

Chapter 17

Acquisition Environment and Regulations

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Chapter 17

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“And so we continue our daily battle against entropy, wondering if in our fight to bring order, we ultimately add to the chaos.” – Roald Peterson

Prefatory note: This chapter summarizes the acquisition environment that existed in the first half of 2002. Since that time the acquisition regulations have been declared out-of-date, but new regulations have not yet been released. It is expected that this chapter will be updated following the release of the new regulations.

17.1 Introduction

I went to Paris on a business trip once. After flying through the night, getting through customs, finding my hotel, and taking a nap, I went downtown to see the some sights before it got dark. After walking around the Arch du Triumphant I looked for a place to eat supper. I was in a strange place, in a very different time zone, surrounded by a language I didn't understand, and hungry. I didn't need an opportunity to decipher what was to me an alien menu offering unknown foods. I had already been through that on several occasions in South America. I spotted a McDonalds restaurant down a side street and ate there with gusto. Why? I was familiar with the products and could reasonably understand the menu. I knew what I would get and how the system worked.

Regulations are too often viewed as just more obstacles to getting things done, and at times that has been the case. The purpose of regulations is to provide a standardized, formal path for doing things. Ideally, they should take into account the common pitfalls and steer people around them. They should provide a common framework so everyone involved in the process knows what to expect. They also allow practitioners to invoke higher authority to get through roadblocks and obtain cooperation.

This chapter is a condensation of the material in Chapters 3 and 4 of the *Guidelines for the Successful Acquisition and Management (GSAM) of Software Intensive Systems*, Version 3.0, May 2000. For a more in-depth examination of the acquisition environment, see these two chapters.

17.2 Statutory Framework

Acquisition has gone through many iterations of reform, and will likely continue to do so. We live in a time of great change; change in world events, administrations, economies, technology, social orders, and knowledge. If the acquisition environment is to remain relevant it must also change. The chief goals of acquisition reform are:

- Cost savings
- Reduced cycle times
- Program stability
- Technology insertion

17.2.1 Major Acquisition Reform

The *National Performance Review (NPR)*, completed in 1993, recommended a series of steps to create a more responsive, effective, and efficient acquisition environment. Several acts were legislated to implement its recommendations, chief of which was the *Government Performance and Results Act (GPRA)*. The NPR and GPRA are shown in Figure 17-1 with their summarized recommendations and requirements.

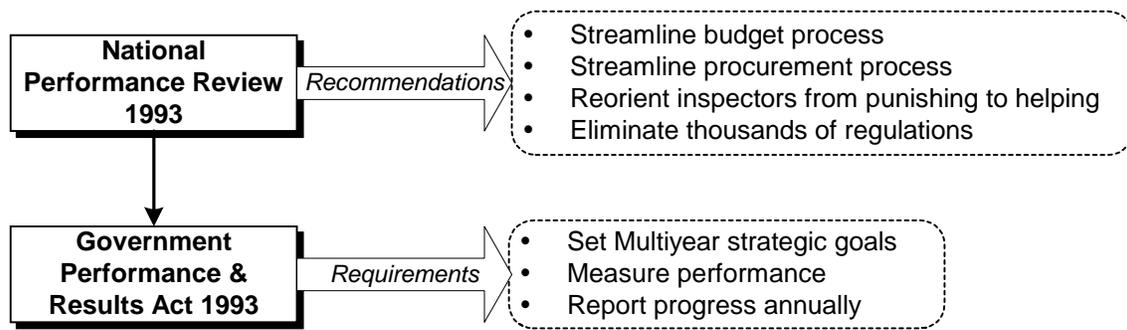


Figure 17-1 NPR Recommendations and GPRA Requirements

The Government Accounting Office's (GAO) *Executive Guide: Effectively Implementing the Government Performance and Results Act* identifies a set of key steps and practices to implement reforms consistent with the GPRA. They are:

- A. Define Mission & Desired Outcomes
 1. Involve stakeholders.
 2. Assess environment.
 3. Align activities, core processes, and resources.
- B. Measure Performance
 4. Produce measures at each organizational level that:
 - Demonstrate results
 - Are limited to vital measures
 - Respond to multiple priorities
 - Link to responsible programs
 5. Collect data.
- C. Use Performance Information
 6. Identify performance gaps.
 7. Report information.
 8. Use information.
- D. Reinforce GPRA Implementation
 9. Devolve decision-making accountability.
 10. Create incentives.
 11. Build expertise.
 12. Integrate management reforms.

The Department of Defense (DoD) complies with the GPRA through its Planning, Programming, and Budgeting System (PPBS). Figure 17-2 illustrates the PPBS process along with documents and plans produced and used as by the process.

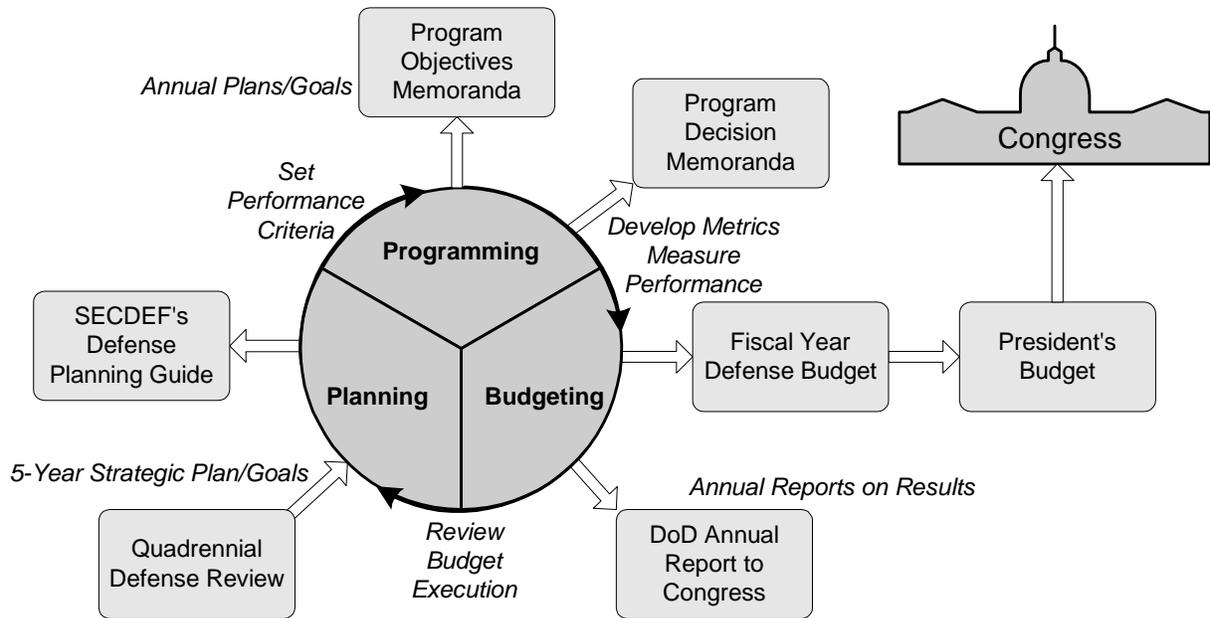


Figure 17-2 DoD Compliance With GPRA Through the PPBS Process

17.2.2 Federal Acquisition Streamlining Act (FASA)

Another acquisition reform act, the Federal Acquisition Streamlining Act (FASA) was enacted in 1994. It removed many rigid acquisition regulations and allowed DoD to implement management best practices. FASA reform provisions pertaining to software system acquisitions include:

- Market research
- Quality and non-price evaluation factors
- Contractor past performance
- FACNET (An automated, electronic list of what the government wants to purchase)
- Commercial buying practices for COTS
- Indefinite Delivery Indefinite Quantity (IDIQ)
- Performance based payments
- Preference for Commercial Off the Shelf (COTS) and Non-Development Items (NDI)

FASA implements the results-oriented, performance-based management requirements of the GPRA. At the end of each fiscal year each major defense acquisition program is evaluated to determine whether it has 90% or more of its cost, schedule, and performance goals, compared to Acquisition Program Baseline (APB) thresholds. If the threshold is missed, a review is required to determine whether a program breach is needed and to recommend suitable action. In addition to tracking acquisition goals, DoD is required to implement an incentive system for acquisition personnel

FASA also requires DoD to report annually on technology insertion, or how it converts emerging technology into operational capability. DoD reduces the time required for technology insertion by:

- Using commercially available technologies
- Encouraging tradeoffs between cost, schedule, and performance at various stages in development
- Expanding the use of Advanced Concept Technology Demonstrations (ACTD).

There have been several other acquisition reform laws but this will suffice to give us an introduction to what they are and what they require. For a more complete treatment, see the GSAM, chapter 3.

17.2.3 Clinger-Cohen Act

The Clinger-Cohen Act of 1996, also called the Cohen Act, the CCA, or CIO Act, was enacted to improve acquisition and management practices pertaining to information resources. Prior acquisitions took so long that systems were often obsolete when fielded. The Clinger-Cohen Act reduced the excessive documentation required for the approval process and shortened the acquisition cycle, leading to the timelier fielding of information systems. The specific requirements of the act are: [1]

- Designation of a Chief Information Officer (CIO) to establish information technology standards and oversee technology spending.
- Decentralize procurement authority.
- Implement capital planning and investment control by making decisions based on measurable criteria related to Return-on-Investment, alternative solutions, shared benefits and costs, and verifiable progress.
- Implement performance and results-oriented management by establishing strategic goals and monitoring progress toward those goals.
- Provide accountability by ensuring information systems provide timely, reliable, and consistent performance data.
- Establish and follow standards and guidelines for information systems efficiency, security, and privacy.
- Ensure that the information technology acquisition process is clear, simplified, and understandable.
- Give procurement protest authority to the US Comptroller General and the General Accounting Office (GAO).
- Improve processes, rather than simply automating existing business functions or replacing old technology.
- Establish a DoD-wide information technical architecture and integrate new systems into that architecture to avoid fragmented, isolated systems.

17.3 Applicable Regulations

The following regulations apply to software acquisitions.

17.3.1 Federal Acquisition Regulation (FAR) & DoD FAR Supplement (DFARS)

The Federal Acquisition Regulation establishes uniform policies and procedures for the acquisition of supplies and services by all executive agencies. It is the highest-ranking statutory document and takes precedence over the DFARS and DoD 5000.1 and DoD 5000.2-R. The FAR regulates procurement planning and Request For Proposal (RFP) development. The DFARS adds DoD unique information and clarification to the FAR. The FAR and DFARS include the following aspects: [2]

- Provides a statement of principles for the federal acquisition system. [FAR 1.102]
- Provides definitions of words and terms used in contracts. [FAR Part 2]
- Prescribes the policy and procedures that are to be used to promote and provide for full and open competition. [FAR Part 6]
- Prescribes policies and procedures for --
 - (a) Developing acquisition plans;
 - (b) Determining whether to use commercial or Government resources for acquisition of supplies or services;
 - (c) Deciding whether it is more economical to lease equipment rather than purchase it; and
 - (d) Determining whether functions are inherently governmental. [FAR Part 7]

- Describes various contract types and when they are appropriate. [FAR Part 16]
- Describes the standard acquisition package format and identifying the appropriate content of each section. [FAR 14.201-1]
- Describes the need to disclose beforehand the evaluation criteria to be used for contract award. [FAR 15.304]
- Describes acquisition policies and procedures for use in acquiring major systems [FAR Part 34]
- Prescribes acquisition policies and procedures for use in acquiring information technology [FAR Part 39]
- Limits contracts to a maximum of five years. [FAR 17.1]
- Clearly explains data rights and what must be done to acquire the data rights deemed necessary. [FAR 27.4]

17.3.2 DoD 5000 Regulations Framework

(THIS SECTION TO BE UPDATED UPON RELEASE OF REVISED DoD 5000 SERIES IN SPRING 2003. Check current status of 5000 series at <http://dod5000.dau.mil>)

The DoD has updated its acquisition policies to comply with the acquisition reform legislation. These police updates are embodied in *DoD 5000.1, Defense Acquisition Directive* (1996), and the associated regulation DoD 5000.2-R, Mandatory Procedures for Major Defense Acquisition Programs (MDAPS) and Major Automated Information Systems (MAIS) (1998). While 5000.1 provides guidance for all DoD acquisition programs, 5000.2-R applies specifically to major programs, allowing decentralization of acquisition and more autonomy for the Component Acquisition Executives to manage their programs.

17.3.2.1 Milestone Decision Authority (MDA)

MDAPs are subject to Milestone Decision Authority (MDA) reviews by the Defense Acquisition Board (DAB). However, the Program Manager (PM) is in charge of the program and the Integrated Product Teams (IPTs) are empowered to help the PM resolve issues before DAB reviews. Where some programs previously had to prepare two quality programs, two test programs, two configuration control programs, etc., the combining of all programs under DoD 5000 reduces the work to fulfilling one set of acquisition requirements.

17.3.2.2 Software-Intensive Systems

DoD 5000.2-R requires that all software development projects be managed and engineered using commercial best practices and processes to reduce cost, schedule, and performance risks. Software-intensive systems must be developed with sound systems engineering principles, including:

- **Architecture** – Implement software systems architectures that support open system concepts, exploit COTS computer products, and provide for incremental improvements based on modular, reusable, extensible software.
- **Reuse** – Identify and exploit software reuse opportunities before beginning a new software development.
- **Programming Languages** – Select languages based on systems and software engineering factors that influence overall life cycle costs, risks, and potential for interoperability.
- **Standard Data** – Use DoD standard data.
- **Successful Contractors** – Select contractors with:
 - Domain experience with comparable software systems.
 - Successful past performance record.
 - Demonstrable software development capability and a mature process.
- **Measurement** – Select contractors with a mature measurement process for planning, tracking, assessing, and improving the development process and products.
- **Risk Measurement** – Assess information system operational risks.

- **Year 2000** – Ensure all software is Year 2000 compliant.
- **Information Security** – Manage and engineer system to reduce security risks, including timely accreditation.
- **C4I Support Plan** – Prepare a support plan for all Command, Control, Communications, Computers, and Intelligence (C4I) systems and all weapon systems that interface with C4I systems, to include:
 - System description.
 - Employment concept.
 - Operational support requirements, including C4I, testing, and training.
 - Interoperability and connectivity characteristics.
 - Management and scheduling.

17.3.2.3 Results-Oriented Acquisition Management

DoD 5000.2-R emphasizes the determination of producibility early in the development cycle. It states that producibility is key to managing risk, and that production should not be approved until the design has been stabilized, the development processes have been proven, and facilities, equipment, and people are in place. Mission Need Statements (MNS) must be linked to the mission described in the DoD Strategic Plan (Quadrennial Defense Review). In addition to linking programs to strategic goals, it emphasizes interrelationships between defining requirements, managing system development, and making funding decisions, with the objective of translating user needs into products that are affordable.

DoD 5000.1 encourages the use of nontraditional acquisition methods where those methods provide advantages over traditional methods, such as lower costs, shorter development cycles, and more rapid fielding of proven technologies. Example of nontraditional methods include modeling, simulation, Advanced Concept Technology Demonstrations, rapid prototyping, evolutionary and incremental acquisition, flexible technology insertion, modular contracting, innovative practices, and Cost As an Independent Variable (CAIV). Use of IPTs removes barriers between different organizations and disciplines and enables integrated solutions to development problems.

17.3.3 DoD Directive 8000.1

DoD Directive 8000.1, Management of DoD Information Resources and Information Technology, 27 February 2002, establishes policies for DoD information resources management (IRM), including information technology (IT), and delineates authorities, duties, and responsibilities for DoD IRM activities. Of particular interest to software acquisition and development programs are sections 4.4 through 4.8. These sections address the following topics:

- The need for accurate and consistent information for decision-makers so they can effectively execute the DoD mission.
- How integrated analysis, planning, budgeting, and evaluation processes must be used to strengthen the quality of decisions about using IT to meet mission needs.
- Analysis that must be accomplished before applying information technology solutions.
- Areas that must be covered in acquisition strategies.
- Risk reduction areas that should be implemented.

17.3.4 DOD Directive 8100.1

DoD Directive 8100.1, Global Information Grid (GIG) Overarching Policy, 19 Sep 2002, establishes policy and assigns responsibilities for GIG configuration management, architecture, and the relationships with the Intelligence Community (IC) and defense intelligence components. Of particular interest to software acquisition and development programs is section 5.7 which requires DoD Components to:

- Populate and maintain their portion of the GIG asset inventory.

- Ensure that the DoD Component architectures are developed and maintained consistent with the GIG architecture.
- Require the use of GIG common computing and communications assets within their functional areas and within their Component.
- Ensure all Component-leased, -owned, -operated, or -managed GIG systems, services, upgrades, or expansions to existing systems or services are acquired or procured in compliance with the current version of the Global Information Grid Architecture.

17.3.5 DoD Directive 8500.1

DoD Directive 8500.1, Information Assurance, 24 Oct 2002, establishes policy and assigns responsibilities to achieve Department of Defense (DoD) information assurance (IA) through a defense-in-depth approach that integrates the capabilities of personnel, operations, and technology, and supports the evolution to network centric warfare. Of particular interest to software acquisition and development programs are Section 4, Policy, and portions of Section 5, Responsibilities. Some excerpts from these sections are:

- Information assurance requirements shall be identified and included in the design, acquisition, installation, operation, upgrade, or replacement of all DoD information systems.
- All IA or IA-enabled IT hardware, firmware, and software components or products incorporated into DoD information systems must comply with the evaluation and validation requirements of National Security Telecommunications and Information Systems Security Policy Number 11.

17.4 Best Practices Initiatives

DoD is reengineering its acquisition processes to provide the warfighter with the best-value goods and services. Reform initiatives are being pursued in the following five categories:

1. Research, development, and test restructuring.
2. Sustainment restructuring.
3. Increased acquisition workforce education and training.
4. Integrated, paperless operations.
5. Future focus areas (i.e., a price-based acquisition and full integration of test and evaluation activities into the acquisition process).

What follows is a summary of major initiatives, along with example of their best practices.

17.4.1 Commercial Best Practices

- Contracting policies and practices.
- Performance and commercial specifications and standards.
- Budget policies.
- Establishing fair and reasonable prices without cost data.
- Maintenance of long-term relationships with quality suppliers.
- Acquisition of commercial and non-developmental items (including components).

17.4.2 Contracting Best Practices

- Commercial specifications and standards.
- COTS and NDI.
- Best value evaluation and award criteria.

- Open systems.
- Past performance.
- Performance-based service contracting.
- Performance-based specifications.
- Software Capability Evaluations (SCEs).
- Paperless contracting.

17.4.3 Management Best Practices

- Cost as An Independent Variable (CAIV).
- Integrated product design and development (IPDD).
- Integrated process and product design (IPPD)
- Integrated product teams (IPTs).
- Simulation Based Acquisition (SBA).
- Total Cost of Ownership.
- Earned Value Management System (EVMS).

17.4.4 Performance-Based Business Environment

- Dual-use products and processes.
- World-class processes.
- Commercial state-of-the-art technology.
- Integrate commercial and military development.
- Better, faster, cheaper, smoother.
- Integrate commercial efficiencies.

17.4.5 Defense Reform Initiative

- Focus the enterprise on a unifying vision.
- Commit the leadership team to change.
- Focus on core competencies.
- Streamline organizations for agility.
- Invest in people.
- Exploit information technology.
- Break down barriers between organizations.

17.4.6 Software Acquisition Best Practices Initiative

- Focusing the DoD acquisition community on effective, high-leverage software acquisition management practices.
- Enabling program managers to focus their software management efforts on producing quality software.

- Enabling program managers to exercise flexibility in implementing best practices within disparate corporate and program cultures.
- Providing program managers and staff with the training and tools necessary to effectively use and achieve the benefits of these practices.

17.4.7 Software Program Managers Network (SPMN) (Now under OSD-ATL Software Intensive Systems)

Note that this effort has a web site: www.spmn.com

- Productivity.
- Development and/or sustainment cost.
- Schedule.
- Quality.
- User satisfaction.
- Cost and schedule predictability.

17.4.8 Information Technology Management Reform Initiatives

- Fielding software-intensive technologies quickly, orderly, and efficiently.
- Streamlined acquisition processes.
- Use of COTS products and services, and outsourcing.
- View information systems investments.
- Training work force in new technologies and processes.
- Protect information.
- Management best practices.

17.4.9 Single Process Initiative

- Government cost accounting standards
- The requirement to provide product cost data.
- Record keeping and reporting requirements.
- Audit and oversight requirements.
- Access to competitively sensitive financial data.
- Socioeconomic and mandatory source requirements.
- Requirements for rights in technical data.
- Security requirements.
- DoD-unique product and process specifications and standards.

As an example, under the Single Change Initiative the contract block change has been implemented to streamline the approval process for the use of commercial specifications, standards, or other processes. Figure 17-3 provides an overview of this process.

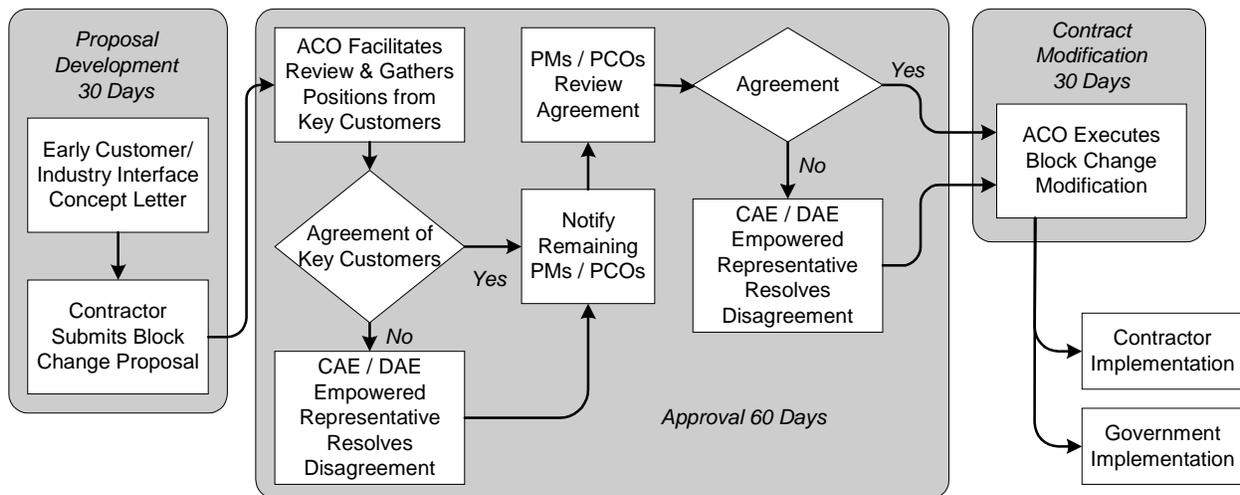


Figure 17-3 Block Change Process Overview

17.4.10 Summary

What all this means is that everything is being looked at for ways to improve the acquisition environment. Nothing is being held sacrosanct. Anything that can reduce the time or cost required to get better systems into the hands of the warfighter is a candidate for change. “We’ve always done it that way,” is not an acceptable response to the question, “Why?” There is far too much at stake not to pursue the best acquisition environment possible. What this means to you is a responsibility to look for ways to make things better in any arena that you observe or influence.

17.5 Acquisition Environment and Regulations Checklist

This checklist is provided to assist you in better understanding your project in relation to the DoD acquisition environment. If you cannot answer a question affirmatively, you should carefully examine the situation and take appropriate action.

- 1. Do you know what mission your project or acquisition supports?
- 2. Do you understand which FAR regulations apply to your project?
- 3. Do you understand which aspects of DoD 5000.1 apply to your project?
- 4. Do you understand which aspects of DoD 5000.2-R apply to your project?
- 5. Does your project implement an architecture that supports open systems, COTS, etc? (See 17.2.3.2)
- 6. Does your project try to identify and exploit software for reuse?
- 7. Are your language choices based on sound system and software engineering principles?
- 8. Are you employing contractors who have domain experience with similar projects, a successful past performance record, demonstrable development capability, and a mature development process?
- 9. Are you striving to implement best practices in all aspects of your development/acquisition project?

17.6 References

- [1] *Guidelines for the Successful Acquisition and Management of Software-Intensive Systems (GSAM)*, Version 3.0, Chapters 3 & 4, OO-ALC/TISE, May 2000. Download at: www.stsc.hill.af.mil/resources/tech_docs/
- [2] Bergey, John K., et al, “The DoD Acquisition Environment and Software Product Lines”, May 1999: www.sei.cmu.edu/publications/documents/99reports/99tn004/99tn004abstract.html

17.7 Resources

Federal Acquisition Regulation and DoD FAR Supplement: <http://farsite.hill.af.mil>

Crosstalk Magazine: www.stsc.hill.af.mil/crosstalk/

- “Integrating Acquisition with Software and Systems Engineering”:
www.stsc.hill.af.mil/crosstalk/1999/08/publisher.asp
- “Outsourcing Requires More Acquisition Training”: www.stsc.hill.af.mil/crosstalk/1997/09/publisher.asp
- “Evolutionary Acquisition and Spiral Development”:
<http://www.stsc.hill.af.mil/crosstalk/2002/08/easd.html>
- “Improving the Software Acquisition Process”: www.stsc.hill.af.mil/crosstalk/1997/03/improving.asp

Data and Analysis Center for Software (DACS) and the Defense Software Collaborators (DSC) combined website:
www.dacs.dtic.mil

DoD 5000 Series information – Latest information: <http://dod5000.dau.mil>

DoD Directives and Instructions: www.dtic.mil/whs/directives/index.html

Program Managers Guide to Software Acquisition, SPMN publication: www.spmn.com/products_guidebooks.html

Software Tech News magazine, subscription application: www.dacs.dtic.mil/awareness/newsletters

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