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**JOINT APPLIED PROJECT REPORT**

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# AN ANALYSIS OF ACQUISITION KNOWLEDGE SHARING IN THE ARMY'S ACQUISITION PROGRAM EXECUTIVE OFFICES

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**September 2018**

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Defense acquisition programs are instructed to maintain robust processes for documenting and sharing lessons and best practices knowledge for improvement of program management; however, these important efforts are sometimes overlooked and under-practiced within the community. Knowledge sharing (KS) is a key activity in the discipline of knowledge management (KM) and is useful for facilitating greater learning among individuals and organizations. This study analyzed the current level of effort with regard to acquisition knowledge sharing of lessons learned and best practices within and between the Army's Program Executive Offices (PEOs). The study used a KS survey to gather feedback from key PEO leadership (e.g., program managers) on current KS strategies to assess the relative KS dynamic, identify KS trends and challenges, and assess where these organizations may seek improvements to better align their efforts with the Army's KM and KS doctrine. The analysis reviews Army KM and KS guidance and policy, and various resources accessible to PEOs for sharing lessons learned and best practices knowledge. Findings from the study indicated that PEOs may not be maximizing the potential of their knowledge resources and therefore risk losing the key knowledge they require for effective decision-making. The research provides information that may help PEOs more effectively and efficiently create and employ KS strategies to benefit their organizations.

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## ABSTRACT

Defense acquisition programs are instructed to maintain robust processes for documenting and sharing lessons and best practices knowledge for improvement of program management; however, these important efforts are sometimes overlooked and under-practiced within the community. Knowledge sharing (KS) is a key activity in the discipline of knowledge management (KM) and is useful for facilitating greater learning among individuals and organizations. This study analyzed the current level of effort with regard to acquisition knowledge sharing of lessons learned and best practices within and between the Army's Program Executive Offices (PEOs). The study used a KS survey to gather feedback from key PEO leadership (e.g., program managers) on current KS strategies to assess the relative KS dynamic, identify KS trends and challenges, and assess where these organizations may seek improvements to better align their efforts with the Army's KM and KS doctrine. The analysis reviews Army KM and KS guidance and policy, and various resources accessible to PEOs for sharing lessons learned and best practices knowledge. Findings from the study indicated that PEOs may not be maximizing the potential of their knowledge resources and therefore risk losing the key knowledge they require for effective decision-making. The research provides information that may help PEOs more effectively and efficiently create and employ KS strategies to benefit their organizations.

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# LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ASAALT | Assistant Secretary of the Army for Acquisition, Logistics and Technology |
| CALL | Center for Army Lessons Learned |
| COP | Community of Practice |
| DAG | Defense Acquisition Guidebook |
| DAMIR | Defense Acquisition Management Information Retrieval |
| DASD | Deputy Assistant Secretary of Defense |
| DASN | Deputy Assistant Secretary of the Navy |
| DAU | Defense Acquisition University |
| DAVE | Defense Acquisition Visibility Environment |
| DAWIA | Defense Acquisition Workforce Improvement Act |
| DoD | Department of Defense |
| GAO | Government Accountability Office |
| IRB | Institutional Review Board |
| JLLIS | Joint Lessons Learned Information System |
| KM | Knowledge Management |
| KS | Knowledge Sharing |
| PEO | Program Executive Office |
| PM | Program Manager |
| PMO | Program Management Office |
| SOP | Standard Operating Procedure |
| SME | Subject Matter Expert |

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# I. INTRODUCTION

Knowledge is power. Knowledge shared is power multiplied.

— Robert Noyce,
co-founder of the Intel Corporation
(Cottrell & Harvey, 2003, p. 17)

## A. BACKGROUND

Systematic knowledge sharing (KS) is a critical practice that helps organizations improve their quality of work and perform more efficiently and effectively. The Department of Defense (DoD) is an organization that emphasizes the importance of KS as a method for accelerating learning among its acquisition community workforce. In particular, the DoD provides guidance stressing the need to actively document and share acquisition related lessons learned and best practices in order to increase learning among individuals, within teams, and throughout its many organizations. The fundamental goal of KS activities is to benefit acquisition practitioners through the exchange of practical insight, skills, and experience from those who have it to those who need it. Most importantly, the act of sharing key knowledge directly benefits program managers (PMs) by giving them increased access to the meaningful input required to adequately plan and manage each of their unique program efforts.

For these reasons, the *Defense Acquisition Guidebook* (DAG) encourages PMs to actively research past and current programs, and explicitly instructs them to use "a robust process to identify and document best practices and lessons learned, to aid both internal activities and other programs" (Department of Defense, n.d.-b, p. 400). PMs rely on lessons learned and best practices knowledge to improve situational awareness, to improve decision-making capability, and to reduce risk in the practice of many acquisition disciplines supporting all phases of the acquisition management life cycle.

Effectively sharing key knowledge is what truly empowers DoD in the performance of each of the three decision-making support systems.[1] Thus, it could be said that KS is what enables the DoD in its efforts to increase productivity and achieve "Better Buying Power" throughout the entire Defense Acquisition System (Kendall, 2015).

In 2008, the Secretary of the Army released the "KM Principles," outlining the Army enterprises' holistic KM strategy for the future. The intent of the strategy was to help both Army commands and institutional organizations with a detailed vision to guide improvement of their respective KM efforts. Of major concern in the strategy, was focusing on the preservation of both tacit and explicit knowledge and increasing the effectiveness of KS throughout the Global Army Enterprise. By applying twelve core KM principles, Army leadership desired a new "culture of collaboration" whereby KS would increase, be recognized, and be rewarded all through an accessible, barrier-free knowledge base (CIO, U.S. Army G-6, 2008, p. 2).

As a key institutional component of the DoD and the Army enterprise, the Army's acquisition community is both a major contributor and benefactor of organizational knowledge. KS is necessary for informing acquisition program decisions in support of the greater DoD mission to provide valuable world-class capabilities to the warfighter. Army acquisition Program Executive Offices (PEOs) manage a large percentage of the DoDs acquisition program portfolios. PEOs are repositories of valuable acquisition knowledge built over many decades of program management execution.

With a unique knowledge of their internal and external acquisition working environments, PEOs can use their people, processes, and technologies to manage their knowledge assets. Operating in a complex and sometimes uncertain work environment requires PEOs to employ robust strategies for documenting, sharing, and preserving their knowledge. Through passive and active sharing of relevant individual and organizational experiences and expertise, PEOs enrich DoDs knowledge base and better influence the

[1] The three DOD decision-making support systems consist of the Joint Capabilities Integration and Development System (JCIDS), the Planning, Programming, Budgeting, and Execution System (PPBE), and the Defense Acquisition System (DAS). Acquisition PM's should continually monitor the status of their individual program efforts relative to each of these systems (DAG, 2007, CH 1-3.1)

practice of sound programmatic, technical, and managerial decision-making. Unfortunately, however, DoD routinely misses vital opportunities to capture and share lessons learned and best practices throughout their workforce, thereby allowing key knowledge to sit idle, perish, or remain widely inaccessible for those who need it.

It is our general observation that the Army acquisition community may not be taking full advantage of KS and therefore may be at risk of losing the valuable knowledge it works so hard to possess. A failure to overcome this challenge may continue to limit the timely access to actionable acquisition knowledge, which could ultimately affect the acquisition community's ability to more successfully develop the best value solutions for the warfighter according to cost, schedule, and performance.

## B. PURPOSE OF THE STUDY

The primary objective of this research is to explore the general state of KS currently in practice by the individual Army acquisition PEOs as determined by direct feedback from PEO leadership (e.g., PEOs, Deputy PEOs, and PMs). Of particular interest in this assessment is identifying the specific internal approaches that PEOs utilize for documenting, analyzing, and sharing tacit and explicit knowledge for lessons learned and best practices, as well as the extent of their collaboration with other Army PEOs regarding the same. What is the relative level of effort that PEOs undertake for documenting and sharing their lessons learned and best practices within and outside their organizations? How do PEOs encourage and incentivize KS activities?

A secondary objective of this research is to identify some common existing DoD, Army, and industry (web-based) resources that PEO members may use for sharing program management lessons learned and best practices knowledge, investigate PEO perceptions of their utility, and identify the extent at which PMs actively contribute to them. Do any of these available KS resources factor into their overall KS strategies?

Comparisons of PEO leadership feedback should identify similarities and differences in individual PEO KS strategies and may inform as to current trends and capabilities. More importantly, the information may help in evaluating the Army

acquisition community's KS progress and should help highlight areas for improvement that may be mutually beneficial to both PEOs and to the greater DoD.

## C. RESEARCH QUESTIONS

### 1. Primary

To what extent are Army PEOs engaging in KS activities to identify and document best practices and lessons learned to aid in internal program activities and in external collaborative information sharing?

### 2. Secondary

In what ways do PMs disseminate lessons learned and best practices to the varying components of their PMOs? What KS resources are PEOs/PMOs/PMs using to meet the DoDs guidance for sharing lessons learned and best practices?

To what extent do PMs find these resources as useful in supporting the Army's guidance regarding the creation of a KS environment among its PEOs?

Do any external DoD KS system capabilities align with PM internal procedures for dissemination of lessons learned and best practices throughout their respective PMO?

## D. SCOPE AND METHODOLOGY

The scope of this study is limited to an analysis of the KS dynamics within and among Army acquisition PEOs. It includes a review of Army KM doctrine and various collaborative (web-based) knowledge resources accessible to PEOs and their PMO staff. The study does not investigate or attempt to make assumptions regarding the KS practices of the Joint Program Executive Offices (JPEOs) and/or PEOs from the other Service components.

Our fundamental analysis approach consists of the development and administration of a voluntary survey to gather information from witting PEO leadership on the primary and secondary research questions posed in the study. Our intent is to gather direct feedback from as many PEOs as possible to provide accurate representation of the current environment as well as a solid foundation to baseline future studies on this topic. The

limitation of the study is that it relies heavily on voluntary feedback from a limited subset of the acquisition community, the PEO management staff positions. Additionally, PEO KS practices are not extensively publicized in open source literature, nor have any of the authors worked exclusively in a PEO environment, which may limit access to some key information and perspective on the topics of interest. Furthermore, the volume of returned surveys, as well as the quality of individual responses, depends heavily on the willingness of the sample population to openly share candid, accurate, and up-to-date information.

## E. SUMMARY

This chapter introduced the research topic, the purpose and scope of the study, and the key research questions. The information generated from this analysis should provide a more comprehensive perspective on the current state of KS among Army acquisition PEOs. Furthermore, this research should establish a basis as to the trends and practices used within and between PEOs for KS and may offer useful insights for improvement of strategies among these organizations.

Chapter II provides a brief overview of knowledge concepts, reviews the basic tenets of the KM discipline, and outlines principles and practices of KS citing relevant DoD and Army guidance regarding the implementation of KM and KS among its organizations. It also identifies various examples of KS resources accessible for use by acquisition PEO staff. Chapter III presents the findings and analysis of the PEO KS survey, and Chapter IV provides conclusions and recommendations.

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# II. BACKGROUND

> Organizations are often replete with knowledge. The critical challenge…is to make this knowledge cohere.
>
> —British economist Mark Casson.
> (Smith, 2009, p. 257)

## A. KNOWLEDGE

Knowledge is a combination of information, experience, and insight. Webster's dictionary describes it as the fact or condition of understanding something with familiarity gained through association or experience. Some refer to knowledge as "justified true belief" (Nonaka & Teece, 2001, p. 14). As Figure 1 illustrates, knowledge is a building block residing near the pinnacle of the data-information-knowledge-wisdom (DIKW) hierarchy model (Rowley, 2007). The pyramid shows the interdependent yet progressive relationship of each building block leading to the zenith of wisdom. Progressive learning drives the person upward through the DIKW model. At the foundation, data represents discrete facts that hold little meaning individually. The person collectively knows nothing of this data (Ackoff, 1989; Zeleny, 1987). Information formulation transpires when the data contains appropriate relevance, and the person assigns a purpose transforming the data into information. At this juncture, the person has provided the information to the questions of who, what, when, and where (Ackoff, 1989). This information begets knowledge that corresponds to the individual's "know how" (Zeleny, 1987). Knowledge is the cognitive ability to generate wisdom through the building of information upon data (Morris, 2002). Grey (1996) offers, "knowledge is the full utilization of information and data, coupled with the potential of people's skills, competencies, ideas, intuition, commitments and motivations" (para. 4). Wisdom is the application of knowledge and experience to produce a sound action or decision. One achieves wisdom in a topic, when one understands all the topic area principles combined with feedback through experience. Table 1 helps explain the DIKW model using a comparison of Ackoff's and Zeleny's terminology for interpreting the meanings and connections between the various DIKW elements (Rowley, 2007).

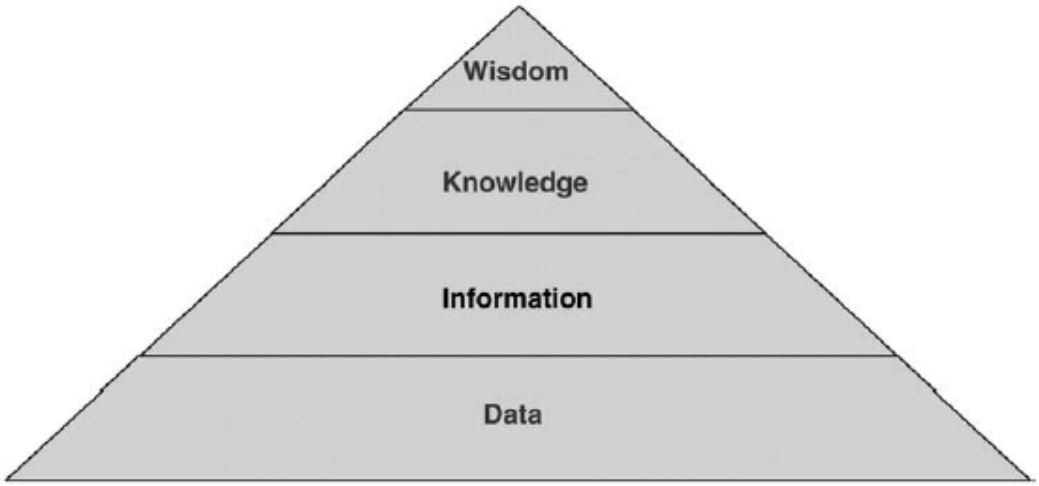


Figure 1 The Data Information Knowledge Wisdom Hierarchy.
Source: Rowley (2007).

Table 1. DIKW Model Definitions. Adapted from Rowley (2007).

| **DIKW** | **Zeleny** | **Ackoff** |
|---|---|---|
| Data | Know nothing | Symbols |
| Information | Know what | Processed beneficial data; provides who, what, when, and where solutions |
| Knowledge | Know how | Usage of the data and information; answers how |
| Wisdom | Know why | Evaluated understanding |

Rowley's comparison of Ackoff's and Zeleny's definitions of the data, information, knowledge, and wisdom model.

### 1. Knowledge Types

The predominant knowledge types are classified into two major categories, 1) explicit knowledge, and 2) tacit knowledge. Explicit knowledge is defined as formalized knowledge readily communicable, stored, and distributed in both visual and oral media (Brown & Duguid, 1998). It is sometimes referred to as the "know-what" and can be found in such sources as documents, manuals, databases, notes and memos. Conversely, tacit knowledge is largely experience-based knowledge. It is referred to as the "know-how" and

encompasses such things as an individual's skills, education, expertise, ideas, and insights, which are difficult to formalize, express verbally, or capture in written terms.

Both individuals and organizations can possess and access varying amounts of each knowledge type, however, the degree at which each utilize and value this knowledge, indelibly varies. At an organizational level and according to the knowledge iceberg model in Figure 2, some experts believe that most of an organizations explicit knowledge is relatively easy to come by. In other words, it is visible and accessible as depicted in the unsubmerged portion of the iceberg. The bulk of knowledge, however, includes the implicit and tacit knowledge, which lies well beneath the surface. Thus, according to this theory, we see an unequal distribution of knowledge between both major types. In fact, researchers estimate that on average this explicit-to-tacit knowledge ratio is near 20:80 for many business organizations (Haider, 2009). As such, a large degree of knowledge lies within the individual and may be widely inaccessible if not for active efforts to extract it.

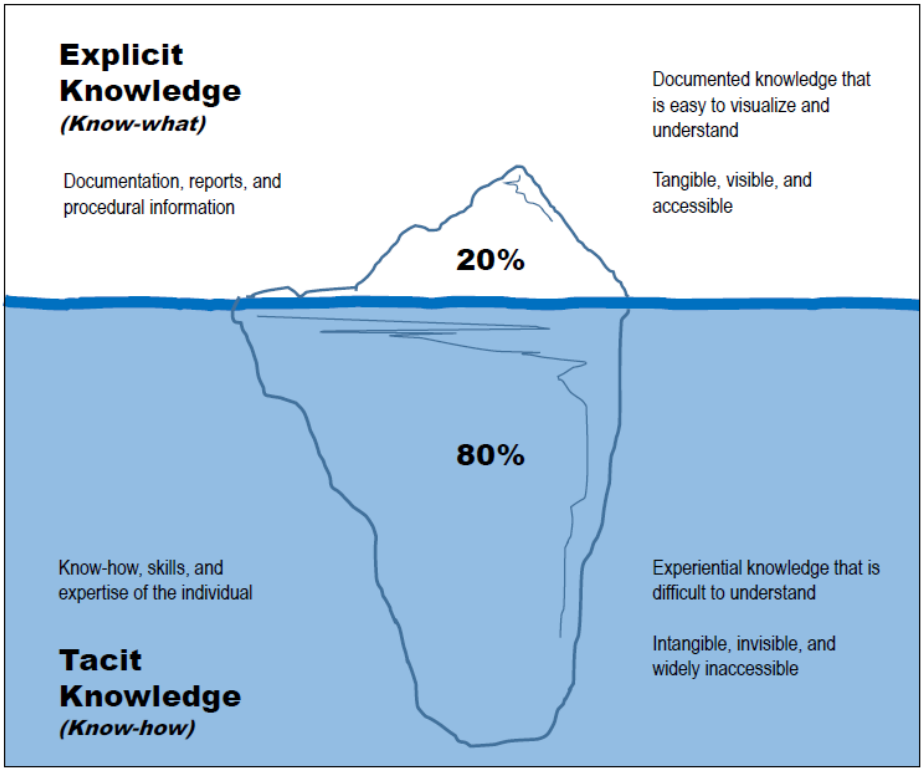


Figure 2 The Predominant Knowledge Types in the Iceberg Model. Adapted from Haider (2009).

Organizations and individuals interact to convert explicit knowledge into tacit knowledge by compiling skills, experience, and existing explicit knowledge into a continuous learning process. This process is known as internalization. Externalization processes on the other hand, effectively convert tacit knowledge into explicit knowledge. Socialization is the process of sharing tacit knowledge through observation or conversations (Surbakti, 2015). Figure 3 shows this relationship by compartmenting tacit and explicit knowledge types within the knowledge block of the DIKW model, the vertical axis being the value to the user and the horizontal axis as the general availability of each building block. This visualization provides insight as to why organizations manage knowledge. The conversion of explicit knowledge into tacit knowledge can greatly benefit an organization (Nonaka, Umemoto, & Senoo, 1996).

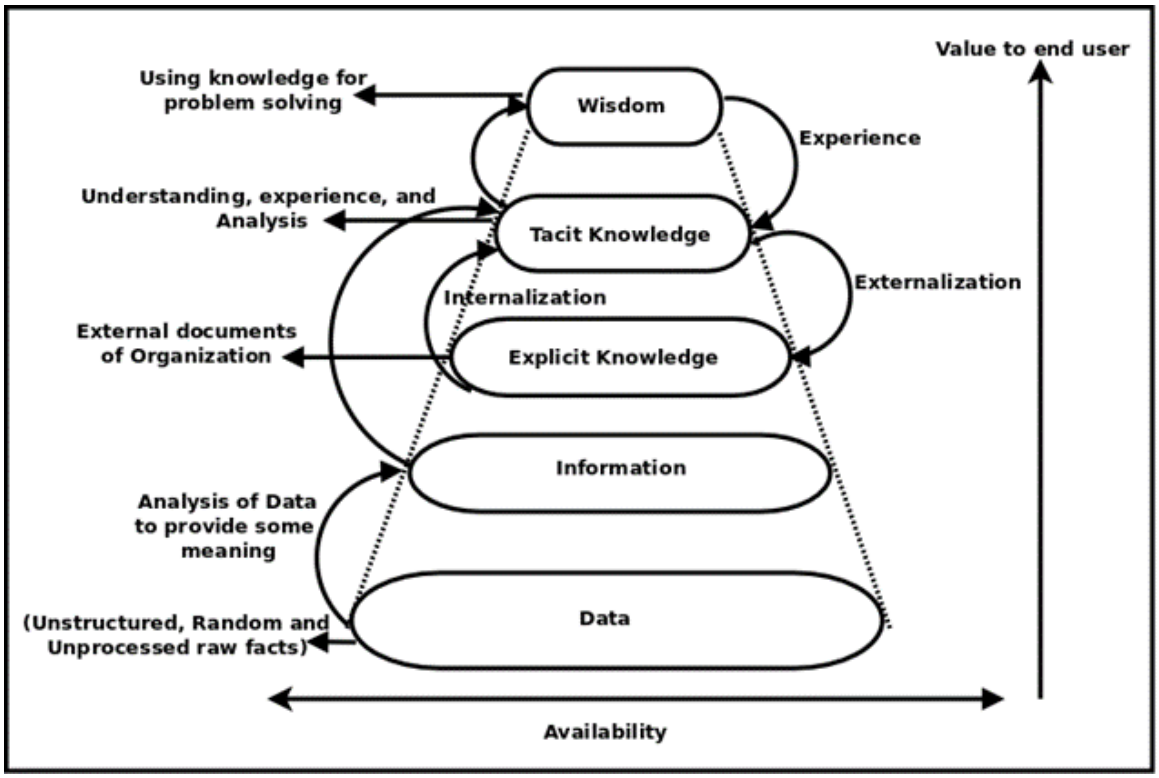


Figure 3 Relationship among Data, Information, Knowledge, and Wisdom. Source: Surbakti (2015).

If one accepts the premise that an organization is what it knows, then it is easy to agree with the contemporary view that knowledge is considered among "the most strategically-significant resources of a firm" (Huber, 2004, p. 2). As a key resource to organizations, both explicit and tacit forms of knowledge can be acquired, transformed, and exchanged between individuals, within intra-organizational teams, and between organizations, leading to a competitive advantage. To sustain an organizational advantage, the rate of organizational knowledge adoption, comparative advantage contained in the knowledge, and the compatibility and format of the knowledge (e.g., lessons learned and best practices) should be high, thereby enabling the innovators and early adopters with a high degree of organizational knowledge diffusion (Rogers, 2010).

## 2. Lessons Learned Knowledge

Knowledge in the form of learned lessons represents meaningful past or current experiences that may be applied in context for improvement of similar current or future

situations. Lessons learned provide valuable insight that can be directly transferred (internalized and externalized) between individuals, teams, and organizations (Rowe, 2007).

The Army defines lessons learned knowledge from "*Establishing a Lessons Learned Program*" AR 11–33 as

> validated knowledge and experience derived from observations and the historical study of military training, exercises, and combat operations that leads to a change in behavior at either the tactical, operational, or strategic level or in one or more of the Army's doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) domains. (Department of the Army [DA], 2006, p.10)

In the defense acquisition domain, lessons learned are considered as useful program management tools that PMs and program personnel can use for retaining organizational knowledge, reducing project risk, and improving project performance in systems development. Lessons learned can be in the form of both positive and negative experiences and approaches, that when captured and shared among the acquisition team, either help avoid reoccurrence of issues or promote repeat application of successful endeavors (AcqNotes, n.d.). A lessons learned database serves to document and store this knowledge providing a review of what worked and what did not work in past programs, in the hopes that future programs can avoid the same pitfalls.

The Army Lessons Learned Program (ALLP) was established by the Deputy Chief of Staff, G-3/5/7 and is managed by the Center for Army Lessons Learned (CALL), with a mission set that "identifies, collects, analyzes, disseminates, and archives lessons and best practices while maintaining global situational awareness in order to share knowledge" (Center for Army Lessons Learned, n.d., para. 1).

In addition to the operational Army's approach to managing lessons learned knowledge, the CALL also established a tangential and complimentary acquisition collection team enabling lessons learned collection(s) focused on all phases of the acquisition life cycle. The documentation of vetted acquisition lessons learned occurs similarly through a robust collection process. The nexus of these two knowledge

repositories provides some of the knowledge needs of today's operational Army as well as the acquisition community for the equipage of the Army Warfighter.

The CALL acquisition collection process model leverages raw data observations and knowledge inputs from observers and subject matter experts (SME) that are transferred to the CALL for analysis. These lessons learned are then passed through the PM for screening before they are ultimately distributed to the acquisition workforce through the CALL online databases and publications (Crosman, 2002). The Crosman military model for establishing lessons learned emphasizes that the lessons learned process must have management support to encourage acquisition wide participation (see Figure 4). The model also facilitates capture of lessons learned from numerous projects regardless of size to promote participation, grow the database, and to stimulate a culture of sharing and non-attribution (Crosman, 2002).

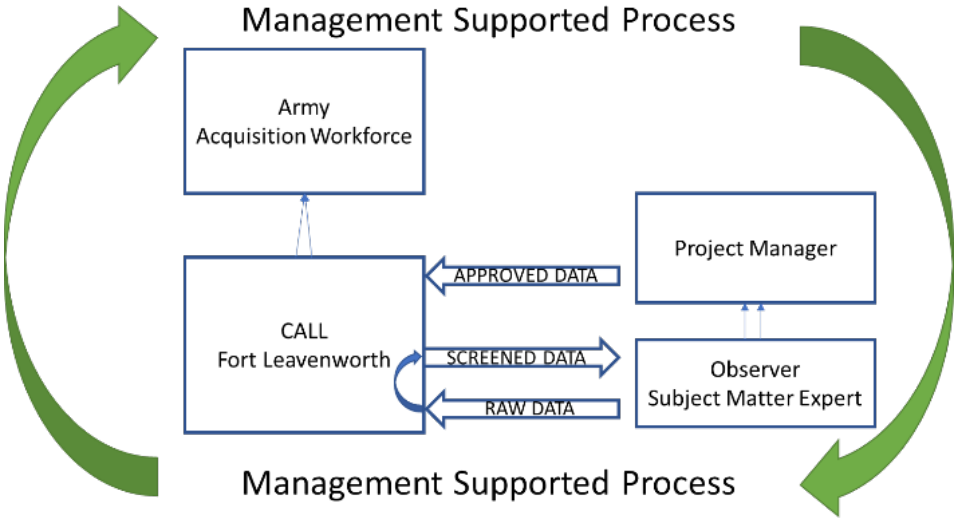


Figure 4 The Crosman Lessons Learned model for Army CALL Lessons Learned. Adapted from Crosman (2002).

### 3. Best Practice Knowledge

Best practices are proven strategies, guidelines, processes, or ideas that highlight the most prudent or efficient way for completing a task. They can serve as a framework for organizations, teams, and individuals to help dictate recommended courses of action

leading to higher probabilities of success when applied to like circumstances. Best practices knowledge is reusable, measurable, and suitable for widespread adoption because it is validated by research and experience as being capable of ensuring optimized results when applied in like situations.

In the context of the Army acquisition domain, validated best practices are valuable knowledge assets derived not only from lessons learned within the DoD but also from the experience of DoD support organizations as well other commercial businesses in the private sector. Management of best practice knowledge requires vested dedication on the part of an organization as this knowledge needs to be recognized, codified, and validated by SMEs prior to dissemination throughout the community. In recent years, GAO has repeatedly advised the DoD acquisition community that it must improve its use of best practice knowledge to reduce program risk and to put PMs in a better position to succeed (Rodrigues, 1999).

To help in this knowledge area, various practical knowledge resources exist in the form of guidebooks and online repositories. The 2017 DAG is among the most recognized examples. The DAG accompanies DoD policy documents by providing a best practice knowledge base tailorable to individual program needs (*Defense Acquisition Guidebook* [DAG], n.d.-b). Similarly, DAUs *A Guide for DoD Program Managers* outlines key context-based best practice knowledge critical for effective and efficient program management. It is a useful compilation of expert recommendations built with insight from PMs over their collective years of acquisition PM practice.

Another resource is the U.S. Government Accountability Office (GAO) and the Best Practices and Leading Practices in Acquisition Management. Here, the GAO offers a large volume of best practices knowledge repository through its published research, references, audits, reports, and findings. For example, a query of “best practices” on the GAO website yielded over twenty-two thousand results, with the subset of those results in the DoD community totaling over five-thousand.

These are but a few examples of how best practice knowledge can be made easily accessible and updatable, while promoting communication, sharing, and reuse among the

acquisition community at large. The diffusion of actionable best practice knowledge is important for large organizations like DoD whose personnel perform similar tasks but may not engage in consistent day-to-day learning engagement because they are geographically dispersed or otherwise limited in their capability to share such knowledge, both tacit and explicit in nature.

### 4. A Knowledge Repository—The Army Acquisition PEO

The Army acquisition PEO is one example of an organization replete with knowledge, both explicit and tacit. Since their inception in the late 1990s, these organizations have managed the development and sustainment of a vast portfolio of integrated state-of-the-art equipment for the Armed forces. They oversee some of the nation's most vital defense systems investments as well as the knowledge associated with them. Today, the Army operates twelve PEOs under the direction of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT).

Individual PEOs specialize in various functional program areas of expertise, and as directed, each PEO follows a generalized organizational structure whereby various PMs and PMOs (with oversight from the lead executive officer) serve as the focal point managers for both individual programs as well as portfolios of similar programs and multi-disciplinary projects.

As a function of their programmatic tasking's, and with many decades of experience, PMOs (and the PEO as a whole) create, classify, store, distribute, communicate, and reuse an appreciable volume of data, information, and knowledge. As major knowledge repositories, PEOs develop the "know-how" and "know-what" through experience as acquisition practitioners acting in many functional areas and through a multitude of management scenarios. Their role involves using these knowledge resources to maintain a holistic view of program status to achieve an in-depth understanding of the interrelationships among each of their programs key elements. The PEOs available knowledge gives insight to influence key decision points throughout each phase of their efforts to ensure deliverables meet set cost, schedule, and performance criteria. Whether by way of formalized sharing and/or discretionary informal sharing, the PEO working

environment is a domain that should place a high demand on continuously shared knowledge to ensure efficient and effective program management outcomes.

Due to the complex working environment and mission of the DoD, it is vital that PEOs consistently document and share knowledge to maintain proficiencies and increase the value of their efforts. Some claim that KS practices are more increasingly necessary in today's DoD citing that "DoDs parochialism and antagonism towards knowledge communication continues to impede success" (Corrin, 2010, para. 8). In fact, recent Defense Acquisition reform initiatives, Better Buying Power, invite the acquisition community to formulate and implement better approaches to improve their information management and KM activities in hopes of improving the sharing culture (Kendall, 2014). The direction to practice evidence-based decision-making puts important pressure on PEO organizations to better manage the knowledge they both knowingly and unknowingly possess. Key knowledge embedded in programs and people include value-added direction from lessons learned, proven techniques in the form of best practices, as well as relevant case study analyses. This knowledge must be documented and shared to make significant positive impact on organizational effectiveness. Moreover, having a process for managing knowledge is key in achieving this goal. In order for knowledge to be useful and valuable, it must be organized and managed (Wiig, 1993).

## B. KNOWLEDGE MANAGEMENT

The overall concept of organizational KM is quite simply, a process of capturing, distributing, and effectively using knowledge (Davenport, 1994). The practice of KM is not a "one-time" effort, but an ongoing institutional process tailored to organizational needs and goals. KM was established as a formal discipline in the early 1990s as businesses recognized a need to formally manage their knowledge as a key resource and intellectual asset. As the KM field of practice evolved from its nascent state decades ago, refined definitions emerged detailing KM's basic concepts and integrated approaches for fostering improved organizational learning. The following foundational KM definitions provide some context.

> Knowledge management is the deliberate and systematic coordination of an organization's people, technology, processes, and organizational structure in order to add value through reuse and innovation. This is achieved through the promotion of creating, sharing, and applying knowledge as well as through the feeding of valuable lessons learned and best practices into corporate memory in order to foster continued organizational learning. (Girard, 2015, p. 9)

Jennex, Olfman, Panthawi, and Yong-Tae Park (1998) refers to KM as "the strategies and processes designed to identify, capture, structure, value, leverage, and share an organization's intellectual assets to enhance its performance and competitiveness" (p. 158). It is based on the exercise of two critical activities:

> Capture and documentation of individual explicit and tacit knowledge.
> Knowledge dissemination within the organization (Jennex et al., 1998, p. 160).

These definitions identify the main purpose of KM as well as the components and process steps needed to develop specific strategies to meet the overarching KM objectives and deliver KM benefits. Sasser's (2004) examples of the some of the most recognized KM benefits within the DoD are

- Enhanced personal knowledge
- Increased information content
- Re-use of internal knowledge
- Time savings in doing routine work
- Accelerated processes
- Improved employee teamwork
- Increased employee motivation (Sasser, 2004, pg. 73)

### 1. KM Components

The three major components of KM are people, process, and technology (Mohapatra, Agrawal, & Satpathy, 2016). Figure 5 shows the interrelationship of the three KM components along with some commonly associated sub-elements, which can be

implemented in a holistic KM strategy with learning achievement being the preferred outcome. The practice of KM therefore becomes the artful combination of the three components for the purpose of knowledge interchange to ultimately accelerate organizational learning—KM being enacted by people, enabled by process, and empowered by technology.

As KM is explained as more of an art than a science, there are few practical "one size fits all" solutions for off-the-shelf application. Over the years however, KM experts have recognized a trend indicating that most effective organizational KM practitioners tend to distribute their KM efforts in a 70-20-10 ratio with respect to the three component areas (Bhatt, 2000). This trend offers insight as to the importance of utilizing the "people" component, because KM depends on people's willingness to share. Focusing largely on people is often most critical for success as some estimate 80-90% of all knowledge consists of the individual experience nested within personnel (Department of the Army [DA], 2012). As such, people actively sharing knowledge (their social capital) through social interaction, promotes the KM process. In summarizing a decade's worth of KM studies, Tom Allen of MIT indicated that

> engineers and scientists were roughly five times as likely to turn to a person for information as to an impersonal source such as a database or file cabinet. In other settings, research has consistently shown that whom you know has a significant impact on what you come to know, because relationships are critical for obtaining information, solving problems and learning how to do your work. (Cross, Parker, Prusak, & Borgatti, 2001, p.100)

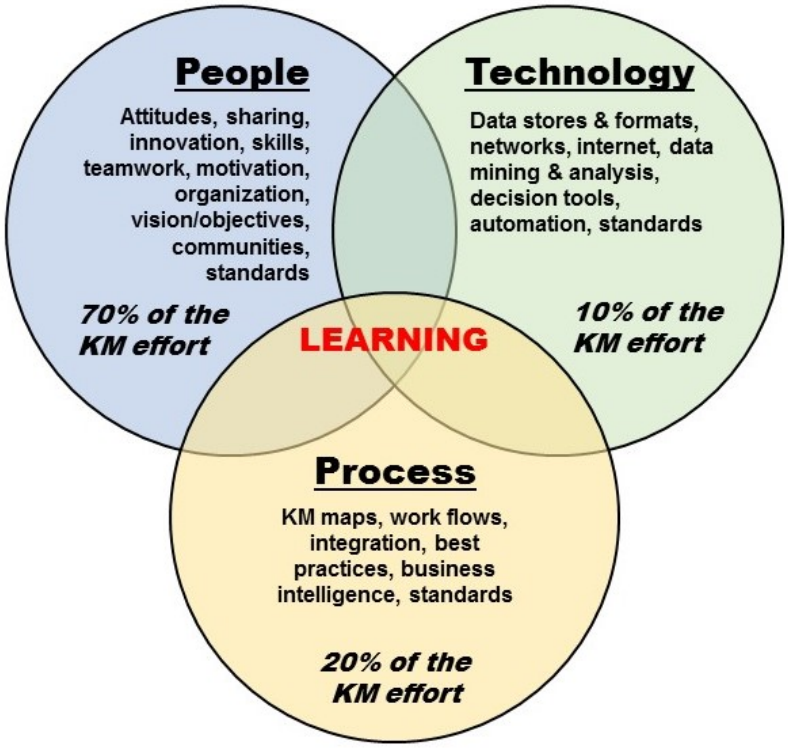


Figure 5 Knowledge Management Components and Sub-elements. Adapted from Bhatt (2000).

As a complement to Allen's assertion, the National Defense Strategy, June 2008 states that

> the people of our Total Force are the greatest asset of the Department. Ensuring that each person has the opportunity to contribute to the maximum of their potential is critical to achieving DoDs objectives and supporting U.S. national security…The goal is to break down barriers and transform industrial-era organizational structures into an information and knowledge-based enterprise. These concepts are not a panacea, and will require investments in people as much as in technology to realize the full potential of these initiatives. (Department of Defense, 2008, pp. 20–22)

Facilitating KM requires leveraging human capital to promote collaborative learning environments, process improvements, and technology for organizational benefit. While a digital repository of explicit knowledge informs as to the "why," the "how," or tacit knowledge, remains the individual's dominion. Empowering knowledge transfer through individuals comes by way of: 1) cultivating learning organizations, 2) promoting

social connections 3) relationship building activities, and 4) promoting collaborative interactions to connect experts with those people who seek the knowledge itself (United States Strategic Command Knowledge Transfer Office, 2009).

### 2. KM Life Cycle

Over the years, KM practitioners have developed a wide range of guiding KM process life cycle models, frameworks, and activities to help guide organizational KM strategies. The models can provide structure on how organizational knowledge may be effectively processed throughout its lifespan. The popular KM Cycle Model (KMC) in Figure 6 represents a simplified amalgamation combining elements of the most influential KM life cycle models developed over the last 25 years. The model presents a pragmatic approach to KM through the iterative execution of seven key overarching knowledge processing phases 1) identify, 2) store, 3) share, 4) use, 5) learn, 6) improve, and 7) create. The step-wise execution of each of these seven interrelated activities helps an organization create value (in the form of knowledge) with the goal of retaining and sharing that knowledge as a key component of the organizations memory (Evans, Dalkir, & Bidian, 2014).

The Evans et al., KMC model commences when a knowledge seeker "requests" knowledge for the purposes of problem solving, decision-making, gap analysis, or innovation. The "identify" phase consists of actively pursuing knowledge from either internal or external resources. This involves pursuit, analysis, and assessment of objectively held explicit knowledge and subjectively held tacit knowledge, for its applicable utility. Alternatively and concurrently, unfulfilled knowledge identification may require knowledge creation if there are limited knowledge assets identified. In this case, knowledge creation initiatives are employed. Moving to the "store" stage involves using tools to retain knowledge in such a (structured) way to allow for efficient manipulation, retrieval, and sharing. In the "share" phase, the organization uses various initiatives (see KS Section, table of *KS Methods*) and technologies to disseminate knowledge within and outside the institution. The "use" phase involves active contextual application of shared knowledge, which leads to the "learn" phase whereby practitioners internalize the

knowledge application outcomes to assess value. As an example, application of lessons learned, and best practice knowledge are considered as some of the most useful activities occurring in the share-use-learn phases of the KMC model. As this "useful knowledge" passes from the learn stage to the "improve" stage, it is further refined and fed back into storage for future use. Alternatively, knowledge deemed "incomplete" results in the knowledge seeker returning to the original starting points of identification and creation, whereby the life cycle begins anew (Evans et al., 2014, pp. 91–94).

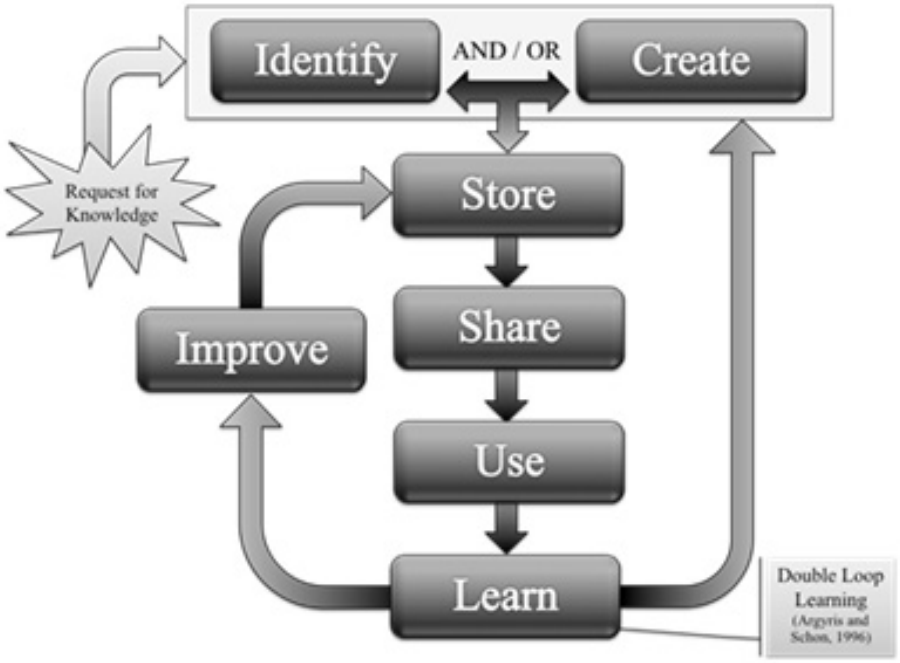


Figure 6 The Knowledge Management Cycle (KMC).
Source: Evans, Dalkir, and Bidian (2014).

### 3. Example of DoD KM Process for Lessons Learned and Best Practices

As mentioned briefly earlier, one of the Army's initiatives to centrally manage key institutional knowledge for improvement of their overall KM strategy was the creation of the ALLP and the CALL. The ALLP represents a robust KM level-of-effort that the Army's operational force elements have taken for identifying, collecting, analyzing, archiving, and sharing lessons learned and best practices among the warfighter community. This model

also influences the joint strategy for KM as evidenced by the creation of the Joint Lessons Learned Program (JLLP), which standardized practice of the joint lessons learned model depicted in Figure 1. Similar to the KMC model, the JLLP methodology follows a like approach and illustrates a robust, codified, five-phase process that may be used for discovering, documenting, validating, and sharing lessons learned and best practices. The JLLP process model begins with a discovery phase using active and passive collection of key knowledge observations and terminates with internal and external dissemination of lessons learned. Intermediate steps include exhaustive knowledge reviews, analysis, and validation of observations leading to formulation of best practices (resolutions) and lessons learned. The terminal phase includes internal and external dissemination implying the potential for real-time application and monitoring of said "solutions." Although this model is not necessarily a formal instruction for the acquisition community's KM practitioners, the process framework (complimented by other KM practical applications), does serve as useful baseline reference for Army acquisition PEOs on how they may best structure their lessons learned and best practices KM activities.

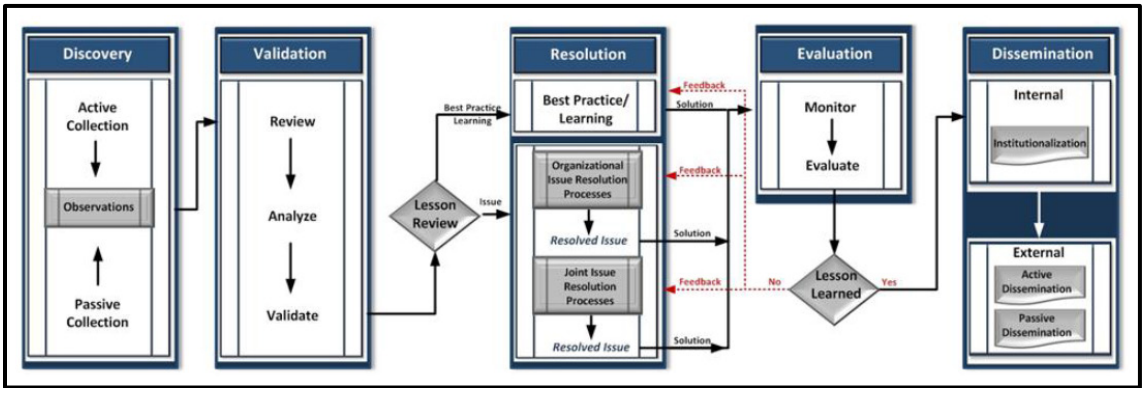


Figure 7 Joint Lessons Learned Process Map. Adapted from Chairman of the Joint Chiefs of Staff (2012).

## 4. KM in the Army Domain

In general, the vast majority of the Army's published doctrine on KM aligns well with the aforementioned concepts and practices developed and accepted among those in the private sector and in academia. Army initiatives to codify and better focus its individual

KM efforts became widely apparent during 2004 when it released Army Regulation 25–1 titled "Army Knowledge Management and Information Technology." Although this doctrine focused primarily on the application of KM practices within active operational units and their direct support organizations, the regulation established the Army's overall KM vision. It states that,

> Army Knowledge Management (AKM) is the Army's strategy to transform itself into a net-centric, knowledge-based force and an integral part of the Army's transformation to achieve the Future Force. [The goal of AKM is to] deliver improved information access and sharing while providing infostructure [sic] capabilities across the Army so that warfighters and business stewards can act quickly and decisively. AKM's purpose is to connect people, knowledge, and technologies. (Department of the Army, 2005, pg. 2)

The KM impetus was clearly articulated in the guidance – increased knowledge access and sharing.

In July 2008, the Army released twelve overarching "KM Principles" with further guidance on the strategy and initiatives for implementing KM throughout all Army organizations. The KM vision was as follows

> KM is a discipline that promotes an integrated approach to identifying, retrieving, evaluating, and sharing an enterprise's tacit and explicit knowledge assets to meet mission objectives. The objective (of the twelve knowledge management principles) is to connect those who know with those who need to know (know-why, know-what, know-who, and know-how) by leveraging knowledge transfers from one-to-many across the Global Army Enterprise (CIO, U.S. Army G-6, 2008, p. 2)

Although this guidance did not directly mention the Army acquisition community or PEOs as targeted KM participants, it is reasonable to assume that these organizations would represent some of the important "business stewards" supporting the greater Army enterprise and therefore would be well suited to implement the given principles into their individual KM efforts.

The twelve guiding KM principles from the Army CIO (2008) were to

1. Train and educate KM leaders, managers, and champions.
2. Reward KS and make KM career rewarding.

3. Establish a doctrine of collaboration
4. Use every interaction whether face-to-face or virtual as an opportunity to acquire and share knowledge.
5. Prevent knowledge loss.
6. Protect and secure information and knowledge assets.
7. Embed knowledge assets in standard business processes and provides access to those who need to know.
8. Use legal and standard business rules and processes across the enterprise.
9. Use standardized collaborative tool sets.
10. Use Open Architectures to permit access and searching across boundaries.
11. Use a robust search capability to access contextual knowledge and store content for discovery.
12. Use portals that permit single sign-on and authentication across the global enterprise including partners (CIO, U.S. Army G-6, 2008, pp. 3–6)

In the recent 2015 Army Techniques Publication (ATP 6–01.1) "Techniques for Effective Knowledge Management," the Army reiterated the importance of KM as a process of "enabling knowledge flow to enhance shared understanding, learning, and decision making" (Department of the Army, 2015, p. 1–1). Although the principal audience of this doctrine was again active Army operational units, the principles, and instructions for developing KM strategies remain valuable and applicable across the entire Army Enterprise, including the acquisition PEO. Provided later in the chapter is a list of these and other KM applicable DoD and Army documents.

As evidenced by these instructions and objectives, the Army proclaims a clear realization of the importance of KM because they appreciate the value of knowledge in sustaining readiness and performance. As the literature and guidance both emphasize, managing organizational knowledge resources involves maximizing use of robust and adaptable strategies built around process frameworks like the KMC model using people resources to explore and exploit tacit knowledge and using technology to explore and exploit explicit knowledge. Each of these three components must be extensively exercised to support an effective KM effort (Mitchell, 2003).

## C. KNOWLEDGE SHARING

The practice of KS is the core tenet of KM and is the act of moving knowledge, including knowledge based on expertise or skilled judgement, from one person to another via expressed formal procedures or informally through collaboration and dialogue. KS is sometimes referred to as "knowledge exchange," "knowledge transfer," or "knowledge dissemination," as these terms are often used interchangeably throughout the literature. As an activity, KS relies heavily on the "individual" who can intentionally explicate, encode, and communicate knowledge to other individuals, groups, and organizations (Schwartz, 2006). As such, a great deal of an organizations knowledge is created and shared using informal exchanges between group members via various activities or initiatives (McDermott, 1999).

KS is supported and based upon the utilization of social capital, which is the sum of available resources (including information and knowledge assets) among personal and organizational networks (Boissevain, 1974). In a productive KS environment, individual members of an organization share what they know because they understand everyone will benefit. Without the practice of KS, knowledge assets with their limited shelf life, provide little value to an organization. Consider a Program Management Office (PMO) team, who gain access to privileged social capital as a function of their membership connections within this network community. As a proposed social community specializing in the speed and efficiency of knowledge transfer, the capability of the PMO organization to create and share knowledge is largely dependent on its ability to create and transfer tacit knowledge (Kogut & Zander, 1996).

Therefore, in theory, the more efficient the organization is in utilizing their social capital to develop, invest, and encourage effective team relationships, the more successful the organization is in creating and harvesting intellectual capital. The faster the KS diffusion rate, the higher a team performs, leading to organizational advantages (Nahapiet & Ghoshal, 1998). This supports the logic that once knowledge is captured and codified, it must to be shared to create value (Mohapatra et al., 2016). As such, and as evidenced by the KMC model, the "sharing" phase of a KM, may in fact be one of the most important endeavors a KM practitioner embraces. It effectively "bridges" the upstream phases of KM

with those downstream, thus enabling application via problem solving, decision making, and improved innovative thinking (Evans et al., 2014).

### 1. KS Methods and Processes

As a key component of the greater KM effort, the practical application of KS relies on the adoption and implementation of various initiatives, activities, and technologies to build a working strategy for the KS organization. These KS "elements" may be utilized individually or collectively to exploit both tacit and explicit knowledge assets.

Among the most widely accepted and useful KS methods are those based on human interaction categorized as 1) self-service, 2) lessons learned, 3) communities of practice, and 4) facilitated transfer of best practice as depicted in Figure 8, (O'Dell and Hubert, 2011). Each varies based upon organizational dependence upon tacit or explicit knowledge, technology, as well as the level of personal interaction necessary to exploit the effort. In the area of self-service approach, a person has access to knowledge assets when and where they require it in a "help yourself" scenario. The lessons learned approach was discussed earlier in this paper. The "communities" area approach relies on social networks or teams that leverage people coming together to solve problems. These COPs typically construct a body of knowledge, such as an acquisition management functional area like program management, contracting, or systems engineering. They are normally found in mature KM programs and communities who professionally develop their members. The knowledge transfer of best practice approach involves formal facilitation and coaching through a controlled and planned method. As the name implies, this method focuses upon exchange of best practices through peer-to-peer assistance in order to close performance gaps between organizations or teams (O'Dell & Hubert, 2011). In order to practically exploit the benefits of these processes, one must understand their capabilities and limitations with regard to the type of knowledge and level of human interaction required to achieve results.

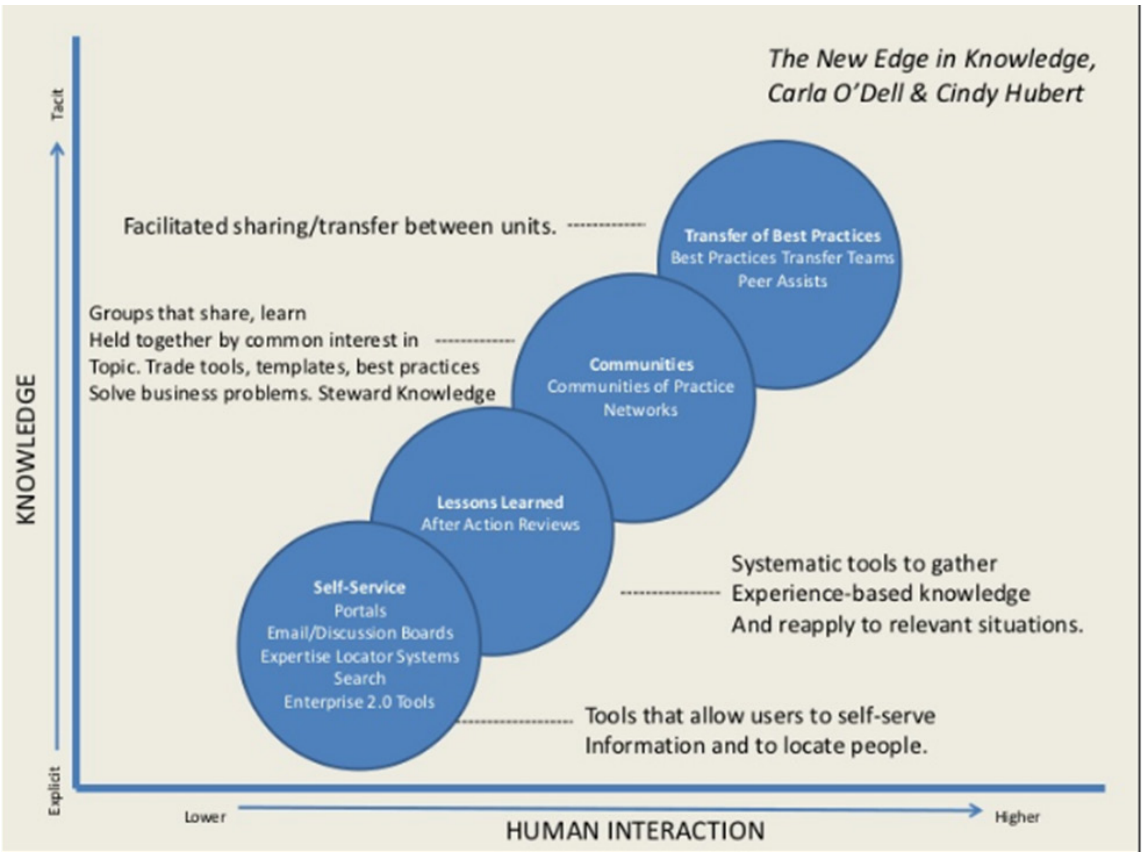


Figure 8 Categories of KM Approaches. Source: O'Dell and Hubert (2011).

Some of the most widely utilized KS methodologies include initiatives, activities, and technology tools are listed in Table 2.

Table 2. KS Methods

| KS Method | Description |
|---|---|
| After action reviews (AARs) | Capture and organization of lessons learned after notable organizational events |
| Conferences | Small-to-large forums whereby SMEs can focus on specific areas of interest |
| Communities of Practice | Groups of networked individuals who share a collaboration on shared interests or practices |
| Storytelling, Narratives, Anecdotes | Case study analyses and stories to generate emotional connections and build KS culture |
| Workshops and Tutorials | Hands-on learning events where small groups explore concepts and develop skills |
| Coaching Mentoring, Apprenticeships | Programs to help new and existing employees learn from those with more experience |
| Social organizational network analysis and sociograms | Mapping of social networks to identify how communications, decisions, and information flow through people |
| Subject matter expert profiling and Yellow pages / Expert locating | Searchable index of people who possess relevant skills and expertise |
| Crowdsourcing / polling | Engaging a group for idea generation and information gathering |
| Town hall meetings | Informal gathering to discuss issues and ideas across many organizational levels with direct worker interaction and feedback |
| On-boarding | Explicit process to integrate new employees in to the social networks of the organization |
| Off-boarding | Explicit process to capture explicit and tacit knowledge from departing employees |
| Social gatherings | Official or unofficial events for relationship building |
| Brown bag lunches | Informal meeting whereby people can come together on a topic of interest to share relevant experiences |
| Knowledge repositories, intranets, and portals | Network sites that facilitate internal and external communication of knowledge and ideas |
| Document and content management systems | Digital content is created and managed for multiple users in a collaborative environment |
| Blogs and Wikis | Web–based software tools where people can post information, make commentary, and edit other entries |

| KS Method | Description |
|---|---|
| Social Media | Computer-based technologies to create and share information, ideas and digital media in a virtual environment |
| Websites | Multimedia content on various web pages published on a web server for universal access |
| Groupware and Collaboration Technologies | Multiple user software platforms for simultaneous group content editing and control |
| Listserves | Professional subscribers receive topics of interest through electronic mail. |

These KS methods include initiatives, activities, and technology tools. Adapted from Evans et al., (2014); Mayfield et al., (2010); STRATCOM, (2008); Mohapatra et al., 2016).

### 2. Other Useful KS Resources and Tools

Additional KS resources may serve as useful references for Army acquisition PEOs on how they may best structure their KS activities. A recent RAND Corporation study identified twenty-one federal and DoD information systems that are available to answer acquisition questions. "The[se] systems are attempting to pull together variables in one place for analysis to improve DoD decision making and to reduce the costs associated with analysts trying to cobble together information" (Moore & McKernan 2017, p. 41).

These resources and tools may be useful to answer complex acquisition problems promoting further KS and KM among the greater acquisition community. Table 3 provides a list of various DoD and Army guiding documents relating to or touching upon the practice of KM and KS, published within the last fifteen years.

Table 3. DoD Documents for KM and KS

| Source | Title | Published |
|---|---|---|
| **HQDA** | AR 25–1; Army Knowledge Management and Information Technology | JUL 2005 |
| **DoD** | DoD Information Sharing Strategy | MAY 2007 |
| **DoD USD AT&L** | DoDD 5000.01; The Defense Acquisition System | NOV 2007 |
| **HQDA** | Army Knowledge Management Principles, July 2008 | JUL 2008 |
| **HQDA** | Handbook 11–33; Establishing a Lessons Learned Program | JUN 2011 |
| **DoD USD AT&L** | DoDI 5000.02; Operation of the Defense Acquisition System | JAN 2015 |
| **HQDA** | ATP 6–01.1; Techniques for Effective Knowledge Management | MAR 2015 |
| **DoD USD AT&L** | Implementation Directive for BBP 3.0 | APR 2015 |
| **DoD** | DoDI 8320.07; Implementing the Sharing of Data, Information, and Information Technology (IT) Services in the Department of Defense | AUG 2015 |
| **HQDA** | Army Data Strategy, Version 1.0 | FEB 2016 |
| **DoD** | DoDI 8000.01; Management of the Department of Defense Information Enterprise (DoD IE) | MAR 2016 |
| **HQDA** | AR 70–1; Army Acquisition Policy | JUN 2017 |
| **CJCS** | CJCSI 3150.25F; Joint Lessons Learned Program | JUN 2015 |
| **DoD** | *Defense Acquisition Guidebook* | FEB 2017 |

The practice of KM and KS provided by DoD and Army guidance documents.

In addition to these documents, other DoD, Army, federal government, and private industry web-accessible resources may also serve as useful tools for PEOs and PMs looking to identify and collaboratively exchange acquisition related knowledge. Highlights of each (i.e., specific details on access and capabilities, as well as other pertinent information regarding these options) are as follows:

**The Acquisition Lessons Learned Portal (ALLP) from the Center for Army Acquisition and Materiel Lessons Learned, (n.d.)**

**Resource Type:** Web-based KS database

**Purpose:** Facilitate the collection, analysis, archiving, and dissemination of relevant Army acquisition process lessons learned and best practices

**Intended User Group(s):** PEOs and PMs in the Army acquisition community (including support contractors)

**Access:** U.S. Government restricted; requires Common Access Card (CAC)

**URL:** https://allp.amsaa.army.mil

**Administrator(s):** Army Materiel Systems Analysis Activity Center for Army Acquisition and Materiel Lessons Learned (CAAMLL)

**Major Contributors:** Defense Acquisition University (DAU) and Center for Army Lessons Learned

**Details:** This resource serves as a vehicle for maintaining key experiential acquisition knowledge and programmatic information from Army programs of record. It provides a forum for idea exchange and resolution of inquiries from contributing participants. The goal of the site is to provide insight for Army acquisition leaders as they develop and execute management's strategies for their program. (Center for Army Acquisition and Materiel Lessons Learned, n.d., para. 1–4).

**Army Knowledge Online (AKO) – Knowledge Networks (KN) from the Department of the Army, (n.d.)**

**Resource Type:** Collaborative platform and document storage database

**Purpose:** Promote KS (networks) within a given Army community.

**Intended User Group(s):** Various Army based groups, commands, and organizations

**Access:** Restricted, CAC enabled site

**URL:** https://www.ako1.us.army.mil/suite/designer

**Administrator(s):** Army Knowledge Online (AKO)

**Major Contributors:** Various Army based groups

**Details:** This resource contains Knowledge Networks (KN) whereby organizations can communicate and collaborate, anytime, anywhere. The KN serves as a centralized location for information that crosses multiple organizations. The KN is a site that is a large Community of Interest yet is not intended to be the official site of any organization in the Army command structure. (Department of the Army, n.d., para. 1–3)

**DAU Acquisition Community Connection – Program Management Community of Practice (COP) from the Defense Acquisition University, (n.d.).**

**Resource Type:** Collaborative KS workspace with blogs and wikis

**Purpose:** Collaborative platform to connect Program Management practitioners.

**Intended User Group:** Acquisition Professionals emphasizing major program management disciplines

Access: Public

**URL:** https://www.dau.mil/cop/stm/Pages/Community.aspx

**Administrator(s):** Defense Acquisition University (DAU)

**Major Contributors:** Various program management practitioners

**Details:** Collaborative platform to connect program management practitioners from across the career field, offering them a chance to talk, share, and acquire knowledge about key PM topics. (Defense Acquisition University, n.d., para. 3).

**Program Management Institute (PMI) Business and Government Case Studies from the Project Management Institute, (n.d.).**

**Resource Type:** KS and networking platform.
**Purpose:** Promote KS and best practices through the lens of the Project Management Institute.
**Intended User Group:** Project Management Professionals
**Access:** Public
**URL:** https://www.pmi.org/business-solutions/case-studies
**Administrator(s):** PMI, Inc.
**Major Contributors:** Various public PMI licensed professionals.
**Details:** Leaders and executives from the world's top organizations and PMOs contribute knowledge for improvement of the project management field and to increase the power of shared learning. (Project Management Institute, n.d., para. 4)

**GAO Best Practices and Leading Practices in Acquisition Management from the Government Accountability Office, (n.d.).**

**Resource Type:** Database of GAO filed reports
**Purpose:** To identify and promote the best practices and leading practices in the acquisition management community
I**ntended User Group:** Acquisition Professionals
**Access:** Public
**URL:**
https://www.gao.gov/key_issues/leading_practices_acquisition_management/issue_summary
**Administrator(s):** Comptroller General, Chief Administrative Officer
**Major Contributors:** GAO's primary products are reports (often called "blue books)," and testimony before Congress. GAO also issues correspondence (letters), which are narrower in scope, of more limited interest, and do not contain recommendations. With virtually the entire federal government subject to its review, the agency issues a steady stream of products, usually over 900 separate products a year.
**Details:** Published reports, testimonies, correspondence, and special publications, as well as legal decisions and opinions. (Government Accountability Office, U.S., n.d., para. 2).

**GAO Assessments of Selected Weapons Programs from the Government Accountability Office, (n.d.).**

**Resource Type:** Database of GAO filed reports
**Purpose:** Weapons Systems Portfolio focused GAO Reports
**Intended User Group:** Acquisition Professionals
**Access:** Public
**URL:** https://www.gao.gov/browse/date/week
**Administrator(s):** Database Administer

**Major Contributors:** Same as those contributors identified in the "GAO Best Practices and Leading Practices in Acquisition Management"

**Details:** Weapons System portfolios focused on published reports, testimonies, correspondence, and special publications, as well as legal decisions and opinions from major weapons programs (Government Accountability Office, U.S., n.d., para. 3–6).

**Performance of Defense Acquisition System Annual Reports from the Government Accountability Office, U.S., (n.d.).**

**Resource Type:** Annual Assessment Reports

**Purpose:** Annual assessment of the performance of the Defense Acquisition System

**Intended User Group:** Acquisition Professionals

**Access:** Public, Open Web Access

**URL:** https://www.acq.osd.mil/

**Administrator(s):** OSD (AT&L)

**Major Contributors:** Under Secretary of Defense, Acquisition, Technology, and Logistics, Washington D.C, United States

**Details:** Addresses performance of the Defense Acquisition System, using quantitative analysis of broad data to measure institutional performance. This annual report series is a central part of Better Buying Power (BBP). It continues to reflect results in defense acquisition performance from ongoing DoD compliance with the Improve Acquisition Act of 2010 and the earlier Weapon Systems Acquisition Reform Act of 2009. (Government Accountability Office, U.S., n.d., para. 3).

**DOT&E Annual Reports from the Director, Operational test and Evaluation, (n.d.).**

**Resource Type:** Reports to Congress

**Purpose:** Annual report on Major Defense Acquisition Programs (MDAP) issues identified during the preceding year

**Intended User Group:** Congress, Acquisition Community

**Access:** Public, Open Web Access

**URL:** http://www.dote.osd.mil/annual-report/index.html

**Administrator(s):** DOT&E

**Major Contributors:** DOT&E

**Details:** Reports outline and attribute risk factors to issues identified on all MDAPs. Report acts as a method whereby a programs health may be assessed from a T&E view. Reports aggregated from the current report can be compared to findings for the same program for previous reports. Trends and risk management strategies for similar programs may be reviewed and implemented where the PEO deems necessary. Director. Operational test and Evaluation, n.d., para. 2).

**milSuite User Community from milSuite, (n.d.-d).**

**Resource Type:** Collaborative platform for secure DoD collaboration and knowledge preservation behind the firewall.

**Purpose:** Connects all Military, Civilian, and Contractor personnel from across the DoD enterprise and provides a platform to quickly and easily build tools and business processes to support execution of the mission.

**Intended User Group:** Acquisition Professionals; DoD workforce.

**Access:** Restricted, CAC enabled site

**URL:** https://www.milsuite.mil/

**Administrator(s):** PEO C3T MilTech Solutions

**Major Contributors:** Various Acquisition Professionals

**Details:** Department of Defense Enterprise Social Network (ESN). It began as a mechanism to preserve knowledge during the Base Realignment and Closure (BRAC) move from Fort Monmouth, N.J. to Aberdeen Proving Ground, MD, and has evolved into a platform available to all members of the DoD workforce to create the solutions they need to meet their mission needs. Consists of multiple collaborative suites (Department of Defense, n.d.-d, para. 1–3).

**Defense Acquisition Visibility Environment – Acquisition Information Repository (AIR) from the Defense Technical Information Center Research and Engineering Gateway, (n.d.).**

**Resource Type:** Web-based document storage repository

**Purpose:** Stores acquisition information required by DoDI 5000.02, which the defense enterprise utilizes in support of milestone decisions and analysis.

**Intended User Group:** Acquisition Professionals

**Access:** U.S. government restricted (requires CAC login) with access possible only from a Government furnished computer

**URL:** https://www.dodtechipedia.mil/dodc/plugins/AIR/airdocuments.action

**Administrator(s):** DTIC

**Major Contributors:** Acquisition Professionals Major Automated Information Systems (MAIS) and MDAP

**Details:** The Defense Acquisition Visibility Environment (DAVE) provides Department of Defense personnel with access to accurate, authoritative, and reliable data to support acquisition oversight, insight, analysis, and decision-making. DAVE is the source for program information for major programs and provides access to data, capabilities and other useful material for analysis. AIR, specifically, provides access to milestone documents for Acquisition Category (ACAT) I and some lower ACAT programs. (Defense Technical Information Center Research and Engineering Gateway, n.d., para. 1).

**Defense Acquisition Visibility Environment – Defense Acquisition Management Information Retrieval (DAMIR), from Department of Defense, (n.d.-a).**

**Resource Type:** Database for Acquisition program information.

**Purpose:** DAMIR identifies various data sources that the Acquisition community uses to manage MDAP and MAIS programs and provides a unified web-based interface through which to present that information.

**Intended User Group:** Acquisition Professionals

**Access:** Restricted, must possess need for access, Common Access Card enabled site

**URL:** https://ebiz.acq.osd.mil/DAMIR//

**Administrator(s):** Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics

Major Contributors: Acquisition Professionals MAIS and MDAP

**Details:** DAMIR is the authoritative source for Selected Acquisition Reports (SAR), SAR Baseline, Acquisition Program Baselines (APB), MAIS Annual Reports (MAR), MAIS Original Estimates (MAIS OE), and Assessments. It is a powerful reporting and analysis tool with robust data checks, validation, standardization and workflow leveling. It has extensive security capabilities as well as both classified and unclassified versions. One component of DAMIR, Purview, is an executive information system that displays program information such as mission and description, cost & funding, schedule, and performance. (Department of Defense, n.d.-a, para. 2).

**Defense Technical Information Center (DTIC) Tech Space – R&E Gateway from the Defense Technical Information Center, (n.d.).**

**Resource Type:** Web-based KS repository

**Purpose:** Connects the acquisition enterprise (DoD Labs, Federally Funded Research and Development Centers (FFRDCs), PEOs, AT&L, and Combatant Commands (CCMDs)). Accelerates the development and delivery of technologies to the armed forces. The Gateway helps the defense S&T community build on past work, collaborate on current projects, and avoid duplication of effort.

**Intended User Group:** DoD Labs, Federally Funded Research and Development Centers (FFRDCs), PEOs, AT&L, and Combatant Commands (CCMDs).

**Access:** Restricted, restricted account access and need for access, Common Access Card enabled site

**URL:** https://www.dtic.mil/

**Administrator(s):** DTIC

**Major Contributors:** DoD and Industry R&D Personnel

**Details:** Provides access to information regarding contracts and grants for work conducted at DoD's 60+ labs, in the FFRDCs and DTIC's Information Analysis Centers (IACs). Furthermore, the R&E Gateway offers access to official defense scientific and technical information, collaborative tools, and subject matter experts. (Defense Technical Information Center, n.d., para. 1–4).

**The Joint Lessons Learned Information System (JLLIS) from the Joint Lessons Learned Information System, (n.d.).**

**Resource Type:** KS system for disseminating operational lessons learned.
**Purpose:** To fulfill the Title 10 responsibility of formulating policies for gathering, developing, and disseminating joint lessons learned for the armed forces.
**Intended User Group:** Military personnel and Acquisition Professionals
**Access:** Restricted, CAC enabled site
**URL:** https://www.jllis.mil
**Administrator(s):** DLA
**Major Contributors:** All military service branches
**Details:** The Joint Lessons Learned Program consists of five phases: discovery, validation, resolution, evaluation, and dissemination. (Reference: CJCSI 3150.25G, Joint Lessons Learned Program, 31 January 2018). JLLIS facilitates the collection, tracking, management, sharing, collaborative resolution and dissemination of lessons learned to improve the development/readiness of the Joint Force. The validated information also enables actionable Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) and Policy changes to improve joint and combined capabilities. (Joint Lessons Learned Information System, n.d., para. 2–5).

### 3. KS Barriers and Challenges

The challenges and barriers which impact the practice of KS within organizations can be cultural, economic, and process based. For example, individuals may "hoard" knowledge, unwilling to share it, thus impeding knowledge transfer. Likewise, organizations may lack technology assets to support KS initiatives and/or they may place unrealistic expectations on existing technologies as a sole solution for KS. Policy and procedural restrictions are also considered major preventative challenges. McKernan & Riposo suggest that policies and procedures affect access to important acquisition data and information, specifically the information found in the AIR and DAMIR resources listed in Section 3 (McKernan & Riposo, 2016). Furthermore, inconsistent KS among individuals and organization may simply result from a lack of motivation, lack of incentives and intrinsic rewards, coupled with the absence of management and leadership support.

The constraints for KS activity are categorized according to various physical and personal factors (Janus, 2016). Figure 9 shows the physical constraints in terms of budget, time, location, operating environment, and technology, which individually and collectively may impede KS practices. Personal constraints originating in people also apply a great deal of constricting pressure, such as perceptions that gaining access to data are inefficient

(Riposo & McKernan, 2015). When determining the best way to implement effective KS strategies, organizations should at minimum, seek to gain an awareness of how these constraining factors may influence the execution of KS initiatives.

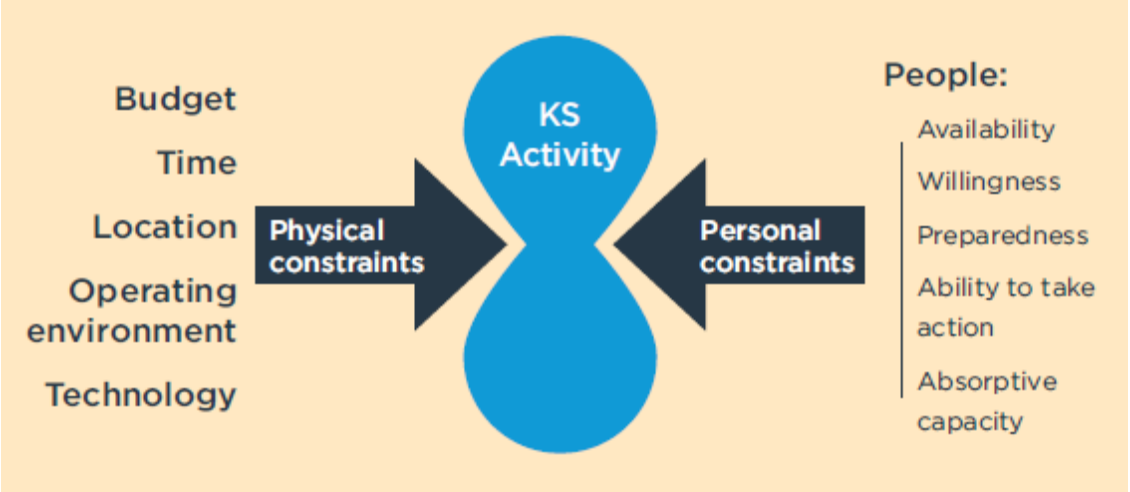


Figure 9 Physical and Personal Constraints on KS. Source: Janus (2016).

According to McDermott, implementing more effective KS includes overcoming the negative impacts of four key challenges; technical, social, management, and personal. The technical challenges pertain to the impacts of the systems used for accessing knowledge and the accessibility, familiarity, and functionality for the user community. This includes the knowledge diffusion between people, systems, and between systems and people. Social challenges include political, cultural, and social norms as well as maintaining a level of diversity among KS participants to ensure creative and critical thinking. The management challenge includes addressing whether there is adequate management buy-in, a structured KS vision, and explicit goals and interests that value and support KS (McDermott, 1999). Lastly, the personal challenges involve addressing the impacts of personal motivations toward KS, availability, willingness to participate, participant numbers, preparedness, the ability to act, staffing, subject matter familiarity, organizational role, and knowledge comprehension (Janus, 2016).

The Army acquisition PEOs would be well suited to gain a better awareness of these KS barriers in order to better identify the degree at which they may be restricting knowledge flow in the organization. A long-standing challenge in DoD acquisition has been accessing the requisite up-front knowledge necessary to ensure programs commence and maintain discipline with fewer assumptions and risks. One key is maximizing untapped potential by sharing professional experience and expertise (Dodaro, 2009). Some assert that the DoDs bureaucracy and overemphasis on high technology, continue to plague DoDs sharing culture and efforts to implement more effective KS strategies (Corrin, 2010). For example, an Army publication by McGurn (2011) identified several common areas where the Army community specifically faces challenges regarding their organizational ability to effectively share knowledge. Nearly 55% of the identified KS gaps were related to processes or people factors

Some of the key challenges McGurn (2011) listed include

- A lack of a common operating picture
- People were unable to locate information
- Content management techniques are not known, understood, or practiced
- An absence, misuse, or misunderstanding of collaborative toolsets
- A high operational tempo limiting opportunities for face-to-face interactions and tacit knowledge transfer
- Not capturing or transferring knowledge when there is personnel turnover
- No formal programs to encourage or reward KS within or between organizations
- A general absence of KM and KS governing processes (McGurn, 2011, p.43).

Among these key challenges is addressing knowledge loss due to generational workforce turnover. Some believe that DoDs overreliance on new technologies and

procedural aspects of KM and KS, has significantly alienated generational cohorts that possess decades of useful tacit knowledge (Whitmore, 2012). The DoD has been fighting this crisis for decades as acquisition program leaders, managers and experts retire - taking with them thousands of hours of accumulated knowledge, experience, and wisdom (Kroeker, 2007). PEOs success in maintaining a productive KS environment in some way depends on their capacity to take advantage of this generational knowledge base before it leaves the organization or transfers out. Likewise, the transient nature of various key leadership positions in the PEO (e.g., PMs) also introduces challenges in being able to indoctrinate new personnel with relevant knowledge, as well as sufficiently transfer knowledge from an outgoing manager to his/her replacement during relocation, reassignment, or retirement.

Overcoming KS barriers and challenges and preventing the loss of organizational knowledge requires the dedicated investment of many resources to build an integrated strategy with explicit expectations defining success. Using technology to create a process that supports initiatives whereby people can exploit, explore, codify, and personalize knowledge for the preservation of organizational memory (Ashkenas, 2013).

## D. SUMMARY

This chapter provides a fundamental review of knowledge definitions, as well as an overview of KM and KS principles and practices. It also presents the Army acquisition PEO as a knowledge repository and identifies some of the influential Army KM guidance that has direct application for PEOs. Furthermore, it gives KM process approaches for KS strategies such as lessons learned and best practices and provides beneficial examples of resources available and accessible to PEOs to benefit their KM practices. Additionally, it discusses the benefits of KM, and presents some of the challenges of KS that a PEO may consider when trying to evaluate their respective KM environments.

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# III. FINDINGS AND ANALYSIS

## A. PEO SURVEY METHODOLOGY

### 1. Introduction

This chapter provides the key findings and analysis of the PEO KS survey. The survey content and associated questions were designed to gather general details on our key research questions as well as other considerations important to the study. Our rationale for using the survey methodology was that we believed it would be the most efficient and effective means of collecting data within the broad PEO management population considering the time constraints of the project as well as the complicated nature of individual work schedules amongst the target population. Furthermore, with a limited amount of available open source information detailing individual PEO KM or KS strategies, and without extensive personal experience working within a PEO, we were rather limited in our access to PEO contacts with whom we felt could provide the feedback necessary to address our research areas of interest. Our overarching intent therefore was to gather the most up-to-date, ground-truth information that could help structure more focused and robust future studies on the dynamics of PEO KS strategy. In-depth interviews and field research were not used as they were deemed impractical and outside the scope of the analysis.

As mentioned, our background literature searches informed that much of the DoD and greater Army KS guidance was narrowly focused on application within the operational forces and their direct support organizations. There is limited policy and guidelines outlining explicit KS strategy applications within the context of a PEO or "PEO-like" working environment. Likewise, there was no identifiable "one size fits all solution" for employing KS in these organizational domains. With this perceived "gap" in consideration, we assumed that the target respondents would be relatively comfortable providing their opinions on the topic(s) of KM and KS, as they seem to be essential in the practice of program management. As such, we believed leadership would be anxious to make

suggestions on how to best improve KS both within their own offices as well as throughout the entire DoD acquisition community.

Knowing that PEO leadership would likely have limited time to complete the questionnaire, we designed the survey to be completed in no more than 30 minutes. Also, we understood the fact that we could not control individual cognitive biases regarding the act of "taking surveys," and we recognized that this phenomenon could negatively impact our response rates regardless of our ability to provide clear context in our solicitation regarding survey intent. Nonetheless, we felt that surveying the PEO leadership directly would yield the best data and information for this study.

### 2. Survey Development

We developed the survey as a fillable .pdf with ten focus questions consisting of a mixture of open-ended short response as well as single-answer multiple choice type questions. The official survey title was *"Knowledge Sharing in the Army's Program Executive Offices and Program Management Offices."* A copy of the official survey is in the Appendix.

Sourcing of PEOs, leadership names and titles came from the PEOs official army.mil websites and from their published organizational structures on these sites. After collecting the names and titles of key leadership, we cross-referenced gathered names with the global Army email directory to source official email addresses for each individual target participant. We then created a PEO tracking matrix listing all potential target respondents according to their respective PEOs. The twelve surveyed PEOs are listed in Figure 11.

A total of 150 potential respondents were identified among the twelve PEOs. They represented a mixture of PEO personnel holding one of the following key acquisition leadership positions

- Program Executive Officers
- Deputy Program Executive Officers
- Chiefs of Staff

- Assistant PEO Upper Management Staff
- Program Managers
- Deputy Program Managers
- Product Managers
- Product Directors

The sample population was therefore comprised of individuals holding mid-to-upper level management positions, and as such, were most likely to have awareness and influence on KM and KS practices within their organizations, acquisition office teams, and working groups. Figure 10 outlines a notional top-level PEO organizational structure, which provides a general view and hierarchy of the types of positional membership we targeted with the survey.

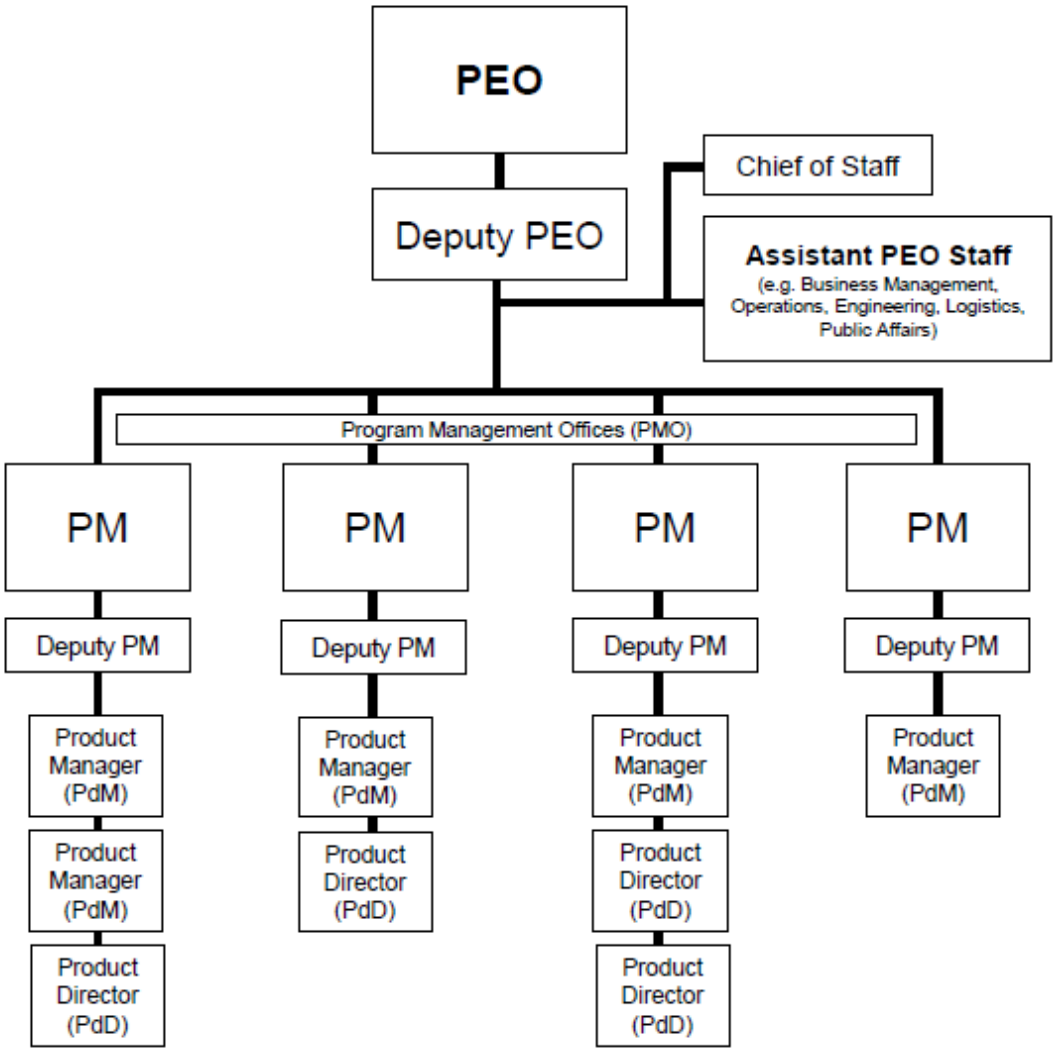


Figure 10 Notional PEO Organizational Structure

### 3. Survey Administration

The survey was successfully delivered to all targeted PEO participants through their official Army (.mil or .civ) email accounts as a .pdf attachment with the email titled *"PEO Leadership Request for Information."* We provided clear context as to the intent of the research study while giving target participants guidance on our expectations with care to return completed surveys within two-weeks. Participants were invited to refrain from including any personal identifiable information in their responses. We explicitly stated that

all collected data would be reported in aggregate and therefore would not be directly attributable to them or their PEO in the final reporting.

Confirmation of email (and survey) receipt was determined via standard delivery and read receipt options in the Outlook mail application. We confirmed that over 98% of the target participants "read" (or opened) the initial email. A second "follow-up" email was sent to all target participants who did not respond to the initial request. No more than three total requests were sent to each target participant, as this was the pre-determined limit of contact outlined in our approved IRB human research plan.

The response rate for the survey was around 10%. Although the response rate was lower than anticipated, nine of the twelve PEOs had at least one target participant in key leadership return a survey. As far as survey demographics, 82% of the respondents were either PMs or DPMs and nearly 91% of respondents had 5 years or less time in position. The respondent's survey feedback was thorough and very clearly articulated throughout each of the questions. We found that many respondents were enthusiastic about the subject area of analysis, and in some cases, volunteered to provide more detail and assistance.

| | | | |
|---|---|---|---|
| PEO Ammunition (AMMO) | | PEO Intelligence, Electronic Warfare, and Sensors (IEW&S) | |
| PEO Aviation (AVN) | | PEO Missiles and Space (M&S) | |
| PEO Command Control Communications Tactical (C3T) | | PEO Simulation, Training, & Instrumentation (STRI) | |
| PEO Combat Support & Combat Service Support (CS&CSS) | | PEO Soldier | |
| PEO Enterprise Information Systems (EIS) | | JPEO Chemical and Biological Defense (CBD) | |
| PEO Ground Combat Systems (GCS) | | PEO Assembled Chemical Weapons Alternatives (ACWA) | |

Figure 11 The Twelve Army Acquisition PEOs. Adapted from Assistant Secretary of the Army Acquisition, Logistics and Technology (2016).

## B. PEO LEADERSHIP KNOWLEDGE SHARING PERSPECTIVES

### 1. (Q1) Individual PEO Approaches to KS

The survey began by asking PEO leadership if they believed their office had a "robust" KS strategy. This solicitation was followed by an invitation to provide written details outlining general specifics of the strategy. Although later survey questions requested specific commentary be provided on internal or external strategies, this question differed in that respondents were asked to provide the broad mix of databases, tools, strategies, and guidance utilized in developing a KS strategy within their PEO.

"Robust" was purposely not defined in the context of the question because the assumption was that participants would generally understand the meaning of robust, and the desire was that respondents not simply agree with a pre-determined definition or

suggestion. The general assumption was that a "robust" strategy would imply some sort of dependable and repeatable process that would likely include incorporation of at least several KS methodologies/approaches to utilize people, processes, and technology to share both tacit and explicit knowledge.

Of the respondents, 29% acknowledged that they believed their current strategies were robust. The majority, 71%, expressed that their strategies were not robust. While specifics are outlined in the below question analysis, most individuals that felt their KS strategy was robust relied almost exclusively on SharePoint sites and/or intranet portals for sharing knowledge. One individual from this group mentioned using exclusively ad-hoc meetings to share lessons learned amongst staff and did not expound with any further detail. No formal KS process details were outlined by any respondent.

Of note, was feedback received in response to a request for respondents to provide open-ended detail on applicable DoD/Army policy and guidelines utilized in formal and informal KS strategy formulation. As outlined in Table 3, numerous pieces of policy and regulatory guidance have been published which encourage KS to varying degrees. Despite the prevalence of policy, however, 86% of respondents replied they were either "unaware of any policy," "policy was not applicable," or expressed that there was "none." Interestingly, 7% of responses listed regulations that were not directly applicable to KS whatsoever. For example, this included the Federal Acquisition Regulation and its supplements. Local PEO SOPs was also given as a response with no further detail provided on which relevant KS policy was utilized as a backup reference for the internal policy. Finally, one respondent stated that they "(find) policy in this area (of KS) to be weak," but failed to cite any specific policy with which they take exception.

### 2. (Q2) Internal KS Efforts

Respondents were asked to rate the effort of their PEO in fostering an environment where internal KS was encouraged. Individual responses are outlined in Figure 12.

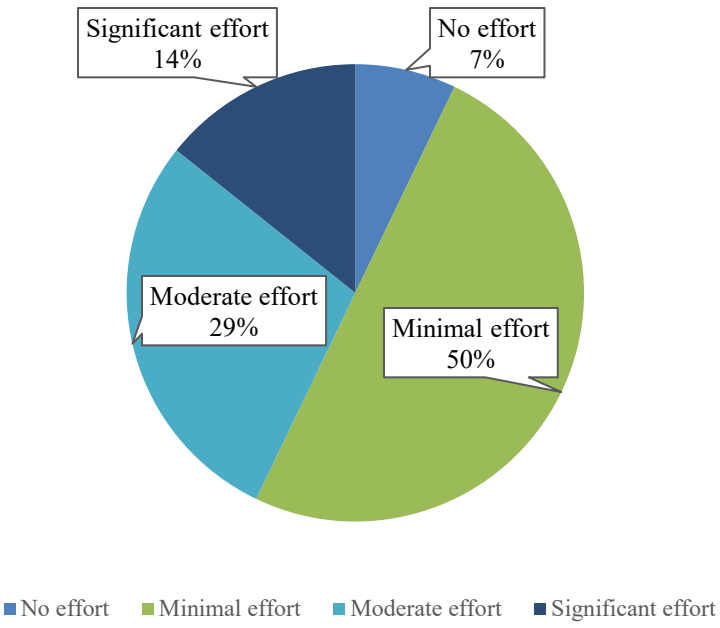


Figure 12 Internal Level of Effort for PEO Knowledge Sharing

Furthermore, respondents were asked to provide commentary on the individual efforts occurring in their PEO to enhance KS activities. This includes how lessons learned and best practices are documented, accessed, and managed within the overall organization. A summation of this information is found in Figure 13.

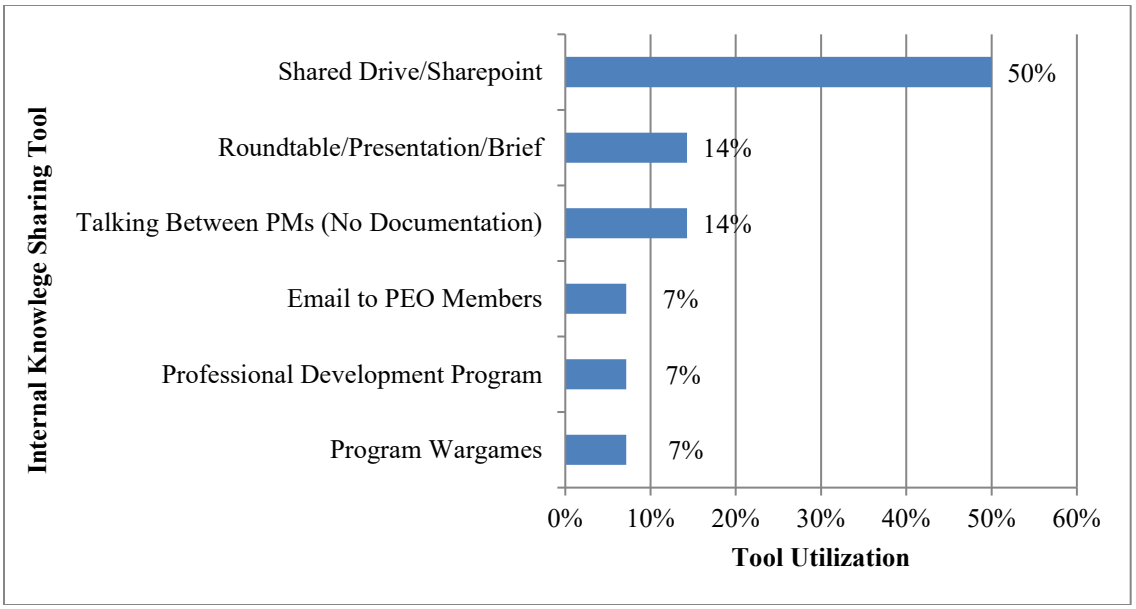


Figure 13 PEOs Internal KS Tools

Those PEO respondents that felt internal KS was at least of moderate effort relied almost exclusively on self-contained internal assets. That is, shared knowledge resides on some internal database or is only accessible to those physically located within the physical PEO footprint. Ultimately, this means that sharing this knowledge to external sources outside the PEO would require some level of redundancy. At the very least, cloning the data to some external database, would be necessary.

Although many PEOs are using shared drives and SharePoint in order to disseminate information throughout the organization, respondents noted some problems that indicate this method of explicit KS requires adjustments before benefits may be realized.

While a shared drive or SharePoint site seems to be one of the most common tools utilized across respondent PEOs, usage is uneven, with system employment varying. Survey responses noted the following with regard to PEO procedures utilizing this tool:

- "While (shared drives and a SharePoint site are) useful for KS, trying to find something there is like finding a needle in a haystack without a guide."

- "We have shared drives and a SharePoint site, but it is difficult to navigate and not standardized."
- "(Our SharePoint sites) are largely used as virtual filing cabinets - not as a KS service."
- "Share point sites…are only effective at the team level for documenting lessons learned, etc."
- "(For KS, SharePoint) is a context poor platform, and we need to stop trying to make it something it's not."
- "Command Drives/Share Drives (are another) best used for backing up the daily build products, while the key team products go on SharePoint."
- "Individual SharePoint sites are used without real collaboration between them."

One respondent noted that their PEO, while not presently using SharePoint at the functional level, are conducting working groups to determine how best to implement and utilize SharePoint for purposes of KS.

The KS tools outlined by survey respondents are informal, are able to be administered at the local level, and require very little effort to implement. As a result, it would seem at a minimum that PEOs would find success at using any one of these tools in making certain that knowledge is disseminated throughout the PEO. The survey, however, revealed that this is not always the case and sharing efforts may be hindered regardless of tool simplicity. One respondent that listed roundtables as a tool specified that knowledge is centralized beyond the PEO level. In this instance, the PEOs roundtable discussions are held within the individual field offices. This means that the entire PEO is not receiving the benefit of lessons learned and best practices because knowledge is contained at the field office level.

In addition to the responses outlined in Figure 13, some PEO respondents indicated that their office did not facilitate KS in any capacity. Instead, they only sought out lessons learned or best practices when assistance was needed in extreme circumstances.

Ultimately, PEOs possess the tools to allow for local dissemination of lessons learned and best practices. It seems, however, that PEOs are unable or unwilling to fully utilize the KS tools at their disposal. While the DoD, and subsequently the Army, has issued numerous policies and guidance requiring and encouraging KS, this guidance remained flexible for KS implementation.

### 3. (Q3) Preferred Information and Knowledge Sources

PEO respondents were asked to provide individual replies on preferred sources for lessons learned, best practices, and case studies. The question was structured in order to allow for open-ended responses. The purpose of this question was twofold. First, data was reviewed in an effort to locate a pattern that demonstrated a consistent and ideal source for PEOs to seek out knowledge for each functional area. Second, the hope was that PEO responses would identify one reputable source as capable of providing access to robust information and knowledge for lessons learned, best practices, and case studies. The results of the query, in Figure 14, are as follows:

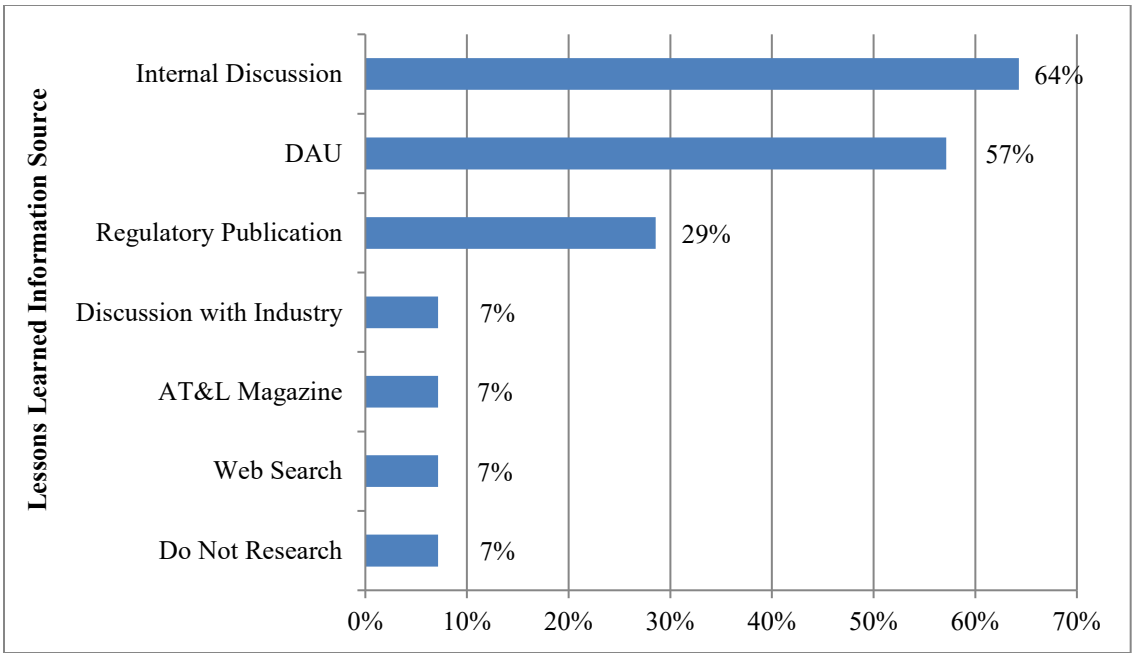


Figure 14 PEOs Lessons Learned Information Source

The most prominent way in which PEOs are capturing information on lessons learned is through internal discussions, which had a response rate of 64%. This involves probing peers, customers, and other departments within the PEO. This strategy provides almost instantaneous access to knowledge; however, it has one significant disadvantage. These types of discussions are held face-to-face and are usually undocumented. The result is that the KS occurs in isolation (e.g., via limited tacit conversations) and there is little opportunity for that knowledge to be communicated beyond those involved in the conversation. Of note, is that internal discussion and discussion with industry are the only two responses that do not involve information being accessible to others. DAU, regulatory publications, Acquisition magazine (formerly AT&L magazine), and web searches, all provide information and knowledge that is generally accessible to the public. Unless these internal discussions evolve to community collaboration, they remain suppressed in the lower levels of the KM cycle.

Another popular method by which lessons learned are sought out and discovered is via DAU. This system, at a 57% response rate, is composed of multiple resources by which knowledge may be obtained. DAU (n.d.) provides access to

- Training
- Guidebooks
- Industry Best Practices
- ACQuipedia
- Online library with access to DAUs Knowledge Repository, Publications, and Research
- A policy browser
- Strategic support (Know What)
- Tactical support (Know How)
- Individual support
- Ask A Professor
- Communities (Defense Acquisition University, n.d.).

DAU maintains a vast archive of information and acquisition knowledge, but mostly acts as a single point to obtain published guidance and regulation. There are however, some DAU tools, which allow individuals to make queries on specific situations. DAUs "Ask a Professor"[2] allows an individual to submit a question that will be reviewed and responded to by one of DAUs instructors. The requestor need only input a quick scenario overview. The DAU instructor will provide a response to the inquiry alongside a regulatory reference to support the provided answer.

Internal discussion, with a response rate of 64%, was again the most utilized source for best practices (see Figure 15). It can be reasonably inferred that best practices are so closely related to lessons learned, that the two topics are often discussed simultaneously.

[2] See "DAUs Ask a Professor (AAP); Located at https://www.dau.mil/aap/Pages/default.aspx..

The same restrictions as noted above, still apply however. These discussions occur internally with no documentation as to the problem being addressed. As a result, details, context, and circumstances remain solely the possession of the parties to the conversation. Such practices inhibit internal and external sharing of valuable knowledge.

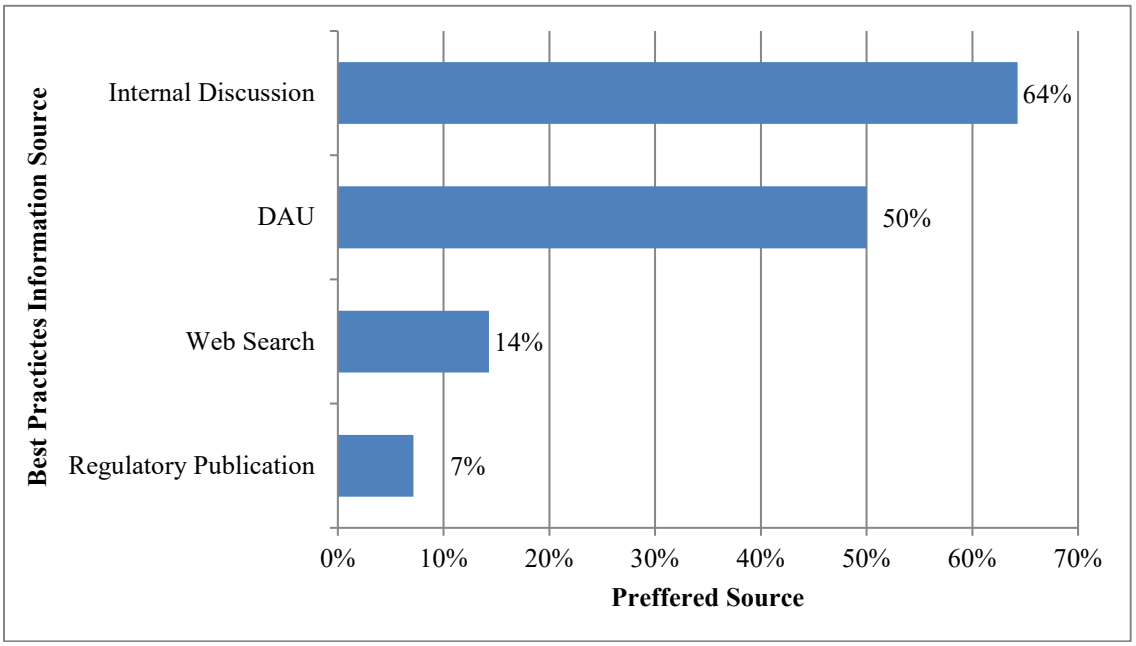


Figure 15 PEOs Best Practices Information Source

DAU, with a 50% response rate, was also the second most popular method by which PEOs obtain best practice information. One of the most notable tools DAU provides on the subject of best practices is the DAG. Although the DAG is accessible from other locations, DAU links[3] to it with a special notice that it "complement(s) formal acquisition policy by providing discretionary best practices" (Defense Acquisition Guidebook, n.d.-b). A search of DAU specifically for best practices reveals a large amount of information and knowledge spanning topics such as auditing, cost estimating, contracting, engineering, general acquisition, program management, requirements management, and test and

[3] See *Defense Acquisition Guidebook;* Available at: ttps://www.dau.mil/cop/rqmt/DAU%20Sponsored%20Documents/Link%20-%20DAU,%20Defense%20Acquisition%20Guidebook%20(DAG).aspx.

evaluation. Topics may be further discriminated based on content type (blog posts, policy documents, acquisition tools, etc.). This is especially helpful as it allows requestors to search for an existing solution, locate an automated tool, or poll the community of practice for assistance.

The overwhelming response on the "go-to" source for case study retrieval is DAU at a 64% response rate (see Figure 16). Feedback on DAU's capability as a case study repository was very positive. PEO respondent commentary included "(Case studies are) a DAU specialty," "No one does it better than the PMT-401 faculty," and "DAU is the only reliable source for case studies" (RTD Research Team, unpublished data). For case studies, DAU maintains a repository with a breadth and depth on par with that of lessons learned and best practices. Available tools also allow users to discriminate based on focus area and resource type.

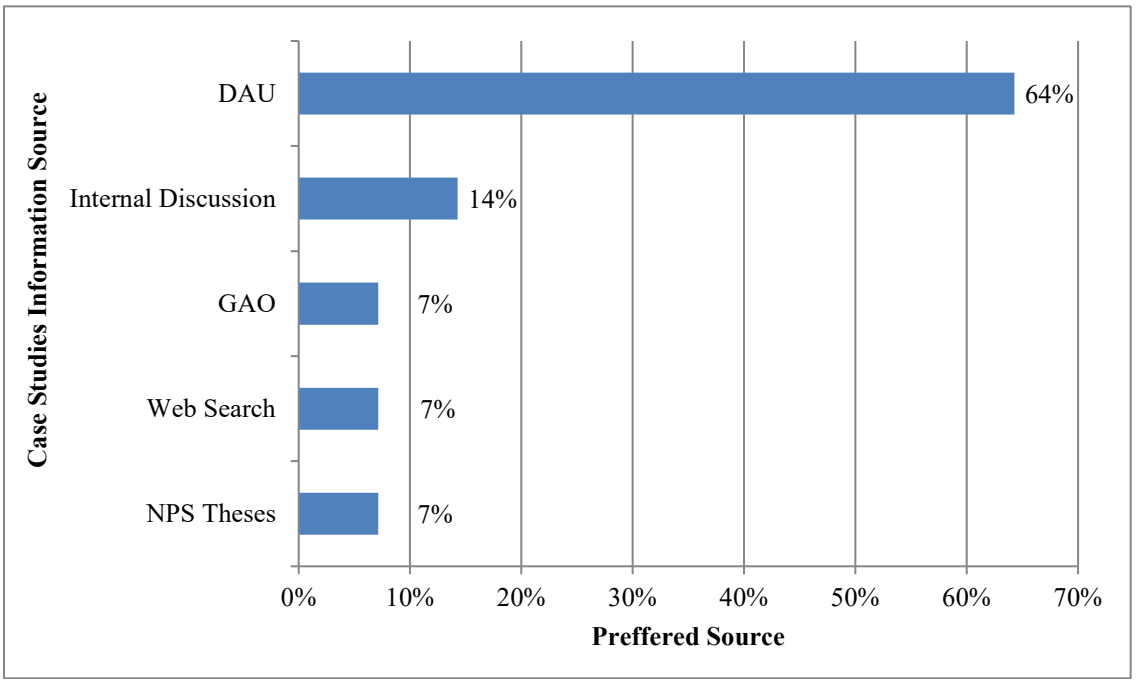


Figure 16 PEOs Case Studies Information Source

Although PEO respondents relied heavily on DAU for lessons learned, best practices, and case studies, their individual "knowledge contributions" to the site (for

various acquisition functional areas) is not encouraging. Only 21% of survey respondents indicated that their office was contributing to DAU at a frequency of monthly or more. As a result, DAU is at risk of not having access to the most relevant and up-to-date material based on actual Army PEO experiences. This disparity between retrieved and contributed information could cause issues as documented lessons learned, best practices, and case studies become superseded based on new regulatory guidance.

While some PEO respondents provided positive feedback outlining preferred sources when in need of assistance, some PEOs were not so optimistic. Some comments received in response to the survey made it appear that some view lessons learned, best practices, and case studies obtained through KS systems to be of little use. For example, some remarked that, "Acquisition is so context dependent that it (is) (easy) to (apply) lessons learned out of context." "Nonexistent at the PM office" was one respondent's comment on best practices. With regard to case studies, one respondent mentioned that these resources were, "Not used, except on rare occasions," and went on further to say, "Typically only pursue this in a training environment" (RTD Thesis Team, unpublished data).

This type of thinking is unfortunate. Lessons learned, best practices, and case studies could provide a significant advantage to PEOs that can apply them on a regular basis. Looking beyond the sustained benefits of learning from the experiences of others, the regulatory aspect of rotating the functional elements into day-to-day operations are also in effect. Multiple pieces of DoD and Army regulation specifically direct PEOs and Army acquisition activities to seek and implement these resources as a common practice. Not only are these PEOs possibly failing to follow published policy, they are also missing out on knowledge that could help reduce government risk in multiple program aspects.

### 4. (Q4) Utilization of Selected External KS Resources

In an effort to obtain insight into PEO utilization of external KS tools, respondents were asked to identify the frequency at which they access and contribute to the KS tools identified in section II, Background. The external KS resource findings, condensed in

Figure 17 to Figure 29, illustrate an environment of infrequent monthly (at minimum) access, with few corresponding contributions by PEO members.

There were certain considerations and assumptions given to the analysis of PEO responses. A minimum monthly basis was considered reasonable when assessing access and contribution frequency practicality. This took into account routine and non-routine utilization of KS tools, as well as other responsibilities existing within a given PEO. The assumption is that access is on a reactive basis in response to encountered events, as well as a proactive basis in an attempt to lower risk for varying facets of the program. Finally, a respondent that provided no response is presumed to mean the tool was never utilized or contributed to.

PEO respondent's usage of some KS tools remained relatively inexistent, with little to no access or contributions noted by any survey respondent. These tools maintain an access and contribution rate that is nearly identical (rare or no response). Other tools however, are in use at PEOs in varying degrees. Inconsistencies regarding tool access, contributions, or both, are outlined in the below commentary. For purposes of the below analysis, access and contribution frequency means monthly or more, unless otherwise noted.

Of the 13 tools, only eight, or 62%, enjoy access by at least one respondent on a monthly or more basis. Contributions are made to four of the tools, 31%, by at least one respondent at a frequency of monthly or more. Figure 17 and Figure 18 reflect Acquisition Lessons Learned Portal (ALLP), The Army Acquisition Business Enterprise Portal (AABEP), and Army Knowledge Online (AKO) Knowledge Networks, respectively.

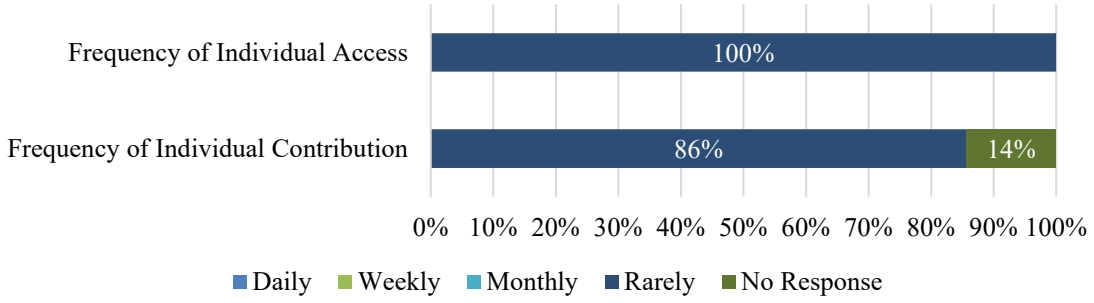


Figure 17 The Acquisition Lessons Learned Portal (ALLP) The Army Acquisition Business Enterprise Portal (AABEP)

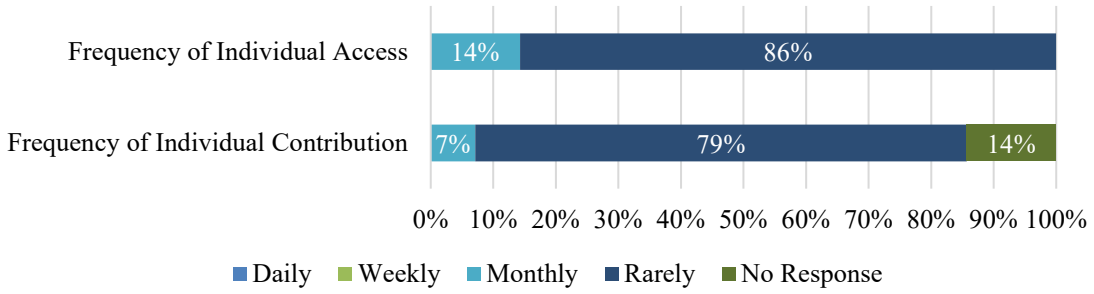


Figure 18 Knowledge Networks - Army Knowledge Online (AKO)

Figure 19 outlines PEO respondent usage of Program Management Community of Practice Wiki DAU Acquisition Community Connection. This tool, based on received responses, was the most popular instrument used in obtaining and sharing knowledge. The sampling of survey respondents, 42% noted using the tool for seeking out knowledge when needed in response to an encountered issue, while 21% contributed to this resource.

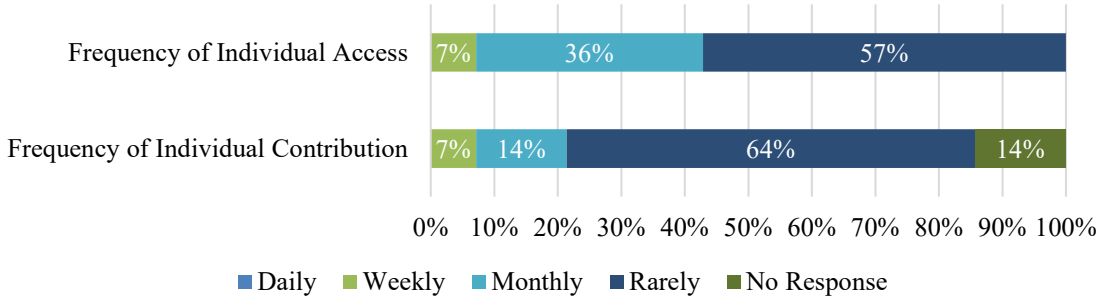


Figure 19 Program Management Community of Practice Wiki DAU Acquisition Community Connection

the guides, standards, business and government case studies from the Program Management Institute (PMI) survey results are offered in Figure 20.

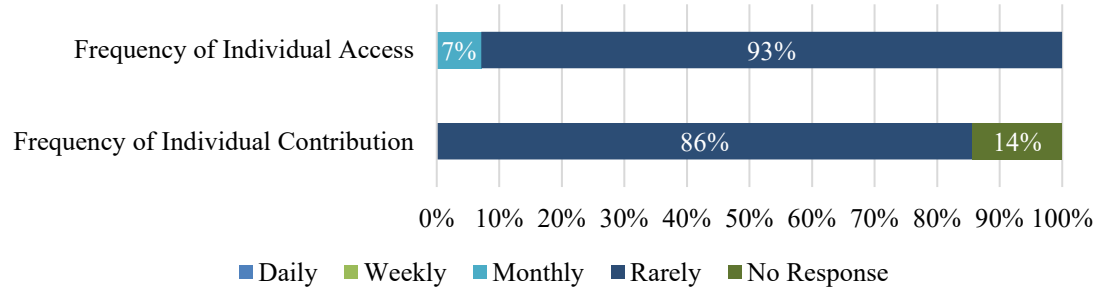


Figure 20 The Guides, Standards, Business and Government Case Studies Program Management Institute

Figure 21 displays usage of GAOs Reports on Acquisition Best Practices. Our sampling, 21% responded that this tool was utilized within their PEO; however, no PEO noted contributing, in any capacity, to the GAOs reporting.

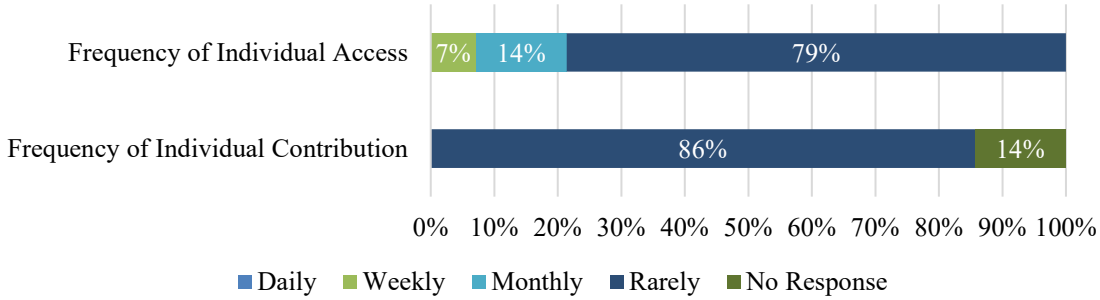


Figure 21 GAO Reports on Acquisition Best Practices

Figure 22 presents data on GAO Assessments of Selected Weapons Programs. In our sampling, 29% of those responding to the survey specified that they used this tool monthly to access lessons learned and best practices knowledge. Despite the frequency of access, only 7% of those responding indicated contributions through this tool.

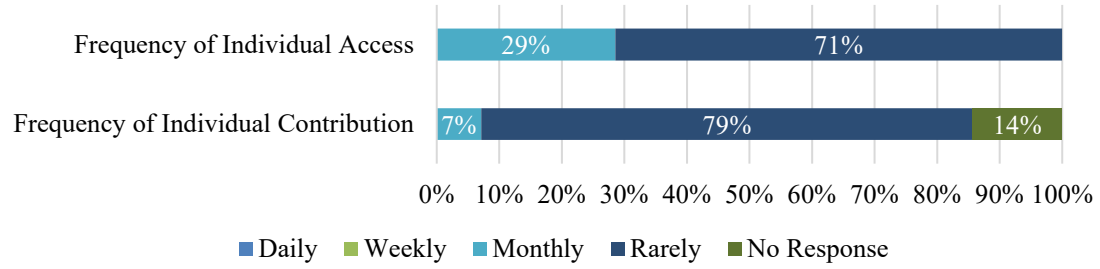


Figure 22 GAO Assessments of Selected Weapons Programs

The Performance of Defense Acquisition System Annual Reports are reflected in Figure 23.

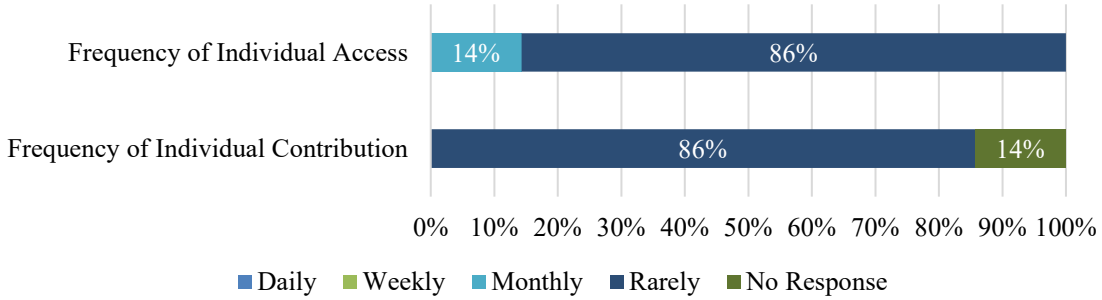


Figure 23 Performance of Defense Acquisition System Annual Reports

Figure 24 displays respondent's use of DOT&E Annual Reports for obtaining knowledge. In our sampling, 21% responded that this tool was utilized within their PEO; however, no PEO noted contributing to DOT&E for their annual compendium.

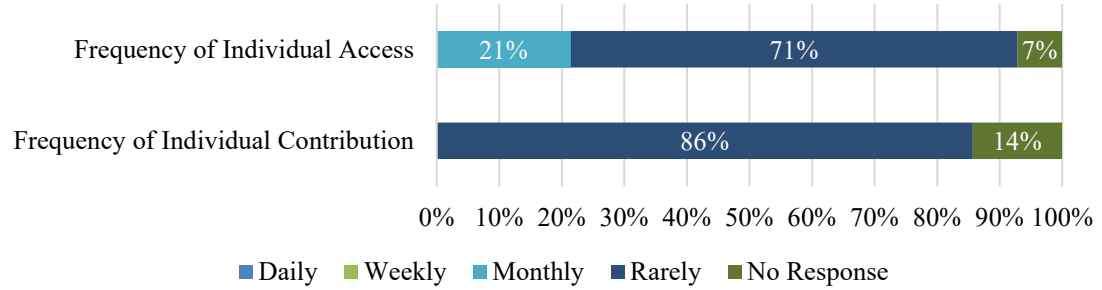


Figure 24 DOT&E Annual Reports

Rarely were milSuite tools such as milBook, milUniversity, milTube, milWiki visited by polled PEO respondents (see Figure 25).

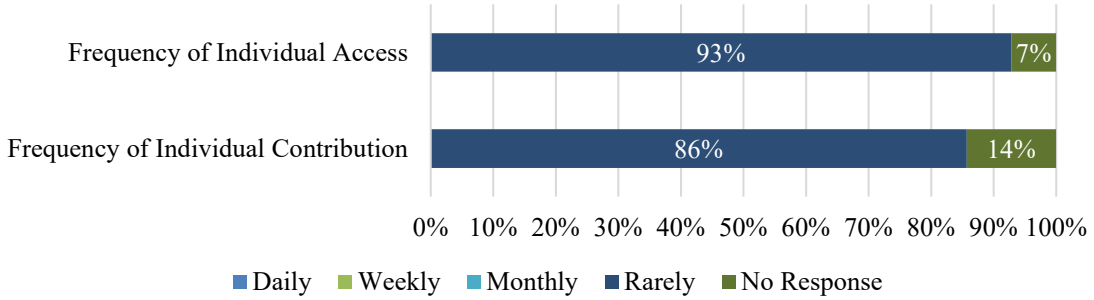


Figure 25 milBook, milUniversity, milTube, milWiki – milSuite

A point of interest in this area of the analysis is the utilization rate of the AIR and DAMIR, shown in Figure 26 and Figure 27, respectively. Although both databases act as storage repositories for information necessitated by DoDI 5000.02, the rare contribution rate noted by respondents is not of direct concern. This is because both systems are part of the DAVE suite of capabilities, which is fed by data, information, and knowledge inputs from multiple supporting sites. The DAVE information includes Department of Defense, (n.d.-c)

- Affordability: tracks current MDAP and MAIS estimates to ensure consistency of affordability caps and goals
- Acquisition Visibility Data Framework: integrates existing acquisition visibility data components within the context of a use case
- Data Opportunities: assists users culling through acquisition data in order to help them identify sources to use in solving acquisition problems
- Acquisition Data Sets: gives users access to raw data that may be used within analytical tools
- Earned Value Analysis Tool: a suite of earned value charts and graphs designed to visually illustrate a contract's cost and schedule performance
- Selected Acquisition Report (SAR)/Major Automated Information System (MAIS) Annual Report (MAR) Catalog: provides access to both current

and historical SARs and MARs which may be used to seek out trends, lessons learned, or best practices

- Cost Assessment Data Enterprise: integrates inputs to provide common data visualization to allow for more rapid and thorough analysis (Department of Defense, n.d.-c, para. 1)

Based upon the abundance of data, information, and knowledge available through this single point of access, it is peculiar that PEOs do not take full advantage. Historical inputs from this resource could assist PEOs with cost estimation, schedule development, technological accessibility, and overall program risk reduction. If accessed, the repository information and knowledge embedded in Defense Acquisition Visibility Environment (DAVE), Acquisition Information Repository (AIR) (see Figure 26), Defense Acquisition Visibility Environment (DAVE), and Defense Acquisition Management Retrieval (DAMIR) (see Figure 27), could assist PEOs in proactively mitigating a number of their acquisition related management issues.

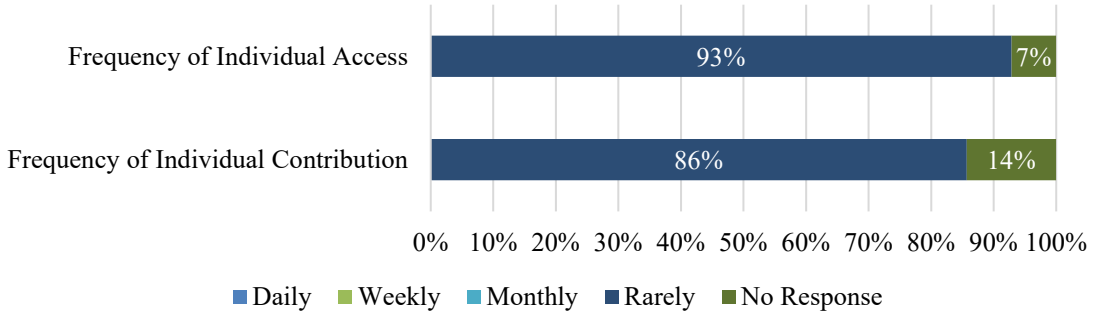


Figure 26 Defense Acquisition Visibility Environment (DAVE), Acquisition Information Repository (AIR)

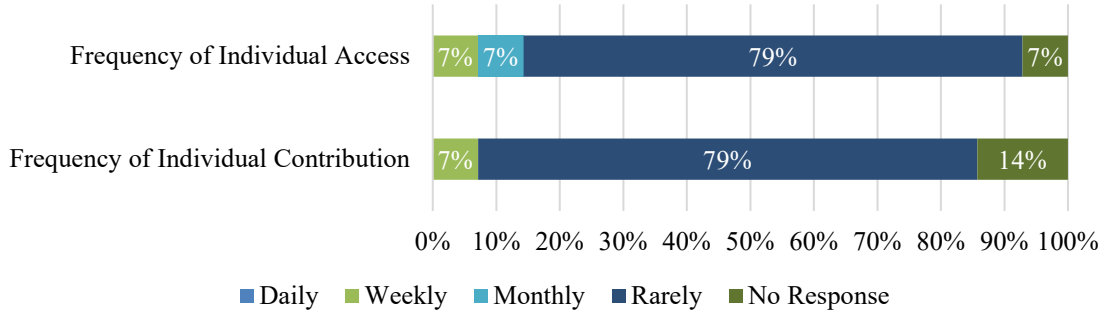


Figure 27 Defense Acquisition Visibility Environment (DAVE) , Defense Acquisition Management Retrieval (DAMIR)

Rarely was the TechSpace at R&E Gateway (DTIC DoD), (see Figure 28), nor Joint Lessons Learned Information System (JLLIS), (see Figure 29), visited by the polled respondents.

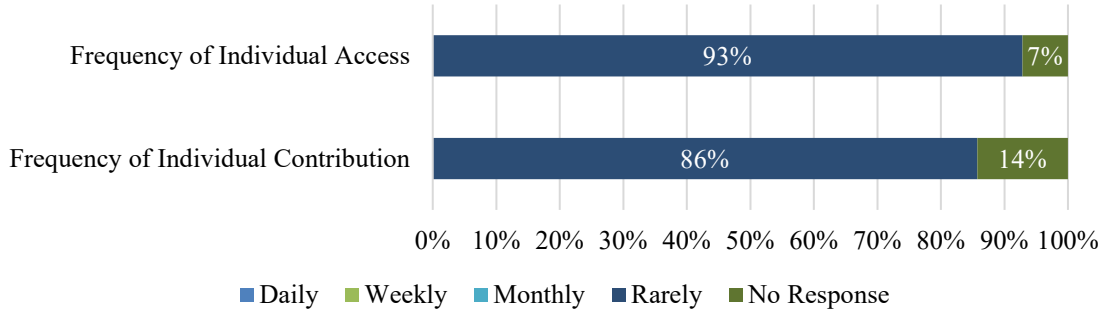


Figure 28 DTIC DoD TechSpace - R&E Gateway

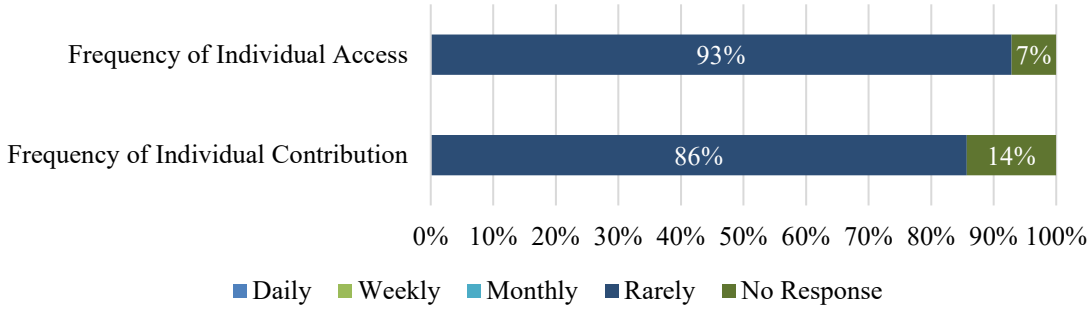


Figure 29 Joint Lessons Learned Information System (JLLIS)

The low utilization rate for the JLLIS is a discouraging finding. JLLIS seems to be a more common sense approach to KS. JLLIS represents a digital storage option that may be accessed by multiple individuals working across the broad spectrum of DoD military services. While not specifically for the Army acquisition community, JLLIS possesses an infrastructure that is capable of readily accommodating individuals across the DoD. Further, it accounts for both active and passive knowledge collection activities and encourages the tacit and explicit knowledge discussion that converts raw knowledge into conventional wisdom. JLLIS, however, is hindered by the multiple levels and layers of review, which are embedded into its formal process.

Once submission occurs in JLLIS, all submitted observations and documents flow through to a "Lesson Manager." This individual is responsible for reviewing, analyzing, and validating observations. Additionally, the manager can adjust the data based upon any classifications and clarifications obtained from the initiator. Following observation approval, an "Issue Coordinator" is assigned that acts as an intermediary between the initiator and any individual looking to engage the initiator. This allows a tacit knowledge exchange. The Issue Coordinators also work through monitoring and evaluation schedules, which affords external entities the opportunity to make comment on the observations prior to widest dissemination. JLLIS ultimately permits users the ability to disseminate lessons learned data through multiple repositories and can take the form of community of practice entries, issue resolution modules, and after action reports. All JLLIS submissions are subjected to oversight and comment as would any piece of documentation that would

require approval. It is no surprise that the system is not often used for KS. JLLIS could very well be the most comprehensive system the DoD has available to meet tacit and explicit KS requirements, but its oversight requirements may prevent it from reaching its maximum potential. In the end, the process of KS through this medium seems to be more of a burden than a benefit.

The preceding analysis of PEO tool usage reveals one constant across all platforms. PEO respondents are heavy users of the noted tools for the purpose of obtaining knowledge. When it comes to sharing and contributing to these same resources, PEOs seemingly "one-sided" use creates an imbalance. A point of concern becomes that if PEOs fail to update lessons learned, best practices, and case studies through contributions to the databases from which they frequent, at some point, the data residing at these locations will become outdated and obsolete. Additionally, if this is a common historical trend, PEOs should place some level of skepticism in the fidelity of the information and knowledge that they retrieve from these locations, as it may be impractical for their applications.

The survey also requested respondents provide additional KS resources used within their individual PEOs. The below resources were noted as other portals where KS may occur. Details are provided for each.

(1) NAVAIR Acquisition Guide from Naval Air Warfare Center, (n.d.)

**Resource Type:** Web accessible Naval Air Warfare Center Training Systems Division (NAWCTSD) policy guide

**Purpose:** Provide a one stop information center on the integrated overall acquisition process, which crosses all competencies at TSD

Intended User Group: TSD personnel, TSD customers, contractors

**Access:** Open with no restriction

**URL:** http://www.navair.navy.mil/nawctsd/Resources/Library/Acqguide/acqguide.htm

**Administrator(s):** Naval Air Warfare Center

**Major Contributors:** Informed by DoD and Navy Acquisition Policy

**Details:** For TSD personnel, provides acquisition process and reference material to assist in daily operations and help to operate effectively in cross competency IPTs; for customers, provides templates necessary for acquisitions; for contractors, demonstrate how NAWCTSD conducts business.

**Number of respondents utilizing tool:** One

**Frequency of Individual Access:** Weekly

**Frequency of Individual Contribution:** Weekly (Naval Air Warfare Center, n.d., para. 1)

(2) AcqNotes from AcqNotes, (n.d.)

**Resource Type:** Non-DoD based web repository

**Purpose:** Founded in order to simplify the process of locating DoD acquisition related information that is generally located across multiple, information heavy DoD resources.

Intended User Group: Individuals looking to learn basic acquisition related concepts.

**Access:** Open with memberships available at no cost

**URL:** http://acqnotes.com/

**Administrator(s):** AcqNotes

**Major Contributors:** DoD AT&L web resources and industry/DoD commentators

**Details:** Along with providing the Aerospace community with a simpler source of information, AcqNotes provides a platform where Professional Services companies can advertise their expertise to the Aerospace community. This expertise can range from engineering consulting services, technology and concept development, computer programs, test & evaluation, cost estimating and research and development and much more. AcqOps provides potential buyers and sellers a place to network and understand what services are available.[4]

**Number of respondents utilizing tool:** One

**Frequency of Individual Access:** Weekly

**Frequency of Individual Contribution:** Weekly (AcqNotes, n.d., para. 2)

(3) Defense Acquisition Magazine from (Defense Acquisition Magazine, n.d.)

**Resource Type:** Bimonthly magazine available in physical or digital format

**Purpose:** Facilitate shared knowledge throughout the AT&L workforce.

Intended User Group: Acquisition professionals serving in career positions covered by DAWIA or industry equivalent.

**Access:** Free to subscribe

**URL:** https://www.dau.mil/library/defense-atl/

Administrator(s): DAU Press

**Major Contributors:** Senior military personnel, civilians, defense contractors, and defense industry professionals in program management and the AT&L workforce.

**Details:** Features stories focusing on real people and events. Articles reflect author experiences in and thoughts about acquisition, rather than reciting various details of researched information. Articles discuss individual experiences with problems and solutions in acquisition, contracting, logistics, or program management.

**Number of respondents utilizing tool:** One

**Frequency of Individual Access:** Monthly

**Frequency of Individual Contribution:** Monthly

[4] Source: http://acqnotes.com/about-us

**Additional Commentary:** Defense Acquisition magazine focuses on procurement, contract and program management, logistics, agility, information technology and security, and auditability and accountability is favored by many within the acquisition profession. The publication relies heavily on submissions from those actively engaged in defense acquisition in order to provide real time experiences that are happening within the community. In order to have an article accepted to be considered for publication, however, there are multiple restrictions. Per the publications writer's guidelines, the below constitute some of the requirements for submission are

- They must include a brief biographical statement.
- The articles must "reflect author experiences in and thoughts about acquisition rather than pages of researched information."
- The "articles should discuss the individual's experience with problems and solutions in acquisition, contracting, logistics, or program management, or with emerging trends."
- The "articles should be 1,500–2,500 words."
- They "do not embed photographs or charts in the manuscript. Digital files of photos or graphics should be sent as email attachments. Each figure or chart must be saved as a separate file in the original software format in which it was created."
- "Detailed tables and charts are not accepted for publication because they will be illegible when reduced to fit at most one-third of a magazine page." (*Defense Acquisition Magazine*, n.d., para.1-8)

With such strict formality, it is no wonder that PEOs routinely require submission of articles to Defense Acquisition magazine as part of annual performance evaluations. If the concern is knowledge dissemination and diffusion, Defense Acquisition magazine seems to be a poor choice for PEOs looking to force staff to share experiences. Not only are the restrictions burdensome, but there is no guarantee that a submission will be selected for publication.

These write-in responses demonstrate that individuals are more likely to be frequent contributors to databases they feel are more capable of providing the information and knowledge they require. As outlined in the fill-in database summary, respondents indicated a contribution rate that matched the frequency of access for lessons learned, best practices, and/or case studies. These sources can range in their degree of applicability. For instance, based upon respondent write-in answers, AcqNotes and Acquisition Magazine are broad in applicability, while the NAVAIR Acquisition Guide has a more specific focus. It is likely that being permitted to share knowledge in a way that one desires, will result in a more consistent give-and-take of knowledge, and could ensure a stronger frequency and fidelity of contributions.

### 5. (Q5) Incentivizing KS Activities

Respondents were asked to comment on if their PEO invoked incentives in an effort to promote KS. In our sampling, 21% of survey respondents indicated that their PEO did in fact incentivize KS, while 78% indicated there were no incentives offered for KS. Despite responding that their PEO did not incentivize KS, 60% of "no" respondents provided some commentary on how their PEO did, in fact, promote the sharing of knowledge. This was interpreted to mean the respondent did not find the particular action taken by their PEO to have an impact in encouraging individuals to share knowledge.

A summary of incentive type and PEO respondent utilization rate, (see Figure 30), is as follows:

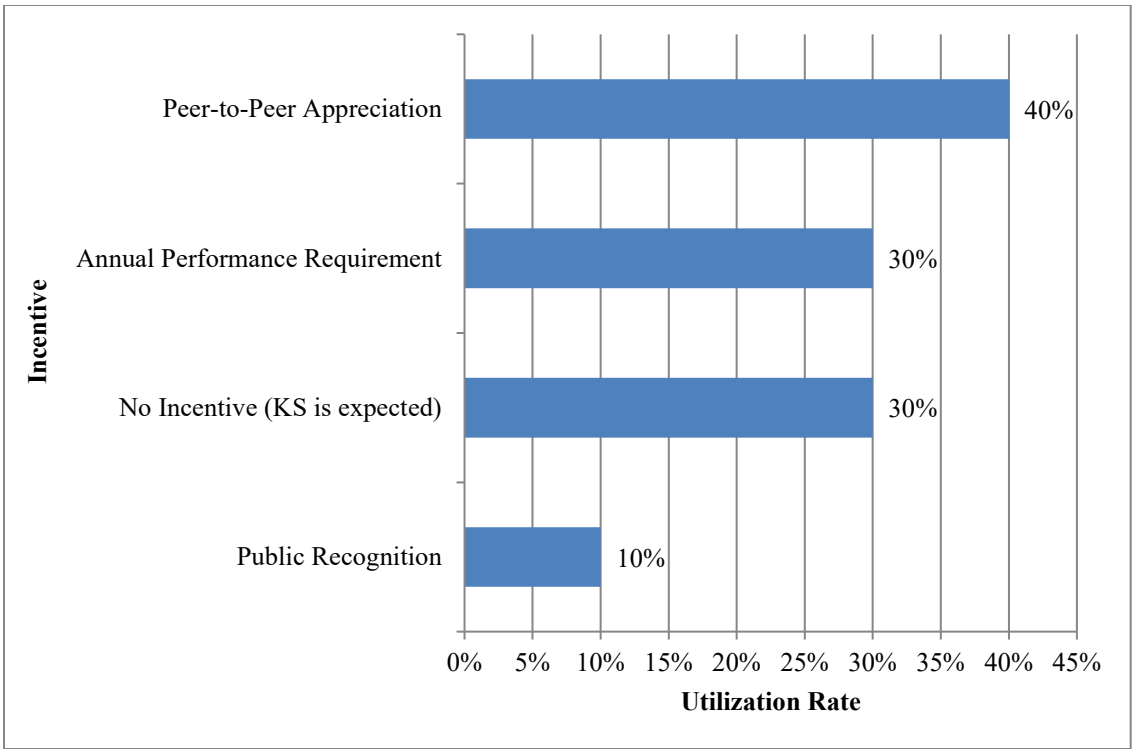


Figure 30 PEO KS Incentive Rate

The most frequent "incentive" noted was peer-to-peer appreciation with a 40% rate of response. This generally results from informal tacit KS amongst members of the PEO. Although intangible in nature, a simple "thank-you" between parties is an example of an intrinsic reward for KS and is how most individuals respond when they are the beneficiary of a knowledge exchange. This activity helps fosters long-term relationships that may assist both parties at later points in their careers. Though it is often undocumented, some individuals derive satisfaction from being able to share knowledge and thus help those around them. A "one team, one fight" mentality is embraced by the knowledge possessor, and thoughts and prior experiences are shared freely, fostering an environment of collaboration. PEO respondents did not mention that their PEO used monetary awards, prizes, improved work environments, or opportunities for education as KS incentives.

A 30% response rate was received that specified designation of KS as an annual performance requirement. This demonstrates that PEOs are using extrinsic reward mechanisms to foster KS as well. Respondents provided examples of various KS activities

they utilize to meet this requirement including informal peer-to-peer sharing, leading professional development sessions, and drafting articles for publication in an acquisition related magazine. There are concerns, however, with utilizing performance requirements as a means by which to "incentivizing" and emphasizing KS. The primary point of apprehension is the qualitative nature of KS. Higher quality, formally documented, knowledge will be of more detail, clarity, and contain supporting information. When converting KS to a quantitative measure as part of an appraisal, it is likely that the shared knowledge will experience a loss of fidelity. For instance, respondents noted mandatory KS efforts were occurring through article submissions to Acquisition Magazine. Since this submission content is subjective, the annual evaluation can only consider whether the article was submitted, but not whether the article contained quality knowledge. As opposed to a method of incentivization, including a requirement to share knowledge as part of annual performance review seems better suited as an accountability method.

### 6. (Q6) Knowledge Collaboration with Other PEOs

In order to determine if KS efforts differed between PEO-to-PEO contact and PEO interactions with KS databases, the frequency of knowledge collaboration efforts between PEOs was questioned. Depending upon the knowledge shared, the program's phase in the acquisition life cycle, the best practice information, or the myriad of KS avenues that have positive benefits for PEO collaboration, this inquiry was directed toward collaboration frequency only. Knowledge shared, program acquisition life cycle phase, best practice information, the myriad of KS avenues available for PEO collaboration, and overall content, were purposefully omitted from question specifics. The frequency of collaboration shared by the respondents ranged from never-to-monthly. Although "weekly" was an option, it was not selected by any of the respondents. The largest response was "only if necessary," with a response rate of 43%. This was followed by 21% for both "monthly" and "never." The lowest response rate was 14%, for those who made yearly collaboration efforts with other PEOs. Figure 31 provides an overview of these findings.

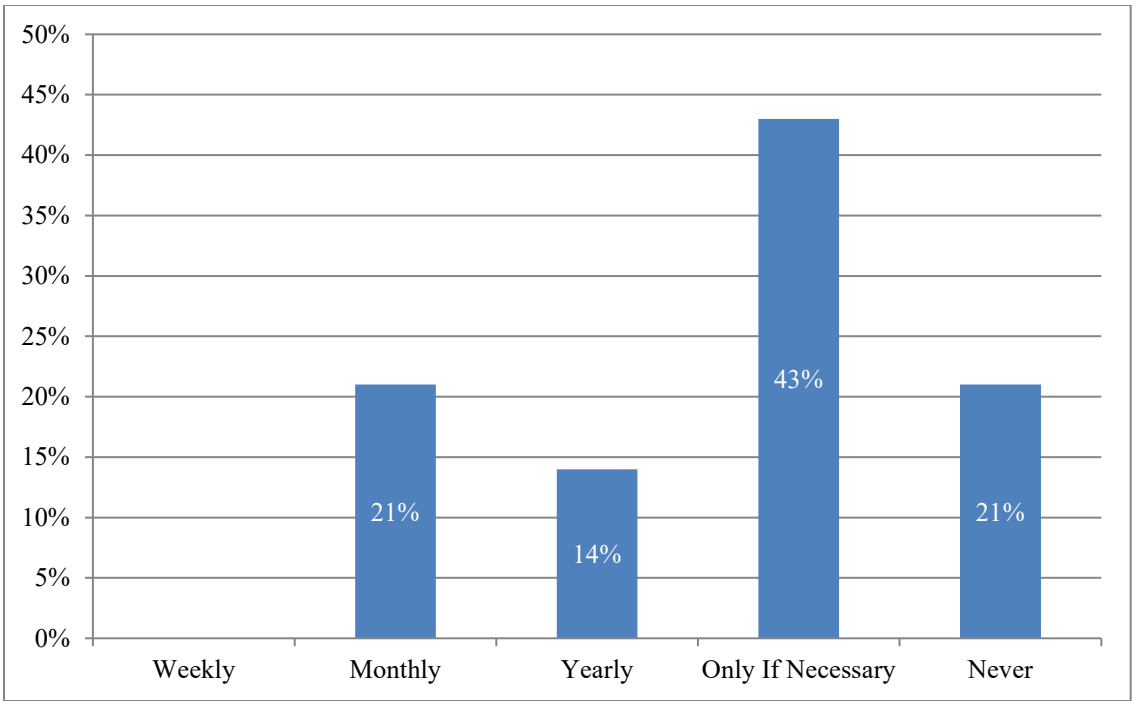


Figure 31 Between Army PEO Collaboration

The results of this analysis are discouraging. Comparison to the frequency of sharing occurring at KS databases is constant with sharing among sister PEOs. This means that, overall, the majority of PEOs are likely only seeking lessons learned, best practices, or cast studies only when absolutely necessary. The likelihood is that PEOs are reacting to the majority of problems encountered. Furthermore, it is unknown how many issues could be mitigated or eliminated if the PEO took a more proactive approach to KS.

What is most disconcerting about this revelation is that both interactions with knowledge databases and peer-to-peer discussions are necessary for KS to be most effective. For instance, relating the frequency of collaboration with other PEOs in this question to the responses noted in Question 4, a trend emerges. Lessons learned, best practices, and case studies are readily available at the selected resources previously identified. Many go so far as to provide this knowledge in the form of an executive summary or summary, so that knowledge may be extorted quickly. One can also observe from these report trends the various risks and other issues resulting with information transforming into knowledge. Even if PEOs are obtaining knowledge from a knowledge

repository, they are likely lacking the feedback scenario for the knowledge to be converted to wisdom (e.g., PEO-to-PEO collaboration), as outlined in the DIKW model.

### 7. (Q7) Most Beneficial Time to Access Lessons Learned

Respondents were asked to provide their opinion on when the active search and implementation of identified learned lessons would provide the most significant benefit to their programs overall. The question structure allowed open-ended replies and the pooled responses were categorized according to three broad areas. Responses are displayed in Figure 32.

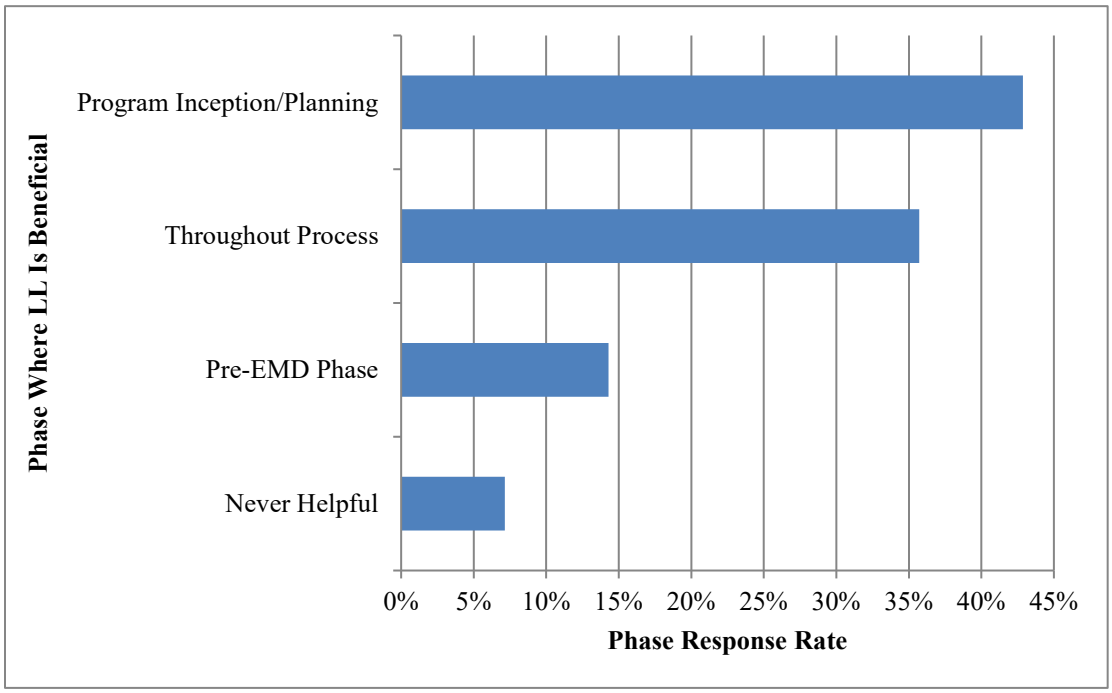


Figure 32 Beneficial Phase for Lessons Learned

The most notable program phase at which obtaining lessons learned was most beneficial was that of program inception/program planning. From the responses, 43% stated that this phase would experience the most benefit of having access to previously developed lessons learned. Program inception and planning is assumed to mean prior to the material solutions analysis phase where the analyzing and developing of the end user's

requirement occurs. Historical data on previous program and alternatives would be of assistance during this phase; however, it is unlikely that many lessons learned exist that could be of benefit to the program. At this early a phase, the initial capabilities document is drafted, analysis of alternatives are conducted, and decisions on material solutions are made.

With a response rate of 36%, "throughout (the) process," was identified as the second most beneficial time that a program could receive benefit from access to relevant lessons learned. Sans the preceding comments regarding lessons learned at program inception, it is likely that a higher volume and breadth of lessons learned exist for the remaining phases of a program. Although respondents identified that lessons learned would be of benefit to the program throughout its life cycle, data received in responses to previous questions indicate that PEOs are not routinely seeking out such knowledge. In fact, one respondent noted in response to this question that they "rarely will access a database for (lessons learned).

At 14%, Pre-EMD phase was noted as the third most beneficial time for lessons learned to be accessed and applied. This is understandable as Pre-EMD/Pre-Milestone B is where program engineering and development phases are completed. The program office has undergone numerous conversations with the end user, the ICD and CDD is validated and preliminary threshold and objective requirements are established. As technical requirements are now developed, and approval is granted at Milestone B, the program will likely enter into preliminary contracts. Lessons learned could be of significant benefit at this point in the program's life cycle. As one respondent noted, "I have sought this sort of information most when trying to come up with strategies for major new efforts. How best to incentivize industry? How do we refine requirements? What's the best way to structure (contract) sections L&M?"

Finally, one respondent stated that "Lessons Learned from other programs never have any chance of being truly effective." Given rationale indicates that political involvement in programs inhibits local personnel's ability to mitigate risks through lessons learned. The example provided discusses how Congressional intervention in the program forced the acquisition strategy "to a cost plus contract, which serves as a mechanism for

corporate welfare, rather than a firm fixed contract to accomplish the mission in a cost effective manner, for the benefit of the taxpayer." The result, the respondent argued, is that the Government is forced into a scenario whereby the Contractor must be incentivized through award fees and performance based incentives, as opposed to cost control methods that are organically available through a firm fixed price type contract. Ultimately, lessons learned are of no use to programs if PEOs are not afforded the appropriate flexibility to implement the knowledge they gather from the programs of the past into their current acquisition strategies.

### 8. (Q8) KS Improvements across Ten Acquisition Functional Areas

Respondents were asked to rate ten core functional focus areas according to what they believed was the relative need for improvement for sharing acquisition-related knowledge of lessons learned and best practices. Context which accompanied the survey question specified that replies should focus on enhancements that would benefit the areas of program planning and execution. Areas selected for this analysis included requirements management, risk management, cost estimation, budgeting, contracting, contract performance, financial execution, human capital management, scheduling, and acquisition oversight & portfolio management. Rationale for inclusion of these areas was their role as core competencies in acquisition life cycle management. As such, they are often practiced throughout most program management efforts, and their application influences the outcomes of projects and programs.

The desire was for PEO leadership to specifically identify which of these areas the greater Army acquisition community needs to improve upon with regard to KS. Areas that were identified with a high degree of concern would therefore be valuable for evaluating whether the current knowledge assets (among these areas) are sufficient enough to meet the needs of the community at large.

In addition to ranking functional areas based on their perceived need for KS improvement, respondents were also asked to provide more explicit written recommendations on ways lessons learned and best practices could be more effectively shared throughout the Army acquisition community.

Figure 33 shows a side-by-side comparison of results from the rated responses across each of the acquisition functional areas in terms of the percent of respondents expressing the need for varying degrees of improvement. Any area with at least 50% of the respondents expressing at least a moderate need for improvement was considered to be a significant finding. Those areas where 50% or more of the combined respondents expressed a great-to-very great need for improvement were considered as very significant findings.

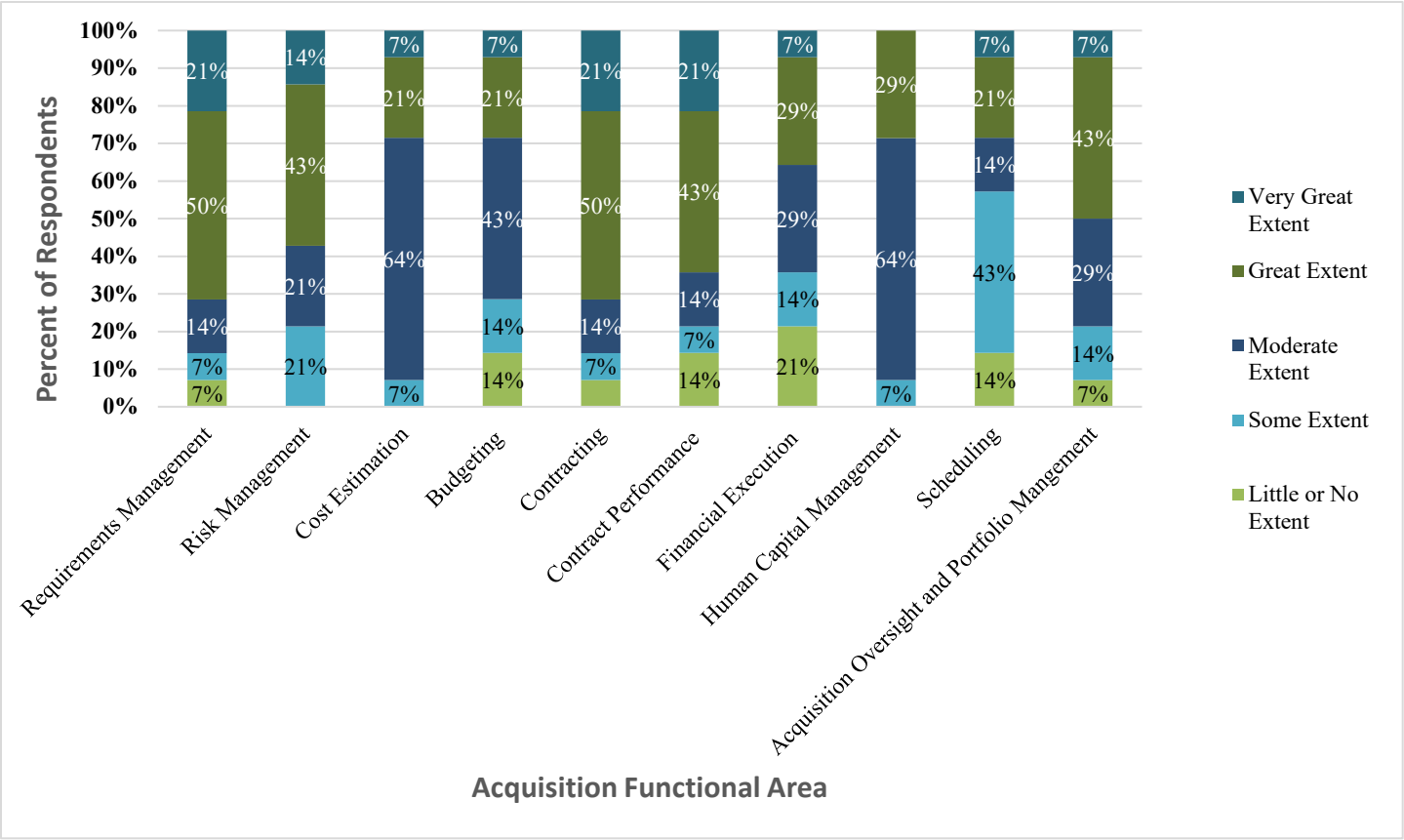


Figure 33 PEO KS Improvement Areas

As evidenced, the majority of leadership, 64%, felt the areas of cost estimation and human capital management, at minimum, required at least moderate improvements. In the areas of requirements management and contracting, 50% of the respondents believed that KS needed attention to a great extent. Finally, risk management, contract performance, and acquisition oversight & portfolio management were identified at near 43%.

In almost all areas, PEO respondents expressed great needs for KS improvement. Nearly 25% of those polled expressed a high degree of concern for the need to improve KS in the areas of requirements management, contracting, and contract performance. When combined with those identifying a great need for improvement in these areas, the totals surged to over 70% for each. This finding may not be surprising, as the acquisition community has been challenged with trying to increase learning in these areas for many years. Nonetheless, it demonstrates a need to share knowledge early in the program in order to make certain PEOs have the requisite knowledge base to ensure success in later stages of execution.

Respondents provided little insight in terms of ways in which KS could be improved. One respondent suggested incorporating lessons learned as a mandatory product, similar to any other PEO regulatory requirement that would be drafted. Another recommendation was for higher level leadership, (e.g., ASAALT), to conduct virtual town halls and discuss lessons learned in a broad capacity. Some feedback suggested there was no way at all to improve this area. One respondent noted, “I do [not] need any more generic lessons learned.” Another suggested that, there “is rarely a one-size-fits-all (solution) in acquisition” and it takes having a network of well-seasoned and experienced acquisition professionals to utilize as a resource.

### 9. (Q9) Barriers to KS

PEO leadership was asked to identify specific cultural and institutional barriers they felt had the greatest impact on their organization's ability to effectively document and share tacit and explicit knowledge from past and ongoing program efforts. Additionally, respondents were asked to identify which barrier, specifically, they considered to be the "most challenging to overcome," and why, in order to help inform which areas may require the most immediate attention for improving KS initiatives.

Each of the given barriers was attributed to one of the three major KM component areas to generate an overall distribution and to determine which category may be having the biggest impact overall. The below list incorporates all responses provided in reply to the query. Some responses mentioned more than one barrier in a particular category and others mentioned multiple barriers that could be applied to more than one KM component area category. Those comments below which are italicized are those which respondents identified as being the "most challenging to overcome:"

**People**

- Seeing it (KS) as an "additional duty"
- *Inability to admit, learn, and share failure for fear of "killing the messenger*"
- *People's individual control of information in order to "maintain fiefdom"*
- Fear that outside organizations will assess information as "sub-standard"
- "Conditioning people to take the time to critically think and (document)"
- *Lack of emphasis from leadership*
- Unwillingness
- (Ignoring) "all of the virtual tools at our disposal"

- The “not invented here” or “we tried that before and it did [not] work” attitude
- Fear of reprisal because “I do [not] want anyone to know what I did wrong”

**Process**

- *Operational pace and scheduling*
- “Lack of a focused program to deliberately share and apply lessons learned”
- Lack of time to consolidate and transfer information
- *“Usually the biggest barrier is time”*
- “Greatest barrier is time”

**People and Process**

- “Lack of incentives”
- No “knowledge gatekeeper” to manage consolidation and determine applicability and utility
- Workload

**Process and Technology**

- Poor organization of SharePoint sites

**All**

- Not being able to “run our PMOs as (a) business”

Of the major barriers identified, PEO leadership overwhelming felt that those related to lack of time, lack of incentive, lack of established processes, and general resistance to admit failure were the greatest impediments to sharing knowledge. Figure 34

demonstrates responses following distillation into one of the three KM components. For purposes of the below analysis, if one response contained multiple KM components, each was counted as an individual data point.

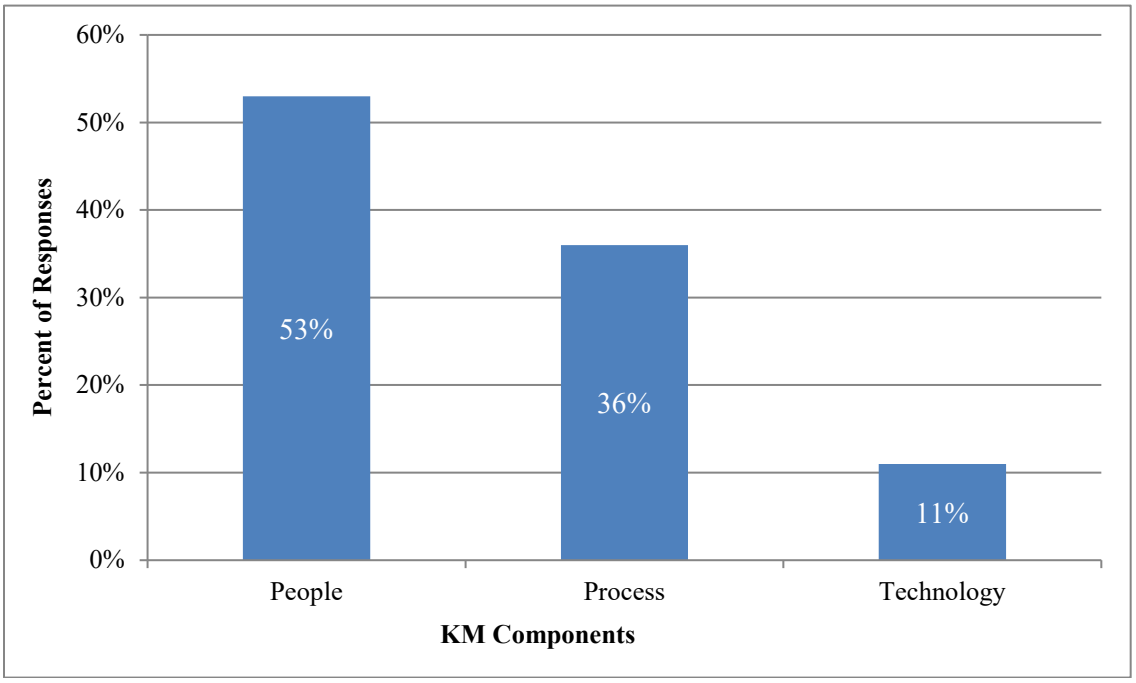


Figure 34 Distribution of Perceived KS Barriers by KM Component Areas

With a response rate of 53%, data suggests that respondents perceive people factors as the most inhibitory to KS in their organizations. This was followed by process factors at a rate of 36%, and technology with 10%. This finding seems to align with assertions in the literature that people are most essential to KS. An effective KS strategy would seek to foster a culture that increases people's willingness to share and use knowledge appropriately.

The limited number of response feedback regarding technology as a barrier was not surprising, as DoD has historically made major investments in this area for empowering sharing of knowledge products. With the low response numbers and no listing of major KS barriers associated with technology, one could assume that current technology may be

perceived by the PEO as being sufficient enough to maintain current PEO demands for knowledge access.

### 10. (Q10) Leadership Knowledge on "How to Be a Successful Program Manager"

Finally, it was requested that respondents identity "the single most critical piece of knowledge" that they could share with the Army acquisition community regarding how to be successful as a PM. Approximately 72% of the lessons learned knowledge provided was shared with them using various one-on-one tacit sharing methods such as face-to-face mentoring, training seminars, or workshops. Around 21% was shared through explicit means like books or documents. This suggests that individuals are the most utilized means of KS in this particular respondent cohort.

In addition to the given advice, it was requested that respondents share the position and title of the person who provided the knowledge, at what stage in the program effort it was provided, and by what means the knowledge was transmitted. Review shows that most of the knowledge was provided through either other PMs, direct peers, or upper level management. In terms of when the information was shared, some mentioned that the lessons learned were shared early in their tenures at PMOs or PEOs. While most did not expound on timing, it is assumed that the knowledge could have come at any point in their management experience. Ultimately, having access to it early and often would be most preferred.

Although it was expected that the bulk of the advice would be largely qualitative, the desire was to investigate any trends in terms of the distribution of "type of advice" given. For example, a point of consideration was whether the majority of the lessons learned advice related to a particular acquisition functional area or if it was more general in nature. Based upon the responses, advice was grouped into one of five categories as seen in Figure 35. The majority of advice dealt with leadership or strategic management, which is to be expected. PMs are both managers and leaders. Additional advice dealt with stakeholder management and communication, two very important areas for learning in the PM domain.

The fact that leadership considered this shared knowledge as "critical" could suggest some relative importance in terms of these areas warranting increased focus for documentation and sharing in the organization. It is reasonable to say that they are among the most impactful for a PM to learn in order to help him/her become successful.

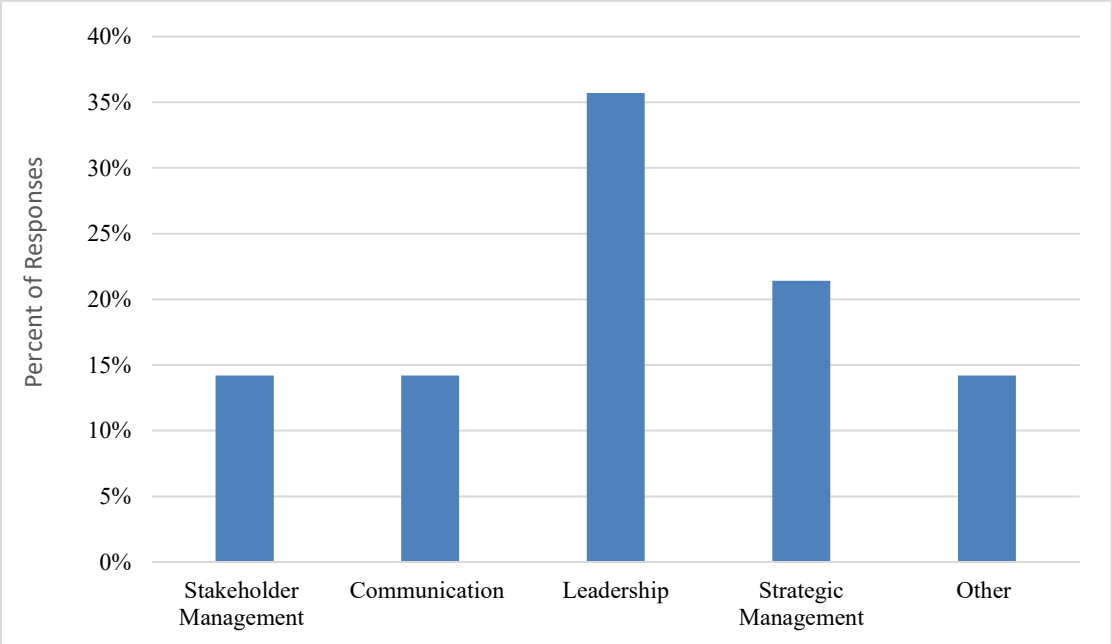


Figure 35 How to Be a Successful PM Advice Categorization

Examples of PEO leadership's most critical lessons learned advice for becoming a successful PM, is summarized as follows:

(1) Knowledge Recipient: PM

**Knowledge Provider(s):** Army General and unknown

**KS Technique(s):** Explicit; read in books

**Lesson Learned/Best Practice Knowledge Advice**

- "When things go wrong in your command, start wading for the reason in increasingly larger concentric circles around your own desk"

- "It is impossible to over communicate to stakeholders on the program – programs typically outlive individuals, priorities of the day, and sometime even operational concepts. Informing key parties on all of these is critical part of being a successful PM"
- "Stakeholder management but it is essential and the most important thing a PM can do besides effectively running his/her program."

(2) Knowledge Recipient: PM

**Knowledge Provider(s):** PEO

**KS Technique(s):** Tacit; Face-to-face conversation

**Lesson Learned/Best Practice Knowledge Advice**

- "The great secret about this business is that industry wants to build things that we want to buy. If we would just communicate better, we would both get what we want."

(3) Knowledge Recipient: PM

**Knowledge Provider(s):** Other PMs

**KS Technique(s):** Tacit; face-to-face via training workshop

**Lesson Learned/Best Practice Knowledge Advice**

- (The knowledge gained by attending) DAU PMT 402 (Executive PMs Course) – "the ability to talk with other PMs."

(4) Knowledge Recipient: PEO Staff Member

**Knowledge Provider(s):** Product Manager

**KS Technique(s):** Tacit; one-on-one discussion

**Lesson Learned/Best Practice Knowledge Advice**

- "When in doubt, lead. If you [are] not sure which way to go, pick a direction and move forward. If you make a mistake, learn from it and make appropriate adjustments"

(5) Knowledge Recipient: DPM

**Knowledge Provider(s):** Bible; teachings of Jesus Christ

**KS Technique(s):** Explicit; book

**Lesson Learned/Best Practice Knowledge Advice**

- "Do to others as you would like them to do to you." Luke 6:31
- "Scriptures in John 1:1-5"

(6) Knowledge Recipient: DPEO

**Knowledge Provider(s):** SES Director

**KS Technique(s):** Tacit; verbally

**Lesson Learned/Best Practice Knowledge Advice**

- "Do [not] just consider how things are, but how they should be, then move to close the gap."

(7) Knowledge Recipient: DPM

**Knowledge Provider(s):** DPEO

**KS Technique(s):** Tacit; verbally

**Lesson Learned/Best Practice Knowledge Advice**

- "Follow the money."

(8) Knowledge Recipient: PM

**Knowledge Provider(s):** Senior Leadership at ASAALT

**KS Technique(s):** Tacit; verbally

**Lesson Learned/Best Practice Knowledge Advice**

- "Never take the success or failure of your program personally…the PM is the bus driver with a bus full of stakeholders across their service and DoD. As the bus driver, you have the steering wheel, gas pedal and brake pedal. Your passengers only have a brake pedal. You need to learn to maneuver to your destination very carefully."

- "Be active and present for your program when stakeholders, especially senior ones, are discussing your program. If you are not at the table, you [are] on the menu."

(9) Knowledge Recipient: PM

**Knowledge Provider(s):** Many different people

**KS Technique(s):** Tacit; verbally and observed actions

**Lesson Learned/Best Practice Knowledge Advice**

- "Let the people do their work – listen. Include them in decisions that impact them"

- "Focus on cost, schedule, and performance – know what is good enough"

(10) Knowledge Recipient: PM

**Knowledge Provider(s):** Other PMs

**KS Technique(s):** Explicit: book & Tacit; face-to-face mentoring

**Lesson Learned/Best Practice Knowledge Advice**

- "Two of my bosses provided (the DAG with its 18 tenets) to me."

(11) Knowledge Recipient: PM

**Knowledge Provider(s):** PMs and ASAALT Staff

**KS Technique(s):** Tacit; one-on-one mentoring

**Lesson Learned/Best Practice Knowledge Advice**

- "Simply do not be emotional about the program that you are charged to manage. Simply execute the resources provided which are a reflection of the Army's priorities."

(12) Knowledge Recipient: DPM

**Knowledge Provider(s):** NPS Instructor

**KS Technique(s):** Tacit; verbal via training course

**Lesson Learned/Best Practice Knowledge Advice**

- "Your fresh perspective [will not] last long – Use it to question everything to unearth what [is] dumb"

(13) Knowledge Recipient: PM

**Knowledge Provider(s):** Other PMs, coworkers, industry partners

**KS Technique(s):** Various (not given)

**Lesson Learned/Best Practice Knowledge Advice**

- "Be innovative, run the PMO as a business, treat industry partners as true partners, develop your team, make your contracting officer your best friend"

(14) Knowledge Recipient: PM

**Knowledge Provider(s):** Not given

**KS Technique:** Not given

**Lesson Learned/Best Practice Knowledge Advice**

- "Capture the intellectual high ground. In other words, do [not] assume that there are people that know more about capability than you…even the combat developers and requirement guys!"

- "Take the time to become the master of whatever you [are] building"
- "Do [not] outsource the hard knowledge"
- "Projects need management, but they need people that can lead them even more. You can [not] do that if you have [not] mastered the product, so put in the effort to capture the intellectual high ground"

## C. SUMMARY

This chapter provided a discussion of the KS survey key findings. The results of the survey were discussed in detail for each of the ten survey questions and aggregate data identified relevant trends in the KS environment within and between the individual Army acquisition PEOs. Feedback information was also evaluated relative to some of the key KM and KS principles and best practices from the literature to identify correlations and to help make inferences as to the current state of KS efforts as perceived by the PEO community respondents.

The following chapter will provide conclusions and recommendation and discuss suggestions for future research efforts.

# IV. CONCLUSIONS AND RECOMMENDATIONS

An investment in knowledge always pays the best interest.

—Benjamin Franklin,
one of the founding fathers of the United States
(Elkins, 2013, para. 5)

This study documented the findings of Army PEO leadership opinions on the current state of KS within their organizations with respect to the efforts of documenting and sharing acquisition lessons learned and best practices. The analysis addressed various KM and KS areas of emphasis that could impact the PEOs ability to effectively implement KS strategies aimed at fostering greater organizational learning. In particular, the study was able to provide some insight into the nature of the PEOs: 1) general internal and external KS approaches, 2) utilization habits for applying KS resources and tools, 3) KS incentivization practices, 4) most impactful KS barriers, and 5) opinions for areas where KS improvements need to occur.

Overall, the study revealed no apparent "universal KM or KS strategy" employed amongst the PEOs who contributed. Likewise, there was not sufficient evidence to suggest the existence of any holistic, systematic, or "robust" KS strategy employed by any of the individual PEOs that involved a codified process for sharing of lessons learned and best practices. We noted that the PEO respondent's general unawareness of Army KM and KS principles and policy guidance may help understand the basis for this assertion.

We understand that due to the low response rate we experienced in the study, we cannot state with a high degree of certainty that all PEOs may be demonstrating the KS situations and challenges we identified in our research. As was mentioned prior, we were unable to solicit any feedback from leadership in three of the twelve PEOs we queried; therefore, our resultant sample size was not as robust as anticipated. Even though we did not get the response we expected, we did receive extensive feedback from leadership among nine of the PEOs. A large percentage of those respondents were serving as PMs,

which we feel helps to better substantiate the accuracy of our findings because PEOs should be leading their respective PMOs in sharing of lessons learned and best practices. The aggregate responses of all respondents do offer sufficient breadth to at least satisfactorily conclude that PEOs would be wise to dedicate more emphasis on understanding their respective KM cultures so that they can extract higher knowledge returns through KS.

## A. CONCLUSIONS

To what extent are Army PEOs engaging in KS activities to identify and document best practices and lessons learned to aid in internal program activities and in external collaborative information sharing?

This study revealed that the extent at which PEOs engage in KS varies significantly between offices. There is also variability in terms of the level of dedication for internal KS versus external KS with the other PEOs. Most of the approaches described were conservative rather than aggressive. Internal KS strategies, although inconsistent and informal, were noted as a significant constant among PEO respondents. Our respondents indicated 43% make moderate-to-significant routine efforts for internal collaboration and KS. Tacit methods such as internal PEO discussions and informal one-on-one dialogue with peers were the primary methods whereby lessons learned and best practice knowledge was transferred between individuals. We found that although a small percentage of internal KS could be described as technically complex, much of these conversations remain undocumented and unmanageable, and therefore, would not likely be converted to the explicit type knowledge that could be more widely disseminated throughout the organization.

We concluded that external collaborative KS amongst the PEOs was neither precise, nor did it seem to be embedded into PEO process routines as was with that of internal collaborative efforts. The external KS efforts were marked with a general infrequency as described by respondents. The PEOs indicated that they rarely seek assistance outside their organization. We believe that their propensity to share (from PEO-to-PEO) "only when necessary" could result from the legitimate differences in the types of programs that each PEO manages, and that the specificity of these task areas may seem to

preclude any meaningful sharing of lessons learned. For example, it may be difficult to discern what lessons learned and best practices documented by PEO Ground Combat Systems for the development of the next generation tank would be applicable to PEO Soldier and their development of soldier protective equipment. While we do not necessarily know if this occurs, it may explain why some PEOs do not share as regularly with others.

PEO respondents revealed that DAUs KS resources were universally capable of meeting some of their needs for sharing of lessons learned and best practices knowledge and listed them as their preferred source. One obstacle that prevents this knowledge from becoming particularly beneficial to those that access it is that it is primarily explicit in nature. Since this knowledge is usually only available in a documented state, it is unlikely that it will be coupled with tacit discussion and feedback to facilitate a more effective knowledge diffusion process.

The analysis revealed that there was no formal process which directs facilitation of KS for lessons learned and best practices within the PEOs who responded. Based upon the feedback, we found that PEOs are more likely to be sharing informally rather than formally. We found that PEOs universally subscribed to the technology of document management systems and databases (e.g., shared drives and SharePoint sites) for explicit KS and respondents revealed that in many cases reliance on these resources likely creates a false sense of KS efficacy. These systems were employed locally and not between PEOs. In addition, we found that PEOs were most likely to use these shared document resources in concert with frequent KS practices like round table presentations, peer-to-peer discussions, email disseminated throughout the PEO, internal professional development programs, and/or wargaming  We believe that PEOs favored these approaches due to the expeditious pace at which knowledge may be obtained, the ease at which contributions may be made, and the overall unregulated nature by which the KS takes place.

With regard to meeting DoD guidance on documenting and sharing lessons learned and best practices through formally established resource and processes, we found little to no support of the JLLIS and its formalized processes. The problem that occurs with formally structured KS is the perceived burden associated with submission of knowledge products, followed by the time it takes for hierarchical reviews, comments, and release of

finalized approved knowledge resources. This ultimately, takes some attention away from running the program, executing other business oriented tasks, or individual personal time which may be more significant priorities not warranting tradeoffs. Based upon these revelations, we concluded that PMs might not consider these resources as particularly attractive. Tacit KS practices and their associated resources seemed to be most utilitarian.

Army and DoD guidance regarding KS amongst PEOs does not appear to have an impact on how PEOs manage and disseminate data. As discussed, 86% of survey respondents directly stated that they were unaware of any specific published policy which directed or guided overarching KM or KS efforts. Another 7% of respondents did provide references to varying pieces of regulation, but the given responses did not include those policies issued by Army or DoD. This lack of awareness of any specific Army or DoD guidance for KS, is noted as a concern. This study did not include investigation as to why the existence of these policies are not readily known at the PEO/PMO level, and it is difficult to discern what impact these policies would have on internal KS activities, ceteris paribus.

Internal procedures for dissemination of lessons learned and best practices were largely informal and consisted of corresponding with internal and external sources on an as needed basis. Based upon the query regarding selected external KS resources, it appears that there is no one resource favored by PEOs in disseminating knowledge amongst one another. This inconsistency at which PEOs are having staff share knowledge, it is not possible to align external DoD KS capabilities to the practices currently enacted at the PEO and PMO level.

Finally, the analysis showed that the greatest number of listed KS barriers among the PEOs were related to people and culture rather than that of process and technology. These “people” barriers represented many of the most common inhibitory cultural barriers we found in the KS literature. With no mention of any definitive KS processes, and a pattern of utilizing document-sharing databases as the common KS technology resource, it is understandable why the PEOs perceived KS culture may experience some of the challenges expressed by the respondents. Technology may be getting more attention than process or people factors, which is likely not the best practice considering the literatures

emphasis to "place the highest level of KM efforts in the component area of people." In addition to this, most of the PEO respondents expressed that there was a general lack of KS incentivization in their organizations. Although they did offer some examples of various intrinsic-based rewards (e.g., peer-to-peer appreciation) for KS, the overarching feedback in this area was equally underwhelming.

Overall, we believe that the findings of the study reasonably suggest that some of the Army PEOs may not be taking full advantage of KM and KS practices and tools, and therefore are likely underutilizing their knowledge resources. They may be forfeiting some of the valuable benefits that KS can provide at both the individual and organizational levels.

## B. RECOMMENDATIONS

Based upon the findings of this study, we offer the following recommendations to PEOs that may assist them in maximizing the value of the knowledge they possess through more focused KS related efforts. These recommendations take into account the KM and KS principles and best practices discussed in Chapter II and are based upon the key findings discussed in Chapter III. We believe that each of them merits equal attention.

- Individual PEOs should conduct formal in-house assessments of their current KM and KS strategies through the individual lenses of people, process, and technology to determine their current capabilities as well as deficiencies. This effort should be guided by PEO leadership and at minimum include all PMs and DPMs from each PMO. PEOs should use the Army's 12 KM principles to develop a codified KS strategy, objectives and vision that align with the Army's intent. Strategies should be tailored to maximize their respective resources. While current informal KS techniques can be individually and mutually beneficial to the PEOs, they must be integrated into a holistic formal process that is understood and practical for application at all levels of the organization. This will undoubtedly involve dedication of time for educating the PEOs with elementary knowledge on the benefits of KM and KS in order to assist them in developing effective strategies to maximize their people, and

technology resources to build a robust process. For example, this could involve performing social network analyses as to better understand the reality of individual and group work relationships in their offices. This may help PEOs uncover opportunities to capture social (knowledge) capital nested in their people and then better facilitate its transfer among the organization with more frequency and fidelity.

- DoD should evaluate the benefits of adapting existing technological capabilities to allow for use as an informal KS solutions for inter and intra-PEO KS. The JLLIS is identified as a database that presently has the greatest chance of making knowledge available to the largest audience. It would be ideal to equip JLLIS with an option that allows users to share informal lessons learned, best practices, or case studies. The current timeframe for review of submitted lessons learned may present a burden to PEOs, and it likely overcomplicates PEO efforts to routinely share current knowledge with other offices. This new capability would closely resemble the informal sharing that PEOs accomplish via local shared drives and SharePoint sites, but it would offer greater value because the information and knowledge could be theoretically available to a much wider audience and at a greater frequency.

- DoD and the ASAALT should review and modify the existing Army/DoD guidance for KS and KM to incorporate specific guidance for KS in the context of acquisition practitioners. Although numerous pieces of policy have been promulgated which stresses the overall importance that KS activities need to occur throughout PEOs, as well as the greater Army population, they fail in one key area. None of the existing KS guidance outlines what an acceptable strategy should look like. It fails to provide a synopsis of what individuals should be involved, what steps must be taken to execute successfully, and what technological solutions are presently in place to assist PEOs to accomplish such a task. In the absence of defining

characteristics, PEOs appear to lack a robust process to guide their offices. Outside of locally developed SOPs, PEOs have nothing with which they are able to define success in this area. Official guidance or policy, demonstrating how to connect people to technological resources, would be a significant benefit to assist PEOs in increasing horizontal KS. There are likely many KM and KS experts in the Federal government and private sector that could assist DoD with this effort.

## C. FUTURE AREAS OF EFFORT

- In order to improve the fidelity of the data presented in this study and in order to better evaluate the accuracy of our assertions, we suggest additional efforts to extract information directly from the PEOs on the areas we addressed in this analysis. In other words, we would like to see polling of a much larger sample size and a more diverse demographic as to better solicit feedback from all of the PEOs and at all levels of their organizations (not solely the upper management). This effort would require in-person visits to each PEO, personal one-on-one interviews with leadership staff, as well as the administration of a PEO climate survey to all PEO membership that could address similar questions to those analyzed in this baseline study. We feel that the acquisition community would be well served to address the area of KM and KS with increased focus and resourcing. This is especially critical considering that in recent history DoD has struggled to execute programs to budget and schedule because they lack the required up-front knowledge to adequately predict risk and build sound acquisition strategies. If this knowledge truly exists in the PEO, it may or may not be currently recognizable. It needs to be extracted and processed to provide benefit. We feel this effort could help more accurately evaluate the actualities of the PEOs current KM and KS efforts and provide a much needed awareness of the current state of affairs so as to develop practical KS strategies that will work.

- In order to improve the KS accessibility of lessons learned and best practices among PEOs, we suggest additional research that could help identify the current technology limitations within PEOs. This is necessary so PEOs may evaluate how they can better exploit the technological capabilities of information and knowledge databases (Moore & McKernan, 2017). SharePoint and shared drives can support local ease of use and access when a common vernacular is used promoting searchable content and fostering KS. In order to disseminate outside of the PEO, a redundant effort is required to replicate existing information into those external sources to provide community wide KS resource availability.

Knowledge is arguably among the most valuable resources for ensuring defense acquisition survivability. PEOs possess volumes of lessons learned and best practices knowledge acquired over many years of application experience. Merely possessing this knowledge however, is not sufficient for sustaining the competitive advantage that our Nation requires and expects. This important resource must be continuously shared in order to extract its maximum value. It is the act of KS that truly empowers organizations like the Army PEO in their efforts to practice knowledge-based decision making for the betterment of program planning and execution. Doing this effectively and efficiently requires a leadership-driven KS vision built on formal and controllable processes, stable and enabling KS technologies, and motivated people all working together to achieve learning. Unlocking the power of people to readily share tacit knowledge should be among the PEO's top priorities. Establishing and cultivating a better PEO KS culture, is nothing short of imperative – replacing program uncertainty and risk, with knowledge!

# APPENDIX. KNOWLEDGE SHARING SURVEY

## Knowledge Sharing in the U.S. Army's Acquisition Program Executive Offices (PEOs) and Program Management Offices (PMOs)

Welcome to the Survey!

Thank you for taking the time to support this analysis project. The following 10 question survey aims to collect information on knowledge sharing dynamics within the Army's acquisition PEOs and PMOs. Information provided will inform a student thesis project analyzing knowledge sharing within and between these organizations. The student cohort (survey authors) are DA Civilians and candidates for the Masters of Science in Program Management (MSPM) degree in the Graduate School of Business and Public Policy (GSBPP) at The Naval Postgraduate School (NPS), Monterey California.

When conducting the survey, please consider the following:

Please do NOT include personal identifiable information (PII) in your responses. It is the author's intent to respect privacy and promote anonymity throughout this effort. (Inadvertent inclusion of PII will be immediately redacted from returned questionnaires).

- Please provide candid and thoughtful remarks. In this way, reported information will most accurately reflect the current environment, improving overall data reliability.
- Please avoid using acronyms.
- Please allow 20–30 minutes to complete the survey. If you are unable to complete the survey in one sitting, you may save responses and complete at your convenience.
- Please submit completed survey to RTD_Thesis@nps.edu prior to 7 March 2018.

The research team appreciates your participation. Please contact us if you have any questions or concerns. We look forward to your valued feedback!

– The RTD Research Team –

Mike Robeson
Neal Thomson
Brad Davis

## Additional Information

The following definitions are provided as a supplement for this survey:

***Knowledge Management:*** *A discipline that promotes an integrated approach to identifying, retrieving, evaluating, and sharing an enterprise's tacit and explicit knowledge assets to meet mission objectives.*[5]

***Knowledge Sharing (Transfer):*** *The movement of knowledge, including knowledge based on expertise or skilled judgement, from one person to another. It occurs formally through established processes and procedures and informally through collaboration and dialogue.*[6]

***Lessons Learned****: Experience acquired in the execution of programs and projects which can provide value-added direction to the formulation and execution of future development and initiatives. It is a key component of knowledge management.*[7]

***Best Practices:*** *Proven techniques and strategies that can prevent common problems and improve quality, cost or both. They should contain enough contextual information so that future practitioners can discern their relevancy and usefulness*[8]*.*

***Case Studies:*** *A knowledge management technique whereby the author documents what they did, how they did it, and what was learned during the process in order to transfer the authors experiences and knowledge directly to the reader so that they may duplicate successfully what the author did. They generally identify areas of risk and the strategies used to fix them.*

[5] U.S. Army Chief Information Officer (CIO) G-6, "Army Knowledge Management Principles", 23 July 2008
[6] ATP 6-01.1, March 2015
[7] Retrieved from https:///www.milsuite.mil
[8] *Defense Acquisition Guidebook* (2017)

Please indicate your current role and time in position:

| CURRENT POSITION | | | | | | TIME IN POSITION | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PEO | DPEO | PEO Staff | PM | DPM | PMO Staff | < 3 yrs. | 3 to 5 yrs. | 5 to 10 yrs. | 10 to 15 yrs. | > 15 yrs. |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**1.** Does your organization have a robust knowledge sharing strategy? [9]

○ Yes ○ No

Please briefly describe (*in the space below*) 1) the approaches/techniques used, 2) how your organization "promotes" knowledge sharing, and 3) any applicable DoD/Army policies or guidelines supporting the strategy

1) Approaches/Techniques include:

2) Promote Knowledge Sharing by:

3) Applicable DoD/Army Policy & Guidelines include:

[9] *Defense Acquisition Guidebook* (2017)

**2.** What is the current level of effort within your PEO to foster collaboration between individual PMOs and to develop (or employ) processes for documenting and sharing program lessons learned and best practices to assist in program management?

○ No effort ○ Minimal effort ○ Moderate effort ○ Significant effort

Please explain (*in the space below*) how lessons learned and best practices knowledge is documented, accessed, and managed within the organization. In addition, please indicate if the following are utilized (*provide details if possible*): share point sites, common drives, and/or shared drives.

**3.** What is/are your preferred (go to) information source(s) for:

a. Researching acquisition program lessons learned?

b. Researching acquisition program management best practices?

c. Researching acquisition program management case studies?

**4.** To what extent do you utilize (i.e., access and/or contribute) to the following resources for acquisition related knowledge sharing of lessons learned, best practices, and case studies?
(*If you use a resource or site not listed in Table 1*) Please specify (*"write-in" the name and location of the resource in the available open spaces of the table below)*

| **RESOURCE/SITE** (in no particular order of importance) | **Frequency of Individual Access** | | | | **Frequency of Individual Contribution** | | | |
|---|---|---|---|---|---|---|---|---|
| | Daily | Weekly | Monthly | Rarely | Daily | Weekly | Monthly | Rarely |
| ***The Acquisition Lessons Learned Portal (ALLP)*** - The Army Acquisition Business Enterprise Portal (AABEP) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ***Knowledge Networks*** - Army Knowledge Online (AKO) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ***Program Management Community of Practice Wiki*** - DAU Acquisition Community Connection | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ***Guides, Standards, Business and Government Case Studies*** - Program Management Institute (PMI) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| **GAO Reports on Acquisition Best Practices** | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| **GAO Assessments of Selected Weapons Programs** | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| **Performance of Defense Acquisition System Annual Reports** | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| **DOT&E Annual Reports** | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ***milBook, ilUniversity, milTube, milWiki*** -milSuite | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| **Defense Acquisition Visibility Environment (DAVE) -** Acquisition Information Repository (AIR) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| **Defense Acquisition Visibility Environment (DAVE) -** Defense Acquisition Management Retrieval (DAMIR) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| **RESOURCE/SITE** (in no particular order of importance) | **Frequency of Individual Access** | | | | **Frequency of Individual Contribution** | | | |
|---|---|---|---|---|---|---|---|---|
| | Daily | Weekly | Monthly | Rarely | Daily | Weekly | Monthly | Rarely |
| ***DTIC DoD TechSpace*** **-** R&E Gateway | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ***Joint Lessons Learned Information System (JLLIS)*** | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Table 1**

**5.** Is knowledge sharing incentivized in your organization? ○Yes ○No

Please briefly describe (*in the space below*) how knowledge sharing efforts are rewarded and how often. Is it formal and/or informal?

**6.** To what extent does your PEO collaborate with other Army PEOs to share knowledge on your PEOs' lessons learned, best practices, and internal case studies?

○ Weekly ○ Monthly ○ Yearly ○ Only if Necessary ○ Never

Please briefly describe (*in the space below*) how this communication takes place. Is it formal and/or informal? Who is responsible for overseeing these collaborative efforts?

**7.** At which point in your program(s) do you believe access to relevant and useful lessons learned knowledge is most beneficial?

**8.** In which of the following focus areas (and to what extent) do you feel the Army acquisition community could improve in sharing knowledge (on

lessons learned and best practices) to improve planning and execution of programs:

(*Please check no more than one option for each row of Table 2*)

| **FOCUS AREA** | Very great extent | Great extent | Moderate extent | Some extent | Little or no extent | Not applicable |
|---|---|---|---|---|---|---|
| Requirements management | ○ | ○ | ○ | ○ | ○ | ○ |
| Risk management | ○ | ○ | ○ | ○ | ○ | ○ |
| Cost estimation | ○ | ○ | ○ | ○ | ○ | ○ |
| Budgeting | ○ | ○ | ○ | ○ | ○ | ○ |
| Contracting | ○ | ○ | ○ | ○ | ○ | ○ |
| Contract performance | ○ | ○ | ○ | ○ | ○ | ○ |
| Financial execution | ○ | ○ | ○ | ○ | ○ | ○ |
| Human capital management | ○ | ○ | ○ | ○ | ○ | ○ |
| Scheduling | ○ | ○ | ○ | ○ | ○ | ○ |
| Acquisition oversight and portfolio management | ○ | ○ | ○ | ○ | ○ | ○ |

**Table 2**

Please briefly describe (in the space below) your recommendation(s) for improvement.

9. **a.** What cultural or institutional barriers have the greatest impact on your organization's ability to effectively document and share both tacit and explicit knowledge gleaned from past and current program management efforts?

   **b.** Which of these barriers do you feel is the most challenging to overcome and why?

10. **a.** In your experience, what is the single most critical piece of knowledge (regarding "how to be successful as a PM") that you've ever received?

    **b.** Who (Position/Title) provided the knowledge, at what stage in the effort was it provided, and by what means was it passed along to you?

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