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Organizational Concepts for Purchasing and Supply Management Implementation

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Preface

This report proposes organizational constructs for the F100 engine Purchasing and Supply Management (PSM) demonstration at the Oklahoma City Air Logistics Center as well as transformation to an Air Force–wide PSM organizational construct. The organization structure presented here is intended as a flexible, springboard design to guide Air Force–wide implementation. This research was sponsored by BGen Robert Mansfield (AF/IL-I), Director of Logistics Transformation, and BGen Darryl Scott (SAF/AQC), Deputy Assistant Secretary of the Air Force for contracting. It was conducted within the Resource Management Program of RAND Project AIR FORCE under a project titled “Designing, Implementing, and Evaluating a Purchasing and Supply Management Demonstration for Engines,” under the leadership of Nancy Y. Moore.

The report should interest Air Force personnel responsible for developing a new organization to support PSM demonstrations as well as incorporating PSM throughout the Air Force.

This study was motivated by the Spares Campaign, which encouraged the Air Force to proceed with a more detailed demonstration and analysis of PSM. To conduct the demonstration, the Air Force needed an organizational structure that could support the core tenets of PSM and provide the foundation for an Air Force–wide implementation if warranted by the results of the demonstration. This research stops short of reiterating the process-based analysis used during the Spares Campaign, and it leaves the detailed discussion of benefits and metrics to other reports in the PSM series. Instead, this

report focuses solely on organizational options for incorporating PSM-related initiatives sanctioned by the Spares Campaign.

The report is one of a series of RAND publications that address issues related to PSM. It discusses the effect of PSM on Air Force Materiel Command organizations and draws heavily on the findings of other RAND research on PSM, specifically the research discussing the benefits of incorporating PSM within the Air Force and other research offering an analytical framework of metrics with which to monitor and manage the implementation. Other reports in the PSM series are:

- “Strategic Sourcing: Bundling Policies and Practices of Leading Firms,” Nancy Y. Moore, Frank Camm, and Laura Baldwin, draft, 2001.
- *Implementing Best Purchasing and Supply Management Practices: Lessons from Innovative Commercial Firms*, Nancy Y. Moore, Laura H. Baldwin, Frank Camm, and Cynthia R. Cook, RAND Corporation, DB-334-AF, 2002.
- “Developing ‘To Be’ Metrics from ‘As Is’ Metrics: Supporting Air Force Purchasing and Supply Management (PSM) Demonstrations,” Justin L. Adams and Nancy Y. Moore, draft.
- “F100 PSM Demonstration: Lessons Learned from Spend Analyses,” Mary E. Chenoweth, draft.
- *Improving Air Force Purchasing and Supply Management of Spare Parts*, Robert W. Bickel, RAND Corporation, RGSD-173, 2003.

In addition, RAND has done other research in the area of commercial practices that relates to the research here:

- *Federal Contract Bundling: A Framework for Making and Justifying Decisions for Purchased Services*, Laura H. Baldwin, Frank Camm, and Nancy Y. Moore, RAND Corporation, MR-1224-AF, 2001.

- *Incentives to Undertake Sourcing Studies in the Air Force*, Laura H. Baldwin, Frank Camm, Edward G. Keating, and Ellen M. Pint, RAND Corporation, DB-240-AF, 1998.
- *Strategic Sourcing: Theory and Evidence from Economics and Business Management*, Ellen M. Pint and Laura H. Baldwin, RAND Corporation, MR-865-AF, 1997.

This report represents the research of an Air Force government employee, completing a one-year research fellowship with RAND Project AIR FORCE to fulfill Senior Service School commitment.

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RAND routinely reviews and refines its quality assurance process and also conducts periodic external and internal reviews of the quality of this body of work. For additional details regarding the RAND quality assurance process, visit <http://www.rand.org/standards/>.

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Summary

This report presents a construct for organizing Air Force (AF) acquisition and purchasing activities to execute Purchasing and Supply Management (PSM). This design incorporates best commercial practices, information from interviews with Air Force personnel, the Air Force Spares Campaign, and results of our analysis of the current commercial PSM practices. The Spares Campaign was chartered by the Deputy Chief of Staff for Installations and Logistics to review the Air Force spare parts supply process. The report draws on Spares Campaign process-based analysis supporting the decision to implement PSM and suggests organizational options for implementing PSM to better align contracting and logistics functions with process changes in procurement and strategic supplier, supply base, and supply chain management.

PSM is defined as a strategic, enterprise-wide, long-term, multi-functional, dynamic approach to selecting suppliers of goods and services and managing them and the whole value network from raw materials to final customer use and disposal to continually reduce total ownership costs, manage risks, and improve performance (quality, responsiveness, reliability, and flexibility). The most basic tenets of PSM, listed below, support the integration of purchasing with supply management:

- Supply base management (availability, capacity, and competitiveness)
- Supplier management (performance measurement and improvement and collaboration)

- Supply chain management (design and integration).

The PSM demonstration was chartered as a result of the Air Force Spares Campaign in which eight initiatives were targeted by the campaign to modernize the spares process and ultimately put more spares into the hands of maintainers.¹ Each initiative underwent a rigorous process-based analysis supported by RAND and Air Force personnel. The last initiative focused on improved purchasing and supply management practices to reduce purchase costs and improve product quality and delivery. In July 2001, the Secretary of the Air Force and Chief of Staff endorsed the initiative. In October 2001, CORONA Fall endorsed the Spares Campaign and gave direction to pursue implementation of the initiatives (pp. 8–9).

Changes to implement the construct proposed in this report, while evolutionary, will eventually result in significant change and transformation. The initial construct proposed for implementation in the F100 engine shop at the Oklahoma Air Logistics Center (OC-ALC) is designed as the first step in an Air Force–wide PSM organizational implementation. The second is designed to support such PSM tenets as alignment with strategic objectives, center-led with cross-functional integration, and shifting personnel skills from administrative and tactical to more analytic and strategic capabilities. It also complements Air Force initiatives such as Acquisition Excellence and Air Force Material Command’s (AFMC) Enterprise Management and Strategic Sourcing, while also capitalizing on best business practices (p. 12).

For the Air Force to adopt the end-state PSM organization proposed here, key PSM tenets, tools, and techniques must be incorporated into day-to-day operations. This will be viewed by many stakeholders as a major transformation. The initial construct sets the first steps of implementation into motion, allowing the demonstration at OC-ALC and other ALCs to pave the way for successful Air Force–wide transformation. The transformation will not be without

¹ Mansfield (2002).

challenges; a thorough understanding of existing practices, legal requirements, and barriers to change, as well as the effects of change is essential. Just as PSM itself is not a cookie-cutter solution, the construct described here is not a set solution but instead a concept for design to be flexibly applied and adapted to current organizational structures.

Acknowledgments

The research contained in this report was conducted as part of a more comprehensive RAND project led by Nancy Y. Moore, “Designing, Implementing, and Evaluating a Purchasing and Supply Management (PSM) Demonstration for Engines.” We would like to thank the sponsors of this project, BGen Robert Mansfield (AF/ILS), and BGen Darryl Scott (SAF/AQC) for their project guidance and WC Margaret Staib for being our point of contact.

We benefited from continuous discussions with RAND colleagues working on the project as well as other related topics. We are grateful to all members of the RAND PSM project team who served as a sounding board and provided valuable advice. Specifically, thanks to Maj. Robert Bickel, who offered invaluable insight and candor and who, along with Rich Moore and Mary Chenoweth, were instrumental in helping to shape the initial demonstration organization. We wish to thank Marla Haims for her human factors perspective and collaborative efforts during the interview process, as well as Carla Hill and Darla Bullard, members of the OC-ALC PSM demonstration team, who arranged and supported the interviews. In addition, we would like to express great appreciation to the OC-ALC individuals we interviewed for their immeasurable contributions.

We are particularly thankful to Col Jeffrey Parsons, Director of Contracting, Marie Tinka, Acting Director of the Supply Management Division at AFMC, and their staff for the opportunity to brief a draft version of this concept and for their meaningful feedback.

We appreciate the support of our colleague, Robert Tripp, in helping to drive the PSM organizational concept to a global resource level. We also would like to thank Sally Sleeper and Professor Terrance Pohlen, University of North Texas, for their constructive suggestions for clarification and improvement.

Last, we wish to thank Regina Sandberg for her assistance in formatting this document and Carol Zaremba for her assistance in revising it.

Acronyms

ACE	Acquisition Center of Excellence
AEF	Aerospace Expeditionary Forces
AF	Air Force
AFMC	Air Force Materiel Command
ALC	Air Logistics Center
ANG	Air National Guard
A/P	Accounts Payable
APS	Advanced Planning and Scheduling
A/R	Accounts Receivable
CEO	Chief Executive Officer
CONUS	Continental United States
CSL	CONUS Support Location
DAL	Developing Aerospace Leaders

DLA	Defense Logistics Agency
DMRT	Depot Maintenance Reengineering Team
DoD	Department of Defense
DP	Demand Planner
EAF	Expeditionary Aerospace Force
EW	Electronic Warfare
FOL	Forward Operating Location
FSL	Forward Support Location
GAO	General Accounting Office
GE	General Electric
GEAE	General Electric Aircraft Engines
GIC	Global Integration Center
HPO	High Performing Organizations
Hq	Headquarters
IL	Installations and Logistics
IWSM	Integrated Weapon Systems Management
JIT	Just-in-Time
LG	Logistics
MAJCOM	Major Command

MIS	Management Information Systems
NAICS	North American Industry Classification Standards
NSN	National Stock Numbers
OC-ALC	Oklahoma City Air Logistics Center
PA	Procurement Advisor
PAF	Project AIR FORCE
PCO	Procurement Contracting Officer
PK	Contracting
POM	Program Objective Memorandum
PSCM	Purchasing and Supply Chain Manager; also Purchasing and Supply Chain Management
PSM	Purchasing and Supply Management
R&D	Research and Development
SCM	Supply Chain Manager (or Management)
SCOR	Supply Chain Operational Reference
SES	Senior Executive Service
SM	Supplier Manager
SPD	System Program Director
SPO	System Program Office

SSM	System Sustainment Manager
SSTG	Space and Systems Technology Group
TQM	Total Quality Management
UAV	Unmanned Air Vehicle
VICP	Virtual Inventory Control Point

Introduction

Purchasing and Supply Management Defined

Purchasing and Supply Management (PSM) is an approach to supply chain management that is meeting with great success at a number of leading commercial companies. Quite simply, PSM is a strategic, enterprise-wide approach to selecting the suppliers of goods and services and managing them and the whole value network, from raw materials to final customer use and disposal. It seeks to continually reduce total ownership costs, manage risks, and improve performance (quality, responsiveness, reliability, and flexibility).¹ Although this definition may appear excessively long, when broken down, it provides a straightforward insight into PSM. Table 1.1 contains PSM's tenets, techniques, and tools as briefed by the Air Force.²

PSM is often described by its attributes, which are listed below:

- **PSM is strategic;** it is aligned with an enterprise's strategic goals and its activities are integrated at the highest levels of decision-making.

¹ The automotive industry was one of the first U.S. industries to adopt innovative PSM practices. That industry was followed closely by the electronics industry. See Moore et al. (2002) for examples of companies that have adopted these practices and the improvements they claim to have gained in performance and total cost reductions.

² See Mansfield (2002).

2 Organizational Concepts for PSM Implementation

Table 1.1
PSM Tenets, Techniques, and Tools

Tenets	Techniques	Tools
Knowledge of where the enterprise's money is spent	Spend Analysis	Database
Knowledge of the supply chain	Spend Analysis	Supply Chain Operational Reference (SCOR) Model (as developed by Supply Chain Council)
Tailor sourcing strategies depending on value and risk to enterprise operations	Procurement/Operational risk assessment	Supply Segmentation/Material Positioning matrix
Move from tactical to strategic sourcing	Develop long-term arrangements with key/best suppliers	Various contracting strategies such as Direct Vendor Delivery, Vendor Managed Inventory, Performance-based Services Acquisition (e.g., Logistics contracting), Long-term Contracts, Corporate Contracts
Rationalize the supply base	Market Research	Supplier Evaluation Scorecard
Manage key suppliers strategically	Performance evaluation Develop collaborative relationships with suppliers	Supplier Evaluation Scorecard Supplier Management Council
Actively manage the supply base	Map the supply base Market analysis	Use the North American Industry Classification Standards (NAICS) to create a taxonomy of the supply base
Link demand planning and replenishment planning	Dynamic collaborative forecasting Dynamic replenishment planning	Advanced Planning and Scheduling (APS) system
Supply chain visibility	E-business techniques Integration of data systems	Web enabled information systems Use of middleware Long-term supplier relationships

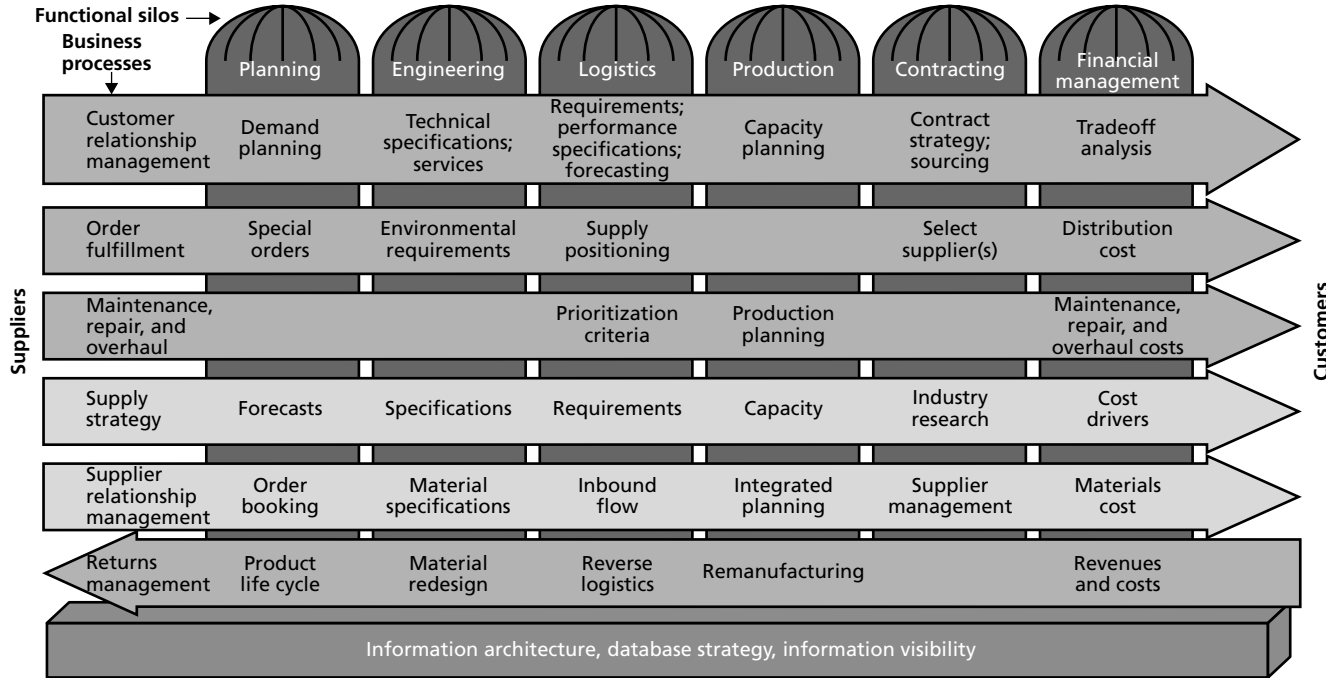
Table 1.1 (continued)

Tenets	Techniques	Tools
An integrated organizational construct	Enterprise, supplier, and supply base focus	Creation of high-level, centralized, multifunctional PSM organization/teams
Align purchasing and supply goals with operational goals	Outcome/process focused metrics	Balanced Scorecard and SCOR metrics
Strategically focused workforce	Blend purchasing and material management	Education, training and strategic hiring

NOTE: See Mansfield (2002).

- **PSM is enterprise-wide;** it has the potential to span both the Air Force as well as the Department of Defense (DoD) and complements other initiatives to retain recognized core knowledge; implement cross-cutting common solutions, where appropriate; ensure rapid delivery of capabilities and effects; enable horizontal and vertical integration; and establish new cross-enterprise, cross-functional core competencies.
- **PSM is multifunctional;** it is able to integrate traditional procurement and sustainment functions. Historically, the System Program Office (SPO) has been responsible for initial design, modification, and procurement of a weapon system whereas the long-term supply and management of parts or items has been the responsibility of the item managers at Air Logistics Centers (ALCs) and more recently, for consumable parts, the Defense Logistics Agency (DLA). In this structure, the customer for the part (weapon system maintainer), the part supplier, and the part procurer are separate, stove-piped functions. PSM seeks to integrate all three functions. Figure 1.1 illustrates how key supply-chain-related processes and activities span traditional functional silos, making supply chain integration very difficult. The need to strategically manage all these processes end-to-end, as opposed to functions to improve performance and reduce total costs, underlies the urgency to move to PSM.

Figure 1.1
Traditional Supply Chain Management Activities and Processes

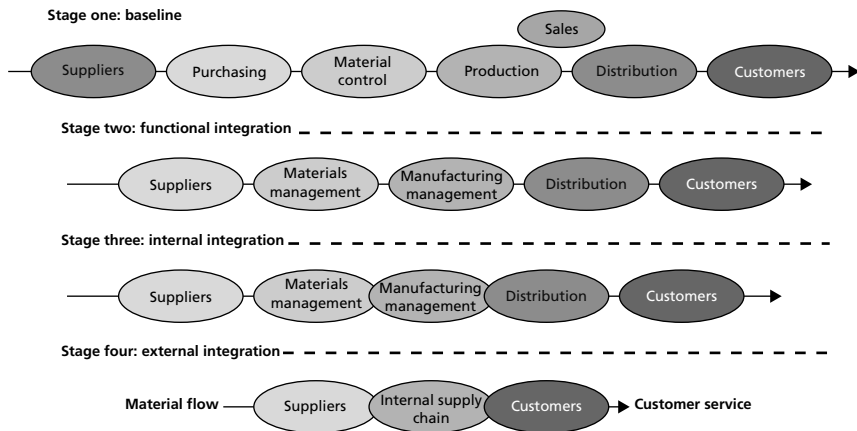


SOURCE: Adapted from Lambert et al. (2001).

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- **PSM is adaptive**; it is designed to be adapted and tailored to an enterprise's specific environment (internal and external) and strategic objectives.
- **PSM is proactive**; it affects the supply strategy, supply base management, and supplier selection and management; it focuses on proactive supplier management built on a trusting, long-term collaborative partnership. Through a multistage approach to implementation, PSM will eventually touch on and incorporate the complete value chain, as reflected in Figure 1.2.
- **PSM is process focused**; it links current and future end user requirements to supply base and supplier selection and management across multiple functions and partnerships in the entire supply/value chain. Figure 1.3 illustrates how supply chain business processes run the length of the supply chain and cut across "classic" functions within each enterprise.³ Supply strategy

Figure 1.2
Whole Value Chain

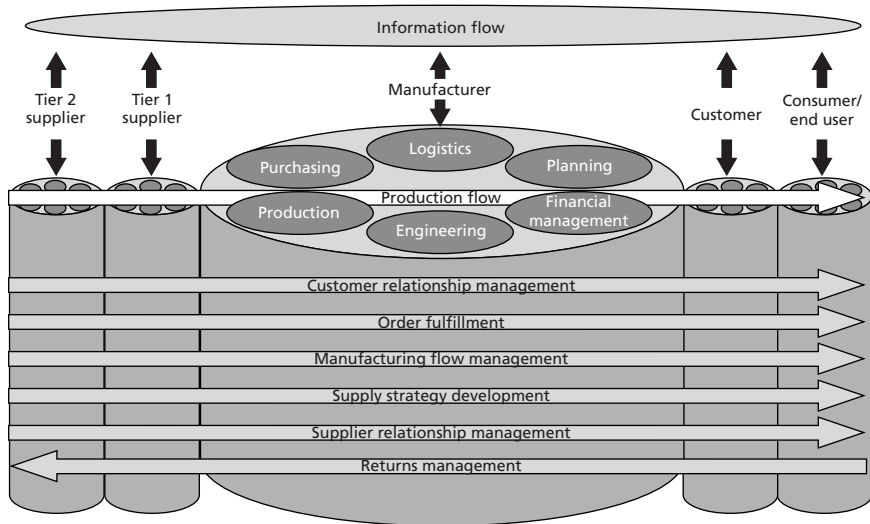


SOURCE: Adapted from Stevens (1989).

RAND MG116-AF-1.2

³ See Croxton (2001).

Figure 1.3
Integrating and Managing Business Processes Across the Supply Chain



SOURCE: Adapted from Cooper et al. (1997, p. 10).

RAND MG116-AF-1.3

development and supplier relationship management are the two key PSM processes shown in Figure 1.3. However, PSM affects and is affected by the other processes as well.

- **PSM is both short- and long-term;** it affects the entire life cycle use of goods and services from raw materials, through customer use, to disposal. It is a strategic, long-term commitment. The implementation, execution, and benefits of PSM must be approached from a current as well as a future perspective. Implementation of PSM will not occur overnight and thus should be viewed as a long-term investment, because some benefits may not be realized for years.⁴

⁴ Initial PSM savings typically come from leveraging spending by consolidating contracts and suppliers; performance improvements come from selecting better suppliers. Subsequent performance improvements and cost savings typically come from continuous and discontinuous improvements throughout the value chain that are enabled by fewer, higher-quality,

The overarching principle of PSM is to develop supply strategies and supplier relationships that assure and synchronize supply to meet demand—a need identified in Joint Vision 2020 under the goal of Focused Logistics. Joint Vision 2020 states that through transformational innovations to organizations and processes, Focused Logistics will provide the joint warfighter with support for all functions. It goes on to define Focused Logistics as the ability to provide the joint force with the right supplies at the right place, time, and quantity for a range of military operations.⁵ PSM and Focused Logistics share the goal of synchronizing supply and demand for the warfighter.

With this goal in mind, PSM should help meet Air Force objectives by efficiently and effectively synchronizing supply to meet demand while continually reducing total ownership costs, managing risks, and improving performance. For example, it is difficult to coordinate and link the supply chain with numerous supplies on short-term contracts that change often. Establishing longer-term contracts with the best suppliers can enable quick access to the suppliers and provide more responsive and reliable parts, repair, and distribution. Similarly, managing not just first-tier suppliers but eventually second- and third-tier suppliers, from a strategic perspective will give the Air Force insight into supplier capacities and will give supply chain managers a more accurate view of long-term supplier capabilities and capacities. The strategic relationships can also put the Air Force in a better position to leverage long-term reductions in cost associated with acquiring supplier services and resources. Appendix A summarizes many of the changes that PSM will bring to bear on Air Force logistics operations.

longer-term, cooperative supplier relationships and that are better aligned with the strategic goals of the enterprise. Specific PSM tenets include performance-based contracts; joint, collaborative planning; and supplier development as well as continuous process improvement and reengineering and improved real-time electronic communication throughout the value chain.

⁵ See Joint Vision 2020 (2000).

Air Force Motivation for Pursuing Purchasing and Supply Management

Over the last six years, the Air Force has adopted an operational concept built on being expeditious. The Air Force has restructured and transformed its combat forces to provide quick response to operational demands anywhere in the world using a concept called the Expeditionary Aerospace Force (EAF). Several RAND studies have helped to frame policy and support structure changes needed to meet the demands of an EAF.⁶ The RAND analysis calls for a support infrastructure consisting of Forward Operating Locations (FOLs), Forward Support Locations (FSLs), and CONUS [Continental United States] Support Locations (CSLs), as well as an integrated distribution system and command and control network. Collectively, the support infrastructure can enable the EAF concept and meet the dynamic operational requirements of an expeditionary force. Implementing the support infrastructure, however, requires significant changes in current practices. The support system must be proactive rather than reactive. It must be adaptive and responsive, able to expand and contract production as demands change. These needed characteristics are in stark contrast to the current environment where the Air Force's aircraft and missile spares support declined between fiscal year 1991 to 2000 because of funding issues, aging systems, high Ops Tempo, retention/experience levels, and aggressive inventory reductions.

There is hope, however. There is great potential to reduce unprogrammed/unbudgeted bills, achieve best readiness capability given dollars and aging, and improve responsiveness to Aerospace Expeditionary Forces (AEF)⁷ operations. In response to the AEF, the rate of ongoing operations, and associated resource constraints, the Air Force Deputy Chief of Staff for Installations and Logistics chartered a complete review of the spare parts supply process. The review was called

⁶ See Galway et al. (2000).

⁷ See Zettler (2001).

the “Spares Campaign.” The goal of the campaign was to put more spares into the hands of the maintainers.⁸ The Spares Campaign resulted in eight initiatives designed to modernize the spares process to support AEF operations, insert financial management changes into the fiscal year 2004 Program Objective Memorandum (POM), provide credible estimates of Air Force spares requirements, provide authority and accountability for spares performance to meet planned weapon systems availability, and exploit relevant commercial capabilities. The last of the eight initiatives approved for implementation was PSM. The goal of the PSM initiative was to adopt improved purchasing and supply management practices to reduce purchase costs and improve product quality and delivery.⁹

In July 2001, the Secretary of the Air Force and Chief of Staff endorsed the initiative. In October 2001, CORONA Fall endorsed the Spares Campaign. Engines were selected as the test candidate because they have been a notoriously high-cost and low-performance driver for the Air Force.¹⁰ Specifically, the candidate system selected for demonstration at Oklahoma City Air Logistics Center (OC-ALC) was the F100 engine.

Developing an Organizational Construct for Executing PSM in the Air Force

Given Air Force leadership’s decision to conduct a PSM implementation demonstration, the organizational structure that will support the demonstration and provide a more strategic focus on purchasing and supply activities must be defined. The organizational structure needs to ensure that supplier relationships, supply chain, and supply base strategies are focused on the strategic goals of the organization. The constructs proposed in this report are entirely focused on the development of a PSM organization and do not address the entire breadth

⁸ See Mansfield (2002).

⁹ The analysis supporting the decision to implement PSM was accomplished during the development of the Spares Campaign and is not summarized or addressed in this report.

¹⁰ According to fiscal year 2000 Air Force Total Ownership Cost (AFTOC) data, engines represent 40 percent of the Material Support Division (MSD) net cost.

of current procurement and logistics activities.¹¹ Although an initial near-term construct is needed for the implementation demonstration, more dramatic changes to the organizational structure are needed to enable full PSM implementation and benefits. Evolving to an Air Force-wide, long-term PSM organizational construct can enable more effective and efficient supply chain integration as well as a higher-quality and more responsive, reliable, and robust supplier base.

Because PSM involves changes in numerous functions and organizations, it is important to consider the sensitivities involved with this controversial subject matter. At the same time, however, it is equally important to recognize that fundamental change is needed to enable EAF objectives.

Analytical Approach

This research on organizational options for implementing PSM uses a process approach to evaluate alternative options against a set of criteria derived from PSM principles and commercial practices.¹² In evaluating organizational options, the existing structure of the targeted demonstration organization for the PSM implementation test must be identified and understood. The next step includes evaluating and defining the objectives for the selection of a PSM organizational structure. After considering different organizational alternatives and evaluating them against the criteria, an approach is chosen for consideration.¹³

Throughout this analysis, we consider research and application of best commercial practices. We conducted extensive literature searches and reviews as the basis for analysis and integrated commercial best practices with applicability to the Air Force into the pro-

¹¹ Such activities as maintenance, major system acquisition, engineering, services, and planning are not considered in the construct put forth here.

¹² See International Benchmarking Clearinghouse (1994) for a basic four-step methodology for conducting benchmarking studies—planning the study, collecting information, analyzing gaps, and adapting improvements.

¹³ The RAND PSM demonstration evaluation team is developing metrics to evaluate the PSM demonstration and implementation in a companion report.

posed constructs. Participation from and knowledge-sharing with the F100 PSM demonstration team at OC-ALC was also extremely beneficial to this analysis.¹⁴

A Brief Introduction to the Proposed PSM Organizational Construct

The PSM organization discussed in this report is designed to accomplish two primary objectives. The first is to elevate the procurement function of the Air Force supply chain to the level of the supply management function to support a more integrated purchasing and supply process. The second objective sought by the organizational structure is to improve management of the supplier network.

Those two issues provide the underlying motivation for the major changes proposed here. Other minor changes in function and roles or responsibilities are tied to cross-functional integration of skills and the need for particular skills or positions to facilitate the cultural change associated with organizational shifts.

Structure of This Report

This report defines a springboard design for an Air Force-wide PSM organizational construct and walks the reader through the process by which the proposed design was selected.

Chapter Two discusses the current Air Force OC-ALC construct to highlight some key issues with the current structure and to provide a baseline from which proposed changes can be evaluated.

Chapter Three details different organizational options considered, the specific criteria against which the options were evaluated, and the results of the analysis.

¹⁴ The Air Force launched its initial PSM demonstration for the F100 engine at OC-ALC in February 2002. The RAND PSM project team participated with SAF/IL-I in the guidance, planning, and establishment of the implementation team. Specifically, an Organizational Learning and Development subteam was established to pursue such areas as training and education, organizational structure, job design and functionality, change management (underlying principles or values and the foundation that will drive or guide all of the above), and PSM subcommittee team integration.

Chapter Four presents an organizational construct for the initial implementation of the F100 engine PSM demonstration team at OC-ALC. It is a stepping-stone to the proposed Air Force-wide PSM organizational construct discussed in Chapter Five. The proposed construct is designed to support PSM tenets, be consistent with the Air Force Spares Campaign, and be complementary to significant strides the Air Force has already taken such as acquisition excellence and the Air Force Materiel Command's (AFMC) Enterprise Management Concept and Strategic Sourcing initiative, while capitalizing on best business practices. It is understood that the Air Force operates differently from the commercial industry and, therefore, all aspects of commercial best practices may not be suitable. A thorough understanding of existing practices as well as the legal, organizational, and cultural implications that come from change is essential. Just as PSM itself is not a "one size fits all" solution, the proposed construct described here is not a set solution but instead a concept for design to be flexibly applied and adapted to current organizational structures. Finally, transformation as discussed in Chapter Six is essential to full implementation of the Air Force-wide PSM organization.

Current Organization

We reviewed existing organizational charts, made several site visits, and conducted exploratory interviews¹ to better understand the current jobs and work processes within the purchasing and supply chain functions at OC-ALC. We used interview findings to determine training needs and to understand the gaps² and barriers that must be overcome as well as the strengths that can be built upon for successful PSM implementation. The interview population included personnel from different disciplines and managerial levels at OC-ALC who are part of the current purchasing and supply management process. These personnel span functions, skill types, and grade levels across the organization. The exploratory design of the interview questions helped us better understand how individuals fit into the work processes, assess awareness of PSM practices and implementation, and determine work environment and organizational issues.

¹ Interview protocol was developed and conducted by RAND project team members with assistance by the OC-ALC F100 PSM Organizational Learning and Development team members.

² Note that this was not intended as a gap analysis but instead as a summary of the feedback received during interviews for the purpose of helping Air Force personnel better understand the current organization and climate.

Baseline Current Organization Structure

To establish a starting point and gain an understanding of the current organization, this chapter includes the current structure of the organization conducting the PSM implementation demonstration for the F100 engine. The organizational chart in Figure 2.1 depicts this structure.

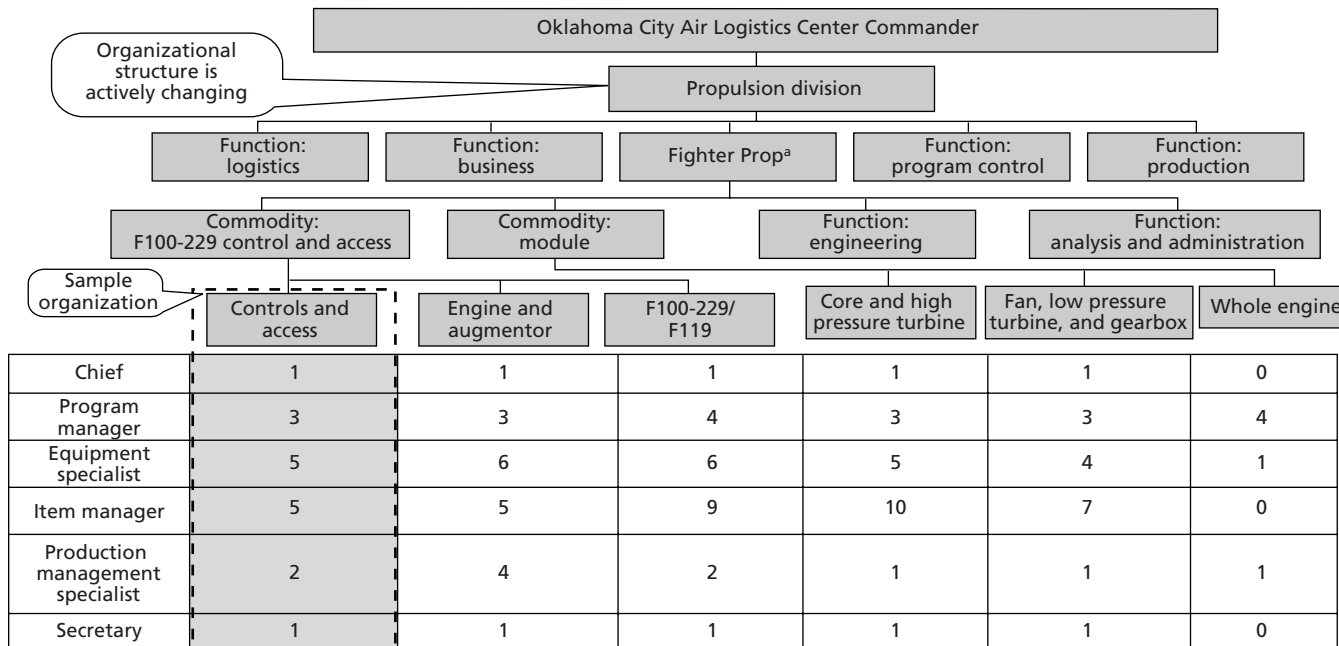
Supply management for the F100 engine primarily takes place within the propulsion division at OC-ALC. A Supply Chain Manager (SCM) leads the propulsion division and is part of the AFMC overarching SCM structure. SCMs manage items and parts (i.e., National Stock Numbers (NSNs)). Their basic roles include requirements determination, cataloging, standardization, engineering data management, stock control and distribution, and technical management. The SCM reports to the ALC Commander and is responsible to AFMC single managers and other customers. Single Managers are responsible to their customers for all aspects of the planning, development, sustainment, and evolution of the products (e.g., weapon systems) they acquire and support. They serve as the single-face-to-the-user for their respective systems or products and are responsible for program performance and the overall health of the product.³ Within the propulsion division, a fighter propulsion organization is further broken down by commodity and function, which are further broken down into sections, according to type of parts.

Within the propulsion division, such functional experts as contracts personnel, engineers, and equipment specialists are matrixed to support the purchasing activities of the F100 while reporting to their respective home functions.⁴ Such personnel as section chiefs, program managers, item managers, and production management specialists are assigned to specific commodities and individual items. From a macro perspective, the organization has an abundance of supply management expertise dispersed throughout the organization. Using the

³ See Hq AFMC/LGI (2002).

⁴ Note that their performance is evaluated by these functional homes.

Figure 2.1
Estimate of Current OC-ALC Organization



^aContracts personnel (~30) and engineers are also matrixed to F100 contracts branch.

^bEstimated based on 11/13/01 OC-ALC organizational website: <https://www/lpa.tinker.af.mil/lporg.htm>

controls and accessories section as an example (see Figure 2.2), we look more closely at a particular commodity and item level structure.

The current organizational structure is hierarchal and characteristic of a traditional matrixed organization. Other organizational structures at OC-ALC vary by system or division. In general, personnel are assigned to items within a commodity group (i.e., the focus is on item management rather than supplier, supplier capacity, or supply base management).

Exploratory Interviews

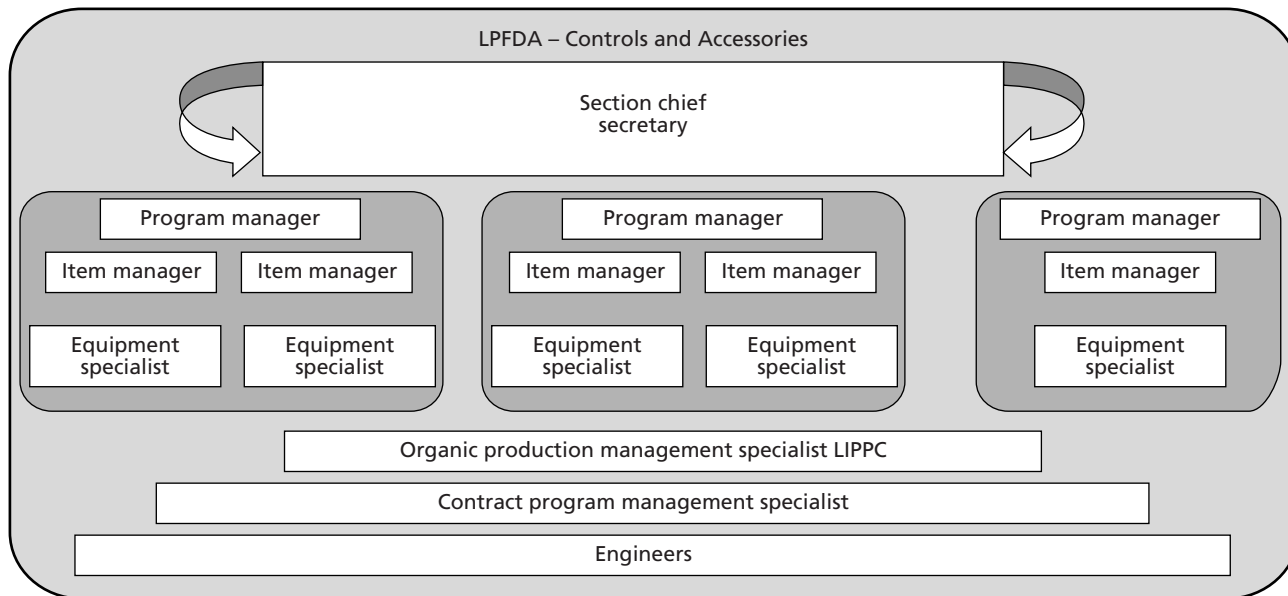
For this study, we developed exploratory interview questions and interviewed personnel from multiple disciplines and at multiple levels who currently perform purchasing and supply management activities at OC-ALC. The interview questions were designed to better understand how individuals fit into the work process, to assess awareness of PSM-related practices and implementation, and to determine work environment and organizational issues relevant to successful PSM implementation. Appendix C contains the question guide, Appendix D contains a representative listing of the types of positions and personnel that were interviewed, and Appendix E contains a summarized list of findings.⁵

Preliminary Findings

The exploratory site visits and interviews served to better understand the current jobs and work processes at OC-ALC associated with the purchasing and supply chain for the F100 engine. The interviews led to identification of gaps, barriers, and training needs in the current

⁵ A more formal, web-based survey was developed by the RAND PSM project after these initial interviews. However, when the F100 PSM initiative ended and remaining ALC PSM efforts were folded into a larger AFMC-wide Purchasing and Supply Chain Management (PSCM) effort, a decision was made to postpone fielding of the survey, which has not been fielded.

Figure 2.2
Estimate of Current OC-ALC Commodity/Item-Level Organization



SOURCE: Adapted from information on the OC-ALC organizational website, <https://www/lpa.tinker.af.mil/porg.htm>, accessed March 19, 2002.

NOTES: Additional personnel are also matrixed from the PK home office. Organizational structures vary by system/division and continue to change.

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environment that must be considered before implementing PSM. The interviews also exposed strengths that can be built upon for successful PSM implementation.

The full implementation of PSM will require dramatic changes in how Air Force weapon system spare parts support is organized, managed, and evaluated. PSM implementation may potentially affect a number of career fields and the relationships between various organizations, as well as existing civilian union agreements. Thus, it is critical that cultural concerns be properly addressed. Our exploratory interviews revealed many challenges, barriers, and impediments that will need to be addressed.

- A key gap results from functionally stovepiped rather than truly integrated teams, which results in inconsistent goals and objectives (different motivators) and communication issues. We learned that many teams are teams in name only. The current functional alignment conflicts with team focus and results in inconsistent goals.
- Resources are limited and workloads are unmanageable.
- The previous F100 program transfer from San Antonio to Tinker presents a key challenge. Lost documents, focal points, accountability, etc., make it difficult to baseline.
- Change management occurs mostly at the high levels and does not always reach the trenches. For example, such previous acquisition reform initiatives as source selection competition rules, more specifically, tools to select best value, are not fully realized or utilized at all levels.
- There is a perception of too many ongoing initiatives; thus, PSM could be viewed as just another change (such as integrated weapon systems management, just-in-time, total quality management, to name a few).
- There is confusion about forces and priorities when dealing with several initiatives:
 - Internal initiatives: AFMC's Strategic Sourcing initiative and Enterprise Management concept

—External initiatives: Secretary of the Air Force for Acquisition (SAF/AQ) initiatives (Acquisition Center of Excellence—ACE), Air Force transformation, Spares Campaign, Six Sigma, etc.

Additionally, legal and regulatory barriers such as Legislative Core,⁶ 50/50,⁷ competitive bidding, and small business requirements⁸ must be dealt with to implement PSM.

Our interviews also revealed key strengths that can be built upon. Specifically, many workforce members recognize initial senior leadership support for PSM and now anticipate the associated incentives and resources. Maintaining leadership support throughout implementation is critical to the success of any initiative. Second, the F100 demonstration team has experienced, high-caliber personnel who are risk-takers and like change. In addition, complementary parallel initiatives previously identified as barriers can be viewed as strengths. For example, Strategic Sourcing is a recent initiative by AFMC that supports a subset of PSM. With proper handling, it can serve as a head start to PSM instead of a conflicting force. As another example, much of the F100 workforce is just beginning to under-

⁶ Section 2464 of Title 10 U.S.C. mandates that DoD activities maintain the government-owned and -operated core logistics capability necessary to maintain and repair weapon systems and other military equipment needed to fulfill national strategic and contingency plans.

⁷ Section 2466 of Title 10 U.S.C. states that no more than 50 percent of the depot maintenance funds for a given fiscal year may be spent for depot maintenance conducted by non-federal personnel.

⁸ The Competition in Contracting Act of 1984 requires “full and open competition.” This can limit the ability of federal agencies to bundle requirements and reduce their supply base if contract consolidation limits the pool of bidders so that the requirement cannot be filled at the lowest possible price. The Small Business Reauthorization Act of 1997 introduces new policy for federal agencies that wish to consolidate contracts requirements for goods and services. It specifies that if a consolidated workload is likely to be unsuitable for direct award to a small business, an agency must demonstrate that the consolidation is necessary and justified, based on “measurably substantial” benefits to the federal government or to meet mission requirements. These benefits can be broadly defined to include cost savings, quality improvements, reduction in acquisition cycle times, better terms and conditions, or any other benefit.

stand Six Sigma. It, too, can become a key tool in PSM implementation instead of a conflicting force.

We also found that the workforce members have many good ideas but feel that they do not get the “ear of leadership,” support, and tools to implement. For example, some F100 employees on their own initiative work as informal teams, allowing backup capability and better communication.

Analysis of Organizational Options

Through interviews, the academic and business literature, and examples outside the Air Force, we learned about local needs and gaps. This led to our development of alternative approaches for a proposed organizational structure for PSM implementation.

We considered several issues when analyzing alternatives for the proposed organizational structure. The first was the specific objectives and tenets of PSM that the proposed structure should aim to implement. The second was the selection of criteria against which different options could be evaluated. We analyzed several alternatives, each of which represents some variation of the current structure drawing upon its strengths.

Objectives and Criteria

The primary goal of the organizational construct is to best enable the Air Force to employ PSM practices in support of operational goals. Identifying both the appropriate level at which to aggregate purchasing and supply chain management and an effective way to manage the suppliers and supplier base were the two key objectives. These objectives were linked to the specific tenets defined in Chapter One, with the idea that they represented a summary level view of a number of the tenets. The objectives and tenets that support them are listed below:

- Elevate and aggregate purchasing and supply chain management;
- Employ an integrated organizational construct;
- Align purchasing and supply goals with operational goals;
- Link demand planning and replenishment planning;
- Know where the enterprise's money is spent;
- Strategically focused workforce;
- Improve the management of suppliers and the supplier base;
- Tailor sourcing strategies depending on the risk and value to enterprise operations;
- Know the supply chain;
- Move from tactical to strategic sourcing;
- Rationalize the supply base;
- Manage key suppliers strategically;
- Actively manage the supply base; and
- Make the supply chain visible.

These objectives can be met by leveraging the significant progress that the Air Force has already made in managing supply chains around aggregate commodities or major end item weapon systems. Currently, purchasing activities are decentralized within the integrated SCM function. "AFMC Supply Chain Managers are defined as the Senior O-6, GS-15 or Senior Executive (SES) who manage National Stock Numbers (NSNs)."¹ They have responsibility for materiel management functions relating to assigned NSNs and draw on an infrastructure of people and resources with which to execute these duties. (See Appendix B for further discussion of the Supply Chain Manager). PSM principles suggest that purchasing and supply chain management should be integrated at a higher, enterprise-wide level. That being the case, the placement of the purchasing function became the focus of the organizational shift. We developed the following criteria to guide the selection of our organizational approach. The proposed solution should

¹ Excerpt from Air Force Materiel Command Guide (Hq AFMC/LGI, 2002).

1. Elevate and integrate purchasing with supply chain management;
2. Be consistent with overall Air Force strategies and objectives relative to SCM; and
3. Establish an organization structure to enable strategic supplier relationships and processes.

The first criterion relates to the need to equate purchasing functions with supply management functions. The rationale for the second criterion, using consistency with current Air Force operations as a criterion, stemmed from the feedback during interviews related to change management. The assumption is that the less an option deviates from the current structure, the easier the implementation and the greater the likelihood for success. The third criterion arose from the need to manage the supply base, at a strategic level, to ensure that now and in the future the Air Force builds long-standing performance-based relationships with key suppliers and manages supplier production capacities over the life of its systems.

Alternatives Considered

Over the last eight years, the Air Force has undertaken organizational shifts designed to elevate management of the supply chain. The creation of the customer-focused supply chain manager was specifically intended to improve supply management. However, although supply chain management was elevated, procurement management remained at a fairly low level and widely dispersed throughout the current Air Force structure. Therefore, placement of the procurement function became the driving factor in defining alternatives. The options listed below represent alternative placements of the procurement function that draw on the supply management strengths of the current structure where supply chain execution is the responsibility of the SCM.

- Option A. Aggregate procurement to a level above the existing SCM aggregation (i.e., Hq AFMC, AFMC-wide supplier, customer, or center level);
- Option B. Aggregate the purchasing function to the same level as the existing SCM aggregation (i.e., propulsion, unmanned air vehicle (UAV) unique, B-2 unique, etc. This is the same categorization as current supply chain managers); or
- Option C. Aggregate the purchasing function to a level below the existing SCM aggregation but above the current decentralized level (i.e., insert an additional layer, by system, commodity type, or geographic location, for example).

Analysis

Each option was given a score of one, two, or three depending on how well it met the criteria. A score of three was given if the option strongly supports the criterion, a two if it moderately supports it, and a grade of one if there is weak support. Table 3.1 summarizes the grading.

As reflected in Table 3.1, aggregating and integrating purchasing with supply at the existing SCM level (Option B) emerges as the approach that best met all criteria. Option B:

- Builds upon an already existing structure by adding purchasing responsibility to the SCM, which becomes a Purchasing and Supply Chain Manager (PSCM);
- Integrates demand requirements at a more aggregate level with purchasing;
- Creates a purchasing span of control consistent with supply chain management span of control; and
- Enables the SCM to leverage the benefits of PSM, including the establishment of strategic relationships.

Table 3.1
Analysis of Organizational Options Against Criteria

Alternative	Criteria				Option Score
	Integration with Supply Chain Management	Consistency with Current Air Force Operations	Strategic Supplier Management		
Option A	3	1	2		6
Option B	3	3	2		8
Option C	1	3	1		5

The other alternatives required either additional organizational layers or duplicative efforts, specifically with respect to procurement. Or, they required a dramatic shift from current operations, which could put successful PSM implementation at risk, judging by the feedback we got from our interviews, particularly if they involve significant personnel relocation.²

Using Option B as a guide, the next chapter addresses the design for a small-scale implementation that could pave the way for Air Force-wide implementation.

² We learned that the closing of the San Antonio Air Logistics Center and the movement of the workload to other ALCs resulted in significant loss of personnel expertise, because many chose not to move with the workload. It has taken OC-ALC many years to recover from this loss.

Initial Implementation—Organizing for an Effective PSM Demonstration

The alternatives described in Chapter Three varied in how they addressed two key objectives of implementing PSM: the integration of purchasing with supply management and the management of supplier relationships. The proposed organization is the one that best supports these objectives and is the most compatible with current Air Force operations. We present first an initial construct for immediate demonstration and implementation. We designed this construct as a starting point or stepping stone to the second construct, which is intended for the longer-term, Air Force-wide implementation of PSM.

This report establishes a springboard design upon which to build and improve as lessons are learned from the demonstration and as other best practices emerge and are deemed appropriate for implementation. Consequently, evaluation and calibration of the constructs are critical.

We envision the initial demonstration team as a “tiger team” that reports directly to the OC-ALC commander. During this initial phase, the team should have a direct link to Hq AFMC’s ACE¹ to

¹ ACE is a new organization developed by Air Force acquisition leaders. “Laying the cornerstone for a top-to-bottom reform of the way the service develops and buys weapons systems, the Air Force opened its new Acquisition Center of Excellence on Dec. 10, 2001. The ACE’s primary mission is to help acquisition professionals cut through burdensome, unproductive processes that slow the fielding of new warfighting capabilities. The new office, led by a member of the senior executive service, also will be the driving force for implementing ‘Agile Acquisition,’ a sweeping series of initiatives to streamline the Air Force’s acquisition systems. The plan was endorsed at a meeting of the Air Force’s four-star generals and senior civilians in November.” See Air Force News Archive (2001).

fully benefit from ACE initiatives, support (groundbreaking expertise), and resources with the longer-term goal of establishing a direct link to an Hq AFMC PSM functional Directorate.

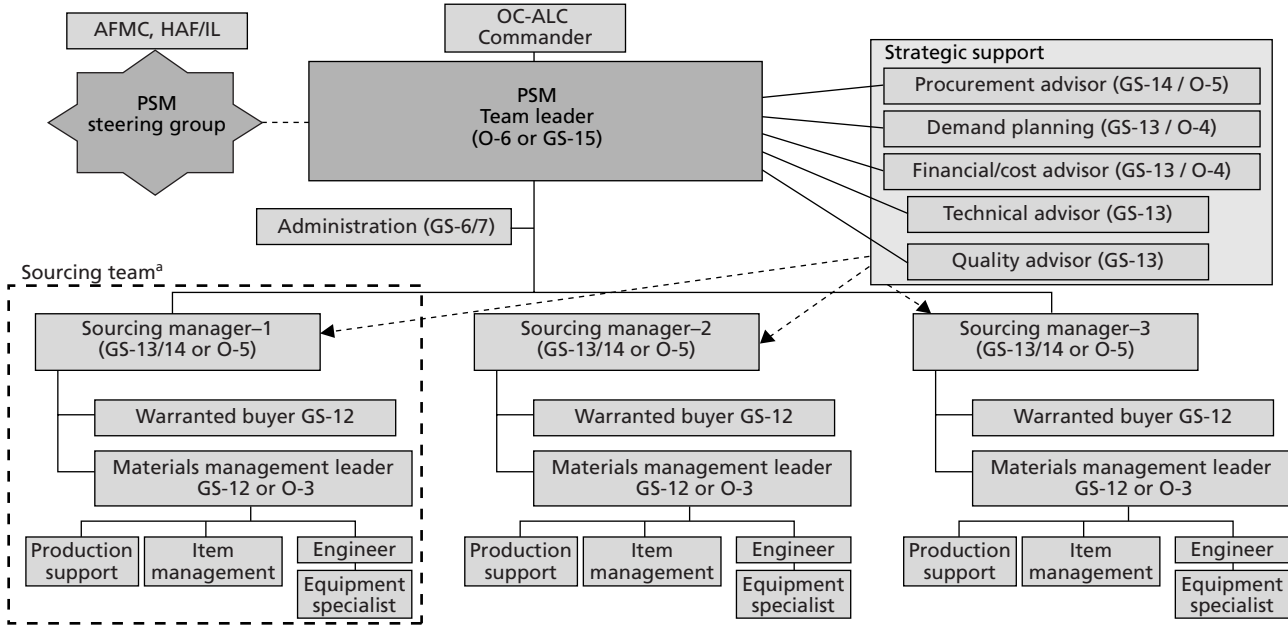
Our notional structure, depicted in Figure 4.1, includes an integrated team with higher-level “sourcing managers” having stronger analytic skills and a much broader, more strategic scope of responsibility for sourcing and supply management for parts that are yet to be determined. This contrasts with the existing organizational structure that has many lower-level individuals, particularly in purchasing, with more administrative/tactical skills and specific item responsibility.

This initial organization is meant to be a stepping stone toward shaping a more horizontal-type structure with fewer layers of management and more strategic, empowered, higher-level analytic positions that have integrated teams “assigned” to them. It has a centered focus of responsibility and accountability, reporting directly to the center Commander. Also note the networking relationships between the strategic support group and each sourcing team.

The Players and Associated Roles

This section outlines the positions and associated roles for our proposed PSM demonstration organizations. The positions and roles were derived from functions that needed to be accomplished as part of PSCM operations, process, and functions critical to any major transformation (drawn from commercial best practices) in Air Force operations (e.g., the PSM Champion). The positions and roles here are addressed only in the context of the PSM demonstration. The following chapters will address these roles in the context of an Air Force-wide implementation.

Figure 4.1
PSM Demonstration Team—Proposed Initial Implementation Construct



NOTE: Grade levels are notional.

^aA notional number of sourcing teams are suggested, organized by supplier or commodity groups, system complexity, and uniqueness. This number will influence appropriate team categories and the number of teams.

The PSM Champion

A senior executive (military or civilian), with authority over the functional and operational directorates within the ALC, will provide clear authority for the PSM demonstration team. This champion should be either the ALC commander or vice commander, as they are able to provide continuous support, are in the leader's chain of command, and can assist in eliciting the personnel and support resources needed from the other organizations within the ALC.

PSM Steering Group

This group will help ensure high-level commitment as well as participation and representation by the stakeholders throughout PSM implementation. Because the implementation of PSM will require significant transformation, communication and support among the stakeholders, including the centers, PSM process owners, the headquarters, etc., is necessary to help ensure successful implementation. This group could be the linchpin to ensuring necessary buy-in and support for PSM at the senior Air Force acquisition and support levels. (See Chapter Six for a more specific discussion of this group.)

PSM Team Leader

This senior-level manager is a change agent² who reports directly to the center Commander. The team leader is the process owner, having weapon-system-level responsibilities and direct interface with the System Sustainment Manager (SSM) and Weapons System Program Director (SPD). One of the leader's key functions is as integrator and decisionmaker across commodities and supply chains. This most closely correlates to current Supply Chain Manager duties. However,

² A change agent is one who is "effective at influencing opinions and attitudes so as to persuade fellow employees to release the familiar and embrace the uncertain" (Hammer, 1996b).

there are some key differences. First, the PSM team leader operates at a higher level of resource aggregation than the SCM currently does. The PSM team leader's focus would be at a weapon system level (or even capabilities level). This will not be clearly evident during demonstration because of the level at which the demonstration is being conducted. (For example, SCM aggregation level is propulsion. In this demonstration, the level of aggregation is the F100, which is the highest level of aggregation possible given the scope of the demonstration and will be the level for this particular demonstration.)

A second key difference between the SCM and PSM is that the PSM Team Leader has purchasing and SCM responsibilities extending from raw materials to the end user. This senior-level manager has full-time responsibility for the execution of the demonstration. Some knowledge of the engine sustainment business is useful, as seen in the literature on change management, but the most important quality this leader needs is the ability to motivate and inspire team members.

Strategic Support to the Sourcing Managers

Each function within this group will provide expertise to the Sourcing Managers and serve as integrators across the Sourcing Manager's teams. Although each team member is the representative of his or her functions, the complexities, uniqueness, and magnitude of effort specific to the F100 demonstration system should determine the specific level of resources required. For example, a large, highly complex system might require more engineers of specific types. They may be allocated to the appropriate sourcing team or reside subordinate to the Technical Advisor and provide support across all teams.

Procurement Advisor. As PSM requires that contracts be written at a higher, more strategic level, this procurement expert will serve as an overarching Procurement Contracting Officer (PCO) for all sourcing teams and will focus on the core PCO analytic and strategic activities rather than the transactional, order-processing activities that

can be accomplished by the sourcing teams and eventually e-procurement. The Procurement Advisor (PA) should focus on and be involved with the strategic planning activities of PSM, including requirements identification and generation activities, rather than execution activities. The PA is potentially best suited to serve as deputy.

Demand Planner. The Demand Planner (DP) is focused on supporting warfighter requirements through collaboration and performs advanced planning and scheduling activities. The DP acts as a liaison and integrator both externally and internally across the sourcing teams. The DP will provide analysis and aggregation of requirements by weapon system and commodity group and will serve as the customer liaison. This planner will be the primary interface with the warfighter and with flow requirements to the sourcing managers who will in turn exchange demand information with the tier 1 suppliers. The demand planner will also be closely involved in any collaborative forecasting arrangements established with suppliers.

Industry Research Advisor. Although not listed as a formal position in the organization, this advisor could serve as a temporary, part-time source of informational support to the demonstration team as the team members develop this capability organically. The advisor could address questions related to total Air Force business with each supplier to effectively apply leverage.

Technical and Quality Leaders. These leaders will provide engineering, analytic, statistical process control, and other expertise to the sourcing teams.

Cost/Financial Support. Such support encompasses both budget and cost competencies. The position is notionally designated as a GS-13 to enable both cost (including total ownership cost analysis, financial risk assessment, cost savings, and cost benefit measurement) and budget competencies.³

³ Whether one GS-13 fills both needs or a GS-12 cost analyst and GS-12 financial manager fill this role is inconsequential.

Sourcing Managers

Sourcing Managers are responsible for cross-functional, commodity-level PSM, encompassing both purchasing and supply chain management activities, including such core PSM activities as industry research, supplier selection, contract execution, supplier relationship management, as well as logistics and program management for their commodity. The sourcing manager will lead and integrate key functional activities such as procurement and logistics, and will coordinate with the weapon system PSM. Sourcing Managers should be at the GS-13/14 and O-4/O-5 level and properly trained. In essence, they are the heart and soul of PSM implementation. The Sourcing Manager categories as depicted in Figure 4.1 are notional. Both the category titles as well as the number of categories are determined on the basis of the specific needs of the commodity group or system.

Buyer. The buyer must have the authority to execute contractual actions and will be assigned to the Sourcing Manager's organization. The buyer should focus on contract execution and e-procurement.

Materials Management Leader. This person must play a more strategic supply chain role and must have responsibility for logistics and production functions⁴ (i.e., the supply side of PSM) including previous item and program management activities, except at a higher level (e.g., system or commodity group/subgroup). This position is key to the evolutionary approach described in this report. Initially, the Materials Management Leader will oversee an experienced "lean" team of previous item managers, equipment specialists, production management specialists, and engineers. The objective is to manage a group of items with a more strategic focus, requiring a single, highly skilled individual with strong analytic skills rather than numerous item managers with more administrative skills. However, many tenets of PSM (such as e-commerce/business utilization) must first be employed before this is feasible.

⁴ Examples of traditional logistics and production functions include manufacturing inventory, requirements planning, production planning, and industrial packaging.

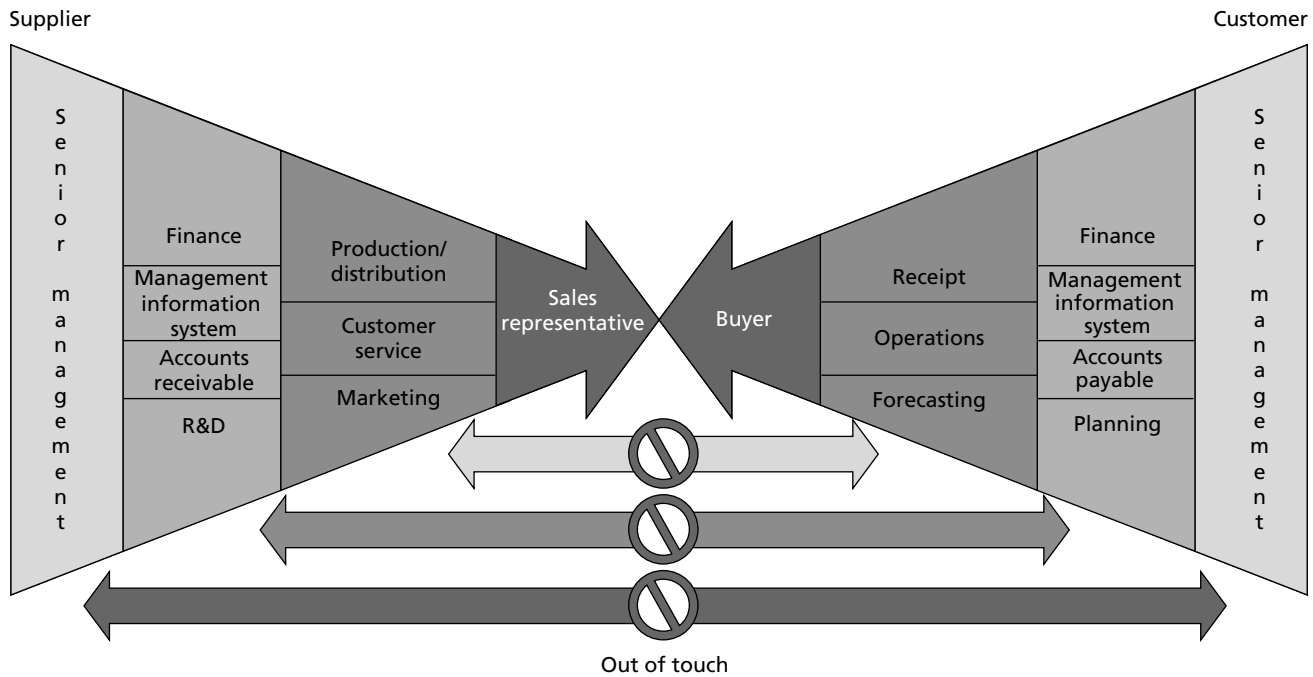
Benefits of Proposed Changes to the Initial Organization

Our proposed structure for the demonstration implementation has several improvements over the existing organizational alignment. It postures the organization to transform as PSM tenets and tools, such as e-business, come in place and PSM becomes a core competency. This structure enables implementation of PSM principles and processes by shifting from an item and contract focus to commodity group, weapon system, supplier, and supply base focus. To clearly illustrate that a PSM organization is better equipped for managing supply chain processes, Figures 4.2 and 4.3 demonstrate the improved relationship between customer and supplier processes.

Figure 4.2 illustrates how the traditional structure limits communication flow by all stakeholders in the supply chain management process. In the traditional model, all communication flows between the sales representative on the supplier side and the buyer on the customer side. This process and resulting communication flow result in delays in communication between other key stakeholders in the process. For example, shifts in forecasted demands are delayed in reaching the production/distribution function on the supply side. This results in tremendous delays in the supply chain responsiveness.

Figure 4.3 demonstrates a new model that is representative of the organization construct being proposed in this report. In this model, communication occurs at all levels between the supplier and the customer. In addition to the communication flow between the buyer and the sales representative, there is direct communication between the forecasting function and the marketing functions, as well as the operations function and the customer service function. There is also more communication between senior management, which will support the development of strategic relationships between the customer and supplier.

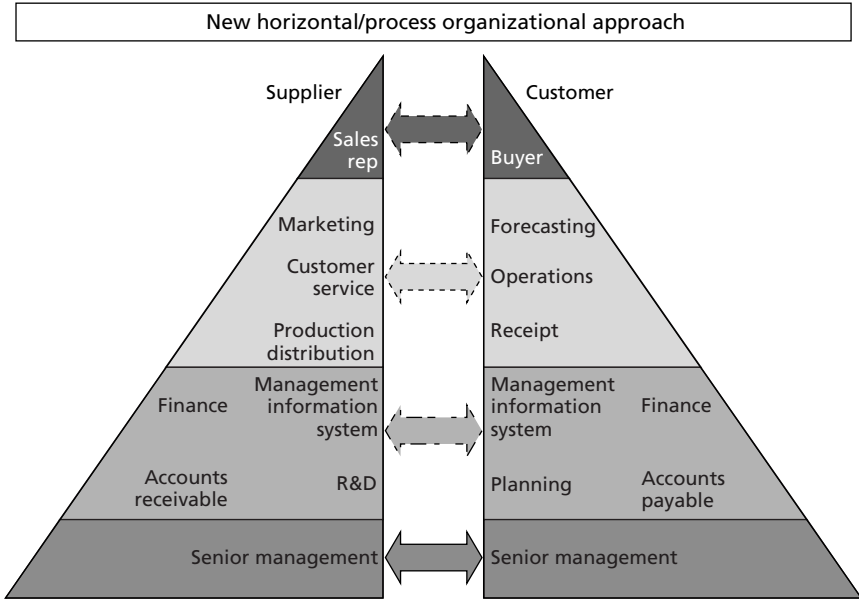
Figure 4.2
Traditional Functional Organizational Approach



SOURCE: Adapted from Elliff (1998).

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Figure 4.3
PSM Process Organizational Approach



SOURCE: Adapted from Elliff (1998).

RAND MG116-AF-4.3

The proposed structure for the demonstration is center-led⁵ at the OC-ALC level and initiates an organizational shift to cross-

⁵ See Porter (2002) for a number of examples of leading companies using this best practice. Indeed, a center-led purchasing and supply management is at the top of the list of six best practices in cost management. “A recent PURCHASING Magazine poll finds six common practices among companies that are routinely delivering 3-7%/yr savings on the spend sides of their balance sheets.

- They have created authoritative, center-led purchasing and supply management organizations sometimes with direct-line reporting to the company’s chief executive officer,
- They use formal, standardized strategic sourcing and other purchasing decision processes,
- They recruit high-caliber professionals for purchasing and supply management and support them with ongoing professional development resources,
- They use formal, validated methods of documenting cost savings,

functional integration through assignment of buyer, logistics, and engineering technical personnel to a sourcing leader and the assignment of functional members to the strategic support team. Extensive procurement benchmarking research of nearly 2,000 global companies finds that world-class companies that employ higher levels of cross-functional teaming realize a higher quality of decisionmaking with a corporate-wide view of needs. In fact, the cross-functional integration of procurement alone realizes a decrease in cost as a percentage of spending by 24 percent.⁶ A General Accounting Office (GAO) best practice report finds that leading companies are moving from the traditional role of the buyer to a more strategic commodity/service expert. They all elevated or expanded the role of the procurement organization, designated commodity managers, and made extensive use of cross-functional teams.⁷ A cross-functional approach is key to implementing a process-based PSM organization. Implementation of the proposed structure for the demonstration draws upon that best practice and transitions from the traditional structure.

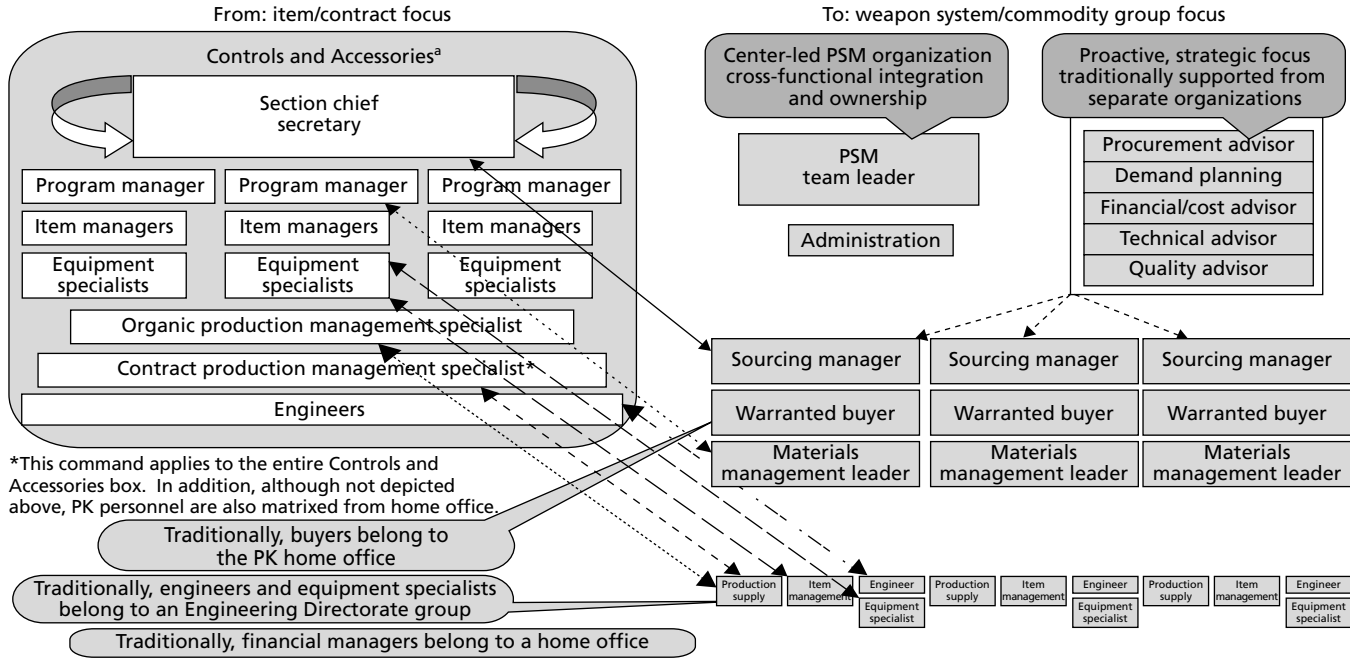
For a notional illustration of how the traditional positions best correlate to the proposed structure, see Figure 4.4. (The arrows between the two different structures link the positioning of similar functions in the two different organizations. For example, the dashed arrow shows where the program management functions move in the context of the new organization.) Figure 4.4 clearly shows how the roles of the warranted buyer and the sourcing manager shift to a more prominent position on the right side of the figure. This shift reflects the heightened role of procurement in a PSM-focused organization. Another key difference is the creation of the strategically focused

-
- They track performance to goals closely and create clear incentives for purchasing executives to deliver bankable cost savings, and
 - They actively invest in information technology that supports their strategic purchasing and supply management initiatives.”

⁶ See *Hackett Best Practices* (2002).

⁷ See General Accounting Office (2002).

Figure 4.4
Linkage and Comparison of Traditional to Proposed Organizational Positions



^aAdapted from information on the OC-ALC organizational web site, <https://www/lpa.tinker.af.mil/porg.htm>, accessed March 19, 2002. (For sample purposes, constructs vary.)

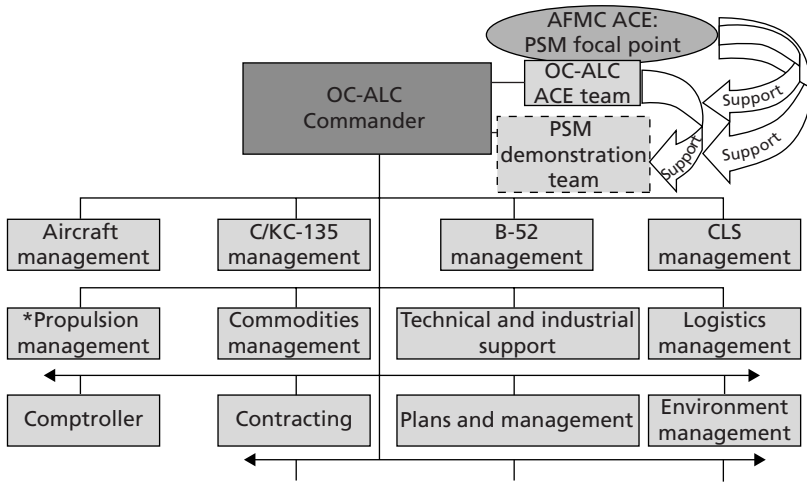
advisory group consisting most notably of the procurement advisor and the demand planner.

Understanding that this is not a one-size-fits-all approach, an organization's structure must be adapted to its strategy. Our proposed construct is a step toward the development of PSM as a core competency and a step toward further transformation to an Air Force-wide PSM organization. First, a great deal of change must take place; these issues are discussed in Chapter Six.

To further understand how this new organization would relate to the current organizational construct at OC-ALC, Figure 4.5 illustrates the new PSM team organization and how it reports directly to the center Commander. We envision that both the Hq AFMC and OC-ALC ACE teams could establish a PSM focal point that would provide support to the PSM team as requested. For example, they could help solve roadblocks and barriers using their link to SAF/AQ Acquisition Excellence initiatives.

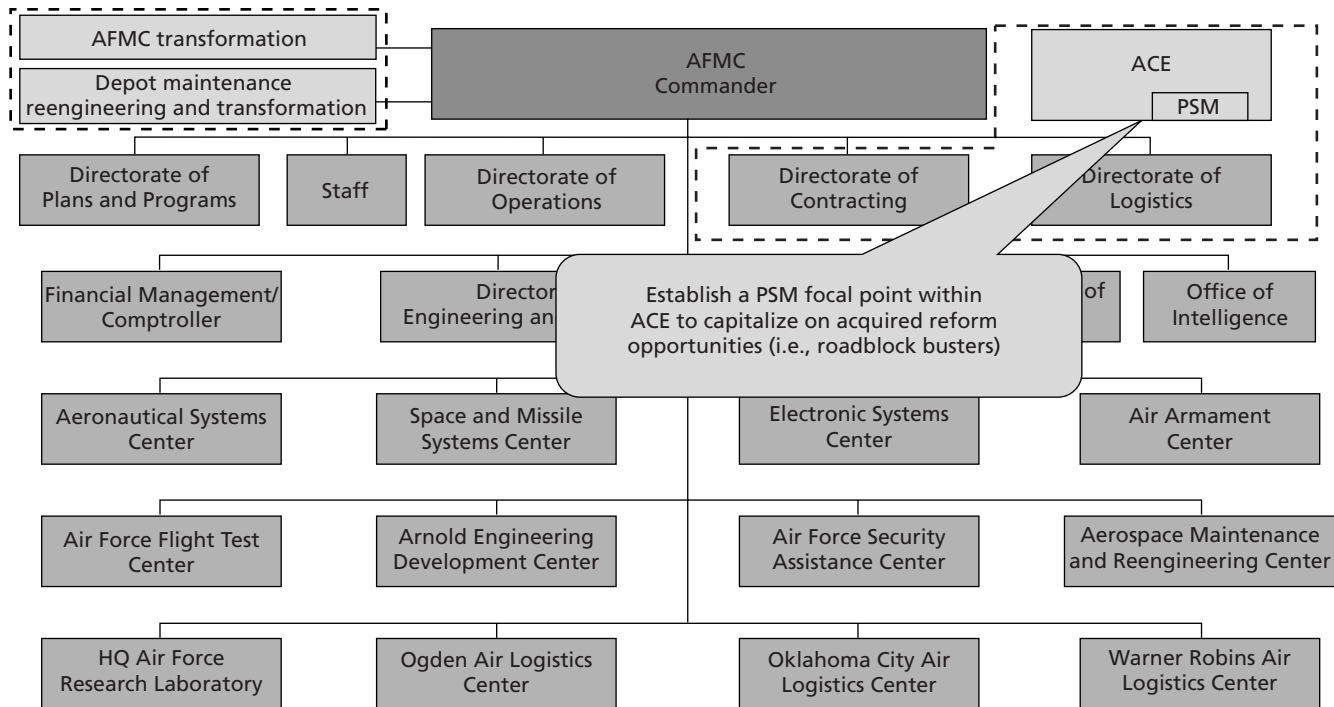
The Hq AFMC-level ACE and location of PSM activities are illustrated in Figure 4.6.

Figure 4.5
Proposed PSM Demonstration Team Placement in Center-Level Organization



*F100 Supply Management is currently in Propulsion Management with personnel matrixed from functional offices.

Figure 4.6
Proposed Relationship to AFMC



A Concept for the Future—Organizing for Effective Air Force–Wide PSM

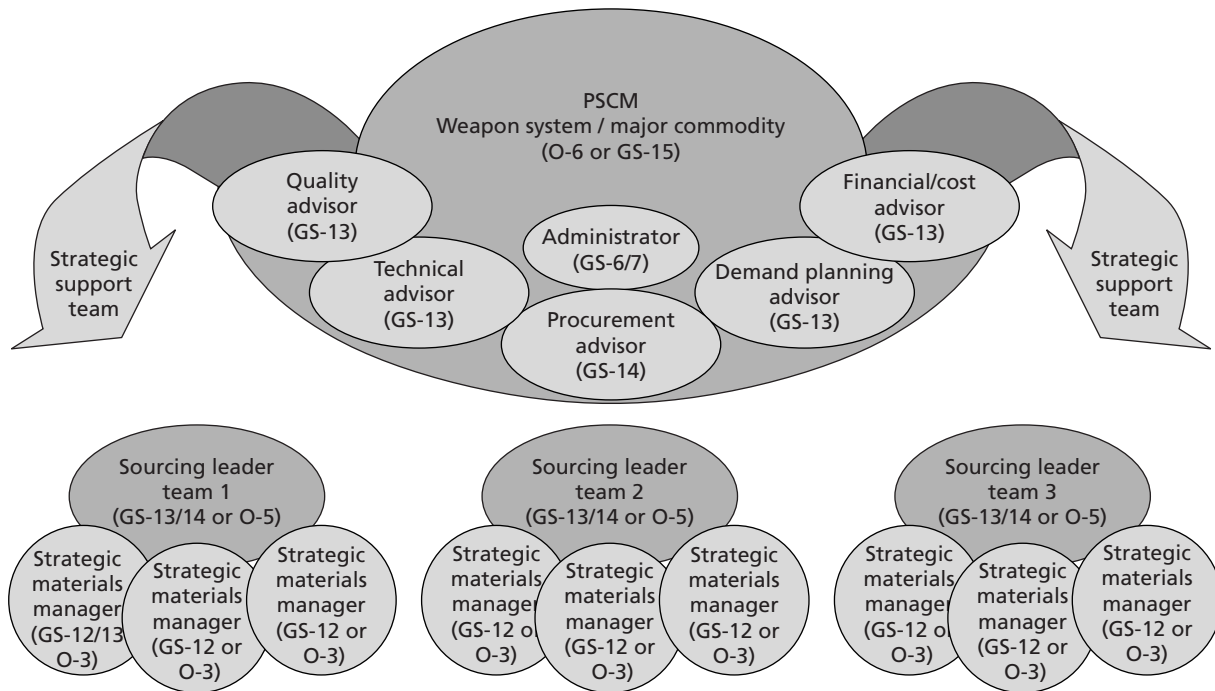
Our proposed Air Force–wide PSM construct is a strategic organization, center-led by a new, core PSM directorate at AFMC Headquarters. As Figure 5.1 illustrates, the Air Force–wide organization builds upon the proposed structure for the PSM demonstration organization at an ALC.

The Center-Level, “Execution-Level” Air Force–Wide Organizational Construct

Figure 5.1 illustrates an organization that is led by a Purchasing and Supply Chain Manager (PSCM).¹ A strategic support team of advisors reports to this leader, providing functional expertise to the sourcing teams while also having integration responsibility for the entire weapon system or major commodity. Each advisor may have additional resources reporting to him/her, depending upon the needs of the organization. The sourcing teams will conduct purchasing and supply chain management using more strategic and analytical PSM processes. The three teams illustrated in Figure 5.1 represent simply a notional quantity. The complexity and uniqueness of the weapon

¹ Note that the Air Force has selected the term Purchasing and Supply Chain Management (PSCM) with the same acronym for the name of its PSM-related change initiative. Combining the terms Purchasing with Supply Chain Management embraces both the contracting and logistics communities.

Figure 5.1
Proposed Air Force–Wide Center-Level PSM Organization



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system or major commodity will determine the actual number of sourcing teams and strategic materials managers. All grade levels are also notional, illustrating the need for higher skill levels to perform these activities.

Many of the functions associated with an Air Force–wide implementation are similar to those highlighted for the PSM demonstration test. This section will readdress those functions and discuss their role in the context of an Air Force–wide implementation.

Purchasing and Supply Chain Manager

The PSCM at the ALC has a direct link to the AFMC PSM Directorate. This person is the current Supply Chain Manager enhanced with “purchasing” responsibilities at the weapon system or major commodity. The PSCM coordinates with the SSM and weapons SPD, as well as the customer. He/she is an integrator and decision-maker across commodities and/or weapon systems. Categories of PSCMs may not always be the current categories of weapon systems and commodities. Just as the Air Force is a dynamic organization, this structure is dynamic and should change with the Air Force’s needs.

Strategic Support Team

This team provides strategic support to each sourcing team. Each member serves an internal ALC integrating function across the various sourcing teams and as an external integrator across the Air Force. Individuals belong to the PSCM organization, report to the PSCM leader, and are directly accountable for the sourcing team’s performance. This team’s performance measurement is linked to meeting organizational sourcing objectives. Although the advisors are representatives of their function, the specific system complexity, uniqueness, and magnitude may warrant allocation of additional resources directly to the sourcing teams and additional resources of specific expertise may be subordinate to the appropriate strategic support team advisor.

Procurement Advisor

The Procurement Advisor will serve as an overarching procurement expert who is responsible for developing and continually improving

the supply strategy and integration across all sourcing teams as well as liaison with Hq AFMC–level supply management activities. Because PSM requires that supplier relationships and contracts be designed at a higher, more strategic level, the procurement advisor serves as the PCO for all sourcing teams and will focus on the core, strategic, and analytic PCO activities, rather than the contract execution activities that can be accomplished by the sourcing teams.² The procurement advisor must focus on and be involved with the strategic planning activities of PSM to include the requirements identification and generation activities, rather than execution and monitoring activities.³ This position may be best suited to serve as the PSCM deputy.

Demand Planning Advisor

The Demand Planning Advisor is a liaison and integrator both externally and internally across the sourcing teams. He/she is a customer liaison, focusing on supporting warfighter requirements, providing an aggregation of requirements by weapon system and commodity group. Collaboration and advanced planning and scheduling are key functions of this position. This position is an alternative option for the PSCM deputy.

² Research of world class companies on trends related to the evolution of procurement best practices shows that “In recent years, the procurement function has labored under a difficult set of dual corporate expectations: As a tactical operation, it must above all be responsive to customer needs. Yet procurement is also expected to maintain a profit-driven mindset through the establishment of productive and cost-effective relationships with suppliers and the leveraging of technology. To respond to the demands of this new environment, leading-edge companies are clearing away the thicket of excess administration that surrounds the acquisition process, thereby increasing available time for purchasing strategy and contract negotiation” (*Hackett Best Practices*, 2002, p. 2).

³ The commercial world may be slower than the Air Force in this realization of the value of early procurement involvement. “Though a proven best practice, involving procurement early in the product development cycle to ensure a quicker, smoother production rollout is often difficult because the role of procurement as value-adding partner represents a radical departure from the function’s historically more limited activity as purchasing agent. In coming years, challenges, such as these (for example, the creation of centralized repositories of information and designs that can be shared across the organization and with external partners), must be overcome in order to make partnerships with suppliers as strong and innovative as possible” (*Hackett Best Practices*, 2002, p. 5).

Technical and Quality Advisors

These advisors provide engineering, statistical process control, and other technical expertise to the sourcing leaders.

Financial/Cost Advisor

This position is designated a GS-13 to enable both cost (including total ownership cost analysis, financial risk assessment, cost savings and cost benefit measurement) and budget competencies.⁴

Sourcing Leaders

These leaders are cross-functional, commodity-level managers involved in both purchasing and supply chain management activities. The sourcing leader is responsible for such core PSM commodity group–level activities as industry research, supplier selection, contract execution, and supplier relationship management⁵ at the commodity level or commodity subgroup. They are responsible for the leadership and integration of key functions such as procurement and logistics, as well as coordination with the weapon system level.

Strategic Materials Manager

This manager is responsible for logistics and production activities (i.e., manufacturing inventory, requirements planning, production planning, and industrial packaging) previously known as item management, program management, production management, and equipment specialist activities, except at a more aggregate level than individual items (i.e., system, major assembly, or commodity group or subgroups). The manager will manage these items strategically, at a higher level than items or parts, requiring a single, higher-grade individual rather than numerous lower-grade specialists. He/she will be

⁴ Both budget and cost competencies are necessary; whether a GS-13 fills both needs or a GS-12 cost analyst and GS-12 financial manager fill this role is inconsequential.

⁵ Supplier relationship management as envisioned here involves managing all Air Force business with each specific supplier. It would better leverage Air Force spending, manage and link supplier performance on all contracts, and work with suppliers to continuously improve performance and reduce the costs of the end-to-end supply chain.

able to execute purchases⁶ using contractual vehicles designed by the PSCM team and established by the procurement advisor. The ability to establish this position is highly reliant upon the successful implementation of PSM enablers, including e-commerce (electronic transactions) and e-business (enterprise-wide) implementation. Realization of PSM tenets may require additional material management support. (For a description of the tenets, please see Chapter One.)

The proposed changes to this point deal mainly with the need to elevate and integrate purchasing and supply strategy activities. The other key need is a function to manage a multitiered supplier network to leverage the Air Force's buying power with its suppliers. That function of an Hq AFMC-level organization is discussed next.

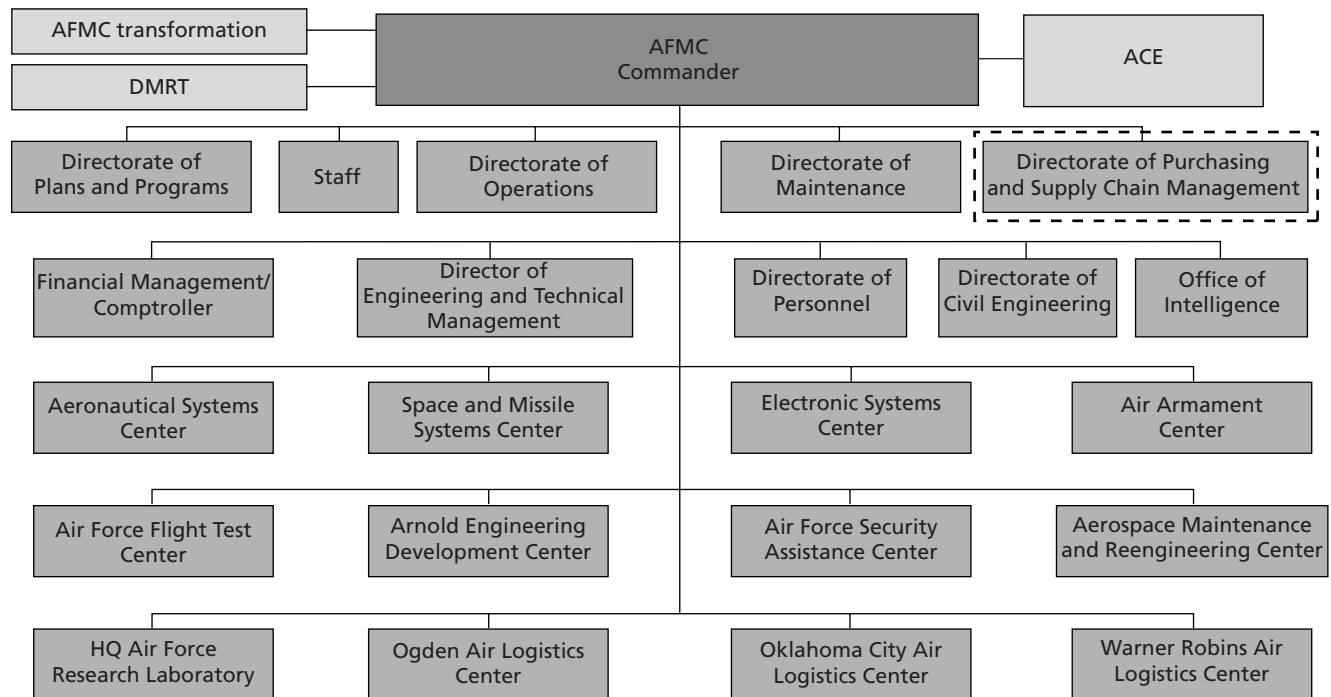
The Air Force-Wide Hq AFMC-Level Organization Construct

In addition to managing purchasing and supply chains at the execution level, the supplier base must be managed at a strategic level to build long-standing performance-based relationships with suppliers and manage supplier production capacities over the life of Air Force systems. Supplier management is important not only for first-tier suppliers but also for second- and third-tier suppliers. This notion of having insight into suppliers' suppliers is a dramatic shift from current supply chain management practices. The proposed construct establishes a PSM directorate at Hq AFMC that capitalizes on the established SCM function. Figure 5.2 illustrates a reorganization at the Hq AFMC level involving the establishment of a Maintenance and PSCM Directorate.⁷

⁶ "World class companies have 78% fewer individual purchase orders, driven by 84% higher use of blanket contracts," according to *Hackett Best Practices* (2002, p. 1).

⁷ It is important to note that the organizational structures proposed in this report are independent of this reorganization and not affected if the reorganization does not take place. The relevant assumption is that all PSM-related activities will move to the PSM organization.

Figure 5.2
Proposed PSM Air Force–Wide AFMC-Level Organization



Management of the supplier base is necessary to assure supply and build long-standing performance-based relationships with key suppliers. Weapon systems often share suppliers and many suppliers provide a range of goods and services. The proposed design establishes this supplier management activity at Hq AFMC and extends supplier management beyond first-tier suppliers. The new PSM Directorate would include a “supplier management” activity that would work at a level above the PSCMs for large cross-commodity suppliers and be organized around major suppliers or supplier groups of like capabilities (e.g., electronic warfare (EW) equipment). For example, there could be a Boeing Supplier Manager (SM), a Lockheed Martin SM, a Northrop Grumman SM, as well as a munitions SM, or a brakes, struts, wheels SM. The SM would be responsible for facilitating the strategic relationships between the Air Force and key suppliers and maintaining oversight of PSCMs and awareness of supplier lead times and production capacities for critical items. An additional function of the Hq-level PSM could be to maintain a database of inactive suppliers, with information on their lead-time requirements and surge capacities.

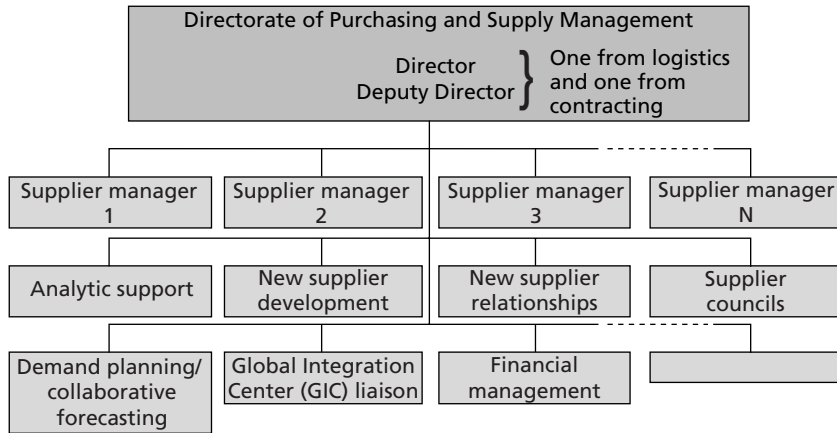
These are key functions of a PSM organization; however, their value to the Air Force extends beyond PSM implementation and supports current initiatives aimed at more closely linking AFMC actions and production to warfighter requirements. One example of an initiative focused on tightening the link between AFMC and the warfighter is the combat support execution planning and control operational architecture study sponsored by AF/IL, which highlights the need for a virtual organization to manage supplier capacity to meet a range of operational requirements. In managing supplier capacities, a supplier manager, in this case the PSM, is constantly assessing active and nonactive first-, second-, and third-tier supplier capacities and developing agreements with them to respond within specified lead times, derived from known or projected operational requirements.⁸ Given these needs, the PSM could be that element of a combat sup-

⁸ Leftwich et al. (2002).

port execution planning and control operational architecture responsible for managing supply capacity and working with PSCMs and resource capacity managers in conducting capability assessments. With insight into multitiered supplier capacities and lead times, AFMC can provide better insight into the Air Force’s long-range operational capability and make more enlightened tradeoff decisions.

Figure 5.3 contains a notional structure for this AFMC-level directorate. It is not all-inclusive but could serve as a starting point for establishing positions consistent with best practices.

Figure 5.3
Proposed Air Force–Wide AFMC-Level PSM Organization



NOTE: Identified positions are not all-inclusive; the structure is merely suggested as a starting point.

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Role Clarification Between the ALC and Hq AFMC–Level Organization Constructs

Before focusing on the Hq AFMC–level activities, we first clarify the terminology used to differentiate between the ALC-level and Hq AFMC–level organizations.

ALC Level. The PSCM can be considered the execution level that will serve a resource capacity management function. Weapon

systems/commodity groups are integrated, assessments are performed, and interaction with more global integration activities could occur from this point.

Hq AFMC Level. Strategic supplier integration, relationships, and evaluations are managed at this level. Supply capacity is managed, working with weapon system and spares resource capacity managers in conducting capability assessments. Other roles include:

- Facilitate strategic relationship between the Air Force and key suppliers
- Oversee PSCMs, maintain awareness of supplier lead times and production capacities for critical items
- Aggregate demand planning and forecasting
- Perform supplier financial risk assessments
- Maintain database of inactive suppliers (lead time requirements and surge capacities, for example).

Air Force–Wide Hq AFMC–Level Organization Constructs

To best complement the headquarters' existing strategic alignment, the core PSM responsibility is a direct reporting unit to Hq AFMC. PSM activities move from logistics, procurement, financial management, the ACE, and other necessary supporting resources to the new directorate. A PSM Directorate at this level maximizes crosscutting visibility and leadership, and allows integrated senior leadership focus. This structure will enable the organization to capitalize on AFMC's enterprise concept⁹ for operations objectives. A key purpose of the Air Force–wide, Hq AFMC–level organization is supplier management. Supplier/Supply Base Managers ensure crosscutting activities, coordination, and integration across all PSCM teams. This is the ultimate integration point. Table 5.1 illustrates a notional cross-reference between the PSCM and Supplier/Supply Base Managers.

⁹ See Swangim (2001).

Table 5.1
PSCM/Supplier Manager Matrix

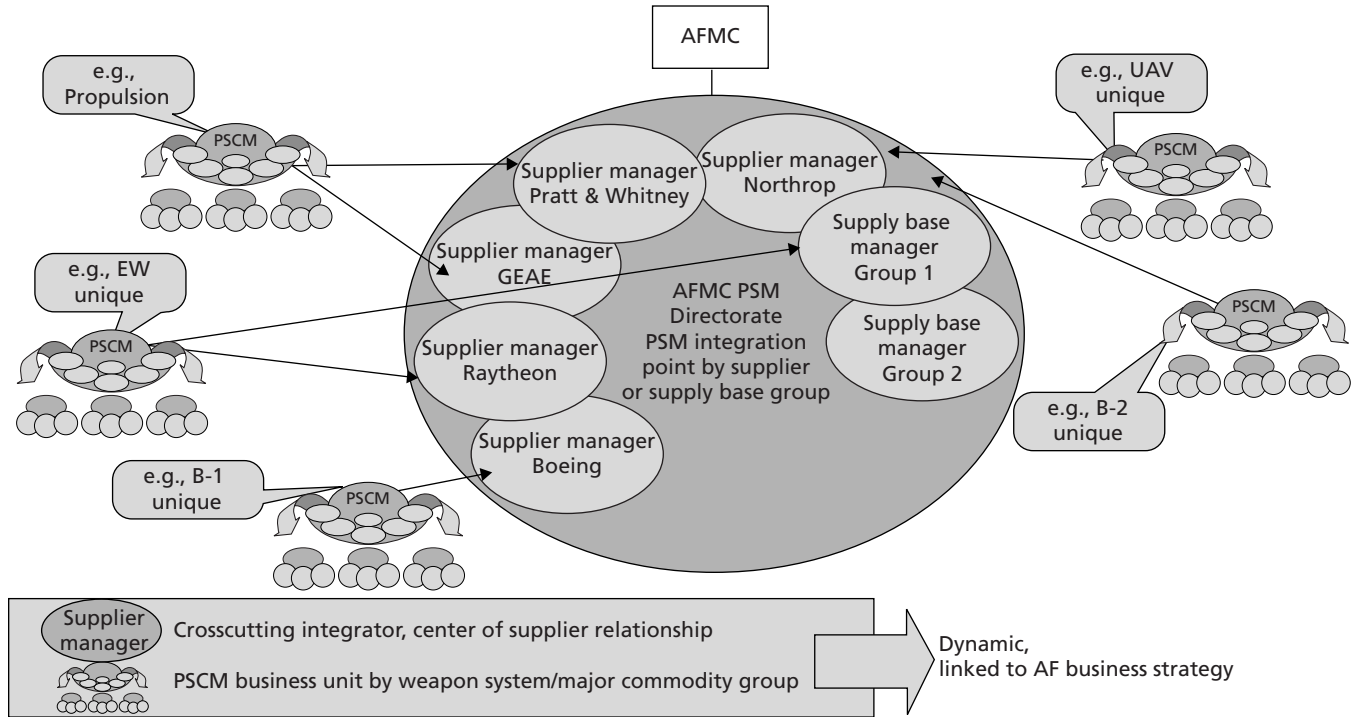
PSCM	Supplier Manager 1 (e.g., Boeing)	Supplier Manager 2 (e.g., Northrop)	Supply Base Manager Commodity Group A (e.g., EW)	Supply Base Manager Commodity Group B
B-1 unique items	X		X	
B-2 unique items		X	X	
EW unique items			X	
UAV unique items		X		X
...				

The Supplier/Supply Base Manager's focus would be determined by major suppliers or groups of suppliers in a manner that best represents the allocation of resources, workload, and PSM benefit potential. Figure 5.4 suggests business units according to existing supply chain management leads. Once again, however, this is not a standard form fit approach; it is dynamic and should be aligned with organizational strategic objectives.

Two examples of relevant organizational structures are from major aeronautical corporations known for their best practices in PSM. Because the information was gathered by RAND team members through unattributed interviews, the company names are omitted.

A major worldwide aeronautical corporation has organized its supply chain management structure using a module center strategy arranged by commodity types. In addition, this particular corporation has identified two commodity management business units. The first is core procurement, broken down into such categories as fabrication and composites and small machined parts, and the second is an externals and engines business unit, further broken down by such commodity types as electronics and electrical systems, forging/raw material, and large machined parts. This company stresses the effectiveness gained by linking the commodity management structure to the module center strategy.

Figure 5.4
Proposed Air Force–Wide PSM Organization—Supplier Integration



A major airline has aligned its supply chain management operations by engine maintenance sourcing, airframe sourcing, warranty recovery, indirect materials and services, and aircraft modifications. Using the engine maintenance unit as an example, six commodity managers have been handpicked and assigned to six commodity categories: Pratt & Whitney product line (spare parts), GE/CFM spares product line, thrust reversers and engine accessories (spare parts and repairs, Pratt & Whitney outside repairs, and GE/CFM outside repairs). Each commodity manager has a different multidiscipline background such as financial, mechanic, repair technician, and materials and technology. Although there are no reporting lines between the commodity managers, they leverage their expertise and work together, as their individual discipline is not sufficient to fulfill all their responsibilities. This is a very lean organization of managers who accomplish their jobs by working with each other and with the rest of the organizational network. Other members of the organization are not matrixed or assigned to them but they help or support this team as needed. The airframe-sourcing unit, on the other hand, contains two commodity management categories. The first is aircraft interiors and the second is component repairs. This unit also contains buyers for areas including airframe structures, aircraft interiors, aircraft systems component repairs, aircraft in-flight entertainment systems, and avionics. Furthermore, this unit has assigned analysts for finances, data analysis, and metrics.

Once again, the key point is that any approach should be derived according to the overall business strategy. Major worldwide corporations have successfully employed PSM and attribute their success to structuring the supply chain management business units according to organizational strategies. A prominent PSM pioneer, Dave Nelson, when he was the vice president of Worldwide Supply Management for John Deere, presented a briefing entitled “How the Winners Win, Mastering Supply Management Best Practices” at a Sourcing Interests Group conference. He stressed the importance of strategic intent. The supply chain strategy must be linked to the business objective and provide the framework to meet the overall business objective. Furthermore, he described the need to move from

decentralization to “center-led” operations, not to be confused with “centralized” operations. His example portrayed a business model to strategically select and develop a global supply base from the top down. At the top of the inverted pyramid was enterprise-led common commodities and services. The smaller, midsection included enterprise/division teams—more highly engineered components, and the bottom section was division-led, product-specific components. This best practice supports the notion of an enterprise level of accountability for PSM as well as the establishment of centers of management for common commodities such as propulsion.¹⁰

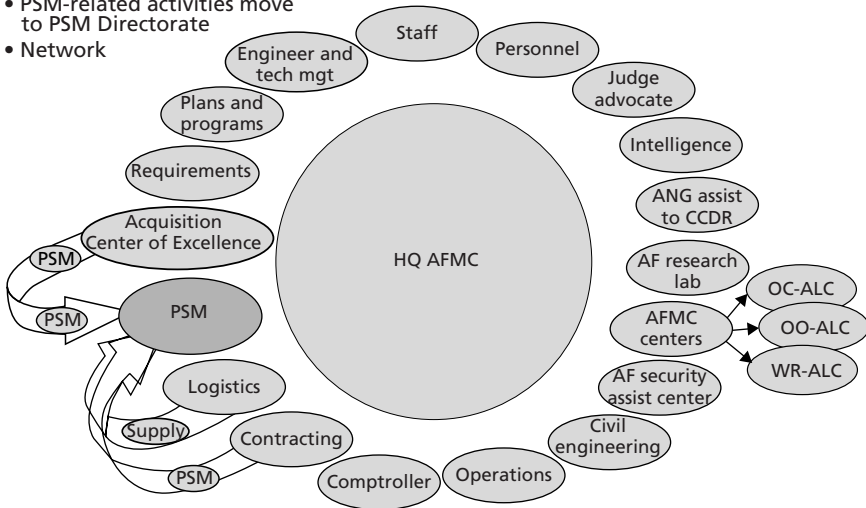
Above we discussed a proposed team having responsibility for developing a core competency in PSM at the ALC level as well as at the AFMC Hq level. We also discussed establishing a PSM supporting role within Hq AFMC’s ACE. This should help enable the ALC implementation teams to fully benefit from ACE initiatives, support, and resources while developing PSM competency through training and teaming among fellow purchasing and supply organizations as well as among the ALC-level implementation teams themselves. As a result, the establishment of an Hq AFMC PSM Directorate organization should be feasible. The PSM focal point within the ACE can complete transformation by separating from the ACE and joining the Logistics (LG) supply and Contracting (PK) PSM organizations, along with other key functional representatives, to become the PSM Directorate.

Figure 5.5 illustrates the many functional resources that are key to PSM. Although PSM becomes a Directorate-level core function of Hq AFMC in this concept, it will rely heavily upon support from other organizations. Following a horizontal, truly integrated model, the functional home offices become coaches (teachers) or centers of excellence. The personnel should not simply be matrixed to the PSM organization (i.e., personnel performance appraisals are written by their functional home office). They should become full members of the PSM organization (i.e., personnel performance appraisals should

¹⁰ See Nelson (2001).

Figure 5.5
Proposed Shift of PSM Functions to AFMC-Level PSM Organization

- Enterprise-level, center-led
- Crosscutting
- PSM-related activities move to PSM Directorate
- Network



SOURCE: Basic, existing organizational functions are from information at www.afmemil.wpafb.af.mil/HGAFMC, accessed March 18, 2002.

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be written by the appropriate PSM organization). A strong case has been made in the business literature for coaches rather than managers. “In the long run, the quality of an organization’s coaching is a key determinant of whether it succeeds or fails.”¹¹ “A single individual, no matter how talented or knowledgeable, can accomplish only so much. A teacher, however, multiplies the impact of his or her knowledge by sharing it with others.”¹² So, the “center of excellence” is where the coaches of a particular skill or profession reside and teach, mentor, and develop the knowledge and skills base of the teams. The PSCM leaders are the process owners and teams do the process. The centers of excellence are responsible for ensuring that skills are main-

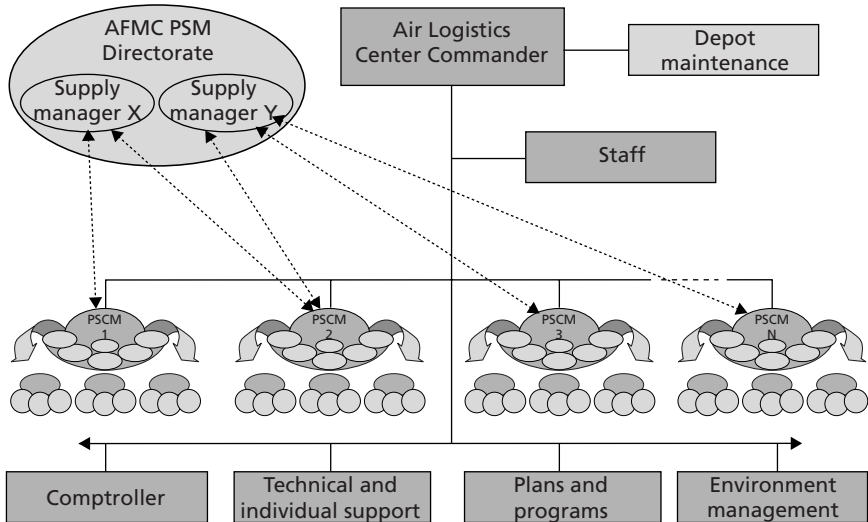
¹¹ See Hammer (1996a, p. 117).

¹² See Hammer (1996a, p. 121).

tained and their success is measured by the success of the teams they support. This differs from the traditional functional home office perspective where the home office is also the process owner, has responsibility to do the work, and is measured by productivity and performance of the functional portion of the work.¹³ The resultant organization is ALC-led, has visibility to the Hq AFMC Commander, and is horizontally aligned with AFMC’s enterprise managers.

Figure 5.6 illustrates the lines of interface and functional support that the AFMC PSM teams will provide to the ALC-level organization. The AFMC PSM team continues to work closely with the ALCs; but many vertical layers of management have been removed. Non-PSM-related AFMC and ALC interfaces remain intact.

Figure 5.6
Proposed ALC-Level Organizational Perspective



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¹³ See Hammer (1996a, pp. 121–137).

Rationalization of the Air Force–Wide ALC-Level Organization

Our proposed Air Force–wide organizational construct supports many key PSM principles. It is center-led at the Hq AFMC level where PSM is elevated to a recognized core competency. It enables enterprise-wide, strategic PSM application with a crosscutting weapon system or major commodity group perspective that is consistent with the Air Force’s SCM function as well as Hq AFMC’s Enterprise Management practices. It is also consistent with PSM principles. Cross-functional integration of requirements, procurement, logistics, engineering, and finance is achieved by assigning personnel to the PSM teams, which ensures that team members share objectives. Moreover, the functional (AFMC and ALC home office) organizations are coaches, or centers of excellence, and are rated on the performance and results of the organizations they support.¹⁴

Our proposed organization also supports Air Force strategic objectives, such as capitalizing on significant strides the Air Force has undertaken. This structure is consistent with the Spares Campaign and Supply Chain Management structure, and is intended to change and be flexible with this strategy. It has the potential to become a key resource capacity management component of the Air Force’s combat support execution planning and control operational architecture.¹⁵ This structure also leverages SAF/AQ’s Acquisition Excellence initiatives (e.g., Roadblock Buster Lightning Bolts), as well as AFMC’s Strategic Sourcing initiative.

A horizontal organization enables an end-to-end view of purchasing and supply management and cross-functional integration.¹⁶ During the 1990s, when many companies were moving away from classic hierarchical organizations toward flatter ones, *Business Week* published an article entitled “The Horizontal Corporation” that summarized then-current best practices. Specifically, steps similar to our proposed approach were taken that include identifying strategic

¹⁴ See Hammer (1996a, pp. 116–137).

¹⁵ See Leftwich et al. (2002).

¹⁶ See Ostroff (1999).

objectives and organizing around processes instead of functions, while preserving key expertise.¹⁷

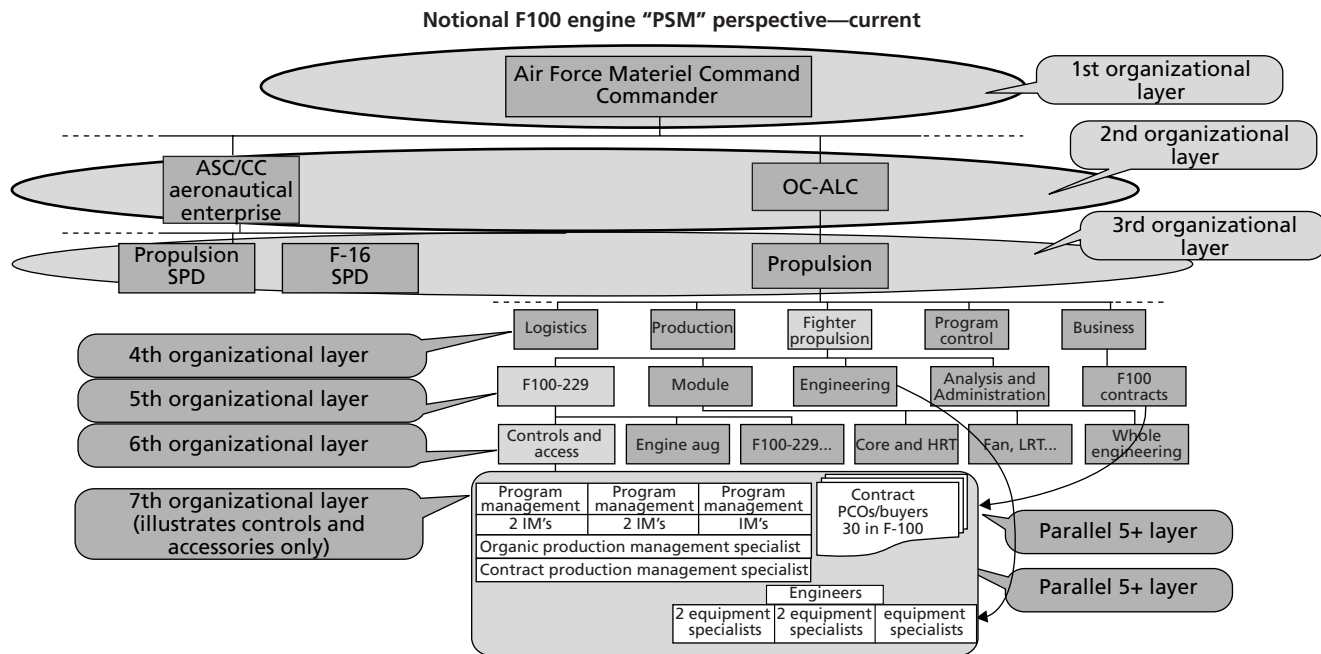
To illustrate how this proposed construct is more horizontal, Figure 5.7 shows the seven layers of hierarchy in the current F100 organization. Although organizations differ by program and center, the F100 and its controls and accessories group serves as an example illustrating that PSM functions currently occur at approximately levels five, six, and seven. Also, there are separate stovepipes at each of these levels for such functions as procurement and engineering.

As a comparison, Figure 5.8 illustrates our proposed organization, which is more autonomous and horizontal. Note the fewer layers, with purchasing and supply management activities taking place at the third and fourth layers of the organization rather than at the fifth, sixth, and seventh layers within multiple stovepipes, shown in Figure 5.7. In addition to illustrating the proposed organizational layers, Figure 5.8 also depicts the interrelationships among the PSM organization, the SPOs, and the AFMC Enterprise Managers.

Many documented best practices serve as examples for a structure such as this. A case in point is Motorola's Space and Systems Technology Group (SSTG), one of four businesses within its communications enterprise. SSTG redesigned its supply management operation from a complicated, vertical, functionally divided, nine-level organizational hierarchy to only three levels. The original hierarchy greatly hindered the group's frontline employees' ability to voice suggestions or solve problems in real time. "Seven hundred workers performed various supply management tasks, but coherence and cross-

¹⁷ Companies such as AT&T and General Electric de-layered their organizations and flattened hierarchies with much success. Basic steps toward a horizontal organization include identifying strategic objectives, analyzing key competitive advantages to fulfill objectives, defining core processes, focusing on what is essential to accomplish goals, organizing around processes, not functions, using processes to link related tasks to yield a product or service, eliminating activities that fail to add value, cutting function and staff departments to a minimum, preserving key expertise, appointing a team as core process owner, empowering with authority and information to achieve goals, linking training, appraisal systems to support new structure and linking to customer satisfaction (Byrne, 1993, pp. 76–81).

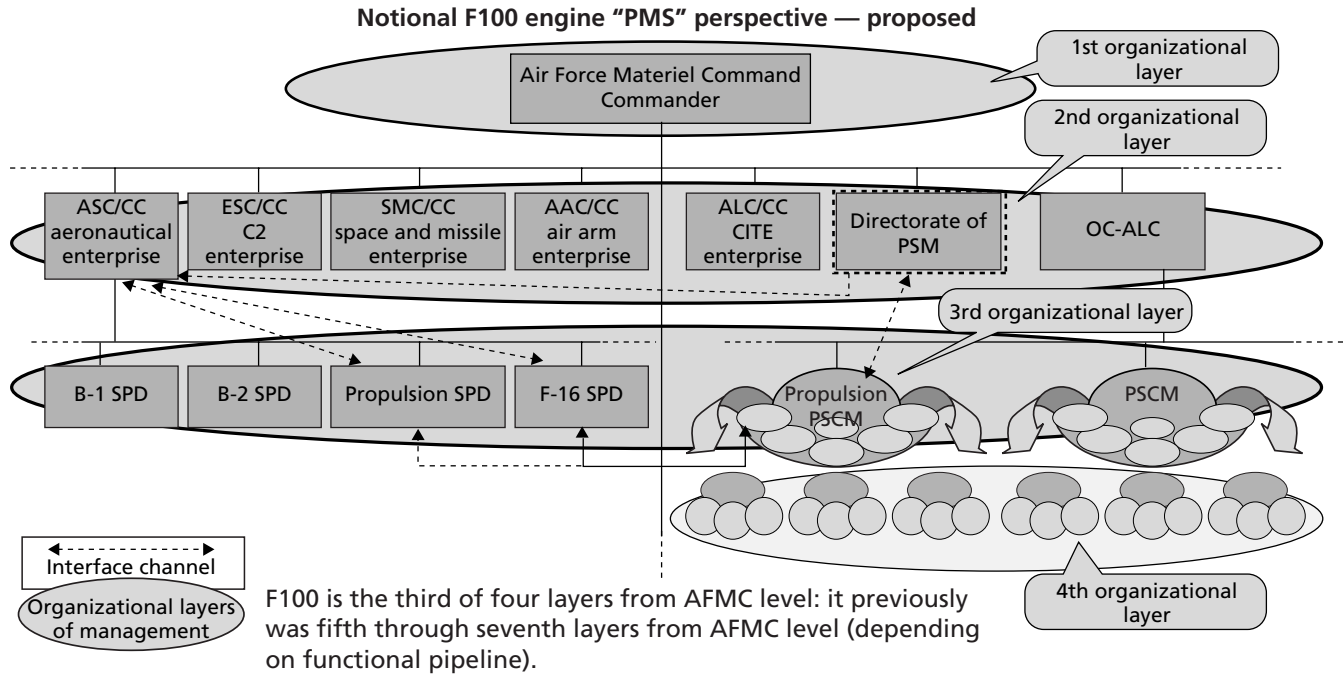
Figure 5.7
Traditional Organizational Layers



SOURCE: Estimates are based on information on the OC-ALC organizational web site, <https://wwwwips.tinker.af.mil/porg.htm>, accessed November 13, 2001.

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Figure 5.8
Proposed Organization—Layers and Interrelationships



functional teamwork were virtually nonexistent.”¹⁸ SSTG began its redesign by defining its direction and value proposition, i.e., by developing a vision and overall strategy. It established supply management as a core operating process. The result was a horizontal, cross-functional organization where self-directed, empowered, decisionmaking teams operate within an organization that is only three levels deep.

As Figure 5.9 depicts, the director of operations and supply chain management reports directly to the SSTG general manager. A process owner team includes the vice president, the director of operations of supply chain management, and three commodity managers. Their commodity teams are arranged by such commodity/technology types as electronic components and assembly, mechanical/electromechanical, and software and systems integration. These teams coordinate and employ the end-to-end supply management core process. Commodity teams work concurrently with purchasing, systems and software, and operations support teams; all reporting directly to the process owner team.¹⁹

A similar example is taken from a very well known IBM PSM success story. At the heart of this success story are the steps Gene Richter took in the early 1990s to move from a vertically integrated to a centralized organization with empowered commodity councils.²⁰

One consequence of a more horizontal organization is new opportunities for communication and knowledge-sharing. These opportunities not only multiply but also become key to the organization’s success. The direct interface characteristics of the proposed Air Force–wide organization reflect the opportunities for and importance of knowledge-sharing.

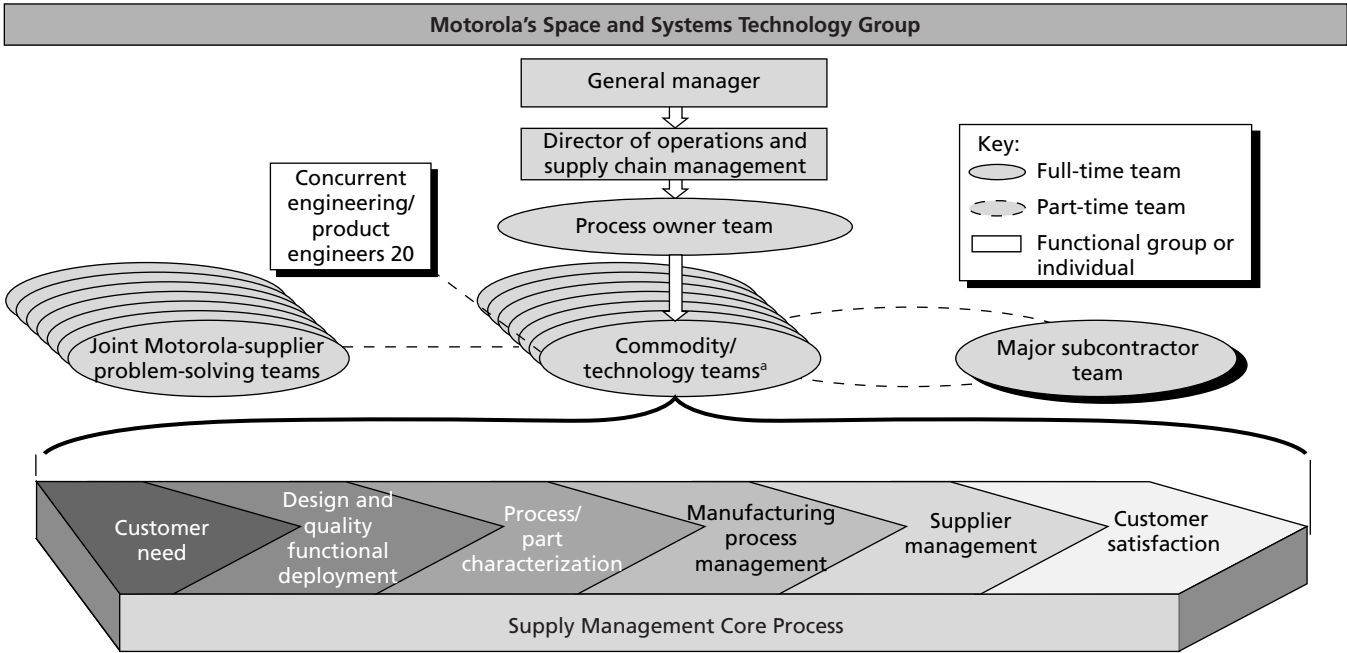
Moreover, the sharing of knowledge and support among the interface points where there is no direct authority requires a large degree of trust and other teamwork characteristics. As discussed above,

¹⁸ See Ostroff (1999, p. 91).

¹⁹ See Ostroff (1999), pp. 89–100.

²⁰ See Purchasing Magazine Online, March 7, 2002.

Figure 5.9
Motorola's Space and Systems Technology Group



SOURCE: Adapted from Ostroff (1999).

^aElectronic components and assembly, mechanical/electromechanical, software and systems integration, etc.

members of this organization are empowered with sufficient discretion to do their work. Because of this high degree of autonomy and accountability, such incentives as group- and outcome-based performance measurement systems are most appropriate.

In our PSM organizational construct, the PSCM business units own the process and have responsibility for weapon system or major commodity group-level PSM activities. They are the execution level and accountable to the AFMC PSM Directorate.

Transformation to Air Force–Wide Organizational Construct

The proposed Air Force–wide organization involves a radical transformation from current organizations and operations. Throughout the evolutionary phase, it is important to continually learn from the PSM demonstration at the ALCs and continually assess, reassess, and calibrate the “Air Force–wide organizational” plan as more is learned from the Air Force’s demonstration as well as from the commercial sector.

Judging by the similar experiences of other organizations, the shift to a PSM organization typically takes three to five years. Many arguments can be made for moving directly to an Air Force–wide PSM organization as opposed to evolving in that direction and deserves further discussion.

Evolution or New Start?

The business and trade literature contains numerous examples of companies that have achieved significant benefits from a major transformation to PSM rather than slowly evolving and implementing PSM in a piecemeal fashion. Indeed, the purchasing literature reports a widening gap between those companies that have successfully implemented PSM and those that have not. This gap is attributed to the difference between a major transformation approach and a slow evolutionary approach. Organizational culture is a major contributor to the differences in approaches because vertical hierarchy and associated

management power continue to influence the organization. Evolving companies often have legacy systems¹ they must consider and may not be able to start fresh with current technology and new systems.² This suggests that the Air Force could increase its likelihood of success by doing a full-scale implementation of an Air Force-wide PSM organization rather than evolving to an Air Force-wide PSM organization in a piecemeal fashion.

Change Management

Change management is a critical and key determinant of a new program's success. The changes that need to be addressed and managed include cultural as well as procedural but, most important, they rely heavily upon the level of senior leadership's involvement and support. Although the F100 PSM demonstration organizational learning and development subteam was to address some of these factors, the following are key change management points associated with this proposed organization.

Develop/Educate/Train Personnel

Aggressive training and educational programs are being developed by the PSM demonstration team and are essential to successful imple-

¹ Old technology and systems that need to change.

² Bernard J. LaLonde (2002), writing about a presentation on "The 'Gap Creep'" by William Copacino of Anderson Consulting (now Accenture), discusses a performance gap as it relates to successful implementation of supply chain management. He notes an increasing difference between average and best companies and suggests the beginning of a polarization at each end. He gives three reasons for this growing gap: the change management processes; technology management and the integration of information technology change; and the level and kinds of burdens a company has. Burdens include everything from the organization's legacy to its culture and traditional organization chart. Supply chain management typically also involves a transition from a vertical hierarchy to a more horizontal type structure, developing cross-functional teams, and implementing new technologies (e.g., e-commerce). He argues that if the traditional vertical hierarchy remains in the form of incumbency and managerial power, it can prevent the evolution of organizational structure, whereas, new start organizations begin with the advanced technology and do not have the baggage associated with converting.

mentation. The following are some overarching training recommendations resulting from the interview findings and the literature. Effective training must relate PSM to the jobs personnel perform so that they can return to their jobs with a good idea of how to apply what they learned from their courses. Training should also include decisionmaking in a PSM environment as well as factors that drive decisions. In addition, job performance aids that guide PSM practices and provide practical insights for day-to-day tasks are essential.

Address Perceived Challenges, Barriers, and Impediments

Training and communication should also specifically address perceived challenges, barriers, and impediments. For example, the workforce needs to understand that PSM will change, not add to, staff workload, by elevating the focus and making the process more efficient. This can help address perceived barriers that result from insufficient resources and unmanageable workloads. Training and communication can also help turn the perception of too many initiatives or “flavors of the month,” such as AFMC’s strategic sourcing and Six Sigma, into a perception that some initiatives are stepping stones or tools that will promote success. Educating the workforce and exploiting PSM enablers, such as SAF/AQ’s ACE initiative and its roadblock busters, can help enable PSM. Unawareness can also become an impediment to successful PSM implementation, which can be corrected through training and communication. For example, some of the workforce is not aware that recent source selection initiatives enable awards to the best value rather than to the lowest bid as previously required.

Motivational challenges associated with change initiation will require close attention. High performing organizations (HPO) management philosophies, such as participative management,³ can be key motivators for the workforce. Successful change requires that personnel feel a part of the change rather than an object of change.

³ See Pickering (2000).

Performance Standards/Appraisals

Employee appraisal systems must be restructured to reward actions and performance consistent with the new PSM-based objectives of the organizations. For example, it does not make sense to give a buyer assigned to the F100 PSM team incentives to act in a manner inconsistent with PSM processes and tenets, when the organization goals and objectives are PSM-focused. Instead, performance-rating criteria and incentives should support PSM and include rewards for positive results and team performance.⁴

The high level of autonomy and accountability required for a horizontal-shaped organization with empowered employees has additional implications for performance standards and appraisals. Giles and Hancy (1998) point out that “Performance management systems containing stretch targets, specific performance contracts, individual and group-based performance indicators and measures focused on outputs not inputs need to be used to act as incentives and reinforce the required behavior.”

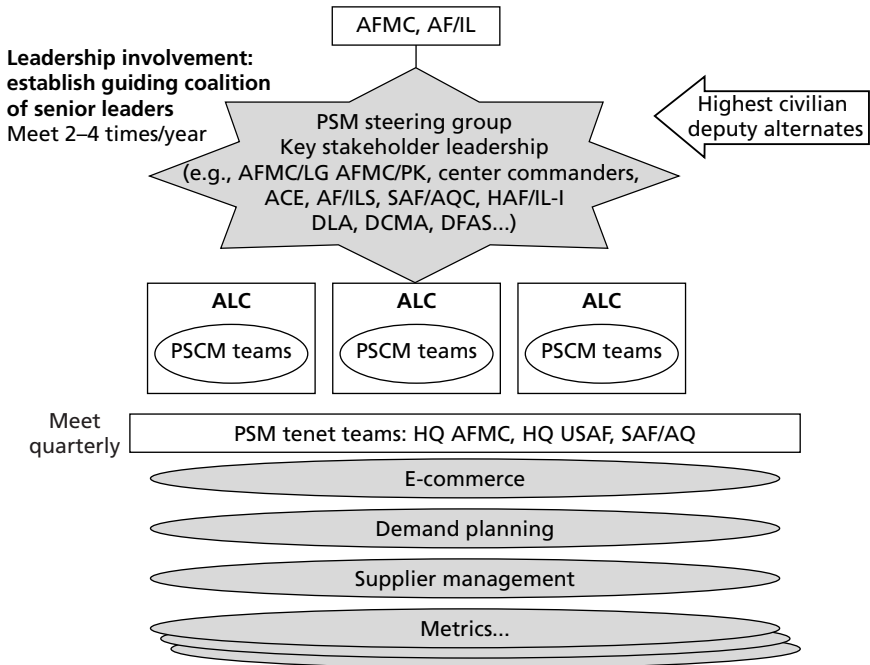
Establish Guiding Coalition

A guiding coalition such as a PSM steering group (see Figure 6.1) is also critical to change management. Developing a coalition team to ensure high-level commitment as well as a strong organizational structure is essential to change the Air Force’s complex logistics and purchasing processes. Such a coalition avoids reliance upon a single organization or individual to have adequate knowledge and control in decisionmaking. A guiding coalition is essential to radical transformation and encourages communication among the logistics centers, PSM process owners, and Hq AFMC, helping to ensure successful implementation across ALCs.⁵

⁴ Kerr (1995).

⁵ See Kotter (1995).

Figure 6.1
Sample PSM Steering Group



RAND MG116-AF-6.1

Core Competencies and Associated Organizational Positions

The Required Core Competencies

In general, the required workforce skills and competencies for a PSM organization will shift to more strategic leadership skills and grade levels will need to increase. This shift can also be thought of as a shift from low-skilled to best-skilled personnel. Examples of more strategic activities include detailed industry analysis, strategic supplier selection, contract design, and strategic supplier relationship management.

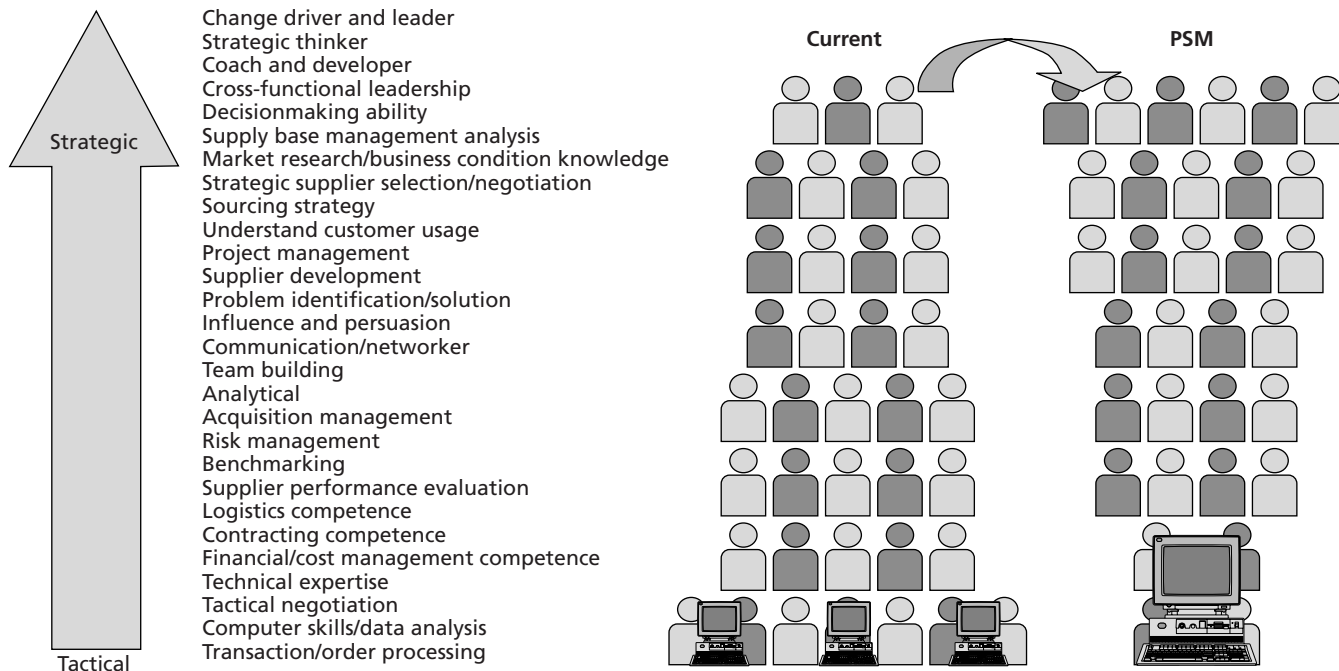
In addition, increased automation such as e-commerce, e-business, and fewer people focused on individual items will result in a reduced need for tactical and administrative skills. The following diagram⁶ illustrates the trend.

The skills listed in Figure 6.2 were selected after a review of the purchasing literature. The most commonly reported skills and competencies indicative of successful PSM implementation tend to repeat themselves. In particular, the basic framework of the skills was adapted from Scheuing (1999), who describes how a company, referred to as Biz Comm, successfully implemented PSM and developed key competencies for various levels within the organization. The company used a high-performance team concept and transformed from a tactical to a strategic approach. A competency development team including key members from the organization developed a list of skills (shown below) by visiting their counterparts in several other companies. They also met with academic professors, internal customers, and key suppliers. The following skills are highlighted as the most important:

- Benchmarking
- Change driver/leader
- Coaching and developing
- Cross-functional leadership
- Customer/supplier focus
- Job knowledge
- Problem-solving
- Project management

⁶ The pyramid in Figure 6.2 is less dramatic than that of many commercial organizations that have implemented PSM. This is because such Air Force organizations as OC-ALC already operate as integrated functional teams to a degree, use more automation, and employ pockets of initiatives requiring similar expertise. Nonetheless, PSM will still require a more radical competency shift and a higher level of analytic skills than existing or previous initiatives. The original diagram was adapted from Scheuing (1999), pp. 5–8.

Figure 6.2
PSM Organization—Proposed Skills and Competencies



SOURCE: The pyramid concept is adapted from Casbon (1999).

RAND MG116-AF-6.2

- Supply chain analysis
- Understanding of customer usage.

Scheuing (1999) builds a case for transformation of competencies and skills as well as the strategies and tactics to implement and metrics to measure them. “Because purchasers are knowledge workers, every organization—regardless of the sophistication of its systems and tools—is constrained by its talent mix. As purchasing has been transforming itself from a corporate backwater into a dynamic contributor to bottom-line performance, its leaders have long recognized the fact that they will need a dramatically different skill set in their staff members as they move forward.”⁷

Organizational Positions, Associated Skills, and Competencies

Figure 6.3 links organizational positions with corresponding skills and competencies. For each position, the proposed structure suggests grade levels to support the skill and competency requirements. The structure also identifies required and desired skills. Although the choice between required and desired is very subjective and one could offer differing opinions for making a choice, the objective of the matrix is to illustrate the dominance of requirements for the more strategic skills toward the leadership positions on the left side of the matrix, the tendency for less strategic (more tactical) skills toward the right side, and analytic skills across the board.⁸

⁷ See Scheuing (1999, p. 5).

⁸ In 1993, Edith Kelly-Green, FedEx’s chief sourcing officer, combined two parallel and separate reporting supply chain groups (aircraft parts and ground and indirect purchases). They reassessed skills and realized that they needed to become more strategic by recruiting people with strategic skills and training those (task-oriented people) already in place. “Of the 170 people now in supply chain management, more than 50% work at setting and implementing strategy for the organization.” Previously, 5–10 percent were performing strategic functions and producing 70–80 percent of the value. In addition, they plan even more shifting to strategic functions. One particular commodity that Kelly-Green has strategically sourced has been through the process twice now with cost savings in the 20 percent range each time (Avery, 2001).

Figure 6.3
PSCM Organization—Proposed Skills and Competencies by Position

Skill/Competency	PSCM	Sourcing leaders	Strategic materials manager	Demand planning	Technical advisor and QA advisor	Procurement advisor	Financial cost advisor	Administration
	Change driver and leader	R	R	R	R	R	R	R
Strategic thinker	R	R	R	R	R	R	R	
Coach and developer	R	R	R	D	D	D	D	
Cross-functional leadership	R	R		D		D	D	
Decisionmaking ability	R	R	R	R	R	R	R	
Supply base management analysis		R	R	R	D	D	D	
Market research/business condition knowledge		R	R	R	D	R	R	
Strategic supplier selection/negotiation		R	R			D		
Sourcing strategy	R	R	R	R		R		
Understand customer usage	D	R	R	R	R	D	D	
Project management	R	D		D				D
Supplier development		R	R	D	R			
Problem identification/solution	R	R	R	R	R	D	D	
Influence and persuasion	R	D	D	D	D	R	D	
Communication/networker	R	R	R	R	R	R	R	D
Team building	R	R	R	R	D	D	D	
Analytical		R	R	R	R	R	R	
Acquisition management	D	D		R				
Risk management	D	R	R	R	R	D	R	
Benchmarking	D	D	D	R	D	D	R	
Supplier performance evaluation		R	R	D	D	R	D	
Logistics competence	R	R	R	D				
Contracting competence	R	D	D			R		
Financial/cost management competence						D	R	
Technical (engineering) expertise		D	D	D	R			
Tactical negotiation		D				R		
Computer skills/data analysis			D		D		R	R
Transaction/order processing			R			D	D	R
Notional grade level ^a	GS-15/O-6	GS-14/O-5	GS-12/O-3	GS-13/O-4	GS-13	GS-14	GS-13	GS-6/7

^aAt least one sourcing manager should be military.

R=required D=desired

Position/Job Role Redesign

The level of detail required for position redesign is extensive and clearly warrants a project of its own. The organizational learning and development subteam of the F100 implementation team was beginning to pursue this task but did not have the resources to do more than a first cut. The following are major role changes between the proposed demonstration and Air Force-wide organizations.

PSCM Team Leader. The PSCM team leader in the demonstration team serves as a change agent and should ideally have PSM-specific experience, encompassing supply and procurement cross-training. Leadership skills are critical throughout the evolution process as well as in the Air Force-wide organization. As the Air Force-wide organization forms and matures, the PSM level elevates to the SCM level with additional purchasing responsibilities.

Procurement Advisor. The PA must take an integrating, overarching approach to the core PCO activities, rather than the execution activities that the sourcing teams can perform. The PA will design contracts at a higher, more strategic level, providing the contractual mechanisms to be executed by the sourcing teams. In the Air Force-wide organization, the PA will become a liaison to the Hq AFMC supplier management activity. The PA's involvement in the initial PSM activities such as strategic planning, requirements identification and generation, and sourcing strategy development will increase. Simultaneously, such activities as document preparation, transactions, and package monitoring will initially be performed by the buyer and will decrease as they continue to be automated. In the end state, these activities will evolve to e-procurement, which can be performed by the sourcing team.

Sourcing Managers. The sourcing managers will ideally have PSM-specific experience encompassing supply and procurement cross-training. The sourcing manager leads a sourcing team that will execute contractual actions using the contractual vehicles provided by the PA. This team must develop organic market industry research capability during the evolutionary phase and possess it as a core competency in the mature organization.

Strategic Materials Manager. Initially, the demonstration team materials manager will lead a “lean” team of item managers, equipment specialists, production management specialists, and engineers. The objective is to strategically manage items at a higher level than the item itself (e.g., by commodity group or weapon system/supplier), requiring a single, highly skilled individual rather than numerous lower-grade specialists. As the Air Force–wide organization evolves, the strategic materials manager will develop and employ streamlined, automated processes. This transformation is highly reliant upon successful implementation of PSM enablers such as training and development of personnel and implementation of e-business and e-commerce.

Statistical analysis shows that “World-class procurement organizations employ more professionals with analytical skills, utilize cross-functional teams more extensively and provide a greater amount of training. None of these techniques is traditionally associated with efficiency, yet these companies manage to operate their procurement organizations with 69% lower costs while delivering more value.”⁹

Where Will PSM Personnel for the Implementation Come From?

Not unlike change management experiences in commercial organizations, the Air Force must handle personnel transitions and determine a source for PSM personnel. Initially, the Air Force’s many skilled and competent personnel who already reside in purchasing and supply functions can be trained in best PSM practices. The PSM training and educational programs currently in development are key to shaping and growing the personnel from within. These programs can clearly provide PSM technical knowledge. The key will be to find and properly motivate employees whose “motivations” are aligned with the success of the team. As Pickering (2000) notes, employees who are actually part of the change will have accountability rather than “feel” accountable and be committed to the success of the program.

⁹ Research has shown that “Procurement executives’ experience with negotiation and contract management should make them among any company’s most valuable employees” (*Hackett Best Practices*, 2002, p. 6).

Moreover, employees who volunteer and realize that a great opportunity exists can be the most positive thinkers and become great assets to the program. In addition, with the looming retirement of a significant proportion of its acquisition and supply workforce, the Air Force has an opportunity to hire personnel with more analytic skills. To illustrate the importance of learning and motivation in a new organization, a case study that involves implementation of a new, difficult surgical procedure at different major medical centers demonstrates increased success when teams are created for learning purposes. “Teams that learned the new procedure most quickly shared three essential characteristics. They were designed for learning; their leaders framed the challenge in such a way that team members were highly motivated to learn; and the leaders’ behavior created an environment of psychological safety that fostered communication and innovation.”¹⁰

Where Will PSM Personnel for the Future Air Force–Wide Organization Come From?

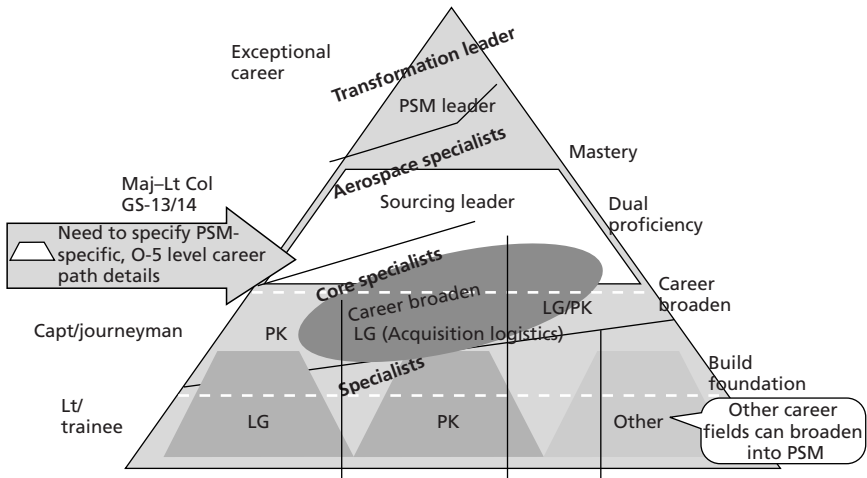
Consideration should certainly be given to the establishment of a PSM career field. To motivate the development of PSM expertise, a career path is necessary. A PSM-specific career path is also essential to guide and facilitate future career shaping in the direction of PSM. The establishment of such a career field will certainly send a message that PSM has a future in the Air Force.

Preliminary Design for a New PSM Career Field

The career pyramid illustrated in Figure 6.4 could be considered a preliminary design for such a new PSM career field.

¹⁰ Edmondson et al. (2001, p. 130).

Figure 6.4
Sample Preliminary PSM Career Pyramid



SOURCE: Adapted from Link (2001).

RAND MG116-AF-6.4

This pyramid is intentionally consistent with the Developing Aerospace Leaders (DAL)¹¹ notional pyramids. The entry level for the PSM career path is at O-5 or GS-14 and is accessible to multiple specialist fields. Alternative consideration should also be given to a captain/journeyman-level entry point. In either case, candidates could follow specialized and core career paths to the PSM entry level. (Refer to Appendix F for an example of the DAL environment and Appendix G for a pyramid to transformational leadership.) The concept is to allow individuals to build a foundation at the specialist level and gain career-broadening experience at the core specialist level before entering the PSM-specific career path. Note that the notional pyramid suggests that personnel from other career fields can broaden by crossing over to PSM. PSM courses should become part of the short

¹¹ The DAL program was created to evaluate and recommend actions necessary to prepare the Air Force's total force for leadership into the 21st century. It is an Air Force Chief of Staff initiative and focuses on understanding the leadership needs of the transforming aerospace force and designing a development process to ensure that airmen and women are prepared to serve in the complex future battlespace (Link, 2001).

course curriculum and the broadening opportunities can serve to achieve both logistics and contracting experience. The O-5 entry-level section of the pyramid requires tailoring to a specific PSM sourcing leader career path.

Conclusion

The Air Force has decided to adopt best PSM practices to better enable effective logistics support to the AEF. This report offers a concept for an organizational construct to support a demonstration of PSM in the Air Force. It also offers suggestions for a long-term end-state structure that would provide a more strategic focus on purchasing and supply activities, while ensuring that supplier relationships, supply chains, and supply base strategies focus on Air Force strategic goals.

We have suggested specific changes to the current alignment of functions associated with supply chain management and procurement. The key recommendations center on aligning Air Force purchasing functions at a level equivalent with supply management functions and creating organizational elements focused on managing a multitiered supplier network more strategically. Both of these actions are intended to leverage the Air Force's buying power with its suppliers and provide better insight into long-term logistics capacities and capabilities. Accomplishing the latter should have the effect of ensuring responsive and sustained support to warfighter requirements.

For the Air Force to create a PSM-focused organization such as the one proposed here, a major transformation must occur supported by leadership and a competent and aggressive change management program. The initial construct sets the first steps of implementation into motion, allowing the demonstration at OC-ALC and other ALCs to pave the way for successful Air Force-wide transformation.

The proposed changes will involve all current purchasing and supply chain management activities, current organizational construct, functional areas, and, most important, people.

Presentation and marketing of the PSM initiative are critical to implementation success. Many of the strengths and weaknesses that we identified in the organizational interviews have overlapping issues. Issues addressed as weaknesses in some interviews were identified as strengths in others. The perception that interviewees have of changes affecting them is a reflection of how senior leadership communicates the changes. When communicating a change in a positive light, the organization as a whole has a positive view of the change. Thus, perception and communication are important within an organization and are critical to longer-term success of the PSM initiative.

There are many obstacles and barriers to overcome before realizing the proposed Air Force-wide PSM organization. However, the prospective benefits of PSM to the Air Force suggest that it will be worth the effort.

Industry reports significant cost savings¹ (reduced costs of more than 15 percent over time).² The Air Force can also benefit from efficiency and effectiveness improvements; a specific challenge is that the Air Force is the only buyer for many goods and services and has only one supplier for them, causing it to pay for capacity. An additional challenge is the extensive variances in demand and complexity. The Air Force requires quantity and schedule flexibility uncommon to most industries and will likely realize some level of efficiency offset. Nevertheless, significant potential exists for improvements to Air Force efficiency and effectiveness in providing the right, high-quality parts when and where needed, while maintaining the flexibility to variation in requirements that is unique to the defense industry.

As with most strategic initiatives involving organizational change, time will tell whether the PSM implementation is beneficial to the Air Force. The success of the implementation is contingent

¹ See Moore et al. (2002), pp. 13–15, and Appendix E.

² Owens (1998).

upon several actions by the Air Force. For example, additional research on the expected benefits, follow-through with monitoring and tracking of PSM metrics, and use of the implementation demonstration results to make adjustments before an Air Force-wide implementation will all provide positive support to the PSM initiative.

What Is Different About PSM?

	From	To
Supply base management	<p>Large, churning supply base</p> <p>Diffused responsibility spread between engineers and contracting</p> <p>Primary concerns include mitigating vanishing vendors and maximizing competition for lowest prices</p>	<p>Smaller, more stable supply base</p> <p>Formal responsibility assigned to the sourcing lead</p> <p>Primary concerns include sustaining a healthy, high-quality supply base at lowest total cost</p>
IT & communications systems	<p>Batch, disconnected, ineffective, and inefficient</p>	<p>Real-time, integrated, effectively and efficiently shares long-term demand schedules, release dates, and actual demands with all members of the channel</p>
Material replenishment flow	<p>Discontinuous flow with significant storage at distribution points</p>	<p>Continuous with minimum storage at distribution points</p>
Supply chain management	<p>Functional stovepipes</p> <p>Supply chain manager directs item managers and fixes supply chain problems as they arise</p> <p>SCM conducted in parallel to sourcing</p>	<p>Integrated with both supply management and purchasing</p> <p>Supply chain manager works with SSM, weapon system managers, program managers, and directs sourcing leads</p> <p>SCM well integrated with sourcing</p>
Suppliers	<p>Many, arms length</p>	<p>Fewer, best source with lowest total cost of ownership, included in planning and design stage</p>

	From	To
Supplier management	<p>Informally assigned responsibility</p> <p>Many contracts with many contracting offices and Air Force/supplier focal points that dilute leverage and make supplier resistance to improvements easy to sustain</p> <p>Trust difficult to foster</p>	<p>Formally assigned responsibility</p> <p>Few, large contracts with a few contracting offices and Air Force/supplier focal points that increase leverage and make supplier resistance to improvements harder to sustain</p> <p>Trust is critical to both Air Force and supplier</p>
Goals and objectives	Operational at the item level	Strategic at the Air Force, weapon system, or major commodity level
Perceptions	Purchasing as a cost center	Supply management as a value center
Purchasing	Reactive, purchase order to purchase order, finds acceptable source, competitive bidding, legal documents	Proactive, finds the best source, open communication, trust, long-term relationships
Personnel , including production, engineering, purchasing, materials, and logistics	Talk to themselves	Really talk to each other
Inventory, supply, production, and transportation decisions	Analyzed independently with no tradeoff capability	Analyzed simultaneously to facilitate tradeoffs
Organizational structures, policies, procedures	Disjoint with functional stovepipes	Integrated, cross-functional, leverages information technology
Teams	Ad hoc, junior-level personnel	Permanent, middle-level personnel
Scope of contract	Often modest with fewer than 20 to 30 items; short-term	Substantial, often with hundreds of items; long-term
Critical skills	Firming up requirements	Adherence to FARs
Incremental improvements within familiar contracts	Processing requirement and contract with minimal participation of senior-level management	<p>Proactive discretion and analysis</p> <p>Interaction with other experts</p>

	From	To
Strategic sourcing	Developing new arrangements to address difficult problems; working on processes as much as contracts	Managing at a high level
Forecasting	Poor, inaccurate, and used for operations	Dramatically improved ability and accuracy; used primarily for planning, with operations based on real-time demand data

AFMC Supply Chain Managers

“AFMC Supply Chain Managers are defined as *the Senior O-6, GS-15 or Senior Executive (SES) who manage National Stock Numbers (NSNs).*”¹ At present, the Supply Chain Managers are the people in charge of the organizations listed in Table B.1 by ALC. They have responsibility for materiel management functions relating to assigned NSNs and include an infrastructure of people and resources with which to execute these duties.

The supply chain manager at each ALC has several fundamental duties. The five most basic functions of an SCM are described below.

Requirements Determination. Determining what is needed to provide responsive support for operating military forces in a basic function of logistics. For requirements to be properly identified, they must be stated in terms of quantity, quality, and time.

Cataloging, Standardization, and Engineering Data Management. Achieving and maintaining a single uniform cataloging system; the highest practicable standardization of items, materials, practices, procedures, and terminology; and managing the acquisition, reproduction, retrieval, storage, dissemination, and disposal of data.

Stock Control and Distribution. Maintaining inventory data on the quantity, location, and condition of supplies and equipment due-in, on-hand, and due-out to determine the quantities of materiel and equipment available or required for issue and to facilitate distribution

¹ AFMC/LGI (2002).

Table B.1
Supply Chain Manager Organizations

Oklahoma City Air Logistics Center	Ogden Air Logistics Center	Warren Robins Air Logistics Center
B-1 unique items	Mature and proven aircraft	C-5 unique items
E-3 unique items	F-16 unique items	C-130 unique items
B-2 unique items	ND numbers	Equipment and vehicles
Cruise missile unique items	C3I Integration Division	F-15 unique items
C/KC-135 unique items	Space Systems Support Division	C-141 unique items
B-52 unique items	Landing gear, wheels, brakes, struts, and weapons	Space and special systems unique items
Aircraft accessories	IM Systems Procurement Office	Electronic unique items
Aircraft propulsion	Munitions and tanks	Special Operations Forces unique items
	Trainers	Avionics unique items

and management of materiel. Distribution is the functional phase of military logistics that includes the act of dispensing materiel, facilities, and services. It also includes transportation, storage, and handling activities.

Technical Management Functions. Responsibilities involving maintainability, reliability, and modernization of equipment; service engineering, technical data, and product improvement.

Pricing. Responsibilities involving forecasting sales (revenues), estimating costs, developing operational rates (such as direct and indirect), evaluating prices for accuracy, and explaining pricing issues to customers.

In this framework, the supply chain manager reports to the ALC commander and is responsible for providing the capability to supply, repair, and manage materiel in support of AFMC single manager and other customers. Product directorates receive funding for such program-specific support as technical services, sustaining engineering, program-related travel, etc., through the respective SM. ²

² Hq AFMC/LGI (2002).

Purchasing and Supply Management Interview Format

Exploratory Interview: Organizational and Workforce Process, Structure, and Issues

The goal of this interview is to begin to better understand the various jobs and work processes of those who will be involved with or affected by the application of PSM to the ordering and purchasing of F100 jet engine components and component repair, including current PSM-related practices, knowledge and attitudes regarding PSM, and thoughts about the challenges and enablers for PSM implementation, given the current work organization and environment.

Interviewee Background

1. What is your functional background?
2. Special skills?
3. Where do you fit in your organizational structure? How many years have you been in your current position?

Current Work Process

1. From your perspective, can you describe the entire process for ordering/purchasing F100 jet engine components and component repair and explain to us where you fit into the process?

Probes

- a. Who is your customer? What are your responsibilities and objective in meeting your customer's needs?
 - b. Who are your key interfaces within the F100 ordering/purchasing process, and what is the purpose of each interface (i.e., informational, material, funds)?
 - c. Are there responsibility gaps in the process? Where, Why?
 - d. Are there specific areas that are problematic? Why (e.g., specific cycle time or cost drivers)?
 - e. Where are the strengths? Why (e.g., what helps you meet customer's needs)?
2. How could the F100 engine parts ordering process be improved?

Probes

- a. What doesn't work? Why?
- b. Are there any bottlenecks or disconnects in the process? If yes, what are they (people, skills, technical support, etc.)?
- c. What are the roadblocks, barriers?
- d. Do you have suggestions to eliminate any of these (a, b, or c)?

PSM Related Practice and Implementation

3. Are you familiar with Strategic Sourcing? [please specify—e.g., have heard of it, have received training, have used in work practice, etc.]
4. Are you familiar with PSM? [please specify—e.g., have heard of it, have received training, have used in work practice, etc.]
[If familiar with PSM, ask questions 5 and 6]

5. From what you know about PSM and plans for implementation, what do you think are the potential benefits?
6. What do you see as the barriers to implementation?

Work Environment/Organizational Issues

7. Are changes in work practices or major change initiatives, in general, clearly communicated to you in a timely fashion?

Probes

- a. Regarding the strategic sourcing initiative?
 - b. Regarding the PSM initiative?
 - c. Can you describe the methods of communication and information dissemination?
8. Do you feel you have adequate knowledge and obtain adequate training to work within these major initiatives?

Probes

- a. PSM specifically?
- b. Have you had any supply-management-related training (please describe)? Others in your unit?
For example:
 1. Benchmarking best practices
 2. Customer/supplier focus
 3. Problem-solving
 4. Supply chain analysis
 5. Understanding customer usage
- c. Can you describe your educational background and other types of training experiences you have obtained outside of your current job (strategic sourcing, PSM, supply-chain-related)?

9. Are you asked to participate in decisionmaking (for example, related to these major change initiatives) that affects you in your job?

Probes

- a. If you are asked to participate, do you? If not, why?
- b. In general, do you have sufficient authority to fulfill your job responsibilities?

10. How is your job performance measured?

Probes

- a. Is it tied to good outcome or contract performance?
- b. Who conducts your performance review (team, functional, etc.)?

11. If PSM is implemented as a system in your organization, what do you believe are the major:

- a. Strengths of your organization that would contribute to the implementation?

(What opportunities exist for successful implementation?)

- b. Weaknesses of your organization that would inhibit the implementation?

(What threats exist that could impede the success of the implementation?)

12. Is there anything else you can share or would like to add about the ordering/purchasing process or your work?

Interview Population Sample

Position Types	Function
Management	Program management
Team leaders	
Engineers	Engineering/technical
Section chiefs	Logistics
Program managers	
Production management specialists—spares	Logistics/specialist
Production management specialists	Logistics/specialist
Production management specialists—buy	Logistics/specialist
Inventory management specialists	Logistics/specialist
Equipment specialists	Engineering/technical
Funds and budget	Financial management
Resource advisors	Funds managers/administrators
Contract management	Contracting
Procurement officer	Contracting
Buyer	Contracting

Exploratory Interview Findings

Summarized below are our top-level interview findings excluding specific individual and position identifiers, in accordance with interview nonattribution agreements.¹ We include these findings to provide more details about the current structure, so that any team proceeding with an organizational change will have some insight to the current environment and hot issues.

Organizational Gaps and Barriers

Workforce feels strongly that they do not share common goals because of functional stove-piping

Performance Incentives

- Inconsistent ratings and incentives
 - Supervisor-specific
 - Misalignment appears to be an issue within logistics but not procurement

¹ Note that the gaps/needs discussed in this appendix relate to the current environment relative to the current processes *not* to the current environment relative to PSM. Not all needs identified by interviewees will necessarily be needs within the PSM construct.

- There is a perception that performance rating does not always reward good performance for fear of losing a good employee to promotion
- Some are rewarded for being part of a good team but not penalized for team's poor performance

Data/Information Needs

- More access to databases/information
- More training on understanding and using systems
- Well-timed and better training
- More hands-on training (for enhanced effectiveness)

Change Initiatives: Workforce Perception

- Too many (management) change initiatives with too little real change at the working level
 - Some view PSM as just another change (i.e., Integrated Weapon System Management (IWSM), JIT, Total Quality Management (TQM))
 - Perception that multiple, internal and external ongoing initiatives are in conflict (i.e., AFMC's strategic sourcing, Six Sigma, enterprise management, Depot Maintenance Re-engineering Team (DMRT), SAF/AQ initiatives, Air Force and procurement transformation, Spares Campaign)
 - New procurement transformation to business professionals—good, but
 - Increases the gap between personnel with different agendas/goals from the teams they support
 - Does not encourage strategic, early requirements generation involvement
- Recognize legal issues as barriers—50/50, small business, etc.

- Current source selection processes are not understood by some (i.e., some are not aware that they can select best value rather than lowest cost)

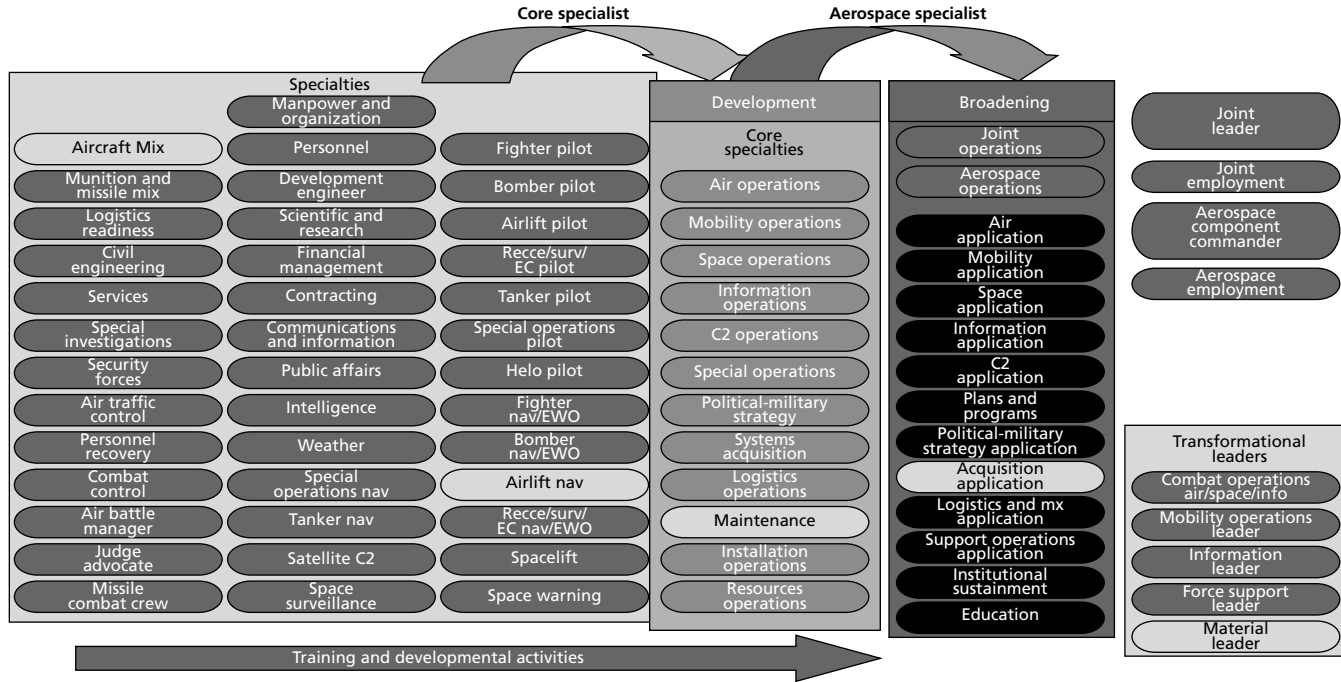
Strengths

- Senior leadership support—many members recognize this
- The experienced personnel chosen for the PSM demonstration are the “cream of the crop”
- Many employees like change and are risk-takers
- Other initiatives can serve as a head start to PSM (i.e., strategic sourcing, Six Sigma)
- Teamwork mentality—some employees take their own initiative to act as teams
- Staff are well-trained “firefighters”—could funnel this energy into a more strategic mode

APPENDIX F

DAL Developmental Example

Figure F.1
The DAL Environment—An Example

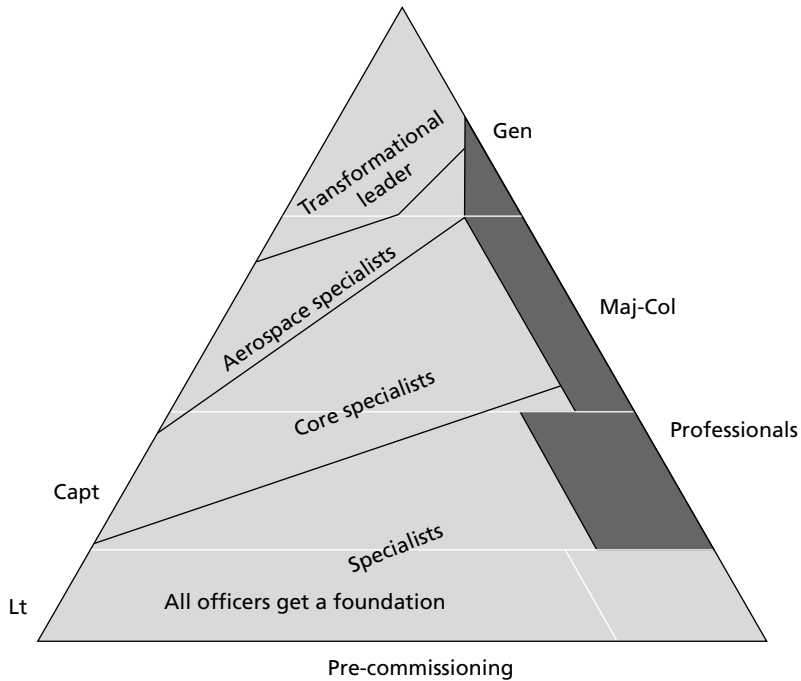


SOURCE: Link (2001).

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DAL Notional Career Pyramid

Figure G.1
DAL Environment Summary



SOURCE: Link (2001).

NOTE: Broadening is to provide knowledge and experience beyond an officer's initial specialty to promote a fuller understanding of the development, employment, and support of aerospace power, thereby increasing the officer's utility.

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