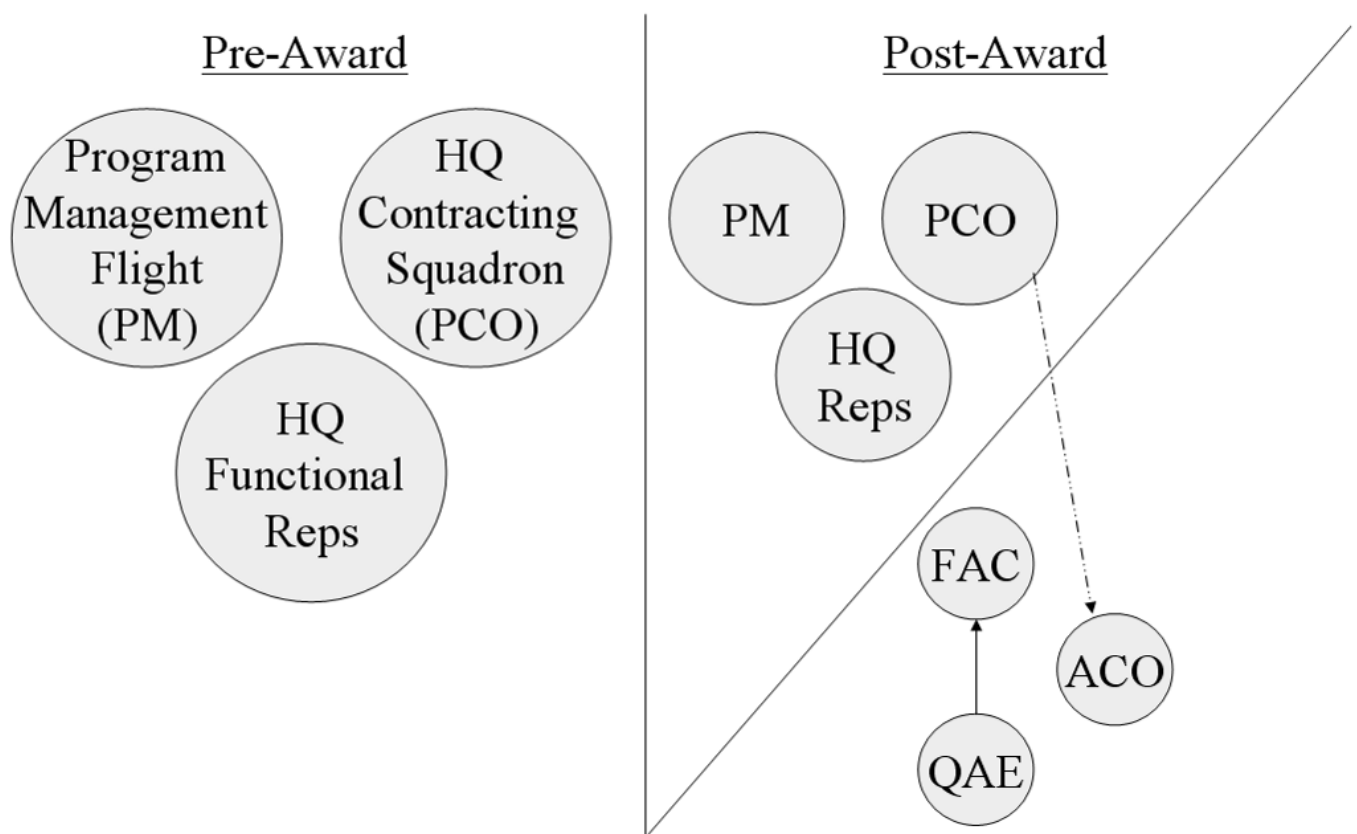
During pre-award activities, the Program Management Flight, contracting squadron, and headquarters functional offices work in a concerted effort to perform the various processes involved in the pre-contract award phases. The headquarters functional offices are the primary organizations involved in the requirements determination and development phases of the project lifecycle for the base operations support functions—such as civil engineering, supply, fuels, transportation, communications and other services, as well as aircraft and engine maintenance.

The headquarters contracting squadron provides the contracting support for the requirements development phase as well as for the pre-award contract management phases. The Procuring Contracting Officer (PCO) provides the contracting officer authority for this phase of the services acquisition lifecycle. The



Program Management Flight integrates the service requirements from the headquarters functional organizations and the contracting support processes from the headquarters contracting squadron. The Program Management Flight also provides program management direction and authority for the pre-award phase of services acquisition. A designated program manager is the link between the headquarters functional organizations, the contracting squadron, as well as the Program Management Flight. This organization is illustrated in Figure 7.

Figure 7. Centralized Services Acquisition Management



During the post-award activities, the AETC uses a decentralized execution structure. The headquarters retains program management authority; that is, a program manager for the aircraft maintenance or base operating support services remains at the Program Management Flight. In addition, the Procuring Contracting



Officer delegates contracting officer authority to the Administrative Contracting Officer (ACO) located at the military installation where the service will be performed. Although the program manager retains authority at the headquarters, the functional area chief and the quality assurance evaluator/specialist perform hands-on surveillance and monitoring of the contractor at the installation where the services are performed. Typically, the quality assurance evaluator reports to, and is rated by the functional area chief.

Because the program manager at the headquarters retains PM authority, there is no on-site program manager at the installation where the services are performed. In this situation, the administrative contracting officer (ACO) typically becomes the de-facto on-site program manager. This situation occurs mainly because the ACO's position acts as a linchpin between the program manager at the headquarters and the functional area chief on-site. Of course, the ACO does not have supervisory authority, nor project-manager authority over the functional area chief or the quality assurance evaluator.

This situation, as reflected in Figure 7 above, has the potential to create disparate and broken communications between all parties involved in managing the services acquisition program. One reason for this is that there is no one individual located at the installation where services are being performed that has overall responsibility and authority for managing the services program. Although the ACO is the authorized contracting officer, the ACO does not have program management authority for managing the program or supervisory authority over the functional area chief or the quality assurance evaluator. Although the functional area chief has supervisory authority over the quality assurance evaluator, the functional area chief does not have contracting authority nor program manager authority for the services program.



4.2.4 Organizational Structure

Finally, in terms of organizational structures at the installation level, our research did not identify any specific or unique organizational structures specifically established for the acquisition of services. The installations we researched reflected the traditional organizational structures of the Defense Department and organizational mission. We did not see any projectized or matrixed organizational structures used in the management of services contracts at the installation level.

The Air Education and Training Command (AETC) has two separate organizations that are responsible for the acquisition of major aircraft maintenance and base operating services. These organizations include the AETC Program Management Flight and the AETC Contracting Squadron. Each one of these distinct organizations provides support to the acquisition of base operations support services as well as aircraft and engine maintenance services.

The AETC Program Management Flight is responsible for planning, programming, managing and executing AETC's contracts in civil service and maintenance and base operating support acquisitions. Base operating support services include civil engineering, supply, fuels, transportation, communications, and other services (USAF AETC, 2007). The Program Management Flight supports the requirements development process as well as the contracting process involved in either *OMB A-76* cost studies or traditional contract source selections. The Program Management Flight organizational structure is divided into two major sections. One section supports aircraft maintenance, and the other supports base operating support programs (USAF AETC, 2007).

The AETC contracting squadron provides contracting support to the Program Management Flight. Although the AETC contracting squadron provides contracting support to other organizations and missions within the command (such as international contracting, technical support and training contracting, Air Force civil engineering support agency contracting, and even defense commissary agency contracting), the mission support flight provides contracting support for aircraft



maintenance and base operating support services contracts (USAF AETC, 2007) Another innovative approach to managing services acquisitions identified in this research was found in the Air Combat Command (ACC) Acquisition Management and Integration Center (AMIC). The AMIC is responsible for providing strategic acquisition, facilitation, integration, and management for Air Combat Command, US government agencies, and allies through integrated program management and contracting support (USAF ACC, 2007). What is unique about the AMIC is that it is a totally integrated organization that performs both program management and contract management functions. The AMIC can be considered a services program office, or “services SPO,” because the AMIC is responsible for acquiring and managing services acquisition programs. At the AMIC, program managers and contracting officers work side-by-side to manage services acquisition programs. The contracting officers provide contracting support, and program managers provide mission and technical support. Additionally, functional specialists (logistics, quality assurance, civil engineer, and communications) are also located within the AMIC organization. Thus, the AMIC includes all three critical elements of an acquisition program office—program management support, headquarters functional support, and contracting support.

The AMIC is different from AETC's Program Management Flight and Contracting Squadron in that the AMIC uses a centralized planning and centralized execution structure for services acquisition management. The AMIC provides a cradle-to-grave acquisition approach to services contracts. The program manager retains program management authority throughout the lifecycle of the services project. In addition, the contracting officer retains contracting officer authority throughout the lifecycle of the contract. Because the AMIC is a single integrated organization providing cradle-to-grave services acquisition management support, the organization is able to have a process-oriented approach, rather than a functional, task-oriented approach. This process-oriented approach allows the mission goals to supersede functional goals and, thus, maximizes resource availability by reducing functional competition for resources. Additionally, the organization benefits from a



common acquisition management structure, common skills set and language—which also maximize training effectiveness within the organization. This is a unique and quite different approach from the AETC approach, which still separates the program management function from the contract management function.



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5.0

Research Findings

The purpose of this research was to continue our exploration in the area of services contracts and to focus on the implications of applying a program management approach to services acquisition. The program management approach consists of a well-defined disciplined methodology and infrastructure. The program management approach also includes a centralized, coordinated management of project activities. This includes the use of a project lifecycle, integrated processes, a designated manager with project authority, integrated cross-functional teams, and an enabling organizational structure.

Our research on managing the service supply chain within the DoD, and specifically in the Air Force, has identified the following findings:

The traditional approach to managing services acquisition does not include a disciplined methodology and infrastructure. Traditional approach to services acquisition also does not include a centralized, coordinated management of project activities involving the use of the project lifecycle, a designated project manager, integrated cross-functional teams, and an enabling organizational structure.

However, our research did identify two innovative approaches to managing services acquisition programs. As mentioned above, the AETC approach incorporates a well-defined disciplined methodology and infrastructure. Through the use of both the Program Management Flight and AETC Contracting Squadron, the AETC is able to provide centralized, coordinated pre-award management of services acquisition programs. And although in the post-award management, the AETC approach does not maintain an on-site program manager, it does maintain an on-site administrative contracting officer. Thus, regardless of its success, this situation has the potential to result in disparate and broken communications between all parties involved in managing the services acquisition program.



On the other hand, the ACC model for services acquisition management using the AMIC approach includes a well-defined disciplined methodology and infrastructure, as well as a centralized, coordinated program management approach. The AMIC approach is unique in that it provides a cradle-to-grave acquisition approach to services acquisition management. This integrated approach results in management efficiencies to include an effective process orientation, maximum resource availability and maximum training effectiveness.



6.0

Conclusions

In this ongoing exploratory research, we identified some unique aspects of services and how they affect the services acquisition process. We developed a conceptual model of a service lifecycle that can be used to analyze and design DoD's services acquisition process. We also discussed the program management approach, identified basic project management concepts and discussed how these concepts are being used in the acquisition of defense weapon systems, and especially how they can be adapted in the acquisition of DoD services.

Our current research has observed that the program management approach is applicable to services acquisition within the DoD. We have also initially concluded that the basic project management concepts such as project lifecycle, integrated processes, project team, project manager, and organizational structure can be applied to the acquisition of services. Our current research leads us to believe that the application of a program management approach and the adoption of basic project management concepts to the acquisition of services will improve the management and oversight of these service contracts.

Finally, our research identified two organizations that provide innovative approaches to services acquisition management. The AETC Program Management Flight and Contracting Squadron, and the ACC Acquisition Management and Integration Center have each been successful in applying the program management approach and project management concepts to DoD's services acquisition management.



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List of References

- Apte, U. M., Karmarkar, U. S., & Pitbladdo, R. (1996). Quality management in services: Analysis and applications. In P. Lederer & U. Karmarkar (Eds.), *Practice of quality management*. Boston, MA: Harvard Business School Press.
- Apte, U., Ferrer, G., Lewis, I., & Rendon, R. (2006). Managing the service supply chain in the US Department of Defense: Opportunities and challenges. In *Proceedings of the third defense acquisition research symposium*, Monterey, CA, May 16-17.
- Director, Defense Procurement and Acquisition Policy (DPAP). (2007, March 2). *Contracts for services*. Memorandum. Washington, DC: Office of the Under Secretary of Defense (AT&L).
- Director, Defense Procurement and Acquisition Policy (DPAP). (2006, August 16). *Government Accountability Office high risk area of contract management*. Memorandum. Washington, DC: Office of the Under Secretary of Defense (AT&L).
- Camm, F., Blickstein, I., & Venzor, J. (2004). *Recent large service acquisitions in the Department of Defense*. Santa Monica, CA: RAND National Defense Research Institute.
- Fitzsimmons, J. A., & Fitzsimmons, M.J. (2006). *Service management: Operations, strategy, and information technology* (5th ed.). New York: McGraw-Hill.
- Government Accountability Office (GAO). (2002). *Best practices: Taking a strategic approach could improve DOD's acquisition of services* (GAO-02-230). Washington, DC: author.
- Government Accountability Office. (2007). *Defense acquisition: DoD needs to exert management and oversight to better control acquisition of services* (GAO-07-359T). Washington, DC: author.
- Government Accountability Office. (2005). *Defense infrastructure: Issues need to be addressed in managing and funding base operations and facilities support* (GAO-05-556). Washington, DC: author.
- Government Accountability Office. (2005). *Contract management: opportunities to improve surveillance on Department of Defense contracts* (GAO-05-274). Washington, DC: author.



Hauser, J. R. & D. Clausing. (1988). "The House of Quality (1988)," *Harvard Business Review*, May-June, pp. 63-73.

Karmarkar, U. S., & Pitbladdo, R. (1995). Service markets and competition. *Journal of Operations Management*, 12(3-4), 397-411.

Kerzner, H. (2006). *Project management: A systems approach to planning, scheduling and controlling*. Hoboken, New Jersey: John Wiley & Sons.

Office of Management and Budget. (2003). *Circular A-76, Performance of commercial activities*. Washington, DC: author.

Project Management Institute (PMI). (2004). *A Guide to the Project Management Body of Knowledge (PMBOK Guide)*. Newtown Square Pennsylvania: author.

Under Secretary of Defense (AT&L). (2003a, May 12). *The acquisition system* (Department of Defense Directive 5000.1). Washington, DC: author.

Under Secretary of Defense (AT&L). (2003b, May 12). *Operation of the defense acquisition system* (DoD Instruction 5000.2). Washington, DC: author.

Under Secretary of Defense (AT&L). (2006, October 2). *Acquisition of services policy*. Memorandum. Washington, DC: author.

United States Air Force, Headquarters Air Combat Command (ACC). (2007). *Acquisition management and integration center (AMIC)*. Mission Brief.

United States Air Force, Headquarters Air Education and Training Command (AETC). (2007). *Program management flight (PMF)*. Mission Brief.



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