
WHITE PAPER:



**A PRACTICAL APPROACH
TO STREAMLINING
DEFENSE ACQUISITIONS**

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1. Executive Summary

The Department of Defense (DoD) acquisition environment is, and has been for quite some time, an area of tremendous challenge. While DoD acquisition activity and budgets have been on a steep increase over the past decade, the population workforce dedicated to its execution has precipitously been reduced over the same period of time. Add to that shrinking program and product development cycles, ineffective cost control measures, and revolutionary technology breakthroughs and the acquisition system becomes virtually unmanageable. Notwithstanding these dynamic changes, the constraints remain -- the defense acquisition process is still lengthy, requires highly skilled expertise, and is costly.

This White Paper asserts that the current defense acquisition workforce is not prepared and ill-equipped to overcome the challenges it faces today or will face tomorrow. Consequently, to adapt to these challenges, acquisition professionals have resorted to shortcuts, workarounds, and various practices that, while satisfying short-term deadlines, may ultimately jeopardize the intents of national and agency-wide acquisition strategies. These ad hoc practices performed over the years have lead to processes that may be largely inconsistent across activities, could omit mandatory procedures, and may not reflect unique program requirements. Collectively, they add unnecessary risk and cost to acquisition programs.

The objective of this White Paper is to introduce the Streamlined Modular Acquisition Requirements Tailoring Tool (SMART-T) concept as a model for streamlining defense acquisitions. Through existing research from various sources including the Government Accounting Office, DoD Inspector General, Coopers & Lybrand, Government Executive, and other research from a mix of notable authors, the paper describes the current challenges facing defense acquisitions, shortcomings of current streamlining efforts and the proposed SMART-T solution.

2. The State of Defense Acquisitions

2.1 Introduction

Much of what the Department of Defense embodies is characterized by its acquisitions. Acquisitions represent the manifestation of DoD vision, capability and readiness as it plans, prepares, and executes its goals and objectives. This is where the Department stakes its current and future ambitions. This is the basis for how allies and enemies view the United States.

DoD Directive 5000.1 defines the Defense Acquisition System as one that *"exists to secure and sustain the nation's investments in technologies, programs, and product support necessary to achieve the National Security Strategy and support the United States Armed Forces."*¹ Its primary objective is to acquire quality products that satisfy defense needs, with measurable improvements to mission accomplishment and operational support, in a timely manner, and at a fair and reasonable price.

2.2 Documented Challenges

Unfortunately, defense acquisitions have historically been an area where DoD has experienced the most difficulty in terms of execution and performance. In its Strategic Objective Plan (2000-2002)², the United States General Accounting Office (GAO) cited several concerns regarding military capabilities and readiness including:

- (1) The ability of the military and associated support organizations to implement the national strategy after workforce cutbacks;
- (2) Costly weapons that take too long to develop and fall below promised quality and performance; and
- (3) An outdated logistics system that needs to be reengineered to ensure responsive and effective support.

Almost a decade after numerous reform initiatives, the DoD is still lacking broad-based results. Although the Department has taken a number of significant

steps in recent years directed at *"improving its outdated and inefficient logistics processes,"* an October 2001 report expressed the need for *"a more detailed framework for organizing logistics support throughout the Department and for guiding the components' logistics planning and implementation efforts."*³ Among other things, it reported a stark need to reengineer and modernize logistics processes and systems and minimize logistics costs.

In 1997, the consulting firm Coopers & Lybrand conducted a study to report on the progress of acquisition reform implementation.⁴ Although they cited improved acquisition reform over the past four years, C&L emphasized that implementation is uneven and inconsistent across and within military services and buying commands. Their conclusions were that, *"acquisition reform has achieved success at the policy level; however, the overall impact of this reform activity across the spectrum of DoD programs, apart from documented successes with certain more visible programs, has been difficult to discern."*

In a March 2001 summary report of 58 acquisition programs (ACAT I - IV), DoD Office of the Inspector General concluded that, *"DoD management of ACAT I through IV acquisition programs remains a complex challenge facing DoD managers. Because of the dollar magnitude of the programs and the impact on national security, the management of the acquisition programs remains an area needing continued emphasis, oversight, and improvement by DoD managers."*⁵

Documented research such as those cited above give a gloom indication of the current state of defense acquisitions. The following subsections offer some probable causes for the present condition and discussions of other issues facing the acquisition community. The purpose here is to lay the groundwork of the forces at work that have created a dynamically challenging environment in which to operate.

2.3 Reduction in Workforce⁶

Less (Skilled) People

According to the GAO, the acquisition workforce has been downsized by over 50% in the last decade to about 124,000.⁷ By 2005, as many as half of the remaining individuals will be eligible to retire. While the average age of DoD's acquisition workforce has increased -- from about 42 to 48 since the end of fiscal

1989 -- the Department is also facing increasing recruitment and retention challenges at the entry levels. In fact, there are 50% fewer people in their 30s and 76% fewer people in their 20s working in the field than a decade ago.⁸

While statistics and headcount are just part of the concern, the most pressing issues revolve around the potential loss of deep knowledge and skills at the experienced level. Procurement reforms of the past decade have placed unprecedented demands on the skill levels of the acquisition workforce, creating an environment that requires a much deeper understanding of market research, industry trends, shifting policies, and technical expertise. Preserving that knowledge base will be a continuing challenge.

Increased Workloads

In spite of the significant decrease in acquisition headcount, acquisition activity and overall budget have dramatically increased. By 2007, acquisition budgets are estimated to grow 74% from 1995 figures to about \$157 billion annually.⁹ The Department now faces serious imbalances in the skills and experience of its remaining workforce and the potential loss of highly specialized knowledge if many of its acquisition specialists retire. This setting sets the stage for serious challenges to the capability and readiness of the acquisition community in the very near future.

Reduced Capability and Readiness

This potentially crippling trend has been well documented. In a 1997 report, a GAO report to the House of Representatives emphasized that, "*Cutting personnel levels without changing how acquisition organizations generate weapon system requirements and estimates will miss an opportunity to address the deep-seated causes of acquisition problems.*"¹⁰

In March 2000, former DoD Inspector General Donald Mancuso testified before the House Government Reform and Senate Armed Services committees that workforce cuts have significantly hindered reform by creating a "*growing imbalance between resources and workload*".¹¹ His comments noted that while workforce headcount have been cut in half, the number of acquisition transactions has actually increased. "*If the workload had been reduced proportionally, eliminating half of the acquisition positions could be regarded as a positive*

achievement. Unfortunately, this has not been the case."

In the Acquisition 2005 Task Force Final Report, former Undersecretary of Defense (ATL) Jacques Gansler and Undersecretary of Defense (Personnel & Readiness) Bernard Rostker wrote, "*The Department of Defense is facing a crisis that can dramatically affect our nation's ability to provide warfighters with modern weapons systems needed to defend our national security. After 11 consecutive years of downsizing, we face serious imbalance in the skills and experience of our highly talented and specialized civilian workforce.*"¹²

A 2001 DoD Inspector General (IG) report cited a specific example of deficient performance and capability at the Defense Supply Center Philadelphia (DSCP), concluding that inadequate procurement support and increased workload led to significant performance issues between 1998 and 2000.¹³ During this time, headcount at the Supply Center had decreased 27% while administrative lead-time and backorders had surged 26% and 48%, respectively. In addition, DSCP's decline in supply effectiveness had negative impacts on their customers downstream. The Air Logistics Center at Tinker AFB, one of DSCP's largest customers, stated that lack of supply items degraded their readiness and capabilities. Specifically, aircraft and components were not repaired on schedule, parts that should have been disposed were reused, equipment downtime increased, and repair parts were often cannibalized.

There is little shortage of studies, reports, and testimonies to document the severe impact that acquisition workforce reductions have had on organizational and Department-wide capability and readiness. Without innovative tools and processes that increase productivity and leverage skills of the existing workforce, defense acquisitions will continue to endure a losing battle against an imbalance of skills, shortage of staff, and increased workloads.

2.4 Uncontrollable Costs

Lack of Cost Management

Overblown acquisition and procurement costs have also been a significant and recurring obstacle for DoD, renowned for its purchases of \$400 hammers or \$500 toilet seats in the 1980's. Various initiatives have begun since then -- such as Acquisition Streamlining, Acquisition Reform, Section 800 Panel Report, and the

National Partnership for Reinventing -- focussing on reducing problems related to over-specification, over-engineering, small-quantity purchases, non-competitive procurements and other governmental practices. Yet many cost control problems still persist, primarily as a product of government-imposed constraints, limited oversight, and sometimes blatant cost mismanagement.

A 1997 article from the Project On Government Oversight (POGO) written shortly after Acquisition Reform (AR) cited that many AR practices had actually made it easier, rather than harder, for defense contractors to overcharge the government.¹⁴ They found that contractors claimed commercial status for items that are not inherently commercial, where the government is the only customer. Although AR helped broaden the definition of "commercial" products in an effort to promote COTS-based procurements, it instead enabled contractors to evade many requirements including the substantiation of cost data and thus allowed contractors to charge any price for their products. In many cases, they found contractors charged "market-based" prices for sole-source commercial items that were significantly higher than the "cost-based" prices previously charged. In addition, a commercial classification allowed contractors to sidestep open competition and made it harder for the government to negotiate prices because they no longer have access to cost or pricing data.

A 1998 report by the DoD Inspector General provided another example of cost-related problems. The report cited an incident where the DLA paid \$76.50 for screws commercially priced at \$0.47, \$714 for electrical bells priced at \$46.68, and \$5.41 for screw thread inserts priced at \$0.29.¹⁵ On a larger scale, a 1996 audit by the IG found that one Navy command unnecessarily added \$88.4 million to one of its programs by failing to take appropriate actions needed to ensure valid requirements and accurate costs.¹⁶ Another audit in 2002 found one Navy program's acquisition effort duplicated the existing and planned functionality of that of another, adding \$71.2 million of unnecessary costs.¹⁷ In another case, the GAO found that during 2000 and 2001, the Army and Air Force *"used more than \$24.6 million for items and services that, in terms of supporting contingency operations, appear unneeded because the purchase did not appear to support the operation or was more expensive than needed."*¹⁸

Cost Drivers in the Solicitation Process

While financial mismanagement has proven costly for DoD, research

suggests that the solicitation process may also have inherent inefficiencies that unnecessarily drive up costs. In 1994, Coopers & Lybrand conducted a study on the top 24 cost drivers -- factors that contributed to 75% of the cost premium -- of DoD contracts.¹⁹ The study concluded that the cost premium resulted primarily from unique, government-imposed practices through DoD specifications, standards and regulations as well as the DoD's lack of ability to generate proper solicitations and RFPs. Excerpts of their findings include:

Cost Driver #5: Contract Specific Requirements/Statement of Work	
	<ul style="list-style-type: none"> • <i>Defense contracts and SOWs are unnecessarily complex.</i> • <i>DoD program managers copy contract clauses and SOW provisions from previous contracts with little regard for changing circumstances.</i> • <i>DoD personnel have a tendency to impose superfluous requirements.</i> • <i>Contractors are frustrated with the size and complexity of DoD contracts and statements of work. They report that contracts are often poorly written, redundant, and contradictory, with boilerplate provisions which may or may not be relevant to the program in question.</i> • <i>Industry reports that [tailoring] is often used to incorporate additional, unique requirements. Such tailoring compels contractors to modify their control systems to accommodate simultaneously several variations of a single requirement, adding to the compliance costs.</i>
Cost Driver #14: Contract Data Requirements List (CDRL)	
	<ul style="list-style-type: none"> • <i>DoD program managers and contracting officials often request more information than the government can usefully absorb.</i> • <i>Contracting officials lift data items from previous contracts and incorporate them into new contracts, conducting little or no analysis of their necessity or usefulness.</i>
Cost Driver #21: Solicitation Reviews, Proposal Preparation, and Negotiation	
	<ul style="list-style-type: none"> • <i>The DoD solicitation phase cycle -- the period from RFP release to contract award -- is too drawn out.</i> • <i>Many firms requested shorter, simpler, and more straightforward RFPs -- and an end to "recycling" major portions of RFPs from previous solicitation.</i> • <i>There is concern regarding the time, cost, and technical talent required to prepare competitive proposals.</i> • <i>Negotiating with DoD tend to be considerably more detailed-oriented and difficult than with most commercial customers.</i>

A March 2000 GAO report cited that programs have a tendency to vaguely define their requirements in Request for Proposals (RFP).²⁰ They linked several

cases where this practice restricted fair and open competition, avoided favorable fixed-fee arrangements, and minimized government control of costs. Investigators found that vague and broadly defined work descriptions and requirements documentation greatly favored incumbent contractors who had better insight on the expected scope of work. Usually, details of the tasks and requirements were to be negotiated by program officials and the contractor after the order was awarded. Without specific and detailed knowledge of program requirements, contractors were not effectively able to submit proposals or cost estimates.

In fact, contractors themselves indicated they were often discouraged to pursue opportunities if an incumbent contractor existed because of lack of information, unreasonably short time frames given for preparing proposals, and selection criteria that appear to favor incumbent contractors. In many cases, incumbent contractors even wrote RFPs themselves, often highlighting requirements that support their strengths while de-emphasizing their weaknesses. Consequently, despite the appearance of open competition and support of the Federal Acquisition Streamlining Act (FASA), contracts are often awarded with existing contractors in mind. Once awarded, of course, the government begins to lose its leverage of cost controls.

2.5 Historical Complexity

A Web of Rules

The defense acquisition system is besieged by a complex web of rules (i.e. laws, regulations, policies and specifications) adopted for various reasons over many years. Complexity, in general, adds significant cost and time to any process. In addition, it demands additional resources to train, perform, adhere to, and audit. These constraints consequently amplify the challenges cited previously. There have been a plethora of other general practices of contributing to this complex 'web of rules':

- Military specifications were adopted to ensure DoD got a quality product that would meet the user's needs while using a procurement process that would allow it to buy from the lowest bidder; and to ensure standardization to enable ease of logistics support;
- Cost or pricing data requirements were established to ensure the

Government received the same information the contractor had, for use in negotiating a fair and reasonable price;

- Cost Accounting Standards were adopted to provide accounting criteria that would result in comparable costs for like circumstances within a company to ensure contractors properly allocated costs to DoD contracts;
- Checks on the Government's authority were established to in essence "protect the people" (in this case suppliers), from certain Government demands, such as the inappropriate use of fixed-price research and development contracts;
- Rights for Technical Data have been requested to ensure the Government can operate, repair and maintain its equipment without fear of being held hostage to a sole-source supplier for spare parts and to obtain additional equipment and spare parts at reasonable prices through competition; and,
- Laws such as the Davis-Bacon Act, requirements to use small businesses, and buy only American-made products, were adopted to further a particular public interest.

While policies such as those mentioned above may individually have (or had) a legitimate purpose for its adoption, they often add no value to the product itself but instead add complexity and cost in compliance not only for contractors, but also for the government. When combined, they contribute to an overloaded system that is often paralyzed and ineffective, and at best cumbersome and complex. Acquisition Reform was an effort to simplify matters, although many of these issues still remain.

Common Practices and Workarounds

The complexity of acquisitions often leads to a tendency for programs to arbitrarily add or cut various support requirements or give little weight in executing acquisition planning strategies. Strapped for time and budget, programs and support teams are often inclined to take short-cuts in documenting their detailed program requirements and documentation. Major cost drivers cited in the C&L report referenced in Section 2.4 provide documented evidence of such

practices.

The following summarizes their potential impact:

- Specifications are either wholly invoked or totally eliminated. When invoked in its entirety without conscientious tailoring, specifications can often impose unnecessary parameters, content, or design constraints that add cost to the proposal. On the other hand, not utilizing government and industry-approved standards and specifications (i.e. for lack of awareness) in favor of unique design requirements also compromises cost, time, and quality objectives.
- Work statements and other requirements documentation are "recycled" from one contract or program to the next. Clearly, acquisition needs vary from program to program. What may be a requirement for one can be unnecessary for another, and vice versa. Consequently, contract requirements and documentation must be developed individually and specifically for the acquisition need at hand, otherwise they can undermine an otherwise superb acquisition plan.
- New directives, regulations, or procedures are omitted. Although some policies and procedures have extensive shelf lives, the majority is revised regularly. If acquisition professionals are not constantly apprised of changes that occur or informed of new policies, they are very likely to follow outdated processes that are contrary to strategic intents.
- Vague and unclear work definitions and requirements are generated. Broadly defined scope and task definitions may sometimes be intentional due to uncertainty and a desire to remain flexible. However, in contract negotiations and proposal evaluation, they create unnecessary confusion, inaccurate cost estimates and ultimately add costs as a premium for risk. With vague requirements documentation that do not expressly state defined scope, deliverables or services, there is often room for misconceptions of cost, schedule, or performance.

2.6 Non-Existent or Inconsistent Processes

"Process" Defined

As previously mentioned, the acquisition process is a complex engagement, requiring detailed requirements planning and analysis, comprehensive technical and contractual expertise, and adequate resource levels. There is an overabundance of research written on the significance of process capability in the repeatable execution of organizational objectives. Michael Hammer, the renowned authority on business process reengineering, wrote:

*"Process is a technical term with a precise definition: an **organized group of related activities that together create a result of value** to the customers. Each word here is important. A process is a group of activities, not just one... Second, the activities in a process aren't random or ad hoc; they are related and organized. They include no extraneous irrelevant activities, and the included ones cannot be performed in an arbitrary sequence... Third, all the activities in a process must work together toward a common goal... Finally, processes are not ends in themselves. They have a purpose that transcends and shapes all their constituent activities...*

Without rigorous attention to processes, achieving even such minimally acceptable performance -- much less anything better -- is impossible. In the absence of a process focus, a company cannot consistently deliver the performance levels that customers always wanted and now demand...

By focusing on end-to-end sequences of work, processes knock down the walls of traditional silos, eliminating handoffs and the errors, delays, and costs that inevitably flow from these discontinuities."²¹

Documented Challenges

Processes in defense acquisitions, however, are often the antithesis of efficient processes as described by Dr. Hammer. Acquisition processes are often ad hoc, not well organized, include extraneous activities, and performed independent of other activities. Certainly, the 1994 Coopers & Lybrand study that cited "*poorly written, redundant, and contradictory*" contracts and the practice of "recycling" requirements documentation from previous contracts provides evidence of an inconsistent and uncontrolled process.

In a January 2002 report of the Defense Logistics Agency (DLA), the GAO

identified a lack of consistent acquisition processes across the agency.²² Although this report deals primarily with software acquisitions, it is representative of the entire field of defense acquisitions. The GAO concluded that project success at the DLA currently depends more on the individuals assigned to a given project than on the rules governing how any assigned individuals will function, which has clearly been proven to be a risky way to manage acquisitions.

The report attributed differences in the DLA's process to the level of resources and expertise committed to various projects. In fact, researchers rated the agency at a **Level 1** maturity as evaluated by the Software Engineering Institute's (SEI) Software Acquisition Capability Maturity Model. Level 1 (the lowest of 5 Maturity Levels) characterizes organizations whose software acquisition processes are *"largely ad hoc, and occasionally chaotic, where few processes are defined and success depends on individual effort."*

Among several practices, the GAO found *"weaknesses in important key practices that jeopardize effective control of the requirements baseline and can result in software products that do not meet cost, schedule, or performance objectives"* and could significantly impact the *"project's ability to ensure that important project management and contractor activities are defined, understood, and completed."*

2.7 Cultural Resistance

The #1 Obstacle

Change risk is among the most documented concerns pressing commercial and government organizations alike. Cultural, physical, ideological and procedural ties to the past often prevent organizations from effectively implementing strategic change. Professors Jeffrey Pfeffer and Robert Sutton of the Harvard Business School noted, *"Precedent, when inappropriately applied, can interfere with both the process of learning and of applying knowledge to enhance organizational performance. Perhaps the most serious problem with precedent is that it is used automatically, almost without thought."*²³ When people in an organization conduct business relying on how things have been done in the past instead of thinking of and buying in on new approaches, implementing change can be difficult. In an organization the size of the US Government, cultural resistance to change has been endemic.

In the 1997 study assessing the implementation of Acquisition Reform in DoD contracts, Coopers & Lybrand reported that cultural resistance ranked the *most* significant barrier to full AR implementation once the go-ahead decision was made.²⁴ More recently, a GAO report in February 2002 identified that:

*"Despite these heavy investments, our work continues to show that **DOD is not carrying out acquisitions cost-effectively and that acquisitions themselves are not always achieving DOD objectives....** when it comes to making procurements, our work, as well as that of other oversight agencies, continues to show that **requirements are not always clearly defined, alternatives are not fully considered, and contractors are not adequately overseen....** Bringing about new ways of doing business was challenging... companies found that in establishing new procurement processes, they need to overcome resistance from individual business units reluctant to share decision-making responsibility and to involve staff that traditionally did not communicate with each other...*

*DOD is committed to adopting many best practices and has already taken steps to change its policies and procedures. Implementing these practices, however, will be extremely challenging. For instance, the **sheer size of the department, the number of acquisitions, and the hundreds of organizations involved will make it difficult** to gain much-needed visibility over spending on services as well as to implement enterprise-wide management and oversight mechanisms. Moreover, the changes DOD makes **must extend well beyond policies and procedures.** Incentives driving traditional ways of doing business, for example, must be changed, and cultural resistance to new approaches must be overcome. Undoubtedly, DOD will need strong and sustained commitment from its leadership to tackle these more elusive challenges - not just to initiate but to continually support them."²⁵*

It is quite clear from this report, and others like it, that DoD has recognized the widespread problems within its acquisition processes and infrastructure. The extensive list of strategic initiatives begun since the mid-1990s represents efforts to alleviate some of these issues. Implementing these strategies, however, has proven to be much more difficult than expected. Processes and mindsets have not largely changed for lack of appropriate incentives, oversight, or enabling tools. The results are noble theories and policies that are, for the most part, not genuinely executed.

Result: Lower Job Satisfaction

What kind of effects do these challenges trigger in the acquisition logistics community? In a 2000 survey of 2800 workforce participants, researchers found the degree of job satisfaction of Acquisition, Technology, & Logistics (AT&L)

arm of the DoD to be "**significantly lower** than the rest of the government based on the results of the 1999 Office of Personnel Management (OPM) survey and even worse when compared to the 2000 OPM results."

The top reasons cited for the perceived **marginal job satisfaction** were:

1. Few rewards and recognition
2. Downsizing
3. Excessive workload
4. Poor leadership and management

When asked what the most important actions that can be taken to increase job satisfaction, the #1 response was to **improve work tools and efficiency**. This response was directly related to the excessive workload conditions facing the work force. The SMART-T initiative, discussed in Section 4, was conceived and designed to address this particular need.

3. Acquisition's Current Streamlining Efforts

3.1 *The Current Focus*

Indeed, the Department of Defense has made significant strides in developing and employing various information technology systems throughout the Department to streamline the procurement process and help the acquisition community to work more effectively and efficiently. Some examples of these include:

- Standard Procurement System (SPS)
- Central Contractor Registration (CCR)
- Past Performance Automated Information System (PPAIS)
- Electronic Document Access (EDA)
- Government Purchasing Cards
- Navy Electronic Commerce Online (NECO)

Although not obvious at first, there is one commonality among these tools and initiatives -- they are focussed at streamlining the general Contracting Office functions. In other words, they are directed toward the latter stages of the acquisition and procurement process as opposed to the early stages. To clarify, Figure 1 is presented to loosely illustrate the overall acquisition process and the three key stakeholders involved. In general, a **Requiring Office** defines a given need, a **Contracting Office** acquires a given solution to deal with that need, and an **End User** takes delivery of the end product or service that fulfils the need. To reiterate, much of the focus in improving this process has notably been in automating the Contracting Office (e.g. Contract authoring, dissemination, and payment). Few initiatives, if any, focus on streamlining the Requiring Offices (e.g. where acquisition requirements originate).

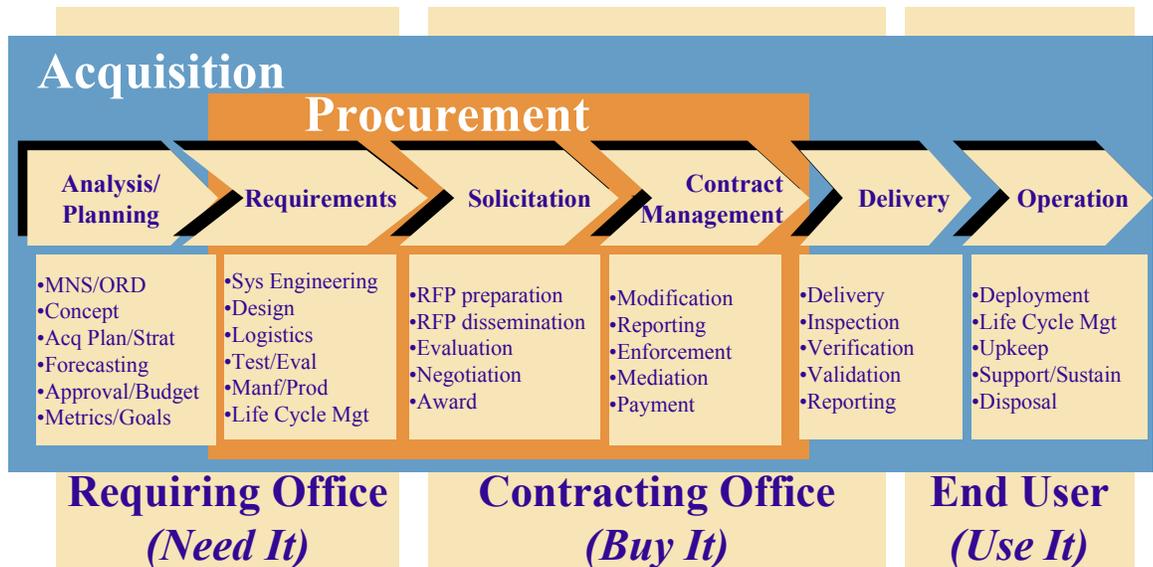


Figure 1

3.2 Shift in Focus

It is quite clear from current acquisition initiatives and IT investments that DoD has primarily focused on optimizing processes in the latter stages of procurement (Solicitation and Contract Management) instead of the early stages (Requirements Definition). The focus on streamlining the contract administration process has largely ignored the pre-solicitation process, where cost controls can have the greatest impact. While there certainly are reasonable motivations to concentrate on the Contracting Office, there is ample evidence to support an equally fervent effort on streamlining the Requiring Office. Reasoning follows that the vast majority of acquisition dollars have already been committed by the time the requirements have been defined and the contract awarded.

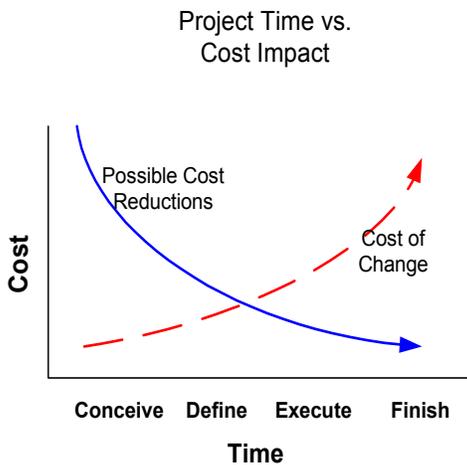
One researcher wrote:

"It cannot be overemphasized how important it is to have [requirements] for approval at the end of the Development phase. It is on this basis that the major investment decision will be made. If there are any doubts here, these will be greatly magnified during execution.

*Far better to stop work and reconsider. It is not generally understood that it is **far more difficult, and costly in design time, to make major changes to an existing design that it is to start from scratch.** This is because the added careful coordination required and the higher probability and danger of overlooking the impact on a related system.*

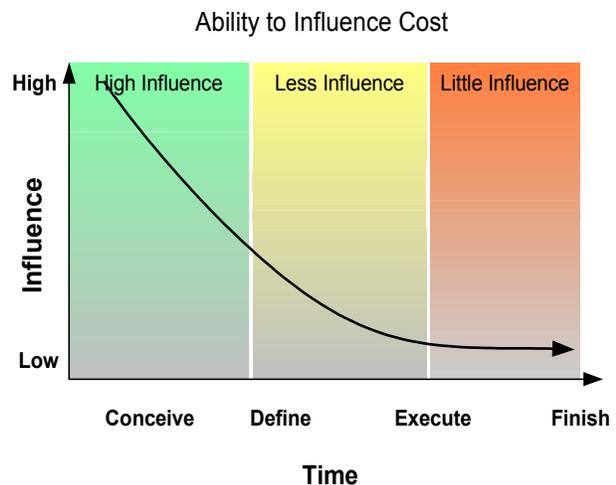
*During execution the contractor is certainly able to influence cost toward a favorable variance, but only to a much lesser extent. It is also common experience that **cost saving or cost cutting efforts at this stage rarely return one hundred cents on the dollar**. Aside from giving the contractor opportunities to improve profit margins, disruption, delay, and possibly wasted effort and materials are genuine and legitimate offsets."²⁶*

Figures 2 and 3 below illustrate this dynamic between project phase and cost flexibility. Figure 2 suggests that the potential to influence cost reductions is high during the conceptual phase and significantly lower in the execution phase. Conversely, the costs associated to unplanned changes dramatically increases as the project progresses. Similarly, Figure 3 suggests that a Program's ability to influence cost is greatest in the early stages. During execution, when certain activities have been put in motion, the Program has little or no ability to influence set costs.



Source: Harold Kerzner, Project Management: A Systems Approach to Planning, Scheduling and Controlling, Van Nostrand Reinhold, 1984.

Figure 2



Adapted from: Max Wideman, "Managing Project Development for Better Results," *Project Management Quarterly*, September 1981.

Figure 3

As much as 80% of project costs have been committed in terms of design specifications and requirements prior to Execution (or contract award). That leaves little opportunity to influence cost control during post-award activities. Thus far, however, the vast majority of tools and government initiatives have concentrated on streamlining the latter, aiming to capture as much efficiency in the contract management process as possible, while overlooking tools to streamlining the earlier phases.

3.3 Probable Constraints Driving DoD's Current Focus

Why has it been that the DoD continued to focus on streamlining the latter stages -- in essence the smaller piece of the proverbial "opportunity pie" -- when program costs have already been largely obligated? There are several reasonable arguments. Certainly, significant administrative costs can be saved during the execution phase of the acquisition (i.e. contract and post-award activities). Automating high-volume, low complexity activities of contract administration can be advantageous in accelerating the acquisition lead-time. Moreover, there is ample empirical data on transaction costs and resulting efficiency savings to justify contract-streamlining initiatives. For example, a business case study can easily quantify the transaction cost of an offline process, compare it to an online process, and multiply by the number of transactions to arrive at an order of magnitude estimate of savings. As a result, initiatives that demonstrate positive Net Present Value (NPV) and Return on Investment (ROI) will usually get approval.

On the requirements side, in contrast, there is little quantitative evidence relating requirements decisions to cost or expected performance. In fact, there is scarce data that actually track the fitness of any solicitation to accurately reflect and support a given acquisition plan or strategy, and ultimately the inefficiencies in the requirements definition process. Consequently, initiatives that cannot validate tangible savings (i.e. those that deal with the potential cost savings in the requirements definition process) customarily go unfunded.

The SMART-T initiative is an effort to shift some of the focus of acquisition Quality-Cost-Time constraints to the Requiring Office from the current focus on the Contracting Office. By focussing on the requirements side, where program costs are obligated and binding contracts are negotiated, DoD can capitalize on an enormous opportunity to better manage its acquisitions.

4. The SMART-T Initiative

S reamlined	M odular	A cquisition	R equirements	T ailoring	T ool
innovative and cost-effective strategies that will result in the most efficient utilization of resources	self-contained components that may be invoked or utilized as needed	the life-cycle process to attain weapons, systems, supplies and services to satisfy DOD needs	exacting needs or demands specified by attributes in support of an acquisition	the process of selectively identifying requirements to meet exacting program needs	an instrument used to facilitate a task or objective

4.1 Introducing SMART-T

The **Streamlined Modular Acquisition Requirements Tailoring Tool (SMART-T)** initiative is designed to manage a critical part of the acquisition and procurement lifecycle - from requirements definition to RFP preparation. SMART-T is an intuitive, web-based application for program managers and their integrated logistics support team to generate tailorable acquisition requirements documents in support of the solicitation process. SMART-T is an extension of the Modular Specification System (M-SPECS) used in the creation of Technical Manual Contract Requirements documentation since 1981.²⁷

The objective of SMART-T is to address many of the challenges currently existing in the acquisition process:

Challenges	Approach
Workforce productivity constraints	<ul style="list-style-type: none"> Eliminate non-value-added activities. Lower the learning curve. Simplify contract documentation.
Program cost management	<ul style="list-style-type: none"> Identify and address requirements early. Facilitate the tailoring process in a controlled manner. Eliminate non-value-added activities.
Historical complexity	<ul style="list-style-type: none"> Embed a rule-based design to facilitate the execution of complex policies and guidelines. Facilitate the tailoring process based on user input of

	<p>key decision points.</p> <ul style="list-style-type: none"> • Develop clear and concise contract documentation.
Process Inconsistency	<ul style="list-style-type: none"> • Guide users through disciplined, pre-determined paths based on interactive user responses to key decision points. • Standardize approved methodologies across activities.
Change management	<ul style="list-style-type: none"> • Centralize regulatory and policy change efforts. • Provide work tools that promote flexibility, efficiency, and simplicity to enhance job satisfaction.

Although the program is envisioned to encompass a total system design approach (including Hardware, Software, Services and Logistics), SMART-T will **initially** address **only** acquisition logistics.²⁸

4.2 The Modular Concept

The Modular concept, based on the M-SPECS approach, entails:

1. Dissecting performance or detailed specifications and requirements into "self-contained components" or modules,
2. Associating the modules to questions that relate to various functions or attributes,
3. Invoking relevant modules as needed into a contract requirement document.

What results is a tailored document that represents the exacting acquisition logistics needs of the program in standardized form and format. In addition, redundant information is reused throughout the solicitation package to generate forms and documentation such as Contract Data Requirement Lists (DD Form 1423), Technical Data Package (TDP) Option Selection Worksheets, Provisioning Technical Documentation (PTD), and customized work statements.

By allowing users to define requirements based on answers to key decision points, the resulting requirements represent no more and no less than what is needed while incorporating best practices and relevant government directives,

guidance, and mandatory regulations. For the government, SMART-T can significantly reduce solicitation development and processing time, minimize acquisition costs, enhance conformance and standardization, and more effectively utilize less-experienced personnel. For contractors, SMART-T will help them better understand program needs by more effectively documenting requirements, standardizing solicitations, and disseminating information.

Figure 4 illustrates the high-level SMART-T architecture, consisting of the SMART-T interface and the various logistic elements that comprise the overall program logistics requirements. Each element will invoke unique contractual requirements to support a given solicitation based on key decision points inputted by the user.

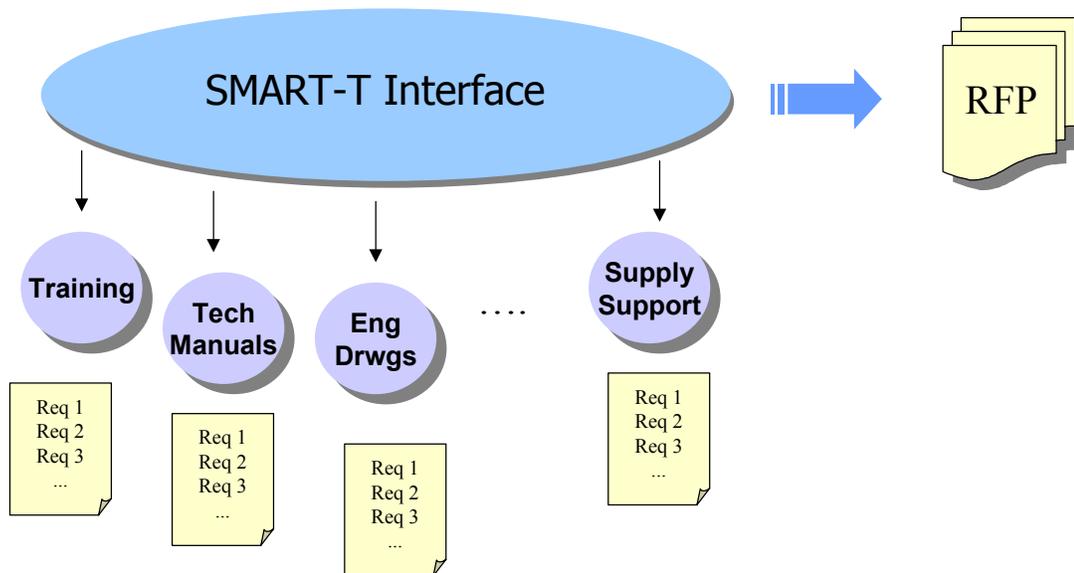


Figure 4

4.3 Supporting Acquisition Reform

The SMART-T concept supports major principles of Acquisition Reform which include:

- **Supporting the Warfighter** - by fostering better communications among key stakeholders during system requirements development and throughout its life cycle to ensure user needs are met.

- **Improving Business Processes** - by encouraging best practices and eliminating cumbersome, outdated and bureaucratic ways of doing business.
- **Reducing Life Cycle Costs** - by providing tools that reduce or avoid unnecessary costs and facilitate the tailoring of unique program requirements.
- **Reforming Regulations** - by simplifying mandatory and discretionary policies to promote greater flexibility and understanding while facilitating regulatory streamlining.
- **Managing the Workforce** - by providing tools, training, and guidance to help enhance quality of work and job satisfaction.
- **Promoting Integrated Product and Process Development (IPPD)** - by encouraging team collaboration and an integrated systems approach to requirements determination.

4.4 Commercial Examples

The modular concept is not new. It has been extensively applied for decades to manufacture commercial products such as homes, furniture, and automobiles. Other examples include object-oriented programming languages, integrated software packages and IT infrastructures. There are clear similarities between SMART-T and some of these other products. They too offer process automation and standardization, data reuse and integration, and productivity and efficiency. Two prominent examples are discussed below.

Tax Preparation Software

As the TV commercial for tax preparation software mentions, there are tens of thousands of pages that cover the United States Tax Code. For many who prepare their own taxes, it is perhaps one of the most dreaded exercises of the year. Fortunately, software products such as Quicken's TurboTax or H & R Block's TaxCut revolutionized tax preparation by helping consumers take much of the complexity out of the process. TurboTax and TaxCut use a simple interviewing approach to help guide the user through the maze of regulations and generate detailed tax documentation based on user responses to tax-related questions. The

software frees users of in-depth, detailed knowledge of the tax code and annual changes while allowing users to focus on their own unique requirements. Moreover, it reuses redundant information throughout the filing, transfers federal return data to state returns, automatically calculates results and populates standard forms, and offers electronic filing. Essentially, these software are productivity tools that uniquely tailor the tax preparation process and help non-experts produce expert results much like SMART-T.

Enterprise Resource Planning

Enterprise Resource Planning (ERP) is another category of commercial tools that revolutionized business processes in the 1990's it became one of the largest software segments and attracted the attention of leading vendors such as SAP, Oracle, Baan, and PeopleSoft. ERP software products offered customers a set of application modules -- such as finance, production, logistics, and human resources -- tightly integrated to support end-to-end business processes. While each module serves a particular purpose and group of users, the information collected is shared and leveraged across the enterprise. By integrating common business processes across the enterprise, ERP streamlined information gathering and dissemination to allow an organization to function as a cohesive unit linked under a common framework. Similarly, SMART-T offers tightly integrated functional modules that optimize workflow management to support the Program Office throughout the procurement process.

4.5 What SMART-T is Not

SMART-T is not designed to function like procurement systems typically found in off-the-shelf software packages. Although commercial solutions such as Ariba's Buyer and Commerce One's Buy offer similar benefits such as expediting purchasing cycles, boosting corporate compliance, minimizing paper-based processes, and automating documentation, they are designed to facilitate and manage simple, high-volume purchases. While they are effective when used to order common, catalogued items and commodities, they are not ideally suited for unique and detailed procurement transactions inherent in large-scale defense acquisitions, where detailed requirements are not pre-defined.

SMART-T does not automate the procurement process. Instead, it automates the labor-intensive preparation and documentation supporting complex

procurements and ensures this documentation is compliant with DoD guidelines. Moreover, SMART-T does not make planning or procurement decisions. Instead, it implements users' decisions after upfront, careful analysis and planning has been conducted, while providing guidance on best practices. SMART-T is designed to support a program's existing and unique requirements definition, Acquisition Strategy, and Integrated Product Team Plans.

4.6 Acquisition Challenges Revisited

In terms of the issues presented earlier, SMART-T will make a significant and positive impact on the challenges facing the defense acquisitions industry:

Reduction in Workforce.

- SMART-T is a productivity enhancement tool that can help the acquisition workforce do more with fewer people. Individuals will be relieved of non-value-added activities such as generating enormous amounts of forms and documentation to refocus on the critical decision-making and requirements analysis activities.
- It will enable non-expert users to more effectively produce solicitation documentation. Novices and experts alike will be guided by definitive and pre-determined routes based on responses to requirements-related decision points. The resulting documentation will be accurate, consistent, well-structured and conforming to government and industry standards.

Uncontrollable Cost.

- By facilitating the tailoring (i.e. skillfully omitting non-applicable sections) of specifications and standards through a controlled process, the resulting documentation represents no more and no less than what is absolutely needed to support the program. Programs will be better able to identify requirements upfront, thereby gaining greater financial control over cost prior to contract award.
- Time and resources normally diverted to generating rudimentary research and documentation will be applied to more critical tasks. Time and resources will also be saved by government and contractors alike in the interpretation,

execution, verification, and validation of deliverables.

- Cost drivers tied to the preparation of RFPs and contracts will be dramatically reduced. Specifically, SMART-T will simplify Statements of Work, better define technical logistics support requirements, and organize contract documentation.

Historical Complexity

- SMART-T's rule-based design will facilitate the execution of complex policies and guidelines. New directives, regulations, and procedures will be routinely updated via SMART-T, reducing administrative burdens on the Requiring Office while improving compliance.
- Tailored specifications and standards will be automatically invoked based on user input of performance requirements and key decision points. Work statements and other documentation will be clearly written and uniquely developed -- users will not recycle documentation from other programs that may not exactly match existing needs.

Inconsistent Processes

- SMART-T can effectively standardize the process of generating acquisition requirements documents. Users are guided through pre-determined paths based on their interactive responses to key decision points and selections. As a result, the process ensures that users follow proper procedures and instructions without extensive training or research needed to comply with complex defense acquisition policies.
- SMART-T will not only standardize processes from user to user, but also from activity to activity. Whether users are from Crane, IN or Port Hueneme, CA, they will all share the same approved methodology and create unique requirements documents to execute their acquisition strategies. If users relocate to another activity, they will not need to relearn local policies and procedures. Similarly, contractors across the country submitting proposals to RFPs will consistently receive standardized information detailing government requirements, which will improve communications and enhance competition.

Cultural Resistance to Change.

- SMART-T can be an effective tool to facilitate changes in acquisition policies and processes. SMART-T can centralize the effort involved in the identification and implementation of changes, relieving the burden of individuals trying to keep up with the latest policy revisions. Instead, the SMART-T Program Office (to be established) will be staffed with experienced logisticians and acquisition professionals dedicated to the maintenance and upkeep of SMART-T modules to reflect current policies. New and revised procedures can be widely-disseminated and consistently implemented.
- As mentioned in the 2000 job survey of ATL professionals, providing work tools that promote flexibility, efficiency, and simplicity may greatly enhance job satisfaction.

5. Conclusions

There are many challenges facing the defense acquisition workforce. This paper discussed some of the major factors and proposed SMART-T as a tool that will help DoD overcome some of these challenges. The results of many of the research referenced in this paper suggest the need to reevaluate the current acquisition process and to develop tools to enhance efficiency. SMART-T's modular approach to constructing solicitation documentation is such a tool that will help tailor requirements, streamline workflow, optimize resources, improve communication, and enhance productivity in support of Program Offices. SMART-T helps users better define and document their unique acquisition requirements while providing clear direction for contractor activity.

Appendix A

M-SPECS and the Acquisition of Technical Manuals²⁹

M-SPECS is an automated, computer-based system designed to produce and track Technical Manual Contract Requirements (TMCRs) and Technical Manual SEATASK Requirements (TMSRs) documents for acquisition of technical manuals, revisions and changes. In June 2000, the M-SPECS Program was awarded the National Partnership for Reinventing Government's Hammer Award. The award was Vice President Al Gore's program to recognize pioneers who create innovative processes or programs to reinvent and enable the government to work better and achieve results.

Specifically, M-SPECS:

- effectively reduced the time to produce a TMCR/TMSR from an average of 10-15 days down to 8 minutes, resulting in annual savings of \$1.3 million for NAVSEA alone, while improving intangible customer satisfaction and efficiencies;
- accelerated and standardized communication between government activities and industry by producing a self-contained, interactive requirements document and providing an online repository for review;
- empowered customers (i.e. acquisition managers and technical POCs) to build their own tailored TMCRs with little training and automating labor-intensive tasks while providing them with immediate results.

The system is based on the use of standardized specification elements extracted from existing government-approved specifications and related acquisition documents. The specification elements are in the form of modules that exist as the basic structural units in the M-SPECS database. The standardized modules were derived from the Office of Management and Budget's approved Acquisition Management Systems and Data Requirements Control List (AMSDL - DOD 5010.12-L).

M-SPECS is used to produce TMCRs/TMSRs tailored to specific requirements for optimum cost-effective acquisition and follow-on maintenance of

technical manuals. The TMCR/TMSR is a stand-alone document (i.e. no references are made to other specifications). It incorporates the specifications, which have been invoked previously in acquisitions, and eliminates the labor-intensive effort previously required to manually prepare and use a TMCR/TMSR.

These documents are produced from requirements specified by an Acquisition Manager, using the Technical Manual Acquisition Requirements Checklist (TMARC). The purposes of the TMCR are:

- a. Assemble, in one document, all of the required information to properly develop and produce useable technical manuals.
- b. Provide the requesting activity the means to tailor the requirements of specifications and the data item descriptions (DIDs) to specific procurements.
- c. Ensure the application of a standardized system for the acquisition of technical manual requirements.
- d. Identify unique requirements incident to technical manual procurement.
- e. Provide amplifying guidance to contractors regarding specification, standard, or DID requirements.
- f. Prevent acquisition of duplicate technical manual data.

Endnotes

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- ⁴ Coopers & Lybrand, "Acquisition Reform Field Implementation: An Industry Survey," October 1997.
- ⁵ Report No. D-2001-178, "Summary of DoD Acquisition Program Audit Coverage," September 10, 2001.
- ⁶ The acquisition workforce comprises all civilian and government employees who have defense acquisition and procurement responsibilities, including buyers, contract writers, program managers, program staff (i.e. logisticians, engineers, and scientists) and lawyers who review contracts.
- ⁷ GAO-02-630, "ACQUISITION WORKFORCE: Department of Defense's Plans to Address Workforce Size and Structure Challenges," April 2002.
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- ¹⁰ GAO/T-NSIAD-97-140, DEFENSE ACQUISITION ORGANIZATIONS: Linking Workforce Reductions with Better Program Outcomes, April 8, 1997.
- ¹¹ George Cahlink, "Drained," Government Executive, February 1, 2001.
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- ¹⁶ Report No. 96-091, "Acquisition of Telecommunications Equipment and Services by the Naval Computer and Telecommunications Station, San Diego, March 29, 1996.

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²⁰ GAO/NSIAD-00-56, CONTRACT MANAGEMENT: Few Competing Proposals for Large DOD Information Technology Orders, March 2000.

²¹ Michael Hammer, The Agenda, Crown Business, 2001, p. 54.

²² GAO-02-9, "INFORMATION TECHNOLOGY: Inconsistent Software Acquisition Processes at the Defense Logistics Agency Increase Project Risk," January 2002.

²³ Jeffrey Pfeffer & Robert Sutton, The Knowing-Doing Gap, 2000, p. 77.

²⁴ Coopers & Lybrand, "Acquisition Reform Implementation: An Industry Survey," October 1997.

²⁵ GAO-02-469T, "DEFENSE ACQUISITIONS: DOD Faces Challenges in Implementing Best Practices," February 27, 2002.

²⁶ Max Wideman, "Managing the Development of Building Projects for Better Results," *Project Management Quarterly*, September 1981.

²⁷ See Appendix A for a detailed description of the M-SPECS system and its demonstrated achievements.

²⁸ According to MIL-HDBK-502, "Acquisition logistics is a multi-functional, technical management discipline associated with the design, development, test, production, fielding, and sustainment [of program requirements]. The principal objectives of acquisition logistics are to ensure that support considerations are an integral part of the systems design requirements, that the system can be cost-effectively supported throughout its lifecycle, and the infrastructure elements necessary for the initial fielding and operational support of the system are identified and acquired."

²⁹ A majority of this information was extracted from "M-SPECS Impact Report" by Mr. Russ Bain, August 28, 1985.