Future Acquisition and Technology Workforce

Final Report

by the
Section 912(c) Working Group
In support of the initiatives described in OSD's April 1998
Report to Congress

April 2000

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Executive Summary

Background and Problem Statement

Since the mid-1980s, the Department of Defense (DoD) has focused on increasing the professionalism of the acquisition workforce. These efforts have included, among other activities, the passage of the Defense Acquisition Workforce Improvement Act (DAWIA), the establishment of the Defense Acquisition University (DAU), expanded training opportunities through the DAU consortium schools, and the issuance of a Continuous Learning Policy.

The 1 April 1998 Secretary of Defense report to Congress, *Actions to Accelerate the Movement to the New Workforce Vision*, identified and described an urgent need to transition the workforce to meet the needs of a future acquisition environment. The Future Acquisition and Technology Workforce Working Group, and its product (this report), are the culmination of a series of studies conducted by the Office of the Secretary of Defense (OSD) and the components to support the initiatives described in the April 1998 report to Congress.

Tasking

The Director, Systems Acquisition was tasked to chair a Senior Steering Group and to establish a working group to describe the performance characteristics and training requirements of a future acquisition and technology workforce. The group was also directed to outline action plans and the requisite documentation, legislation, and other tools to support career paths for transitioning from today's workforce to the DoD acquisition and technology workforce of the 21st century. The Senior Steering Group and the Working Group membership included representatives from OSD staff, the military departments, and the defense agencies.

Methodology

The Working Group developed an analytical approach based on projecting a likely future acquisition and technology environment and deriving through an iterative process what the workforce will need to be, know, and do in that environment.

Step 1: Projecting the Future Acquisition and Technology Environment: The Working Group concluded that it was essential to first describe the future acquisition and technology environment before generally proposing what the future workforce would need to be, know, or do. Accordingly, the group examined numerous documents, including prior studies and reports, policies, and speeches. From this research, the Working Group derived an understanding of the future environment in which the workforce is likely to operate.

Step 2: Determining Future Acquisition and Technology Functions: Once the future acquisition and technology environment had been depicted, the next step was to determine what activities the workforce must perform to operate successfully in the future environment. These were called "functions."

Step 3: Determining Future Acquisition and Technology Workforce Competencies: The Working Group then determined the competencies that the workforce will need to perform the future functions and operate successfully in the future environment. Competencies were developed along two major lines: universal competencies, which are personal, organizational, leadership, or management competencies needed by all members of the workforce, and functional competencies for specific acquisition and technology career areas.

Step 4: Obtaining the Competencies: The final step of the project methodology involved suggesting appropriate sources for obtaining the competencies. The Working Group created a model of the various methods for obtaining the competencies and highlighted the benefits and limitations of each element of the model. They also made observations as to the usefulness of certain of these methods in helping to shape the workforce to meet the challenges of the future.

PRODUCTS

The following products were developed:

- **Acquisition and Technology Workforce Universal Competencies**: Beginning with the 27 Leadership competencies developed by the Office of Personnel Management (OPM) the Working Group evaluated the desirability of adding competencies from other private sector and governmental sources. They also considered the need to delete competencies from the OPM list because they were not pertinent to the future acquisition and technology workforce. They concluded that no additions or deletions were required. The Working Group then evaluated the relevance of the 27 competencies at the stages of a federal career. They concluded that while all of the competencies were applicable throughout a career, some were more pertinent than others at different career stages. These differences in emphasis have been indicated in the recommended list of acquisition and technology universal competencies.

- **Future Acquisition and Technology Workforce Functional Competencies:** The Working Group developed 435 detailed functional competencies for the acquisition and technology career areas. These competencies are a mix of new competencies as well as existing competencies where emphasis will change in the future. These competencies can be grouped into concept or theme clusters to indicate key areas of future focus.

- **Database of Future Functional Competencies:** All of the newly developed functional competencies have been entered into an interactive database that links the future trends with the future functions and, in-turn, with the future competencies. The interactive nature of this database will be very useful in follow-on implementation phase by the Functional Integrated Process Teams (FIPTs).

MAJOR RECOMMENDATIONS

This report recommends measures that will allow DoD to realize a vision of a future acquisition and technology workforce that will be smaller, highly talented and motivated, adaptable, knowledgeable of commercial business practices and information technology and able to operate in a dynamic, rapidly-changing environment. Recommendations were developed in three major categories, as follows:

Competencies:

- The Deputy Under Secretary of Defense (Acquisition Reform) (DUSD [AR]) and the Deputy Assistant Secretary of Defense for Civilian Personnel Policy (DASD [CPP]) should determine how universal competencies can be incorporated in acquisition and technology professional development programs, considering costs and competing demands on workforce.

- The FIPTs and the Overarching Acquisition Integrated Process Team (OAIPT), with oversight by a Senior Steering Group appointed by the Under Secretary of Defense (Acquisition, Technology and Logistics) (USD [AT&L])should:

  - compare the future functional competencies with current competencies being used by the DAU, the FIPTs and the Components to determine gaps, changes required in audience/emphasis, and current competencies that can be eliminated.

  - develop coordinated implementation plans and identify required funding.

Developing the Workforce

The DUSD (AR), in coordination with the DASD (CPP) should ensure that:

- a legislative proposal is prepared to extend the tuition assistance authority in DAWIA, which will otherwise expire in September 2001.

- the Defense Planning Guidance (DPG) directs the Components to adequately fund the Continuous Learning Policy and monitor compliance.

- all Components have active rotational/developmental assignment programs.

The DAU should expand its current Team Training offerings.

Hiring and Retirement

- The DUSD (AR) should ensure that the DPG directs Military Departments to increase funding for the Intern and Cooperative Education programs described in Sections 1742 and 1743 of DAWIA.

- The DUSD (AR) and the DASD (CPP) should develop policy, programmatic and legislative proposals to facilitate hiring, ensure new hires have the desired future competencies, and avoid precipitous loss of experience. Possible initiatives to be explored/staffed:
  - use of feeder universities;
  - make term employment more attractive, especially for mid-level, by allowing movement across government, industry and academia, without pension penalties;
  - expand the Intergovernmental Personnel Act (IPA) to include employees from the private industry sector;
  - explore 100% execution of civilian personnel programs and overhire authority; and
  - use of phased retirement to make additional full time equivalents (FTEs) available.

ACTION PLAN

The following actions should be initiated as soon as possible.

- The DUSD (AR) and the DASD (CPP) should begin the examination of the recommended hiring and retirement initiatives and develop implementation plans for those that are approved. They should also prepare proposals for statutory changes for submission in the earliest possible legislative cycle.
- The DUSD (AR) and the DASD (CPP) should determine strategy for incorporating universal competencies in acquisition and technology professional development programs and submit implementation plan by July 2000.
- The OAIPT and FIPTs should compare future functional competencies created in this study with current competencies, determine the required adjustments and prepare an implementation plan by July 2000. They should conduct a progress review with a senior steering group appointed by the USD (AT&L) as soon as possible and every 60 days thereafter until implementation is completed.

Contents

Section 1. Tasking and Methodology
(A). Requirements and Guidance 1-1

BACKGROUND 1-1

REQUIREMENTS FROM THE CHARTER 1-1

GUIDANCE 1-2

Section 1 (B). Approach 1-3

RESEARCH SOURCES 1-3

DEFINITIONS 1-3

Acquisition and Technology Workforce 1-3

The Acquisition Environment 1-3

Function 1-3

Competency 1-3

Potential Sources 1-4

FUNCTIONAL BOARDS & FUNCTIONAL INTEGRATED PROCESS TEAMS (FIPTs) 1-4

STUDY METHODOLOGY 1-5

Step 1: Projecting the Future Acquisition and Technology Environment 1-5

Step 2: Determining Future Acquisition and Technology Functions 1-6

Step 3: Determining Future Acquisition and Technology Workforce Competencies 1-6

Step 4: Obtaining the Competencies 1-6

OTHER PRODUCTS 1-7

Legislative, Regulatory or Policy Changes 1-7

Action Plan 1-7

Functional Competency Database 1-7

Section 2. Future Acquisition and Technology Environment and Global Trends 2-1

FUTURE ACQUISITION AND TECHNOLOGY ENVIRONMENT 2-1

FUTURE ACQUISITION AND TECHNOLOGY ENVIRONMENT GLOBAL TRENDS 2-3

Workforce Demographics 2-3

Workforce Focus 2-4

Impact of Leaner Budgets 2-4

Impact of Information Technology 2-4

Government-Industry Cooperation 2-4

Section 3. Future Acquisition and Technology Environment Functional Trends 3-1

A NEW APPROACH TO ACQUISITION 3-2

COMMERCIAL-MILITARY INTEGRATION 3-3

PRICED-BASED ACQUISITION 3-4

INTEGRATED , PAPERLESS ACQUISITION 3-5

RESEARCH, DEVELOPMENT , TEST AND EVALUATION 3-6

OPERATIONS AND SUPPORT 3-7

Section 4. Future Acquisition and Technology Functions 4-1

Section 5. Future Acquisition and Technology Workforce Competencies 5-1

Section 5 (A). Universal Competencies 5-3

METHODOLOGY FOR DEVELOPING UNIVERSAL COMPETENCIES 5-3

Step 1: Identify as a starting point, a widely accepted set of leadership and management competencies. 5-5

Step 2: Determine the relevance of competencies to future global acquisition future environment trends. 5-7

Step 3: Develop a proposed list of universal competencies for the future acquisition and technology workforce. 5-8

POLICY ON CONTINUOUS LEARNING FOR THE DEFENSE ACQUISITION WORKFORCE 5-12

THE LEADERSHIP EFFECTIVENESS INVENTORY (LEI) ASSESSMENT 5-14

OBSERVATIONS ON CURRENT LEADERSHIP TRAINING OFFERINGS 5-15

Section 5 (B). Functional Competencies 5-16

DEFINITION 5-16

IMPORTANCE 5-16

CAREER FIELDS CONSIDERED 5-17

Acquisition Functional Career Field 5-17

Other Workforce Areas 5-18

DERIVATION OF FUNCTIONAL COMPETENCIES 5-20

FUNCTIONAL COMPETENCY DATABASE 5-21

RESULTS OF ANALYSIS 5-22

Number of Competencies 5-22

Common Concepts Among Functional Competencies 5-24

Common Functional Competencies 5-28

Section 6. Summary of Findings for the Career Fields and the Sustainment Function 6-1

PROGRAM MANAGEMENT AND COMMUNICATION -COMPUTER SYSTEMS 6-1

SYSTEMS PLANS, RESEARCH, DEVELOPMENT, AND ENGINEERING (SPRD&E) 6-4

TEST AND EVALUATION 6-6

ACQUISITION LOGISTICS 6-8

MANUFACTURING, PRODUCTION, AND QUALITY ASSURANCE 6-10

CONTRACTING 6-12

BUSINESS, COST ESTIMATING, AND FINANCIAL MANAGEMENT (BCEFM) 6-13

INDUSTRIAL AND/OR CONTRACT PROPERTY MANAGEMENT 6-15

SUSTAINMENT 6-16

Section 7. Obtaining the Competencies 7-1

THE SOURCING MODEL 7-2

COMPETITIVELY SOURCE 7-3

Description 7-3

Analysis 7-4

HIRE 7-5
Description 7-5
Analysis 7-6
Other Legislative, Regulatory and Policy Barriers. 7-9
Need for a Coherent Plan of Force Management 7-9
DEVELOPING CURRENT EMPLOYEES 7-10
Education 7-10
Training 7-12
Experience 7-14

Section 8. Recommendations 8-1
RECOMMENDATIONS PERTAINING TO COMPETENCIES 8-1
Major Recommendations 8-1
Supporting Recommendations 8-2
RECOMMENDATIONS PERTAINING TO DEVELOPING THE WORKFORCE 8-3
Major Recommendations 8-3
Supporting Recommendations 8-4
RECOMMENDATIONS PERTAINING TO HIRING AND RETIREMENT 8-5
Major Recommendations 8-5
Supporting Recommendation 8-6

Section 9. Summary and Conclusions 9-1

Appendix A. Future Acquisition and Technology Workforce Working Group Charter

Appendix B. Future Acquisition and Technology Workforce Study Senior Steering Group

Appendix C. Future Acquisition and Technology Workforce Study Working Group

Appendix D. Research Sources

Appendix E. Methodology Flowchart

Appendix F. Global Future Acquisition Environment Trend Narrative

Appendix G. Functional Future Acquisition Environment Trend Narrative

Appendix H. Future Acquisition and Technology Functions

Appendix I. Future Acquisition and Technology Universal Competencies Matrix

Appendix J. Composite Database of Future Acquisition and Technology Functional Competencies

Appendix K. Career Field Narrative & Functional Competencies

- K1 - Program Management & Communications - Computer Systems
- K2 - Systems Planning, Research, Development and Engineering (SPRD&E)
- K3 - Test and Evaluation
- K4 - Acquisition Logistics
- K5 - Manufacturing, Production and Quality Assurance
- K6 - Contracting

K7 – Business, Cost Estimating, & Financial Management (BCEFM)

K8 – Industrial and/or Contract Property

K9 – Sustainment

Appendix L. Common Functional Competencies

Appendix M. Common Concepts Among Functional Competencies

Appendix N. Barriers to Achieving Workforce Competencies

Appendix O. Glossary

Section 1.Tasking and Methodology

A)Requirements and Guidance

BACKGROUND

Since the mid-1980s, the Department of Defense (DoD) has focused on increasing the professionalism of the acquisition workforce. These efforts have included, among other activities, the passage of the Defense Acquisition Workforce Improvement Act (DAWIA), the establishment of the Defense Acquisition University (DAU), expanded training opportunities through the DAU consortium schools, and the issuance of a Continuous Learning Policy.

The 1 April 1998 Secretary of Defense report to Congress, *Actions to Accelerate the Movement to the New Workforce Vision*, identified and described an urgent need to prepare the workforce to meet the needs of the future acquisition environment. The present report, produced by the Future Acquisition and Technology Workforce Working Group, is the culmination of a series of studies conducted by the Office of the Secretary of Defense (OSD) and the Components to support the initiatives described in the secretary's 1998 report to Congress.

REQUIREMENTS FROM THE CHARTER

OSD's Director, Systems Acquisition was tasked to chair a Senior Steering Group and to establish a Working Group to describe the performance characteristics and training requirements for a future acquisition and technology workforce. The Working Group was also directed to outline action plans and the requisite documentation, legislation, and other tools to support career paths for making the transition from today's workforce to the DoD acquisition and technology workforce of the 21st century. A copy of the Working Group's Charter is at Appendix A.

The Senior Steering Group and the Working Group membership included representatives from OSD staff, the Military Departments, and the Defense agencies. Names and agencies represented are at Appendixes B and C.

The Future Acquisition and Technology Workforce Working Group's Charter directed the group to accomplish the following specific tasks:

- Consider future acquisition and technology workforce issues and their implications.
- Assimilate projected changes in current acquisition and technology functions and processes to describe required future workforce functions.

- Identify "knowledge, skills, and abilities" required to accomplish future acquisition functions and the types of career development actions necessary to attain them.

- Identify personnel, manpower, and information management issues that affect the transition of the workforce and the legislative, regulatory, or policy changes needed to support the transition.

- Provide an annotated action plan (tasks, responsibilities, schedule, milestones, and remaining actions) for the professional development and force shaping of the future acquisition and technology workforce.

GUIDANCE

This document is the result of the research and deliberations of the Future Acquisition and Technology Workforce Working Group, guided and approved by the Senior Steering Group. As is indicated in the report, the Senior Steering Group did not alter the Charter's basic requirements, but they did direct the Working Group to expand their review and to examine universal leadership and management competencies as well as functional competencies.

Section 1 B)Approach

RESEARCH SOURCES

The members of the Working Group considered a number of key reports and other documents dealing with prior acquisition workforce research for their basic background reference. They were also given an expanded reference list for more in-depth preparation. The documents used as research sources are listed at Appendix D.

DEFINITIONS

The following definitions were adopted by the Working Group to provide a common basis of reference.

Acquisition and Technology Workforce

This workforce is made up of individuals who are members of occupations primarily concerned with acquisition, as well as individuals who are in occupations that are often, but not always, associated with the acquisition process~~if~~ they are assigned to an organization having a primary acquisition mission. Workforce members represent all aspects of the acquisition process from early research to initial design, development, contracting, and logistical support after system fielding.

Future Acquisition Environment

The future acquisition environment is what the acquisition and technology workforce faces in the future. It consists of global trends, which are primarily external influences affecting the environment, as well as specific reforms and initiatives whose implementation has been directed by DoD's leadership. The primary time frame used was 1999 to 2005.

Function

The term "function" denotes activities that the acquisition and technology workforce must perform because of future acquisition environment influences and specific trends.

Competency

The term "competency" refers to something that the acquisition and technology workforce either needs to know, or needs to know how to do, in order to carry out a specific function or operate effectively in the future environment.

FUNCTIONAL COMPETENCY

A functional competency is one specific to a career field or fields. It is needed to carry out the functions related to specific reforms and initiatives mandated by the acquisition and technology leadership.

UNIVERSAL COMPETENCY

Universal competencies are personal, organizational, leadership, or management competencies needed by all members of the workforce. These competencies help the workforce adjust to the global environment trends and carry out functional competencies.

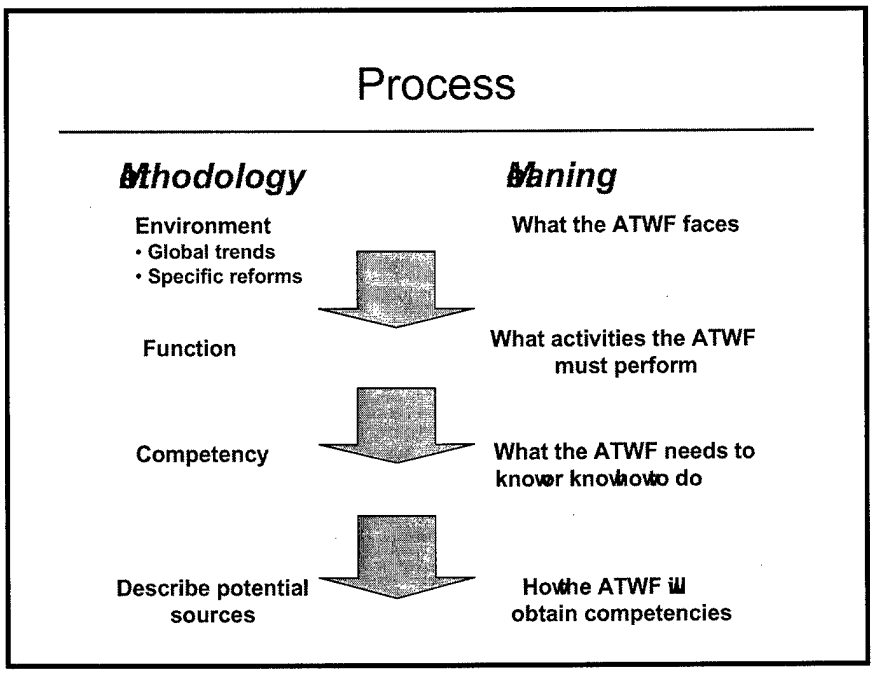
Potential Sources

Potential sources are the sources of education, training, and experience through which the acquisition and technology workforce (ATWF) can obtain required competencies.

FUNCTIONAL BOARDS & FUNCTIONAL INTEGRATED PROCESS TEAMS (FIPTS)

While this study was in progress, the new Functional Integrated Process Teams (FIPTs) structure was announced. In this report we will generally refer to FIPTs, except when we are referring to a prior role or action of the Functional Boards. It is our understanding that the FIPTs will, at least initially, use the same groupings that the functional boards use.

STUDY METHODOLOGY



To meet the Charter's objectives, the Working Group developed an analytical approach, approved by the Senior Steering Group, based on projecting a likely future acquisition and technology environment and then deriving through an iterative process what the workforce will need to be, know, and do in that environment. See Appendix E for a flow chart depicting this methodology.

Step 1: Projecting the Future Acquisition and Technology Environment

During the initial planning stages, the Working Group concluded that it was essential to first describe the future acquisition and technology environment before generally proposing what the future workforce would need to be, know, or do. Not only would this approach produce a future-oriented product, it would avoid deriving workforce competencies based on initiatives that the acquisition and technology leadership no longer felt to be appropriate or useful. Accordingly, the group examined numerous documents, including policies, studies, and speeches (see Appendix D). Following this analysis, the group worked to identify the trends that would influence the future acquisition environment.

These trends fell into two broad categories: global trends primarily external forces that will shape the future environment and specific reforms and initiatives that the acquisition and technology leadership has asked the workforce to implement so that the

workforce can operate more effectively in the future. From this research, the Working Group was able to derive the future environment in which the workforce will likely operate. This projected environment was presented to the Senior Steering Group, categorized as a series of trends, and was approved for continued use in the study.

Step 2 Determining the Acquisition and Technology Functions

Once the Senior Steering Group had approved the Working Group's vision of the future acquisition and technology environment, the next step was to examine each future acquisition environment trend dealing with reforms and initiatives. The group asked this question: Given this particular reform/initiative trend, what must be done what activities must the workforce perform to implement it. These activities that must be performed were called "functions," and the group developed function(s) for each reform or initiative trend. Functions were not derived for the global trends, given their more general nature. The functions served as a bridge connecting the future acquisition environment functional trends with the competencies needed by the future workforce to operate successfully in the future environment.

Step 3 Determining the Acquisition and Technology Workforce Competencies

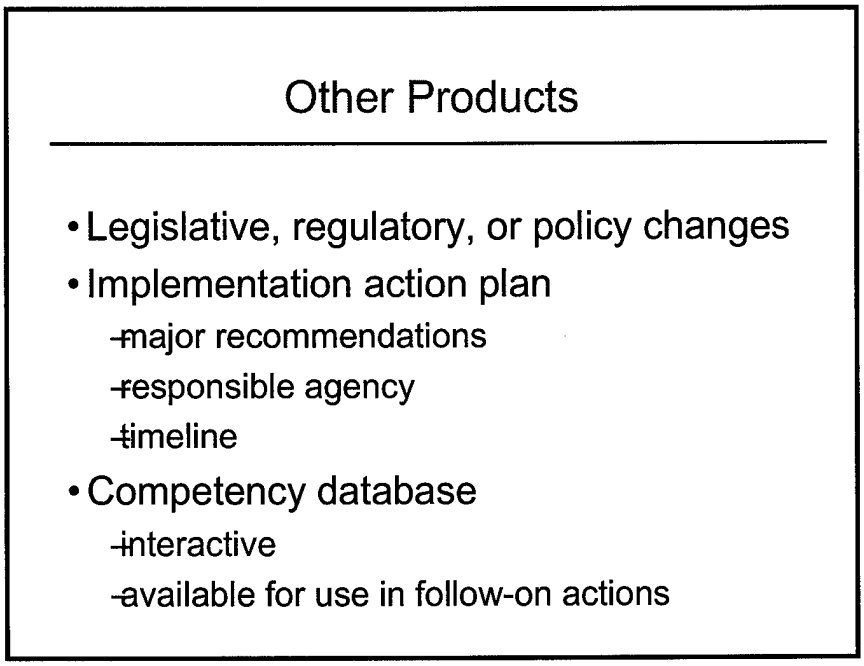
The next, and most important step, was to determine what the workforce would need to know or know how to do to perform specific functions and operate successfully in the future acquisition environment. It was agreed to call these sets of "knowledge, skills, and abilities" (in the language of the Charter) "competencies." Competencies were developed along two major lines: universal competencies and functional competencies, as defined previously. A Subgroup composed of Working Group members, augmented by personnel from the Office of the Deputy Assistant Secretary of Defense for Civilian Personnel Policy (DASD [CPP]), developed the universal competencies. A Working Group Subgroup composed of Working Group members, augmented by career field subject matter experts, developed the functional competencies for each DAWIA career field and each Sustainment workforce area.

Step 4 Training the Competencies

The final step of the project methodology involved suggesting appropriate sources for developing and training the competencies. The Working Group created a model of the various methods for obtaining the competencies and highlighted the benefits and limitations of each option offered by the model. The Group also commented on the usefulness of certain of these methods in helping to shape the future workforce to meet the challenges of the future.

OTHER PRODUCTS

Other products required by the Charter are listed below.



Legislative, Regulatory or Policy Changes

In the process of deriving the competencies and examining how to train for and develop them, the Working Group identified legislative, regulatory, policy, and other changes that are currently ongoing within the functional board agendas or, if adopted, would produce a better trained acquisition and technology workforce that would operate more effectively in the future. These changes are addressed later in the report.

Action Plan

As required by the Charter, the Working Group developed an action plan detailing the timeline for implementing major recommendations and specifying the responsible parties.

Functional Competency Database

All functional competencies developed were placed into an interactive database. The Working Group used that database extensively for trend analysis; it will also be available for use by the FIPTs personnel to help them in the implementation process.

Section 2.Future Acquisition and Technology Environment and Global Trends

FUTURE ACQUISITION AND TECHNOLOGY ENVIRONMENT

Describing the likely future acquisition and technology environment that the workforce will have to operate in was an important first step in determining the competencies required of that workforce.

Future A&T Environment

- Foundation step for deriving competencies
- The Working Group used its own expertise & research documents to determine the likely environment
- Projected trends out to 2005
- Two categories of trends: global & functional

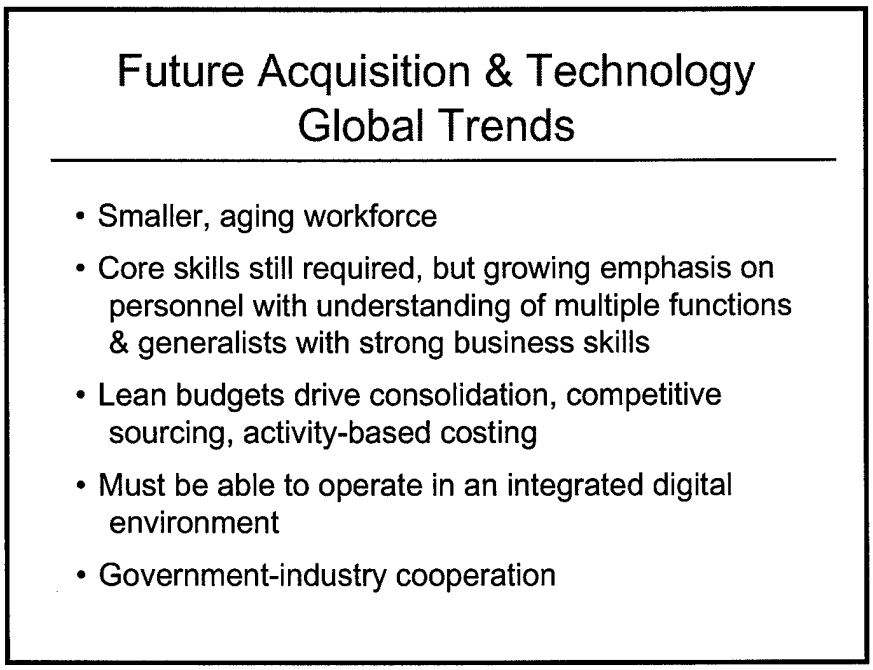
In addition to drawing on their own subject matter expertise, the Working Group members drew upon the research sources listed in Appendix D to derive the environment discussed in this section. The Senior Steering Group was briefed on this environment and accepted it for further use in the study.

It should be noted that the Working Group members used the year 2005 as a basis for their projections in order to visualize with some confidence the trends during the 2000–2005 period. Accordingly, the workforce competencies derived should be less speculative and more appropriate for committing the Department's resources for further implementation.

The Working Group concluded that the future environment will be a product of two types of trends: global trends and functional trends. The global trends affect all members of the workforce; they are primarily external forces that will shape the future environment. The functional trends are the specific reforms and initiatives that the acquisition and technology leadership has asked on the workforce to implement so that it will be able to operate more effectively in the future. The trends could affect one or more specific career fields. This section of the report discusses both types of trends in turn.

FUTURE ACQUISITION AND TECHNOLOGY ENVIRONMENT GLOBAL TRENDS

The future acquisition environment global trends are mainly external. They are forces and influences that are already starting to influence the workforce's operating environment and will continue to do so. The Working Group's conclusions about the global trends are discussed below.



In the first decade of the 21st century, we expect to see changes in the workforce's demographics and a continuation of changes in the way we work. The business of acquisition will rely more on technology and will continue to adopt best practices to develop and deliver products better, faster, and cheaper.

Workforce Demographics

The workforce will be smaller and older and will have fewer military members. With continuing constraints on the federal budget the workforce will continue to decrease in numbers. Estimates are that by the end of FY2004, the average civilian Defense acquisition worker will be 47.4 years old and that 18% of the workforce will be eligible to retire in that year. Between 1999 and 2005, as a result of separations and retirements, the job series that make the primary contribution to the acquisition process are projected to experience cumulative losses ranging from 35% to 50%.

Workforce Focus

Although DoD will continue to retain core expertise in acquisition, technology, and logistics skills, increased emphasis will be given to developing people who understand multiple functional areas and who can participate effectively on integrated product teams. While there will be exceptions in some functional areas, there will be an increasing demand for generalists with a broad range of business skills to support consolidation, competitive sourcing, and emphasis on services instead of on products.

Impact of Leaner Budgets

The cumulative effect of lean Defense budgets will drive a continuation of the Department's efforts to ensure that available budget dollars field the most effective possible warfighting force. Decreasing the amount spent on the infrastructure of the acquisition, technology, and sustainment base will be decisive to these efforts. Belt tightening will result in further consolidation within the Department and will lead to greatly increased competitive sourcing of operations and functions. Operating in an integrated digital environment will become necessary. The development process from the pre-milestone 0 stage, through the follow-on stages of acquisition, will be increasingly streamlined and integrated. Full transfer of costs to using activities will be achieved by using activity-based costing.

Impact of Information Technology

The use of information technology has been crucial in achieving the dramatic growth in American productivity in recent years. A high competency in information technology, and an ability to work in an integrated digital environment, will be required. Rapid communication and data availability will allow organizations to have a geographically dispersed virtual office. In fact, information technology is now considered the prime driver of the U.S. economy. This situation is projected to continue. The increase in the availability of data will require a knowledge management infrastructure to organize and transfer information in meaningful ways. Learning organizations that adopt best practices will be critical. Consequently, the acquisition workforce will increasingly be defined as a team of developers, buyers, testers, and users enabled by a system of knowledge management, continuous education, and instant communication.

Government/Industry Cooperation

The use of partnerships with industry to collaborate on research and development (R&D) projects will grow. So will the utilization of competitive public-private partnerships, as well as commercial practices. The acquisition leadership will continue to promote the concept of increased personnel mobility between government and industry.

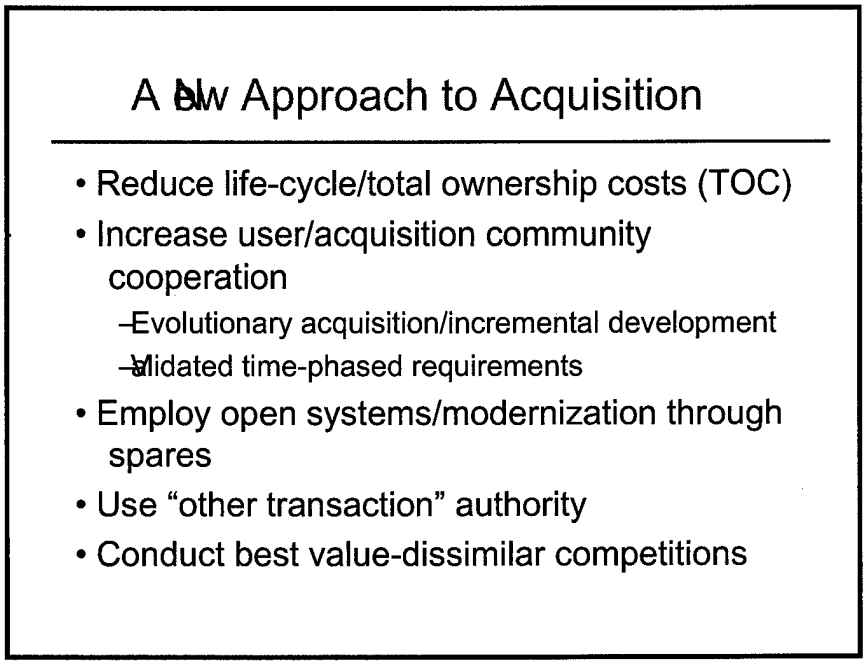
Appendix F describes the future acquisition global environment trends in greater detail.

Section 3.Future Acquisition and Technology Environment Functional Trends

As previously noted, the future acquisition and technology environment functional trends are the specific reforms and initiatives that the acquisition and technology leadership has called on the workforce to implement. Each has impact on one or more specific career fields. The headings under which the trends are discussed are the same as those that were employed in the research sources that the Working Group used; they represent simply an organizing tool, not definitive categories. The focus should be on the individual trends themselves. Appendix G describes these functional future acquisition environment trends in greater detail.

A NEW APPROACH TO ACQUISITION

This category was used to capture those reforms and initiatives not directly related to more specific areas. Some of these trends have been under way for several years; others have emerged more recently.



The Department will place increased emphasis on cutting life-cycle/total ownership costs. Evolutionary acquisition is an acquisition strategy that fields a core capability, with a modular open structure and provides for additional future increments in capability upgrades. Time phased requirements support evolutionary acquisition in phases by allowing systems to be delivered to the field in increasing increments of capability. The future (follow on) increments are developed as blocks or models by the acquisition community as requirements are refined by the warfighter's increased understanding of the delivered capability, the evolving threat, and available technology. Technology refreshment of systems (modernization through spares) will occur, with increased use of open architecture and modular designs allowing insertion of newer technology into legacy systems. Other transactions represent a potentially successful way to do business with those firms, often at the leading edge of technology, who have traditionally not done business with the DoD. Finally, emphasis on performance-based contracting will provide more opportunities for contractors to introduce cost effective-changes and to increase profits through innovation.

COMMERCIAL-MILITARY INTEGRATION

Commercial-military integration, holds the promise of greater competition and reduced costs.

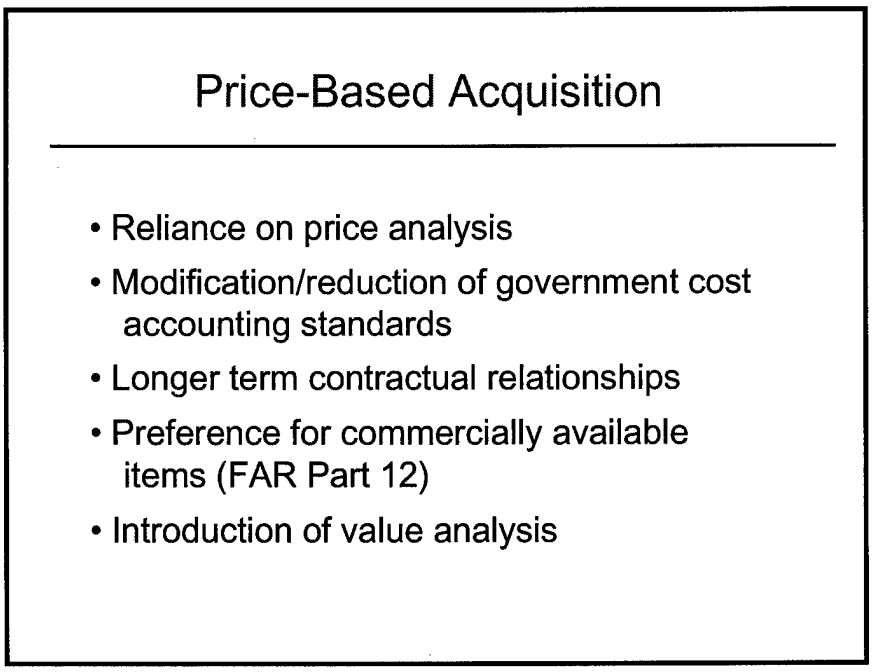
Commercial-Military Integration

- Integration of contractor commercial & military operations & increased commercial content of business base
- Reliance on common commercial technology
- Single-process initiative (SPI)
- MILSPEC reform extended to re-procurements
- Flexible, lean manufacturing

The new emphasis on commercial-military integration will increase the number of commercial firms doing business with DoD. Also, it will lead Defense firms to expand the commercial content of their business base and to integrate their operations so as to be more commercial. There will be greater use of common business practices as the Department makes the transition to a performance-based business environment. Single process initiatives (SPIs) will continue to expand the use of best common practices throughout facilities, companies, and corporations to include suppliers in the supply chain. Flexible manufacturing (economic manufacture of varying size and types) will allow the mix of products on common production lines and make suppliers more able to be responsive to their customers by producing cost-effective runs with as little as one unit. MILSPEC/MILSTD reform will be extended to re-procurements.

PRICED BASED ACQUISITION

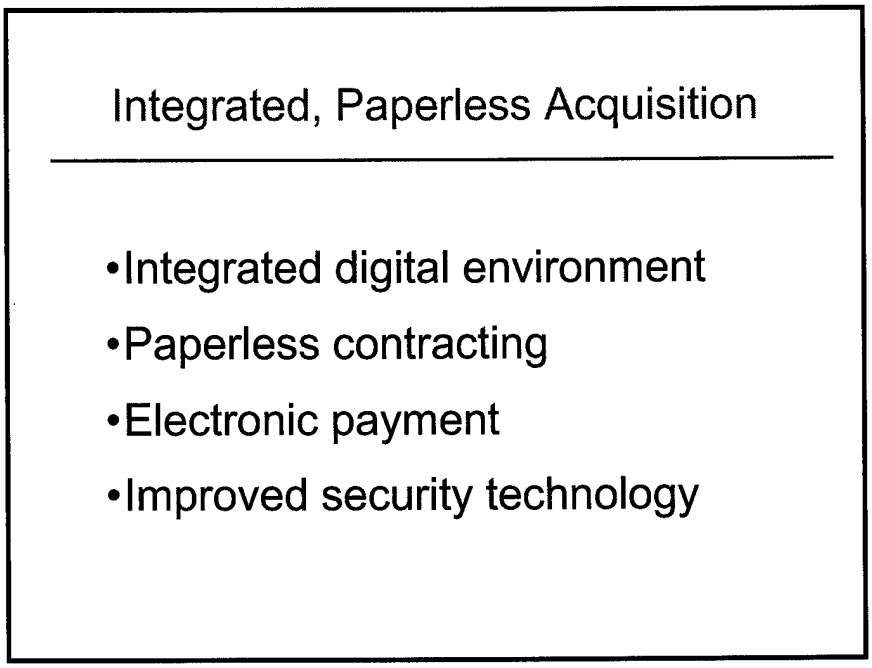
While no single definition of price-based acquisition has been universally adopted, the concept clearly calls for relying on price analysis as opposed to cost analysis in many future procurements. It is recognized that it will still be necessary to award cost type contracts in the future and rely on cost analysis. Therefore, the workforce will have to be conversant in both types of contracts and analysis techniques.



To facilitate price-based acquisition, we can expect that the government will revise its cost accounting standards to remove some barriers to doing business with the government and to reduce the cost of doing such business. There will be longer term contractual relationships to improve productivity and efficiency. Reliance on price analysis rather than cost analysis will overcome one of the principal obstacles to doing business with the government and will lower the government's and the contractor's administrative expenses. Use of FAR Part 12 acquisitions will be maximized in order to take advantage of the availability of commercial items and of the faster delivery times and price reductions enabled by use of commercial practices. Value analysis, which establishes a value for a set of activities to achieve a goal or acquire a product, will emerge as a form of price analysis to be used independently of or in conjunction with other price analysis techniques.

INTEGRATED, PAPERLESS ACQUISITION

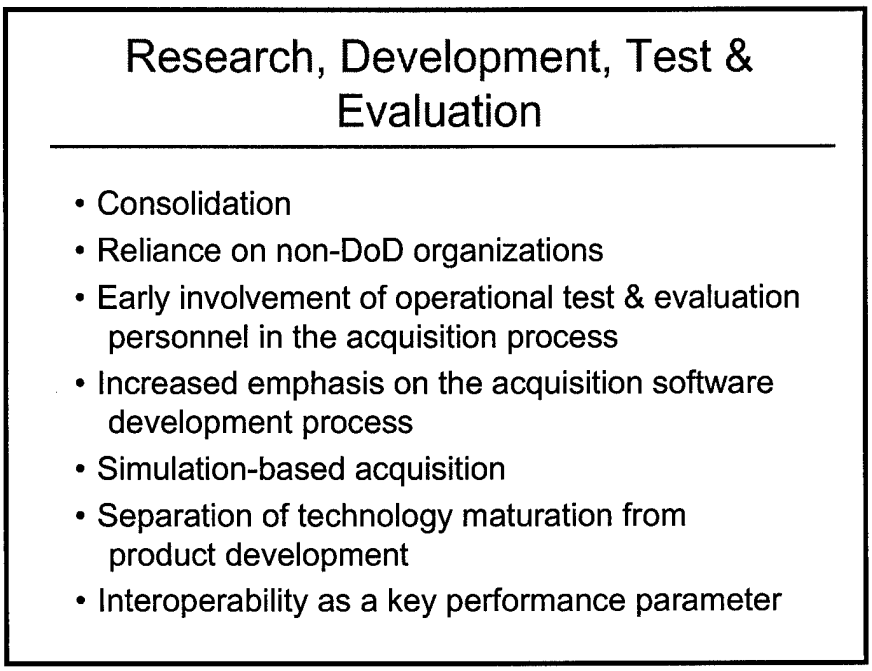
Most acquisition and logistics operations will increasingly be based on digital methodologies and products because of the move to integrated, paperless acquisition.



Simplifying the integrated digital environment will align DoD with the commercial practice of a standard reference identification number system. The trend to paperless contracting will accelerate. Technology improvements in security will allow increased access to data while protecting classified and proprietary information.

RESEARCH, DEVELOPMENT, TEST AND EVALUATION

This area will be highlighted by the rationalization of capabilities among the Services, other federal agencies, and industry.



Organizations will be consolidated into centers of excellence with lead-Service/supporting-Service relationships based on technology expertise and capabilities. DoD will increasingly rely on non-DoD organizations for cooperative R&D activities while ensuring a retention of in-house expertise in order to remain a "smart acquirer." Earlier involvement of the operational test and evaluation community in the acquisition process will help in making early design and trade-off decisions. Greater use of simulation-based acquisition (modeling and simulation) will be made as appropriate throughout the entire systems acquisition process to reduce the total cost of ownership. Only mature technology will be used during product development, to limit cost and schedule impacts. Both domestic and international programs will emphasize interoperability as a key performance parameter. There will also be an increased emphasis on acquisition software development and performance to reduce the time and cost of systems integration and testing.

OPERATIONS AND SUPPORT

Operations and support is an area that profoundly influences TOC. It will be affected by a number of initiatives to maintain the progress already made in reducing expenses.

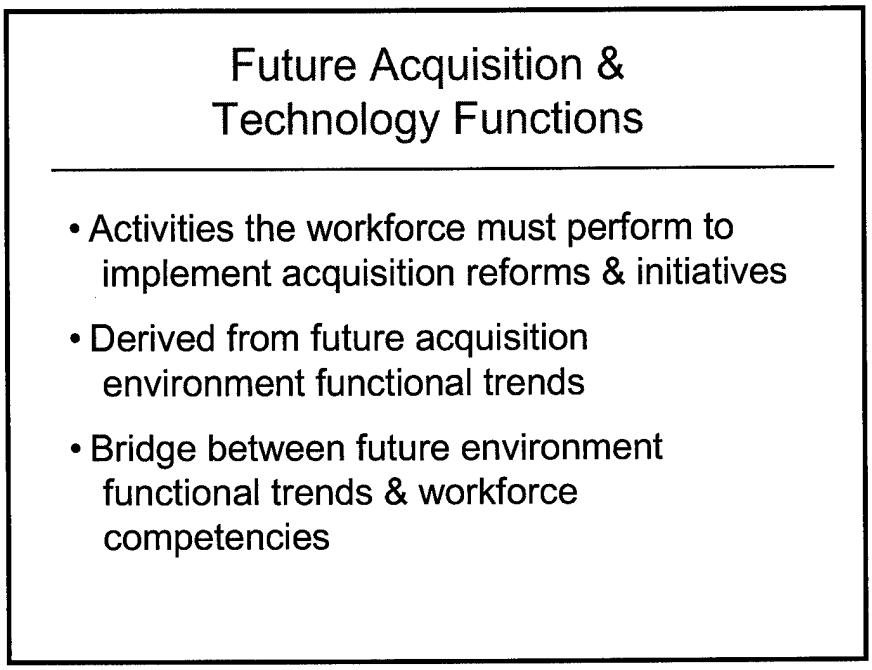
Operations & Support

- Consolidation & competitive sourcing of logistics & base operations infrastructure
- Reengineering to use best practices
  - –prime vendor/virtual prime vendor
  - –direct vendor delivery & time-definite delivery
- Expanded contractor logistics support
- Supply chain management
- Electronic commerce
- Increased program management influence to reduce TOC

Responsibility for managing repair parts and commodities will be consolidated in joint activities or lead Services. The product support process will continue to be reengineered to utilize best practices~~inc~~luding supply chain management~~to~~ integrate the components of the logistics chain so as to focus on enhanced product delivery to the customer. DoD will increasingly use prime vendor/virtual prime vendor as we move to managing suppliers, not supplies. Maintenance, supply, and transportation will increasingly be competitively sourced as will the disposal of military equipment. There will be an increase in direct shipment of products to the user as well as an increase in vendor-managed inventory. Efforts to reduce TOC will include giving the program manager more responsibility for and funding control over the post-delivery phase of the life cycle. Growing use of electronic commerce and other information technology will enable reduction in intermediate inventory layers and give the user better visibility of an order. More use of competitive sourcing of services will allow significant savings by providing support on a regional basis and through contracting out to industry.

Section 4.Future Acquisition and Technology Functions

~~H~~aving described the likely future acquisition and technology environment~~w~~hat the workforce will face~~the~~ Working Group turned to the second step of the study methodology: determining the future workforce's functions.



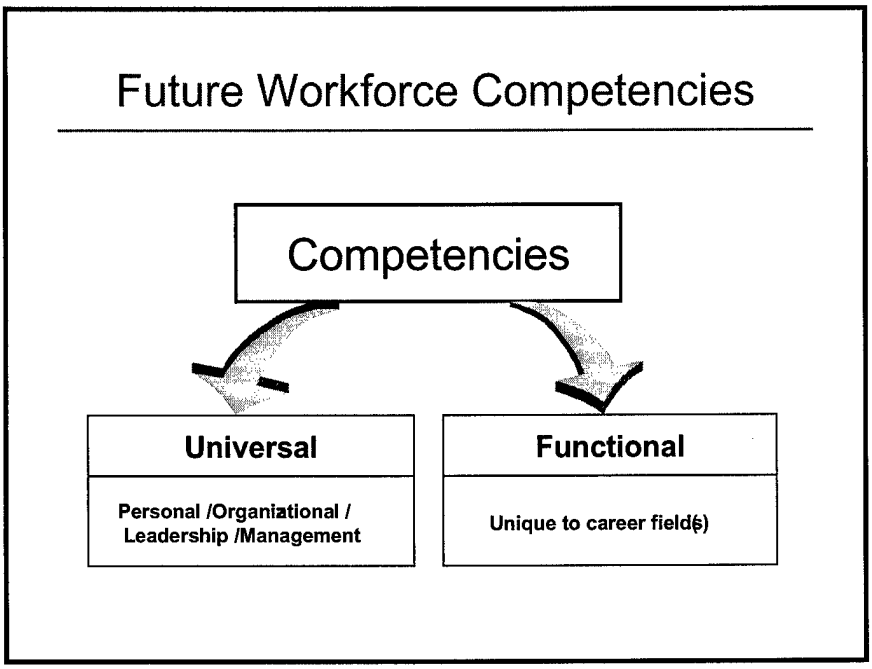
The functions are the activities the workforce must perform in the future. They were derived by analyzing each of the future acquisition and technology environment functional trends. These future workforce functions are important for two reasons:

- They represent the specific activities that the future workforce must perform to implement the reforms and initiatives approved by the acquisition and technology leadership.
- They serve as the essential mechanism for determining the competencies the future workforce will need to possess in order to accomplish the future functions and to operate successfully in the future acquisition and technology environment.

Accordingly, the Working Group developed one or more functions for each future acquisition and technology functional trend. Appendix H lists the functions and the future acquisition and technology environment functional trends from which they were derived.

Section 5 Future Acquisition and Technology Workforce Competencies

This portion of the report discusses Step 3 in the overall study methodology, "Determining Future Acquisition and Technology Workforce Competencies."



As has been described in the preceding sections, the future business environment will be dynamic, uncertain, and global. Emerging acquisition functions will demand a workforce with broader acquisition and business knowledge, skills, and abilities. The acquisition workforce of the future must possess both functional and organizational competencies, at all levels of the workforce, to perform effectively.

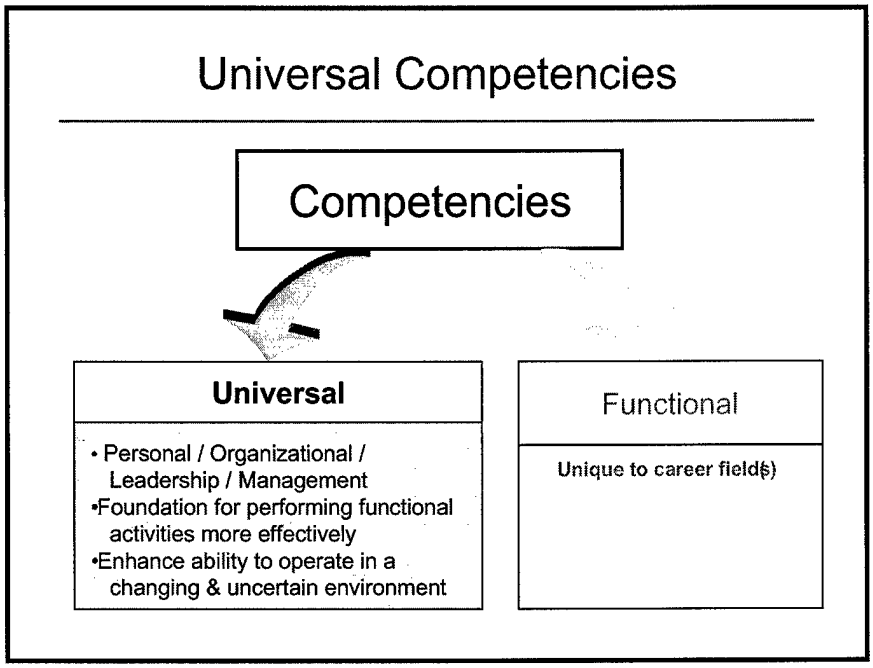
The Working Group defined competencies as "something that the acquisition and technology workforce either needs to know or needs to know how to do." The Senior Steering Group made it clear that the Working Group was to also address the need for a better balance between organizational~~what~~ we call "universal," competencies and functional competencies.

Universal competencies encompass personal, organizational, leadership, and managerial competencies. They are required by all members of the acquisition and technology workforce to respond quickly to the global environmental trends and effectively apply the functional competencies.

Functional competencies are those that pertain specifically to acquisition; they are unique to a particular career field, functional area, or group of career fields/areas. They are needed to carry out the reforms/initiatives mandated by the acquisition and technology leadership. The following sections discuss the universal competencies, followed by a discussion of functional competencies.

Section 5(A) Universal Competencies

This section identifies the universal competencies and tells how they should be addressed at the entry, journey, and senior levels.



Universal competencies provide a foundation for effective performance of functional activities at all levels of a workforce member's career, from entry to exit. As has already been discussed, the most certain thing about the future environment is that it will be substantially different from today's. Ensuring that adequate attention is given to developing the universal competencies will enhance the workforce's flexibility and its capability to operate in this changing and uncertain environment.

METHODOLOGY FOR DEVELOPING UNIVERSAL COMPETENCIES

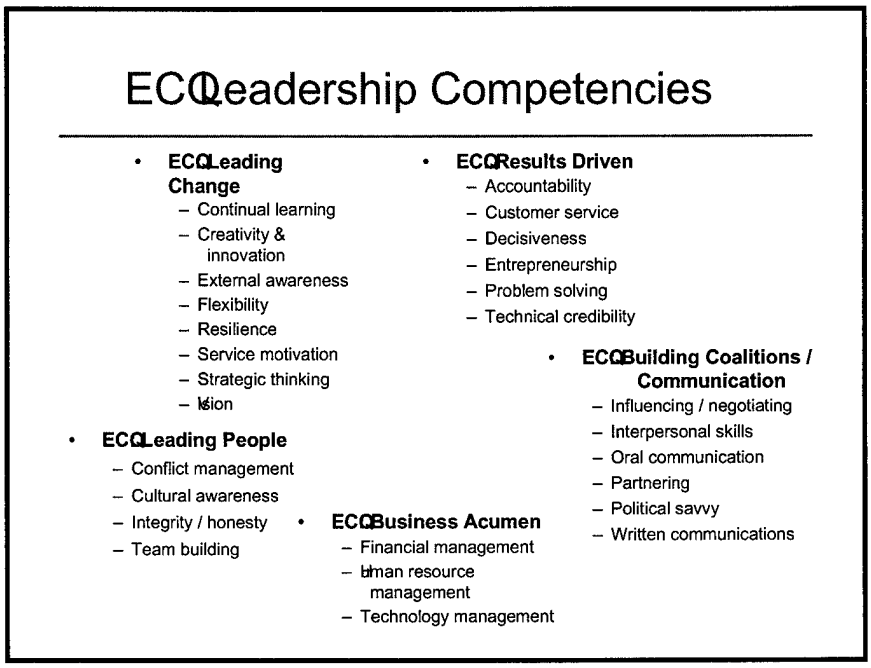
The Senior Steering Group tasked the Working Group to develop a set of universal competencies for the acquisition and technology workforce. To do this, a subgroup was formed with representatives from the office of the DASD (CPP) and from each of the Component Defense Acquisition Career Management (DACM) offices. This subgroup was designated as the Universal Competencies Subgroup. It often worked independently from the full Working Group, but it presented its findings and recommendations to the full Working Group for approval as they were developed.

The Universal Competencies Subgroup used the following methodology:

- Step 1: Identify, as a starting point, a widely recognized and accepted set of leadership and management competencies.
- Step 2: Determine their relevance to the global acquisition trends previously identified.
- Step 3: Develop a proposed list of universal competencies for the workforce.

Step 1: Identify as a starting point, a widely accepted set of leadership and management competencies

As suggested by the Senior Steering Group, the Subgroup began with the 27 underlying leadership competencies that support the five Executive Core Qualifications (ECQs) identified and validated by the Office of Personnel Management (OPM) for the federal civilian workforce.



There are several sound arguments for starting with these competencies. The ECQs were developed with change management in mind. As described by OPM, they are *"an approach to governance that provides a continuing vehicle for change within the Federal Government."* They are current (last updated in September 1997) and are recognized and used throughout the federal government. In addition, because OPM involved private-sector executives in their development, they benefit from an important private-sector perspective.

Within DoD and its Components, the 27 leadership competencies are employed in the screening and selection of applicants for the Defense Leadership and Management Program (DLAMP). They were also used in the notional guides for each of the acquisition career fields contained in the Continuous Learning Policy issued by the Under Secretary of Defense (Acquisition, Technology, and Logistics) (USD [AT&L]) in December 1998. Throughout the federal government, the ECQs and their underlying competencies are used by the independent Qualifications Review Boards in certifying Senior Executive Service (SES) appointees.

On the basis of the above considerations, the Working Group concluded that the ECQ leadership competencies formed an excellent departure point for developing the universal competencies for the future acquisition and technology workforce. This finding was briefed to the Senior Steering Group who also accepted that finding.

Step 2: Determine the relevance of ECQ competencies to future global acquisition future environment trends

The next step was to ensure that these 27 competencies were relevant to the future global acquisition future environment trends developed by the Working Group and approved by the Senior Steering Group.

Relevance of Competencies

- Comparison of the global future acquisition & technology future trends with the 27 ECQ competencies
- Comparison conducted by representatives from each Component DACM office & the office of DASD/CPP
- Very high correlation established
- Conclusion: ECQ competencies are highly relevant to the future acquisition & technology environment

This evaluation compared each global acquisition future environment trend with each of the 27 ECQ competencies to determine whether any correlation or relevance existed between the two. Initially, the DACM and CPP representatives independently evaluated the correlation of each interaction between the global acquisition trends and the ECQ competencies (e.g., the correlation of "cross-functional teaming" [a global trend] with competencies such as "partnering," "teaming," "interpersonal skills," etc.).

These independent evaluations resulted in correlation rates ranging from 85% to 97%. Following them, a group discussion and evaluation of all decisions was conducted. After discussing the reasons for establishing a correlation (or lack thereof), the Subgroup evaluated all interactions a second time. That final evaluation established a nearly 100% correlation between the global acquisition future environment trends and the 27 ECQ competencies.

Step 3: Develop a proposed list of universal competencies for the future acquisition and technology workforce

Having established that the 27 ECQ leadership competencies constituted a valid and relevant starting point for developing universal competencies for the acquisition and technology workforce, the Subgroup moved to the final step in the methodology.

Developing Acquisition & Technology Workforce Universal Competencies

- Determine whether competencies should be added to or deleted from the ECQ leadership competencies, by examining
  - –corporate university competencies
  - –other federal agency institutes' competencies
  - –OPM information technology competencies
- Determine whether these are "competencies" or "traits"
- Structuring by career levels
- Conclusion:
  - –none to be added or dropped
  - –five competencies can be classified as "traits"

In this step, the members of the Universal Competencies Subgroup first examined other sources of workforce competencies to determine whether others should be added. Conversely, they also used this examination process to determine whether some of the 27 competencies could be eliminated.

The Working Group received information on competencies used by private-sector corporate universities (e.g., Motorola University and GE's Management Development Institute), federal government institutes (e.g., the Treasury Acquisition Institute and the Federal Aviation Administration Center for Management Development). The Group also examined the list of over 40 competencies developed by OPM for specific information-technology-related occupations. Another review looked at competencies being developed by the Army's DACM office. These turned out to be the same as the 27 ECQ competencies.

The Working Group concluded from this review that no competencies needed to be added to the initial list. In all cases, the Group determined that the competencies being examined for potential addition were either already accommodated in the initial list or were not applicable to the acquisition and technology workforce. For example, the OPM

information technology list included competencies that were technical in nature and determined to belong on the functional side.

The Working Group also concluded that there were no competencies on the initial list that it wanted to delete. All were considered appropriate and important to the successful functioning of the future workforce. In addition, there was concern that deleting competencies from a list that is widely used both within DoD and throughout the federal government could mislead or confuse workforce members. For example, if five competencies were removed from the OPM-approved list of 27, workforce members might conclude that they were no longer applicable to any aspect of their careers. Subsequently, some might seek participation in the DLAMP program or compete for SES positions, only to find out that they had not been developing all of the desired competencies. There is a danger that neither the supervisor's activities nor the individual's own development initiative would be properly focused on the full spectrum of required competencies.

COMPETENCIES VERSUS TRAITS

The Senior Steering Group asked the Working Group to address the issue of whether all the "competencies" were actually "competencies" and not "traits." The Working Group examined all 27 competencies and decided that five were more appropriately characterized as "traits."

The following definitions can be found in the *American Heritage Dictionary* :

competence: (a) The state or quality of being adequately or well qualified; ability.
(b) A specific range of skill, knowledge, or ability.

trait: A distinguishing feature, as of a person's character.

To these definitions, the Working Group added the following consideration to identifying "traits": traits are often hard to gain through formal training and difficult to measure (except perhaps by their absence). Traits are often inculcated through the character of the organization or institution. That is, if the organization demonstrates that it values and rewards certain traits~~for~~ example, integrity and honesty~~the~~ workforce will tend to demonstrate those traits.

With these definitions and the added criterion, the Working Group concluded that "flexibility," "decisiveness," "resilience," "integrity and honesty," and "creativity and innovation" should be categorized as traits. Nevertheless, because these traits are extremely important to the successful performance of the acquisition and technology workforce, the Working Group concluded that they should not be deleted from the list of universal competencies (and traits) desired in the future workforce.

In the remainder of this report, we will use the term "universal competencies" to indicate both competencies and traits.

STRUCTURING UNIVERSAL COMPETENCIES BY CAREER LEVEL

The Universal Competencies Subgroup also examined the desirability of structuring the universal competencies by career level. The Acquisition Career Program assigns the

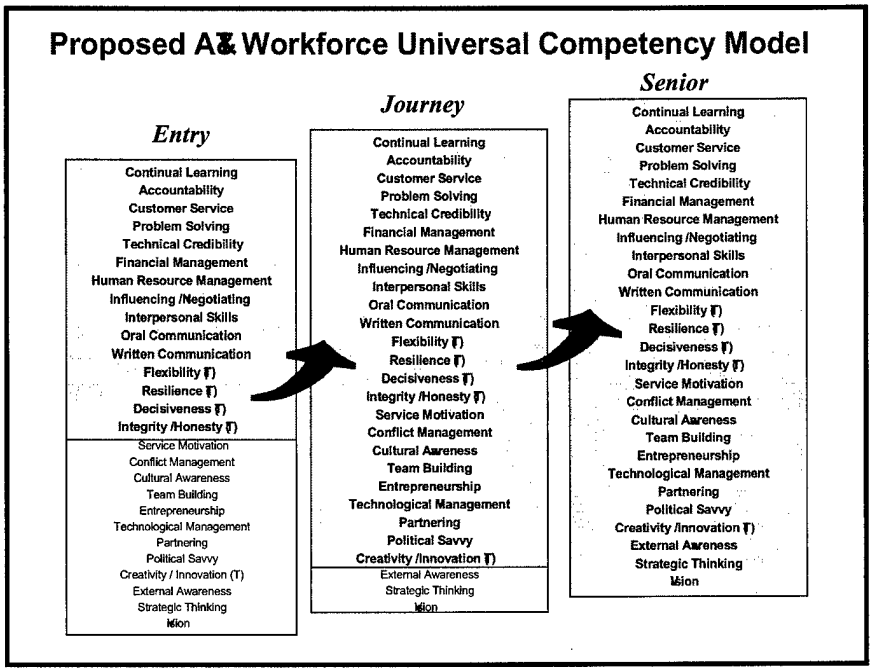
education, training, and experience requirements for each acquisition career field very specifically to one of three levels. The Working Group considered what might be appropriate groupings for the universal competencies and determined that a career stage grouping was the most appropriate. The three levels that the Group selected (entry, journey, and senior) are widely recognized career points and, while they are not specific in terms of grade, the responsibilities and tasks for each level are generally understood.[1]

The Subgroup members considered the possibility of developing new definitions for each competency and trait at the three career levels they had selected, tailoring these new definitions to the tasks at each level. It was ultimately decided that this was not a desirable course of action. While some of the definitions developed by OPM for the 27 leadership competencies have a decidedly executive tone, the competencies and traits themselves are required throughout a career, albeit at differing levels of capability.

While the members of the Subgroup agreed that all of the universal competencies were applicable at all levels of a person's career, they also agreed that it would be useful for supervisors and workforce members to understand which competencies and traits should, as a general model, receive the greatest emphasis at each point in an individual's career. The following chart shows the proposed acquisition and technology workforce universal competency model. This model was reviewed and approved by the full Working Group and the Senior Steering Group and is now recommended for approval by the USD (AT&L).

[see chart on page 5-11]

[1]The Classification Program Division, OPM, uses the following general descriptions for each stage: Entry~~tas~~ks range from simple and elementary through somewhat difficult; tasks are performed under immediate to general supervision, with limited opportunity for the exercise of independent judgement. Journey~~as~~signments range from the highly difficult to the complex; they are performed under little supervision, and allow ample latitude for exercise of independent judgement. Responsibilities are widespread. Senior~~du~~ties are far-reaching and complicated in nature, calling for the exercise of a high degree of independent judgment and minimal or no supervision.



The chart indicates~~by~~ background shading and text bolding~~w~~hich competencies and traits should be emphasized *as a general model* at each career level. As is indicated in the chart, by the time an acquisition and technology workforce member reaches a senior position, he or she should possess all of the competencies and traits.

It must be reemphasized that the Subgroup and the full Working Group concluded that all competencies and traits are important at all career stages. It is also important to remember that the requirement for specific competencies depends on the incumbent's current position or assignment. Additionally, each individual has a different capability level in each of the competencies at any given point in time. Therefore, just what competencies should be focused upon for development should be determined at the individual worker and supervisor level in open and candid discussions.

POLICY ON CONTINUOUS LEARNING FOR THE DEFENSE ACQUISITION WORKFORCE

In the process of its research and deliberations, the Universal Competencies Subgroup carefully examined the USD (AT&L)'s Continuous Learning Policy, which became effective in December 1998. The following chart summarizes some of the major features of the Continuous Learning Policy and its current state of implementation.

Continuous Learning Policy

- Announced Dec 1998 (preceded by 2-year interim policy)
- Encompasses education / training / experience
- 80 continuous learning points every 2 years
- Creditable activities
  - –Training
    - Functional / technical / leadership
    - On-site or distance
  - –Education (on-site or distance) in relevant subjects
  - –Experience (experiential & developmental assignments)
    - On-the-job experiential assignments
    - Intra- & inter-organizational & rotational broadening & developmental assignments
  - –Professional activities (teaching, presenting papers, consulting, etc.)
- Policy has been funded in FY2000 budgets

The Subgroup and the full Working Group concluded that the Continuous Learning Policy will be particularly effective in attaining and maintaining universal competencies. In their review, they found it to be a very comprehensive policy that directs the workforce to maintain currency in four principal content areas: the academic or disciplinary underpinnings of acquisition functions, the specific acquisition functions themselves, acquisition reforms, and the leadership competencies.

Members of the workforce may choose a variety of activities that allow them to stay current in these content areas. Developing competency in the leadership skills appropriate to the workforce member's position is a policy requirement, and it becomes mandatory for all workforce members performing in team leader, supervisory, managerial, or executive positions by 2002. The Continuous Learning Policy recommends using the Leadership Effectiveness Inventory (LEI) for all new members of the acquisition corps. The LEI enables employees and their supervisors to assess the leadership competency needs of a particular position as well as the incumbent's capabilities in the required competencies. The Continuous Learning Policy also requires that new accessions into the acquisition corps be given the opportunity to take the LEI to determine their needs for additional

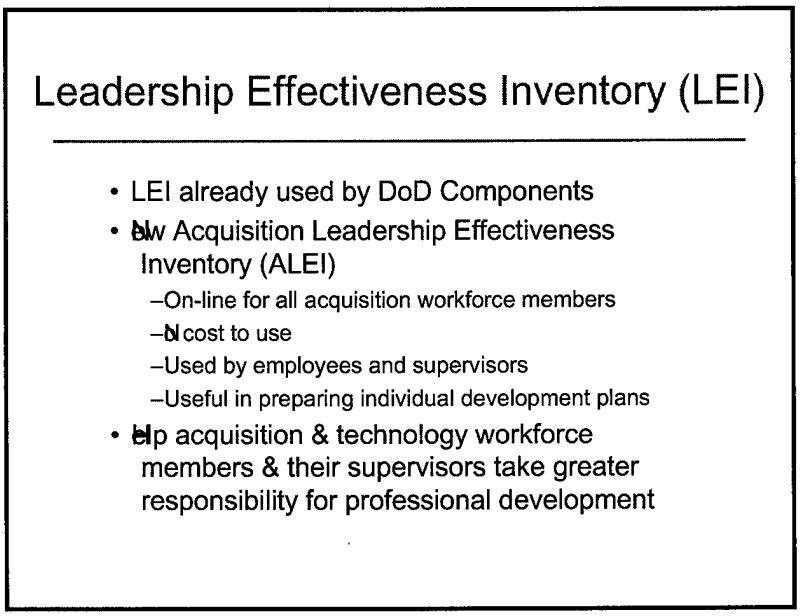
leadership development. The policy establishes higher standards for personnel in critical acquisition positions and requires appropriate training in these competencies for team leaders, supervisors, and managers, as well as executive-level training for SES/Flag and General Officers.

Defense Planning Guidance (DPG) for FY2000 and later directed that the Components "shall program to implement" this policy. In May 1999, the USD (AT&L) asked the Components to report on the adequacy of their resources for supporting continuous learning for FY2000-2006. Seventeen of 24 DoD Components reported specific dollar amounts programmed for continuous learning, while the remainder reported "sufficient" or "adequate" resources to implement the policy on the basis of known requirements. The 17 Components reporting dollar amounts have set aside approximately $65M to support continuous learning in FY2000-2006. Although this is a substantial commitment, it may not be adequate to address the implementation of this comprehensive new policy[2]. While other resources are available for continuous learning activities, for example courses funded by DAU that are not included in this amount, the Working Group recommends that the adequacy of funding for the Continuous Learning Policy be assessed in preparing the Component budgets. To ensure that this review occurs, they recommend specific DPG to that effect.

[2] Note: The policy covers only the "DAWIA" workforce at present. Because the re-identified workforce had not yet been identified when the policy was issued, the General Counsel advised that the policy could not apply to the larger cohort, since its members and their basic certification requirements had yet to be determined.

THE LEADERSHIP EFFECTIVENESS INVENTORY (LEI) ASSESSMENT

The LEI has been used for some time by several DoD Components.



During the course of the study, the Working Group members examined the newly available ALEI Web site (http://alei.doddacm.com). That Web site, which became fully operational for the entire acquisition and technology workforce in mid-November 1999, is the result of an initiative by the Office of the Director of Acquisition Education, Training, and Career Development to make this tool more widely accessible.

Using the ALEI, workforce members will have access to tools that will help them evaluate their universal competency and traits learning needs, establish goals to meet those needs, and create a detailed development learning action plan. The assessment can be performed by the employee, or by the employee and her or his supervisor. By identifying developmental activities for each development priority, defining the resources needed to complete the development activities, and setting a time frame for completing each development activity, the interactive Web site helps the workforce member develop the plan for action. As currently envisioned, use of this Web site will be voluntary. It will not supersede or replace any DoD Component requirements for workforce development.

The Working Group had felt that it would be useful to develop a notional matrix of the different actions or steps that individual acquisition and technology workforce members could take at each level to prepare themselves for more senior positions or assignments. The matrix at Appendix I is the result of that effort. This matrix describes, for each of the 27 competencies, actions or steps that might be applicable at the entry and journey level to help the workforce member develop the capabilities desired in that competency or trait

at the senior level (as described in the OPM definition). After completing the matrix, the members of the Working Group had their first opportunity to view a prototype of the ALEI. In that review, they determined that the ALEI contains very useful generic (but still fairly specific) suggestions for developing the 27 competencies. In fact, they concluded that these suggested developmental actions and steps were a substantial improvement over the actions and steps that they had developed during the course of this task. The Web site's suggested developmental activities were far more numerous and detailed than those developed by the Working Group. As a result, the Working Group concluded that this was a valuable initiative that should be given the Department's full support and wide publicity.

The Working Group discussed the importance of the supervisor and of initiative on the part of the acquisition and technology workforce member in this process. In view of global acquisition environmental trends such as a "smaller workforce," "more generalists," and "learning organization," it was agreed that greater emphasis will need to be placed on having supervisors assist their employees in attaining the universal competencies. At the same time, the Working Group agreed that individual workforce members would have to assume greater responsibility and exercise initiative for their own development.

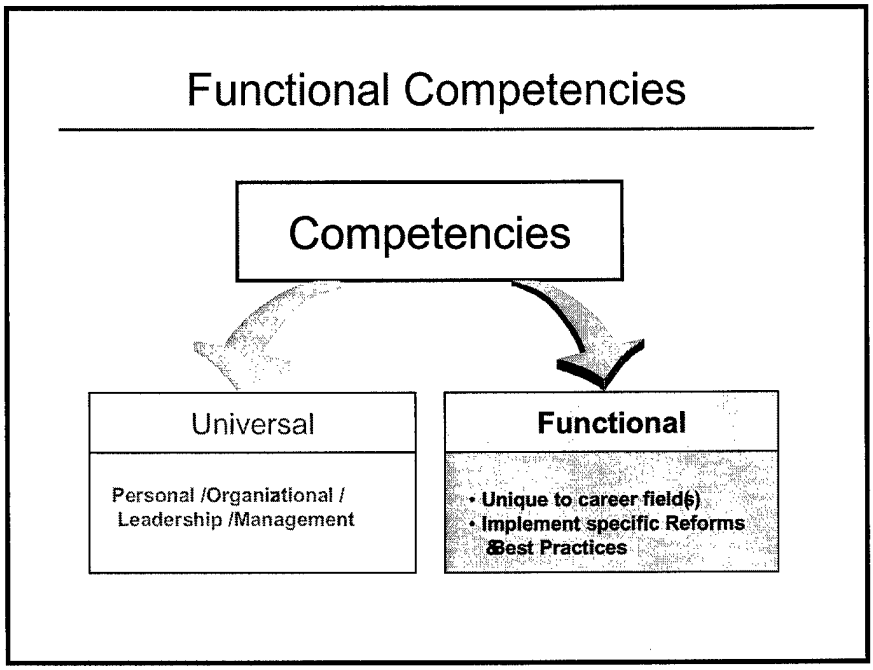
OBSERVATIONS ON CURRENT LEADERSHIP TRAINING OFFERINGS

The Working Group wanted to get a sense of how current training offerings in the Components address the universal competencies. However, because it was not possible to conduct a reliable survey of the many courses offered, the Working Group examined samples of data from several Components. On the basis of these (admittedly limited) samples, the Group formed two observations about the current programs: (1) Most programs and courses that address leadership competencies target the senior portion of the acquisition workforce, and (2) conversely, entry-level programs generally do not cover the ECO leadership competencies.

The Working Group members conveyed these observations to their respective Components and asked for confirmation of their accuracy. The Components that had provided inputs upon which the observations were based confirmed that they were generally valid observations. The Working Group believes that a comprehensive survey of current offerings will be necessary to determine the degree to which universal competencies are currently addressed at each of the three career levels.

Section 5B) Functional Competencies

The remaining discussion of competencies deals with the functional competencies required by specific career fields.



DEFINITION

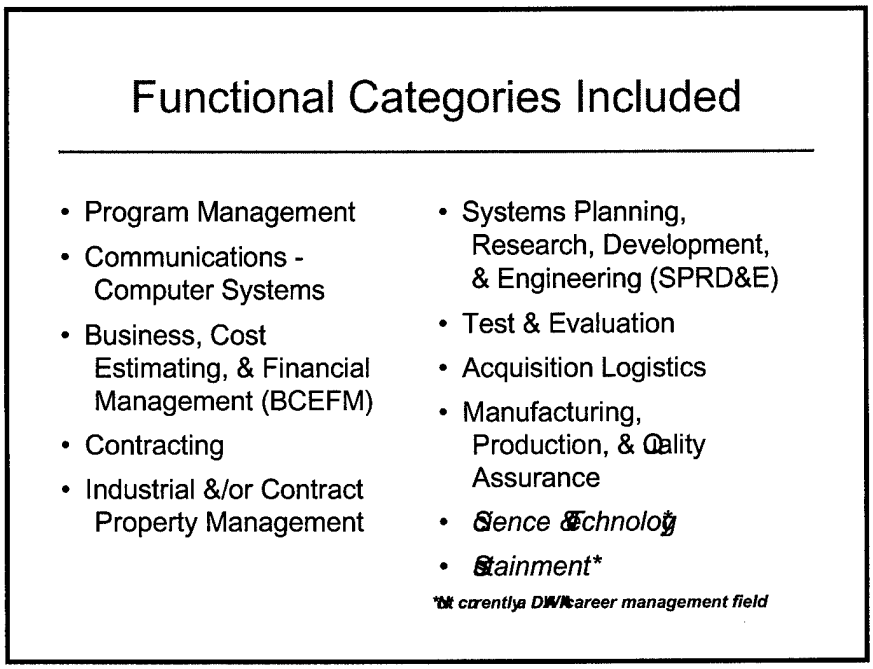
Functional competencies are what the workforce needs to know, or know how to do; they are specific to a particular career field or fields. In contrast to universal competencies, they are technical in nature.

IMPORTANCE

These competencies are important because they are essential to being able to carry out the reforms and initiatives approved by the acquisition and technology leadership.

CAREER FIELDS CONSIDERED

To ensure that competencies were developed for all applicable elements of the future acquisition and technology workforce, the Functional Competency Subgroup considered not only the career fields managed by the current functional board structure but also the Sustainment and Science and Technology workforce categories, since actions are currently under way to integrate elements of these latter workforces into the current acquisition and technology workforce.



Acquisition Functional Board Career Field

As a starting point for determining which career fields to consider for this study, the Functional Competency Subgroup first examined those currently managed by the five acquisition functional boards. While our study was in progress, the new Functional Integrated Process Teams (FIPTs) structure was announced. The FIPTs will, at least initially, use the same groupings that the functional boards use.

ACQUISITION MANAGEMENT FUNCTIONAL BOARD

Our study embraced both the program management and communications-computer systems career fields.

TECHNICAL MANAGEMENT FUNCTIONAL BOARD

The study included the following as separate career fields:

- SPRD&E.
- Test and evaluation.
- Acquisition logistics.
- Manufacturing, production, and quality assurance.

AUDITING FUNCTIONAL BOARD

Following discussions between the study Senior Steering Group Director and auditing career field officials, it was agreed that this career field would not be a part of the study.

BCEFM FUNCTIONAL BOARD

The study also embraced the Business, Cost Estimating, and Financial Management (BCEFM) career field.

DEFENSE CONTRACTING

The study included, as separate career fields, both contracting and industrial/contract property management. On the recommendation of the Defense Contracting Functional Board secretary, Purchasing was not included in this study.

Other Workforce Areas

The Functional Competency Subgroup also considered workforce areas not currently under the purview of a functional board, as follows.

SUSTAINMENT

While this workforce area is not currently managed by a functional board, many ongoing activities will result in determining which logistics positions will become a part of the acquisition and technology workforce and in defining education and training requirements for those logisticians. Representatives of this community participated in the study; they have produced products that will be useful for the Sustainment workforce area once these formative activities have been completed.

SCIENCE AND TECHNOLOGY

This workforce area is not currently managed by a functional board. A separate working group is now determining the requirement for establishing a new position category description, and training and education needs. Representatives of this community were consulted, and their input is reflected in the SPRD&E study group products.

MEDICAL RESEARCH,D EELOPMENT , AND ACQISITION

Although the study did not specifically address this workforce area, the Working Group recognizes that portions of the study results could be useful to this particular community since its members engage in medical-specific acquisition functions. The Working Group recommends that the Services share the study results with their medical communities and take actions that they deem appropriate.

CONSTRUCTION ENGINEERING

Although the study did not specifically include this workforce area, the Working Group recognizes that some of the study results could be useful to this particular community, since its members engage in construction engineering acquisition functions. Specifically excluded are activities and personnel in civil-works-funded programs.

DERIVATION OF FUNCTIONAL COMPETENCIES

The Functional Competency Subgroup derived the functional competencies by analyzing each future acquisition function and determining what the workforce would have to know, or know how to do, in order to perform that function.

Functional Competency Derivation

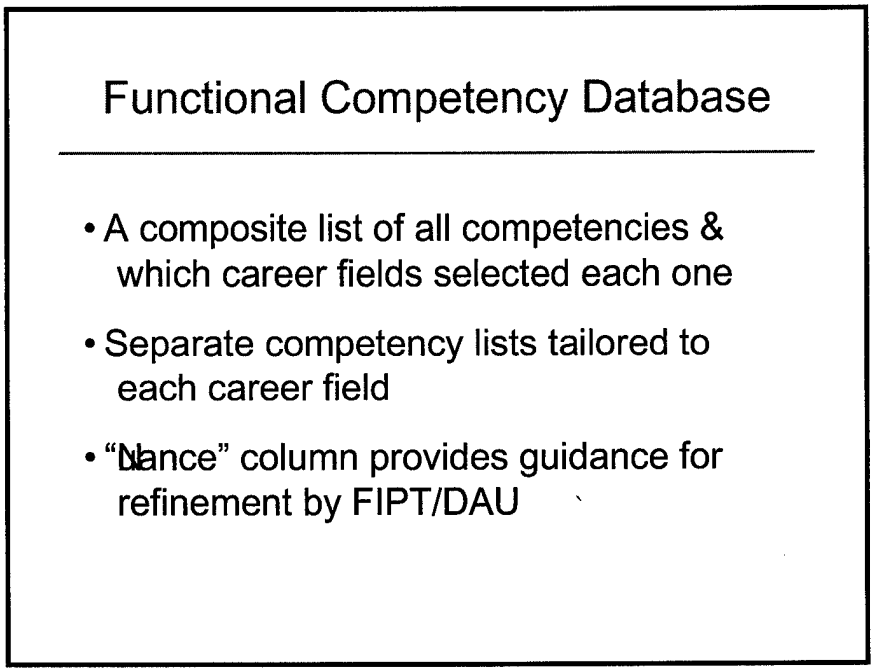
- The Working Group analyzed each future acquisition function to determine supporting competencies
- Career field subject matter experts selected competencies applicable to their fields
- Career field representatives also recommended competencies for other career fields

These competencies were then entered into a database displaying the competencies, along with the acquisition trends and functions that they support. Next, career field subject matter experts examined the database and selected those competencies that they considered applicable to their specific career fields. They also developed additional competencies when they felt that these competencies were necessary for performing a function adequately.

To achieve additional perspective and career field interplay, participants were encouraged to recommend to Working Group representatives from other career fields competencies that they believed would be valuable for the members of those career fields. Many of these recommendations were accepted, with a resulting increase in the number of competencies required for each career field.

FUNCTIONAL COMPETENCY DATABASE

Once the functional competencies had been developed, they were entered into a database to permit ease of further review and provide a query and analysis capability.



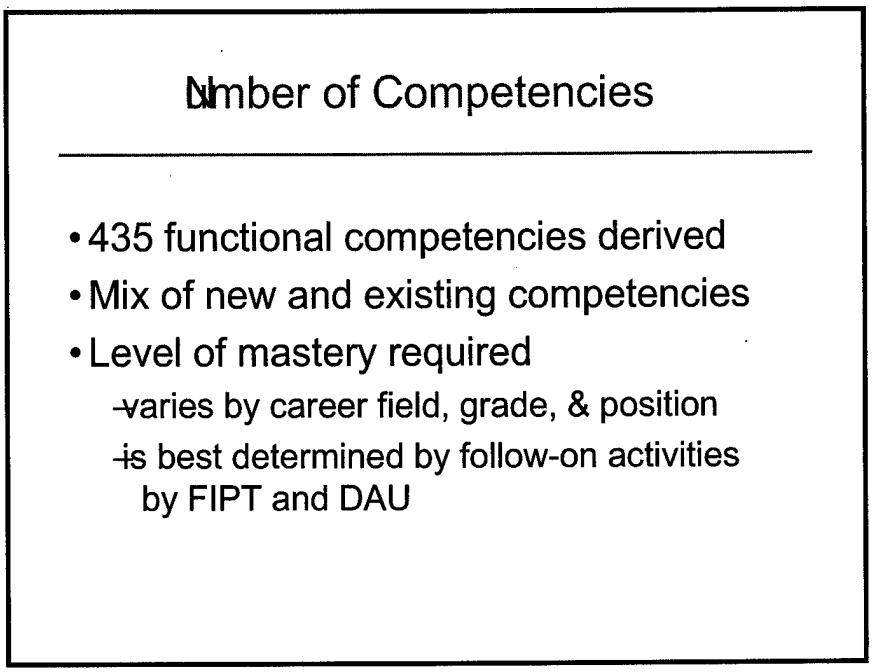
Appendix J is a paper copy of the composite database of all the functional competencies and of the career field(s) to which each applies. This interactive database can be adjusted to accommodate changes in projected future acquisition environment trends. It will be useful for follow-on activities by the FIPTs and other career field representatives during the implementation process.

The composite database was then sorted by career fields and analyzed by the appropriate career field representatives. These representatives used the "nuance" column located next to each competency to pass along guidance for future refinement of the competency by the FIPTs and DAU. Appendix K consists of paper copies of the functional competency database, sorted by career field.

The database itself will be made available in electronic form for use activities subsequent to this study.

RESULTS OF ANALYSIS

The interactive nature of the functional competency database was invaluable for analyzing the competencies for trends within and across career fields. The database analysis results are discussed below.



Number of Competencies

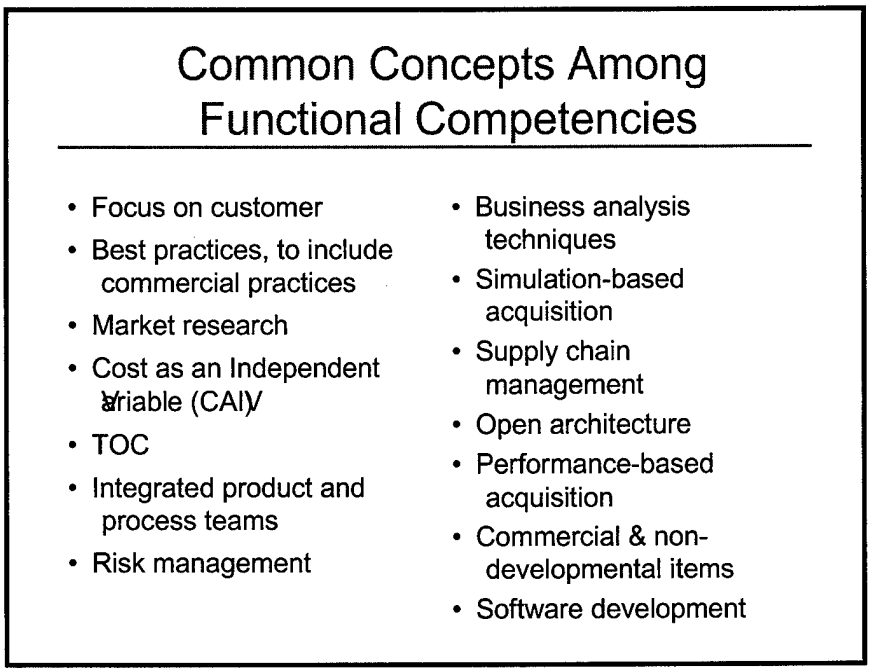
A total of 435 functional competencies were derived as a result of the Working Group's efforts. They describe what the future acquisition and technology workforce must know, or know how to do, to perform the 102 functions required to implement acquisition and technology reforms and initiatives. The number of competencies is large because of the level of detail and because many address different aspects of common concepts. The number of distinctly different competencies is closer to 200.

Of course, many of these competencies are not new. Notations were made in the database when the Working Group recognized that a competency is already included in the DAU curriculum. However, the fundamental fact remains that these are the competencies, both new and existing, that the Working Group believes are needed by the workforce to succeed in the future acquisition and technology environment, and many represent areas where we can expect significant changes in processes or application within the next five years.

Examination of the competencies for each career field by FIPT and DAU personnel will reveal modifications in some cases significant, in others minor required for integration

into educational and training products. The Working Group did not try to assign definitive educational taxonomy levels to the competencies, because the FIPTs and DAU are best placed to determine the level of mastery required for a competency. Also, that level will vary within any given career field by grade and position.

Common Concepts Among Functional Competencies



The Functional Subgroup analyzed the database to determine general common concepts among the more specific functional competencies. Appendix L lists those common concepts occurring most frequently. The frequency with which a topic occurs not only indicates that it is contained in numerous competencies, but also that it affects the workforce's ability to perform multiple acquisition functions in support of several environmental trends. A high frequency of occurrence suggests a training area having a high pay-off potential. Some of the more prominent themes from this analysis are shown in the chart above and in the following paragraphs.

FOCUS ON CUSTOMER

Of the 15 competencies associated with the common concept "Focus on the customer", two—*know and understand customer requirements,* and *analyze market research/customer requirements/sourcing strategies to synthesize best value solutions*—were listed in all 11 career fields. Knowing and understanding customer requirements was derived from the function *to employ/develop sourcing strategies that emphasize best value,* which in turn was derived from the environmental trend *to reengineer the post sprt process to use best practices* . Without exception, this competency was though to be important for all career fields. The competency of analyzing market research/customer requirements/sourcing strategies to synthesize best value solutions came from the function *to perform trade-off analysis of capability/performance, and life-cycle cost considerations,* which in turn came from the environmental trend *to increase the program manager's influence to reduce total ownership cost with the specific emphasis on fundings as* .

COMMERCIAL AND BEST DEMONSTRATED PRACTICES

Associated with this concept were two very prevalent and important competencies: *know and understand commercial best practices,* and *apply and/or tailor commercial business sector practices (e.g., B*. Knowing and understanding commercial best practices was a competency required for two functions: *take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems)* and *benchmark government and industry to identify, adopt, and tailor best practices*. These functions came from the environmental trends of *consolidation* and *reengineer the product support process to use best practices*. The second competency came from the function *to promote use of common business practices,* which was associated with the environmental trend *increased use of common business practices*. Most career fields will need a general understanding of commercial best practices. The program management career field in particular will need an increased effort in this competency as the trend develops to reengineer the product support process in order to use best practices. The Sustainment career field will need to emphasize the leveraging of commercial core competencies and technology. To be able to apply and/or tailor commercial business sector practices is essential for the manufacturing, production, and quality assurance career field. It is important for the industrial/contract property career field members to recognize the benefits and cost savings of joint government and contractor auditing of contractor processes.

MARKET RESEARCH

Here again, the competency to *apply and/or tailor commercial business sector practices* is very important, as mentioned in the discussion above.

COST AS AN INDEPENDENT VARIABLE (CAIV)

Basic to CAIV is the competency *understand the CAIV policy concerning the authority of the program manager to make cost and performance trade-offs*. This competency stems from the function *conduct affordability assessments and analysis,* which in turn is derived from the environmental trend *separation of technical maturation from product development*. While applicable to all career fields, it is particularly important for those in the SPRD&E career field to have a solid knowledge and understanding of this competency.

TOTAL OWNERSHIP COSTS (TOC)

TOC was mentioned in eight competencies. Among them, the most universal one is *to know and understand components of TOC*. This competency is required in order to perform the function *develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC*. Again, while applicable to all career fields, it is critical for the SPRD&E career field.

INTEGRATED PRODUCT AND PROCESS TEAMS

The use of integrated product and process teams have made it extremely important to have the competency *know, understand, and be able to operate in an integrated product team (IPT) environment.* Two functions requiring this competency are *develop test and evaluation master plan to allow for early involvement of test and evaluation,* and

participate in development of user requirements. These functions must be performed to satisfy the environmental trends *early involvement of operational test and evaluation* and *flexible user requirements*. The above competency is essential and critical for several of the career fields, including the manufacturing, production, and quality assurance and SPRD&E career fields.

RISK MANAGEMENT

This is another very important concept. It has two basic associated competencies: *know and understand risk assessment methods and measurement tools,* and *know and understand cost benefit analysis and fault tree methods for describing and making decisions.* These competencies are required in order to *perform/assess business case analysis (mission, capabilities, costs, trends, opportunities)* and to *employ/develop sourcing strategies that emphasize best value functions.* Essential in the manufacturing, production, and quality assurance career field, they are also vital to the SPRD&E, program management, and communications-computer systems career fields.

BUSINESS ANALYSIS TECHNIQUES

This will be important for all career fields, and of the 12 competencies listed for this concept, two were listed as important for all career fields. These were *know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault tree methods for describing and making decisions,* and *know and understand analysis techniques and tools.* The first of these was discussed above. The second is particularly important to the BCEFM career field, and it should be coupled with an understanding of the planning, programming, and budgeting system as well as of integrated program scheduling.

SIMULATION BASED ACQUISITION

This will become extremely important in the near future as it gets applied throughout the future acquisition and technology process.

SUPPLY CHAIN MANAGEMENT

This is a concept with multiple applications in the *operations and support* and *emphasize commercial/military integration* future acquisition and technology workforce environments.

OPEN ARCHITECTURE

This will increase in importance to allow multiple technology updates to legacy systems that will be kept in the active inventory much longer than earlier systems.

PERFORMANCE BASED ACQUISITION

This concept requires the competency to *know and understand performance based work statements or statement of objectives development environment,* which is required for performing the *develop performance based work statements or statements of objectives*

function. This competency is particularly critical for those in the SPRD&E career field who develop work statements.

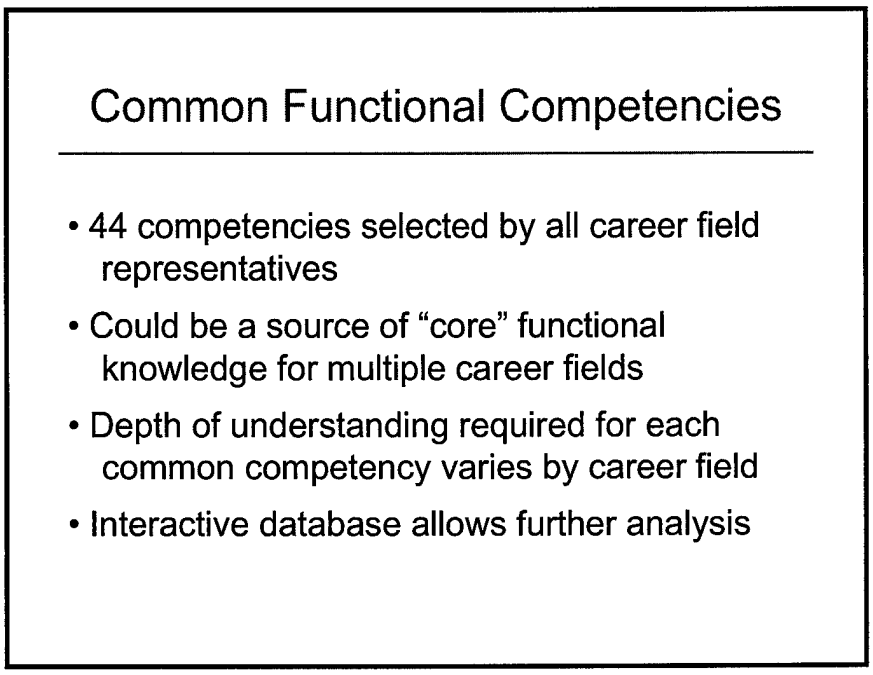
USE OF COMMERCIAL AND NON-DEVELOPMENTAL ITEMS

This concept is an important one with competencies required in several major areas of the future acquisition and technology workforce environment.

SOFTWARE DEVELOPMENT

Eight competencies that flow up to the environmental trend of *increased emphasis on software development* are required to perform the functions of *developing evaluation and assessment criteria to measure software progress* and *applying newly developed software evaluation tools.* These functions are of critical importance to SPRD&E career field engineers working in acquisition software development and evaluation areas. Although program managers and those in the communication-computer systems career field have a degree of competency in the first function, greater emphasis will be required there as the environmental trend develops.

Common Functional Competencies



Appendix M lists 44 specific competencies that were selected as applicable by all career field representatives. These competencies ranging from "being able to work in an integrated product team environment" to "understanding risk assessment methods" to "being able to apply commercial best practices" could be considered as part of the workforce's core functional competencies. For some career fields, a simple understanding of a particular competency may suffice. Other career fields may require the ability to apply that same competency in a detailed manner on a daily basis. Follow-on analysis of these common competencies by the FIPTs and DAU will reveal aspects of each that should be included in fundamentals courses required by numerous career fields and in integrative courses required by more senior personnel.

Although Appendix M includes only specific competencies selected by each career field, the interactive nature of the database created by the Working Group will permit conducting automated inquiries of those competencies selected by a specified number (for example 7, 6, 5, etc.) of career fields to obtain a list of other common competencies. Queries run to identify competencies common to specified career fields would be meaningful for designing instruction for career fields managed by the same FIPT or career fields that need to interact more in the future.

Section 6Summary of Findings for the Career Fields and the Sustainment Function

The Working Group career field/functional area representatives, along with their advisors, summarized the findings for their fields/areas. These summaries are set forth in this section. In all cases, the findings were grouped into three sections: vision through the year 2005, the impact global trends will have, and those future competencies vital to the career field/functional area. Appendix Kcontains more detailed career field/functional area narratives.

PROGRAM MANAGEMENT AND COMMUNICATIONS-COMPUTER SYSTEMS

FindingsProgram Management & Communications - Computer Systems

- **Vision**
  - Leadership, critical thinking, business acumen needed to succeed when there will be fewer "cookbook rules"
  - More joint, smaller workforce to respond to cost reduction pressure through more responsive/flexible risk management
- **Global Trend Impact**
  - Business skillsindustry partner, services emphasis, competitive sourcing, activity-based costing, risk management
  - Functional integrationcross-functional teaming
  - Knowledge managementinformation technology, learning organization
- **Future Vital Competencies**
  - Increased collaboration with users & requirements
  - Increased program management influence on reducing TOC
  - Use best practices; increased reliance on non-DoD organizations
  - Reduced cycle time
  - Price and cost analysis
  - Knowledge management and risk management
  - Automated information systems

The successful program managers in 2005 will have a broad range of competencies. Leadership, critical thinking, and business acumen will head the list. The future will require higher degrees of proficiency and flexibility in more functional skill areas, since that future will call for creative solutions and have fewer "cookbook rules." To support the trend to more generalists and the requirements of special projects (e.g., contract

statements of objectives), organizations must be provided "just in time" training to augment career field training.

Global trend impacts will occur in three major areas. Business skills impacts will require program managers to have solid graduate-level business school education. The emphasis will shift from buying products to buying services that require new skills. Competitive sourcing, activity-based costing, and risk management are considerations for the program manager in buying "best value" for DoD. Second, the program manager needs to continue to emphasize~~and~~ become highly skilled in~~all~~ aspects of integrated product and process development and needs to focus on being part of the functional integration group. The program manager's leadership is critical in order to enhance government-industry personnel mobility, cross-functional teaming, and the integration of the acquisition, logistics, and technology functions. Emphasis will continue to be placed on systems engineering, process discipline, and clear accountability for system mission success. Finally, knowledge management includes an awareness of technology advances that will support the positive aspects of working with a smaller and more experienced force with fewer military members and more generalists. Productivity improvements will be directly related to improvements in, and employment of advances in, information technology.

The Communications-Computer Systems career field should be renamed Information Technology to reflect the changing commercial market and the expected deployment of those people within DoD in the future. The career field would have potentially a single track through all or part of Level II. Then the career field would have two to three tracks with the DAWIA portion being the Automated Information Systems (ACAT IA) program management and the CIO portion supporting the CIO track. The technical track of the career field would be broad based, with the engineers supporting both the AIS and the CIO efforts. Whether the technical personnel would be in the SPRDE career field or in the information technology career field would be the subject of further study.

Automated Information Systems (ACAT IA) personnel who practice program management are overseen by the PM Functional Adviser today for determining training for program management. The deficiency in this area is that there is no defined mechanism to identify the requisite experience and background for these assignments in conjunction with the Communications-Computer career field. In the future, Automated Information Systems (ACAT IA) personnel who practice program management would be under the Program Management Career field, as today, but with a set of joint CIO/PM courses—modified Communications-Computer courses~~to~~ support the technical requirements and experience unique to the managing of ACAT IA systems or "systems of systems." This track, within the PM career field and under the oversight of the PM Functional Advisor, could be managed by OSD(C3I) in conjunction with the PM Functional Adviser and would also allow for definition of the requirements for qualification for either a CIO or ACAT IA program management related assignment. The CIO, or the delegated representative, would clearly be the Functional Adviser for CIO related functions as is the case today. This recommendation would formalize the working together of the PM Functional Adviser and the CIO representative to mutually identify clear career paths, particularly where there may be overlapping issues.

Thirteen functional trends will drive most of the changes in these two career fields between now and 2005. Rather than decompose those trends into competencies (where the impact becomes highly focused and meaning is lost as to which competencies are vital), the trends are grouped in the following three areas:

- Trends relative to career fields' relationships with external organizations (covers collaboration with user and defining requirements; increasing program manager influence in reducing TOC; reengineering product support process to use best practices; and increased reliance on non-DOD organizations).

- Trends where career fields will change internal processes to respond to the above external relationships (e.g., separation of technical maturation from product development; reduced cycle time; increased emphasis on commercial items; software development; long-term contractual relationships).

- Knowledge management techniques (a trend in itself).

SYSTEMS PLANNING, RESEARCH, DEVELOPMENT, AND ENGINEERING (SPRD&E)

Findings—SPRD&E

- **Vision**
  - IPTs operating in a performance-based environment helping customers meet cost, schedule, & technical targets
- **Global Trend Impact**
  - Workforce—smaller, older
  - Knowledge management & information technology
  - Cross-functional teaming
  - Competitive sourcing
- **Future Vital Competencies**
  - IPT player
  - Control TOC
  - Know & use systems engineering, parametric analyses, mechanical & structural engineering
  - Know & use open systems/architecture & software integration
  - Perform risk analyses/assessments

In the future, government engineers will either be part of IPTs or will themselves form small IPTs that cover critical engineering competencies. The team will be able to operate in a performance-based environment and will have the skills necessary to help customers meet cost, schedule, and technical targets. The team members will have a thorough understanding of—and maintain currency in—systems and design engineering, risk management, logistics, testing , manufacturing, modeling and simulation, open systems, and software, as well as of their interactions, integration, and effect on cost, schedule, and technical performance. Engineers will need to be well-versed in commercial, industrial, and academic technology and management developments.

The SPRD&E workforce will feel the effects of several global trends. The smaller, older workforce will depend on reliable information technology to perform new functions, keep up with technology advancements, and do proper analysis. Related to this is the knowledge management required to ensure that the workforce can effectively use the information technology. The broader knowledge required will be obtained from teams rather than from individuals, and teaming with industry and academia will expand. The smaller workforce will have to concentrate on government-only functions, with the other functions constantly being reviewed as competitive sourcing candidates.

SPRD&E personnel will need to be productive members of IPTs. They will also need to understand and master competencies for controlling TOC. Among these are the ability to perform parametric analysis of both hardware and software systems, and to understand what modeling and simulation tools are available and how to use them properly

throughout a system's life cycle. As legacy systems remain in the inventory longer than in the past, it will be important to reduce the cost of increased technology upgrades and future technology insertions. The understanding and proper use of open architectures, including appropriate use of commercial items, will facilitate the attainment of this goal. Finally, it will be vital to know and understand how to perform comprehensive risk analyses and risk assessments, how these assessments tie into cost and schedule performance, and how technical performance measurements give indications of continuing or improving risk, cost, and schedule conditions.

TEST AND EVALUATION

Findings—Test & Evaluation

- **Vision**
  - Broad technical skills in systems engineering disciplines, & modeling & simulation; greater emphasis on interoperability testing, resources, & cycle time
- **Global Trend Impact**
  - Early involvement of operational test & evaluation personnel
  - Increased use of joint warfighting experiments
  - Adopting commercial test & evaluation best practices
  - Reengineering the aging test & evaluation infrastructure
  - Systems/interoperability testing
- **Future Val Competencies**
  - IPT player (including early operational involvement in the test & evaluation process)
  - Evaluate commercial-off-the-shelf items
  - Understand mechanical & structural, software engineering, advanced concepts technology demonstrations (ACTDs), & life-cycle impacts
  - Know the evolutionary spiral process
  - Use systems engineering to reduce operational & support problems

Test and evaluation personnel of the future will require broad technical skills in all systems engineering disciplines and in modeling and simulation. They will be more involved with interoperability testing and more aware of resources and cycle time.

Test and evaluation's work will be affected by several global trends as its personnel learn new ways to reduce cycle time and TOC. One way is through increase use of combined developmental and operational testing. They will need to know more about determining the technical performance, effectiveness, and system suitability; about joint warfare experiments; and about adopting commercial test and evaluation best practices. They will have to focus efforts on how best to reengineer the aging test and evaluation facilities while ensuring continued customer support. Finally, interoperability is one of the biggest issues to be addressed in the future.

Test and evaluation personnel will continue to participate on IPTs, identifying and resolving test and evaluation issues early in the process. One future requirement will be to determine just where in the test and evaluation process testing can be combined to ensure greater participation by the operational testers up front while maintaining their independence. Early involvement of the operational testers will provide an opportunity to consider their insights and concerns early in the development process. However, it is important to ensure that developmental testing is robust enough to support risk-reduction testing requirements while providing independent operational testing evaluators with data for analysis. Test and evaluation personnel will also need to understand the differences between the commercial and DoD operating environments for commercial

and non-developmental items in order to evaluate their relative effectiveness. Other areas that will require continued emphasis and understanding include modeling and simulation, software engineering principles, and the ACTD process, along with their life-cycle impacts. Test and evaluation personnel will also have to know the evolutionary spiral process of each segment to ensure system interoperability and testability. The use of systems engineering will reduce operational and support problems.

ACQUISITION LOGISTICS

FindingsAcquisition Logistics

- **Vision**
  - –Broad technical (systems engineering) & business skills with understanding of the operational support environment
- **Global Trend Impact**
  - –Workforce: smaller, joint, fewer military, more generalists
  - –Reengineer product support environment to use best practices
- **Future Vital Competencies**
  - –Know & use mechanical & structural engineering
  - –Understand open architecture & apply it to interoperability
  - –Analyze market research, user requirements, sourcing strategies
  - –Develop performance-based work statements
  - –Know & understand TOC

Future acquisition logistician will require broad technical (systems-engineering-oriented) and business skills. They will be well versed in engineering disciplines such as design, reliability, maintainability, and supportability as well as having business skills that include scheduling, life-cycle costing, and negotiation. In addition, the acquisition logistician will have a thorough understanding of the operational support environment.

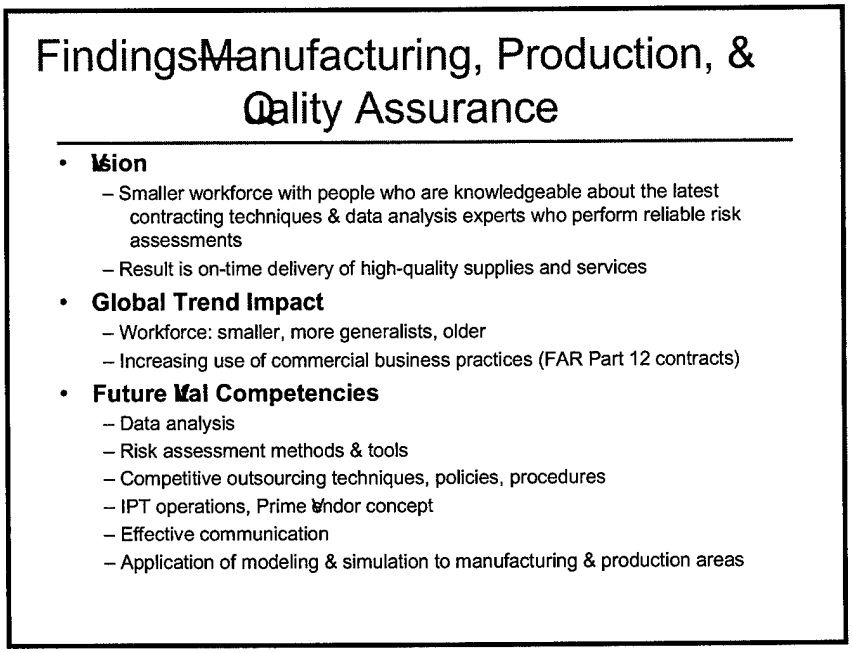
Global trends that will have the most significant impact on the acquisition logistics career field include a smaller, more joint workforce, having fewer military in that workforce, and the reengineering of the product support environment to use best practices. The first will require acquisition logisticians to acquire much broader technical and business skills than most presently have and to become familiar with the operational support environments beyond those of their own Service. Having fewer military in the workforce will require acquisition logisticians to develop much greater understanding of the operational support environment. The final global trend will require the acquisition logisticians to understand the capabilities and limitations of all sources of potential system support including contractors in order to determine the most cost-effective support concept to meet warfighter needs.

To perform effectively in the future acquisition and technology environment, several competencies will be vital to those in this career field. Among them is understanding the use of modeling and simulation throughout the total life cycle of a system so that the supportability and downstream logistics impacts of competing design alternatives can be predicted. Another is to know and understand open architecture discipline, tools, and methods and to be able to apply them to promote interoperability and allow rapid

technology refreshment to extend the capabilities and service life of weapon systems. A third vital competency is to analyze market research/customer requirements/sourcing strategies to synthesize best-value solutions and facilitate development of alternative weapon support concepts that cost-effectively meet warfighter requirements. To develop contractual system design and system support requirements effectively in the performance-based business environment (PBBE), competency in developing performance-based work statements and statements of objectives will be required. Finally, it will be important to know and understand components of TOC, including an in-depth understanding of the complex relationships between acquisition and operations and support costs, as well as return on investment.

MANUFACTURING,P RODUCTION, AND QUALITY ASSURANCE

All personnel in this career field will be fully knowledgeable of the latest contracting methods and techniques and will be fully capable of implementing surveillance when necessary. They will be expert in data analysis and will use their analyses to perform risk assessments. Risk assessments will consider both the likelihood and consequences of potential failures, will identify significant acquisition risks, and will lead to mitigation of these risks.

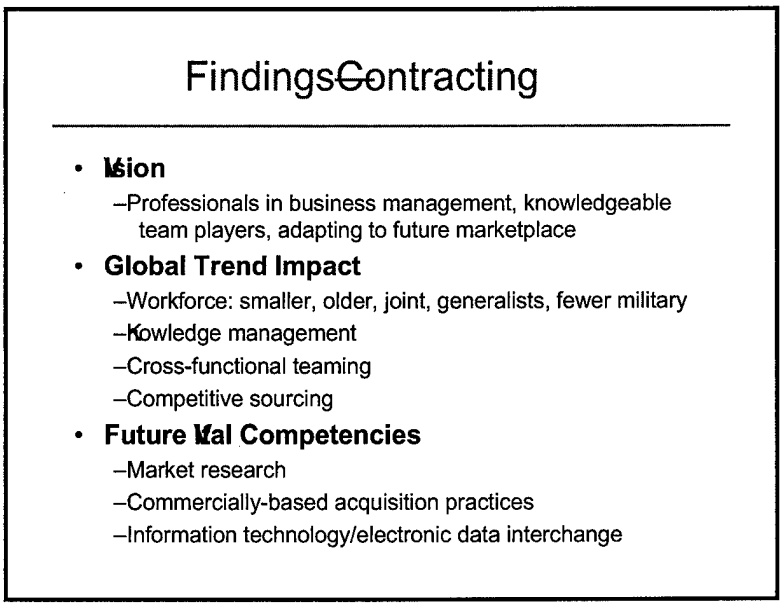


Global trends affecting this career field are a smaller, older workforce with more generalists and increased use of commercial business practices (FAR Part 12 contracts). The changed workforce will be required to be more knowledgeable about a much broader range of subjects and will be called upon to perform duties across a wider spectrum than that existing today. The migration to commercial business practices is expected to change the ground rules that historically have governed the work of personnel in this career field.

Future vital competencies in this career field include knowledge and understanding of data analysis, risk assessment and tools, competitive outsourcing techniques, and the policies and procedures that govern competitive sourcing. Data analysis will provide information needed to make risk assessments and critical decisions regarding what government oversight is necessary, as well as its nature, frequency, and intensity. Risk assessments will consider both the likelihood and consequences of potential failures, identify significant acquisition risks, and lead to mitigation of those risks. Competitive

sourcing will be relied upon to accomplish mission requirements in the face of additional workload and the shrinking product and manufacturing assurance workforce. Other competencies vital to this career field are the ability to operate in an IPT environment, to understand the Prime Vendor concept (and other new acquisition/supply techniques), to recognize and understand FAR Part 12 contracts, to apply modeling and simulation to help solve manufacturing and production problems prior to the "bending of metal," and to communicate effectively with customers and contractors.

CONTRACTING

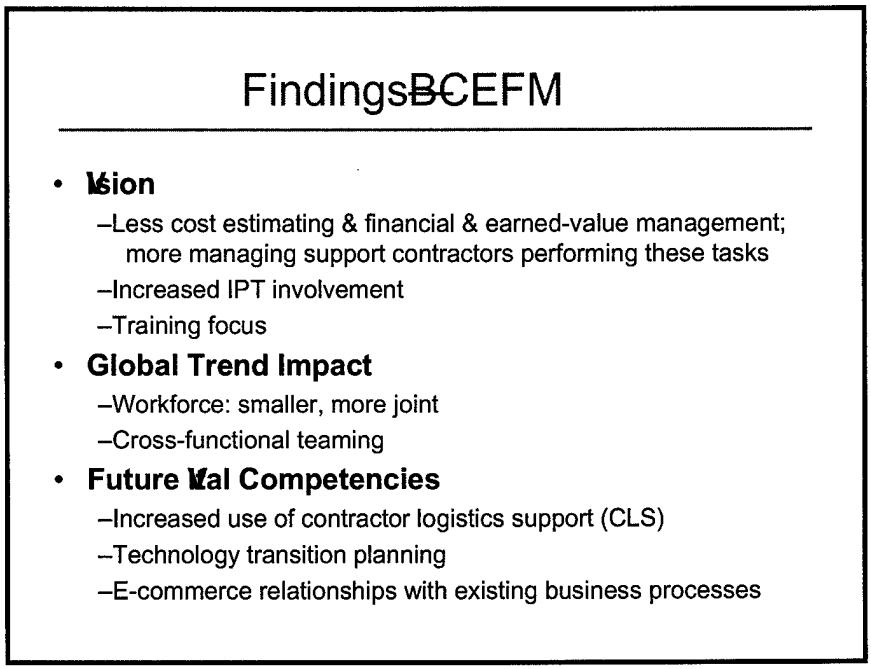


The people in the future contracting career field will retain and enhance their professional standing, will set a standard of excellence in business management, and will become thoroughly integrated in the process of equipping the force in the 21st century. They will be sufficiently knowledgeable of the roles of other functional components in the acquisition system to operate on a well-integrated team. They will reduce the application of government-unique rules and requirements and will shift to business dealings more in line with commercial practices.

Several global trends will affect the future workforce. Fewer people will have to do more, requiring better knowledge management and cross-functional teaming. The trend towards developing more generalists must not have a negative impact on the primary technical function of the contracting career field. Having fewer military members may place additional demands on the civilian workforce, especially in contingency operations. There may also be a greater demand for applying A-76 techniques to support competitive sourcing.

Contracting personnel will need to adapt new techniques and skillsand expand on some existing onesto compete in the future. They will need a deeper understanding of the technical aspects of the marketplace to adopt a more user-friendly, commercial-like approach. The trend towards more commercial-like acquisitions requires stronger skills in price- and performance-based acquisition practices, and it will be necessary to develop innovative ways to solicit vendors lacking experience with government business. The contracting workforce will also have to function in the electronic-based information world of tomorrow.

BUSINESS,C OST ESTIMATING, AND FINANCIAL MANAGEMENT (BCEFM)



As downsizing continues, there will be fewer functionals performing cost estimating, financial management, and earned-value management, and instead, more managers managing the efforts of support contractors performing these tasks. To accomplish the mission in its entirety, engineers, logisticians, contract administrators, and business managers/cost estimators will be integrated into a single team focused on managing the efforts in an integrated fashion throughout the entire process. Training will need to focus more on business process reengineering, commercial practices, contract administration, program management, integration, teaming, and leadership and management skills.

The BCEFM workforce will be smaller and more joint. It will be required to be competent in its knowledge of business skills, contracting principles, and the planning, programming, and budgeting system. Cross-functional teaming will increase as more significant decisions are made in IPTs, affording the workforce the opportunity to know more about contracts (e.g., contracts resulting from price-based acquisition), technical subjects (e.g., modeling and simulation, block upgrades, software development), and their relationship to budgeting and program management.

BCEFM personnel will need several vital competencies having an impact on cost estimation, budgeting, financial management, and TOC. These competencies include understanding commercial CLS practices, commercial contracting for logistics support, market research and business-case analyses, and inventory and configuration

management. Important competencies needed to give the BCEFM workforce the background for producing more effective cost estimates and taking advantage of TOC reduction opportunities include understanding technology transition planning, tools for evaluating and inserting best-value options into technical transition plans, and ACTDs and their impact on life-cycle cost. The BCEFM workforce will greatly increase its effectiveness by acquiring competencies such as knowledge of economic commerce system relationships with existing business processes and knowledge of how to develop affordable requirements documents for software/hardware architecture in an integrated digital environment.

INDUSTRIAL AND/OR CONTRACT PROPERTY MANAGEMENT

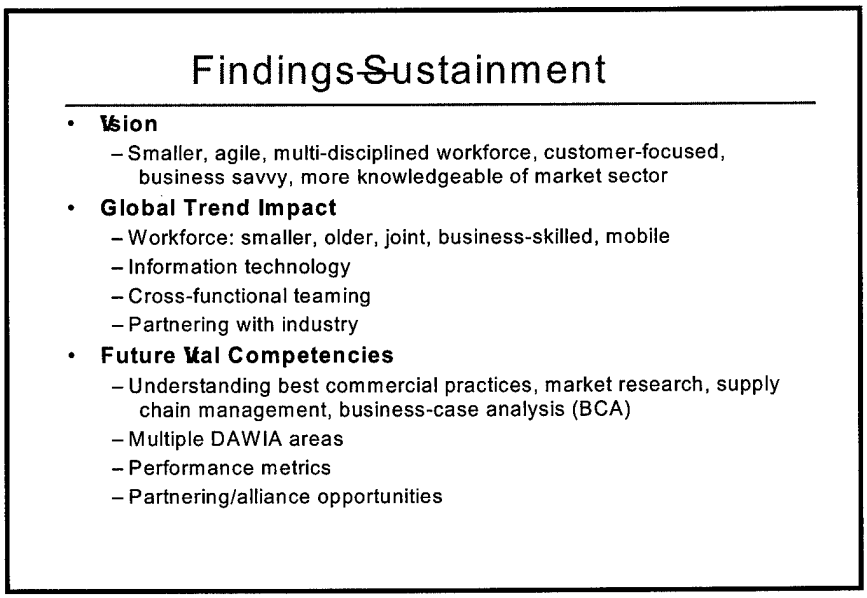
Findings~~In~~dustrial and/or Contract Property Management

- **Vision**
  - –No longer government-mandated requirements, so more difficult to determine "sound business practices" in future
  - –Future surplus sales will be part of E-commerce (Internet)
- **Global Trend Impact**
  - –Smaller workforce
- **Future Vital Competencies**
  - –Understanding common business practices
  - –E-commerce marketing & selling strategies
  - –Risk management
  - –Financial accounting

Property administrators can no longer rely on government regulations and must operate in accordance with sound business practices. As a result, their jobs may become more difficult. Surplus sales will increasingly take place in the world of electronic commerce, requiring new skills.

To manage government property, future property management career field personnel will have to use common (sound) business practices in lieu of government-mandated ones. To ensure that the program in administered consistently, they will need a thorough knowledge of what is meant by sound practices. Personnel must also understand electronic commerce policies and procedures as more government surplus property is sold over the Internet. Because there will be fewer personnel, risk-management techniques must be applied to determine the level of oversight required in the future. All government property must be financially accounted for (including property in the custody of contractors).

SUSTAINMENT



The future Sustainment workforce will be smaller and more multi-disciplined. It will be knowledgeable of the market, will focus on performance and on life-cycle cost, will employ joint and holistic thinking, will possess business savvy, and will concentrate on serving the customer (the warfighter).

Increased understanding, thinking, and problem-solving in a joint environment will be required. A larger percentage of the workforce will require quantitative and qualitative business analysis skills. They will need to know and understand information technology capabilities and be able to apply them to product support requirements for both weapon systems and support systems. The use of IPTs has the potential for greater application. As a larger portion of the workforce participates in IPTs, it will need to know and understand how to manage workload and priorities. Partnering with industry will increase and will take on a variety of new forms and approaches. These new forms and approaches will embrace such contractor support for non-inherently governmental functions, varying degrees of contractor logistics support (CLS), and public-private partnerships for supply chain management.

This function in the future will require knowledge and understanding in several competency areas, including best commercial practices, which will be a key enabler of acquisition and logistics reform. BCA (including process, rules, and tools) will help select and achieve best value. With fewer people, more generalists with a broader scope in several DAWIA areas will be needed. Market research will be an important prerequisite for benchmarking best practices and preparing for a BCA. Supply chain management will enable the management of relationships and services in the PBBE. Customer-focused, performance-based, output-oriented, and outcome-oriented measures will be the most important metrics in the PBBE. Finally, partnering and alliances will allow the leveraging of core competencies, best practices, and technology.

Section 7Obtaining the Competencies

This is the fourth, and final, step in the Working Group's methodology.

As the USD (AT&L) Continuous Learning Policy states, the members of the acquisition community are "challenged today as never before by the rapidly changing environment in which they must function." Indeed, continuous learning is fundamental to the successful performance of the acquisition workforce of the future. The Continuous Learning Policy further states that "meeting increased performance expectations in the rapidly changing Defense acquisition environment requires workforce members to be current with reforms, adaptable, flexible, and willing to accept risk and exercise leadership."

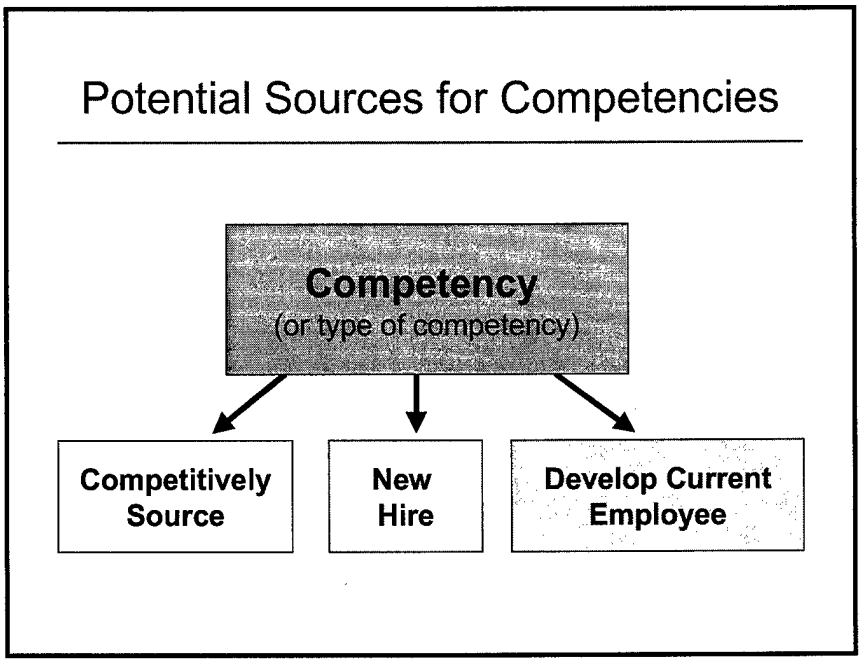
The Working Group found the sources of universal and functional competencies~~the~~ knowledge base for acquisition~~to~~ be quite diverse. These competencies may be found within individuals, institutions, and functions of the Department and its suppliers, partners, and customers. This knowledge may be formal or informal, explicit, or tacit.

To ensure that they considered all possible sources, the Working Group members developed a notional model of potential sources that would be applicable both to functional competencies and to universal competencies. Although the members of the Working Group were not educational or training experts, as functional experts, they described a model that would be applicable to their efforts to create a future acquisition workforce, a workforce that many of the Working Group members are specifically responsible for developing. In addition, they solicited information and advice from educational and training experts during the model's development.

This section describes the elements of the model and its application and then discusses the advantages and disadvantages of each sourcing option.

THE SOURCING MODEL

The chart below illustrates the major elements of the sourcing model.

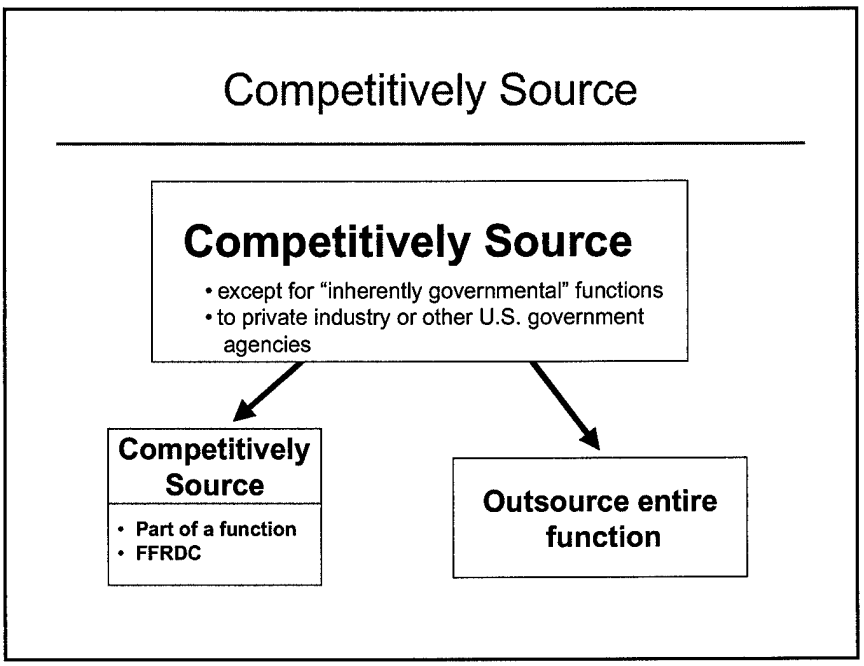


A desired workforce competency can be obtained by any of three principal means. The organization can contract or competitively source for the capabilities represented in a specific competency or set of competencies. A second option is to hire a new person with the desired competency or competencies. The third option is to develop the competency in current employees. These options are discussed below.

It should be pointed out that the model is not static. For example, if an organization hires a new employee to obtain required competencies, then subsequent development of competencies for that individual would proceed down the path of developing those for an existing employee.

While the analysis that follows mentions some economic considerations, this report does not include a detailed assessment of the economic costs and benefits associated with various elements of the sourcing model. Nevertheless, the Working Group recognizes that such considerations must be factored into all sourcing decisions.

COMPETITIVELY SOURCE



Description

Competitive sourcing is a viable option when the function or competency is not inherently governmental (it would be inherently governmental if, for example, it involved making resource obligations for the federal government). Competitive sourcing does not necessarily mean contracting with the private sector. There are instances where the most efficient provider, particularly of a service, is another federal agency.

Competitive sourcing can be accomplished by contracting for a specific competency with an individual having specific experiences or capabilities. For example, if market research is the desired functional competency, the organization can contract for market research as a function or for the services of a specialist to work with the organization's staff.

Some of the staff members in many program management offices are actually employees of Federally Funded Research and Development Centers (FFRDCs). The employees in those positions are virtually indistinguishable from the DoD employees.

The final form of competitive sourcing is to contract for the entire function. Naturally, that usually involves obtaining several competencies.

Analysis

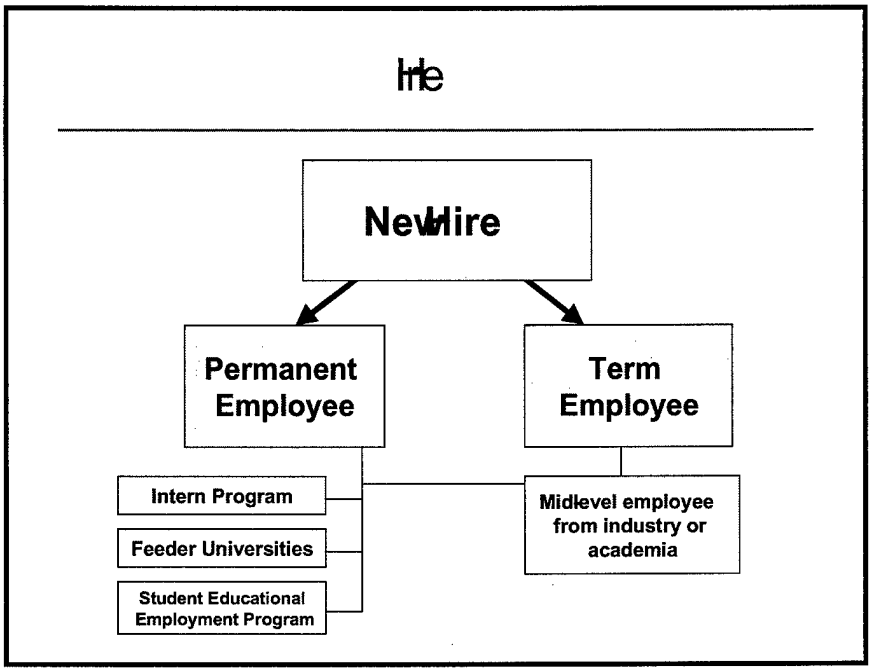
Competitive sourcing can be useful when an organization needs to meet a specific or emerging requirement quickly. Competitive sourcing can also be effective when an organization has a peak workload that its internal staff cannot handle, or when a unique requirement arises that does not justify hiring permanent staff members.

Competitive sourcing has the advantage of quickly acquiring specialized talent not readily available in the government to address new requirements that the workforce is not trained to handle.

Although there are some recent trends toward long-term relationships between the government and its supporting contractors, competitive sourcing is still generally viewed as a means of meeting competency requirements for a limited time only. When the contract expires, the expertise is lost to the government.

As noted above, competitive sourcing is clearly inappropriate for tasks that represent an organization's core competencies or entail inherently governmental functions. The use of competitive sourcing must be tempered so that it does not erode skills and competencies that should be maintained in-house.

HIRE



Description

While the study was underway, the Office of the DASD (CPP) provided data indicating that during the period from 1999 through 2005 up to 50% of the current acquisition and technology civilian workforce will leave DoD. Because of downsizing, not all of these employees will be replaced, but it is clear that there will be a substantial influx of "new hires." This situation presents both a major challenge and an opportunity to the USD (AT&L) and the Components. The challenge will be to ensure that the loss of experience is not precipitous. The opportunity comes from the fact that, with foresight and planning, it will be possible to attract new employees with many of the requisite universal and functional competencies. Thus, for the first time in several years, hiring can become a major sourcing option for the desired competencies.

One "hire" sub-option, the traditional permanent employee, has three additional sub-options. The first is the intern programs conducted by several DoD Components. These programs are an excellent source of new hires with academic backgrounds in business because the academic qualifications for applicants can be named. In these programs, new hires come into the government with excellent academic records in desired academic disciplines. They are then moved through a series of job experiences in a short period of time. Thus, in addition to their academic background they can be given multi-functional exposure early in their careers.

Some private sector industries and firms have used the "feeder university" concept very effectively. In this arrangement, the industry works closely with a few educational

institutions to assist them in developing curricula in the desired disciplines, often providing case studies and summer internships for the students before they graduate. The federal government's Student Educational Employment Program is another excellent source of new hires with desired academic backgrounds. This program enables students working toward degrees to gain work experience that can help prepare them for government employment.

A less frequently used option is to hire a mid-level employee from the private sector who has the desired experiences and competencies. These can be, as the chart above shows, either term or permanent employees. The term employee is a person hired for a specified period of time, usually 14 years. The person hired often has a specific background, or set of needed competencies, e.g., private-sector experience in a particular market sector. Use of this arrangement was specifically recommended by an April 1998 Defense Science Board report.[1]

Aalysis

Hiring from outside the organization, as opposed to hiring from within, can be appropriate when an organization needs to acquire a newly identified competency. In such situations, the needed skills or competency simply might not be available within the organization, and external sources present the only viable alternative. Adopting this course also offers an opportunity to shape the workforce towards new or more highly emphasized work areas. New hires can be placed into these areas, replacing retiring workers from less needed areas.

EXPANDING EXISTING PROGRAMS

As noted above, the anticipated large numbers of departures from the current civilian workforce present both opportunities and challenges. The Working Group highly recommended expanding the use of existing programs that permit the Department to attract talented young people with the desired academic backgrounds, specifically the Component intern programs and the Student Educational Employment Program. Because of hiring or budgetary limitations, these programs were reduced in several Components during the drawdown years.

FEEDER UNIVERSITIES

The Working Group also recommended that new programs, particularly feeder universities, be explored for feasibility. The goal would be to establish new programs that will increase the Department's likelihood of assuring that graduates entering its workforce will be well-schooled in a selected set of competencies and therefore, better prepared for acquisition jobs, than graduates from non-tailored programs. Tailored programs could be used to bring in people with needed skills such as business analysis and software and supply chain management. However, because of the basic differences between the private and public sectors, the success that industry has had with feeder university programs may not carry over cleanly to the government. For instance, if such a program became highly successful in placing graduates in DoD jobs, socio-political pressures

[1] The Office of the Under Secretary of Defense (Acquisition and Technology), *Defense Reform* , Report of the Defense Science Board Acquisition Workforce Sub-Panel of the Defense Acquisition Reform Task Force, March 1998.

could force the Department to open the program up to a wider selection of universities. If universities see their participation in this program as an entitlement, the quality of the tailored academic programs could suffer.

INTERGOVERNMENTAL PERSONNEL ACT (IPA)

Term employees can infuse the organization with new energy and enthusiasm and, if carefully selected, can bring with them state-of-the-art skills that the organization lacks. At present, the Intergovernmental Personnel Act (IPA) permits scientists and academicians with unique technical knowledge to enter the federal government for short terms of employment. Unfortunately, that authority, which now facilitates movement between academia and government, does not apply to employees in industry. Because benefits can accrue to the organization whether it hires mid-level employees from industry or academia, the Working Group recommended that an expansion of the IPA, or similar new authority to include exchanges with industry, be explored. The exploration should address the significant questions about the potential for conflicts of interest and abuse.

"FLEXFORCE"

The Working Group also recommended exploration of additional legislation (in addition to the expansion of the IPA discussed above) which would facilitate hiring mid-term employees from the private sector. Portability of benefits between the private sector and government has been an additional impediment to term employment. DASD (CPP) has previously sought legislation for a program, called "FLEXFORCE", that would authorize a pilot program for a new type of non-permanent workforce. Its major features would be:

- No grade restrictions (thus mid-grade term hires could be targeted).
- Up to 10% of total DoD civilians.
- Maximum employment terms (including extensions) of six years.
- Health benefits immediately, retirement coverage after two years.
- Two year probationary period.
- Can convert non-competitively to permanent appointment after one year.

Although a previous attempt by the Department was held up in OPM over questions about when benefits would become effective and non-competitive transfer to permanent appointment, the Working Group recommended that re-initiation of that legislation be explored.

OTHER HIRING CONSIDERATIONS

The Working Group and Senior Steering Group expressed concern that the Department may be at a disadvantage in competing with the private sector for term employees, especially at the mid-term point and for high-tech employees. The Senior Steering Group noted that the predicted exodus of experienced employees, many at higher grades, will increase promotion opportunities in the coming years. They recommended that this dynamic be given visibility in recruitment efforts. In addition, a recent change in law that

revoked the so-called "dual-comp" restrictions on retired military officers seeking government jobs after their retirement from the military may make term employment at the mid-grades more attractive to that experienced population. Previously, these officers had to forfeit a portion of their civilian employment pay. A change in the FY2000 National Defense Authorization Act eliminated that forfeiture requirement. The implications of this change should be examined by the DUSD (AR) and the DASD (CPP).

While the idea of bringing in mid-level employees is appealing because of the infusion of new skills and new energy, there is also a downside to this approach. If thrust directly into mid-level management positions, these individuals might be at a significant disadvantage because they may not know or understand DoD's various processes and proceduresskills and knowledge that are almost second nature to long-time employees. Thus, if managers choose to use this source, they may also have to devote additional time to giving these new employees a focused period of hands-on assistance to help them learn the ropes.

The Working Group raised several issues that should be addressed when considering using new hires as a source of needed competencies:

- Constraints on dollars or manpower authorization.
- The adverse effect of stopper lists and other personnel management rules that require the organization to select individuals who have "rights" to the position but whose competencies make them only marginally qualified for the job.
- Portability features of the Federal Employee Retirement System (FERS) that can result in increased employee turnover.

PHASED RETIREMENTS

The Senior Steering Group expressed concern over the adverse impact of the predicted large turnover on personnel on continuity of operations and experience levels. They recommended that a FY1999 legislative proposal for a "phased retirement" program be re-evaluated as a way to ameliorate the predicted sudden loss of experience over the next five years. This legislative proposal would amend 5 USC 8344 to permit a pilot project with the following features:

- It would be a voluntary program for all participants.
- Employees would be permitted to enter a period (up to two years) of "phased retirement" during which they would work one-half to three-quarters time (20 to 40 hours per week).
- During this period, they would draw from their retirement annuity up to the amount of full time pay, thus avoiding a drop in net income prior to full retirement.
- Employees participating in the program would be assigned to part-time overhire positions, thereby freeing FTEs for new hires.

Other Legislative, Regulatory, and Policy Barriers

The Working Group addressed other legislative, regulatory, and policy barriers that can stand in the way of achieving the required competencies for the future workforce. These include:

- The lack of a "training pipeline" for the civilian workforce.
- Difficulty in modifying civilian occupational series.
- External resistance to setting minimum educational requirements.

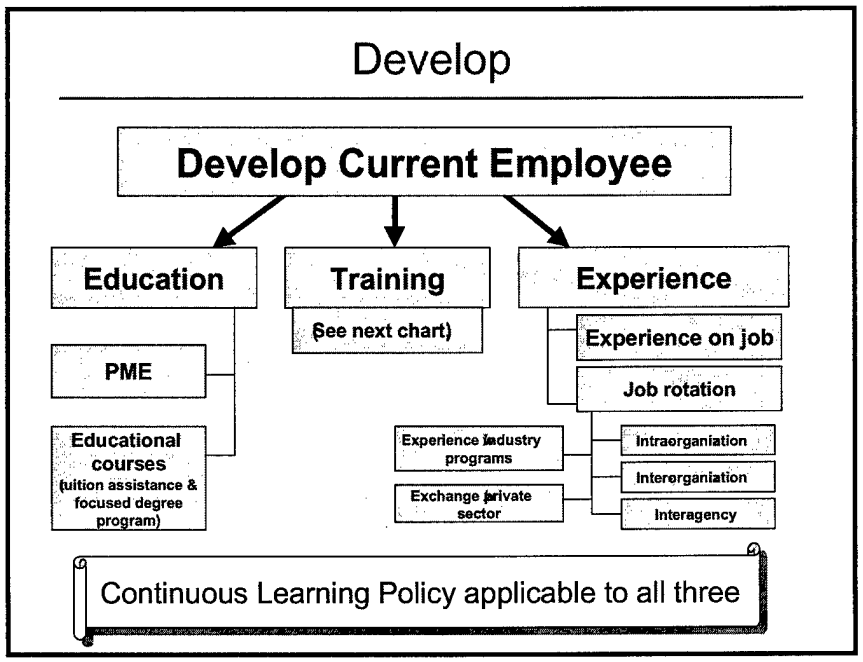
These barriers, and other types of issues that can act as barriers; these are discussed at Appendix N

Need for a Coherent Plan of Force Management

The Senior Steering Group also recommended a follow-on task to develop a coherent plan for hiring and retiring civilian members of the acquisition and technology workforce. This follow-on work, to be undertaken by the DUSD (AR) and the DASD (CPP), should address the initiatives discussed above and the issues associated with them.

DEVELOPING CURRENT EMPLOYEES

The final major option in the model is perhaps the most diversified. It is summarized in the two charts that follow and their accompanying narratives.



Education

DESCRIPTION

In developing the competencies of current employees, three major alternatives exist. The first of these is education. Professional military education (PME) is available in all four Services. In recent years, there have been increases in the numbers of DoD civilians participating in PME, a trend that should be continued. DAWIA requires that tuition assistance be afforded to all acquisition corps members. These educational courses can culminate in a degree, or they may target a specific competency offered in a certain course or in two or three courses. The Air Force Institute of Technology (AFIT) and the Naval Postgraduate School have offered focused advanced academic degrees for many years.

ANALYSIS

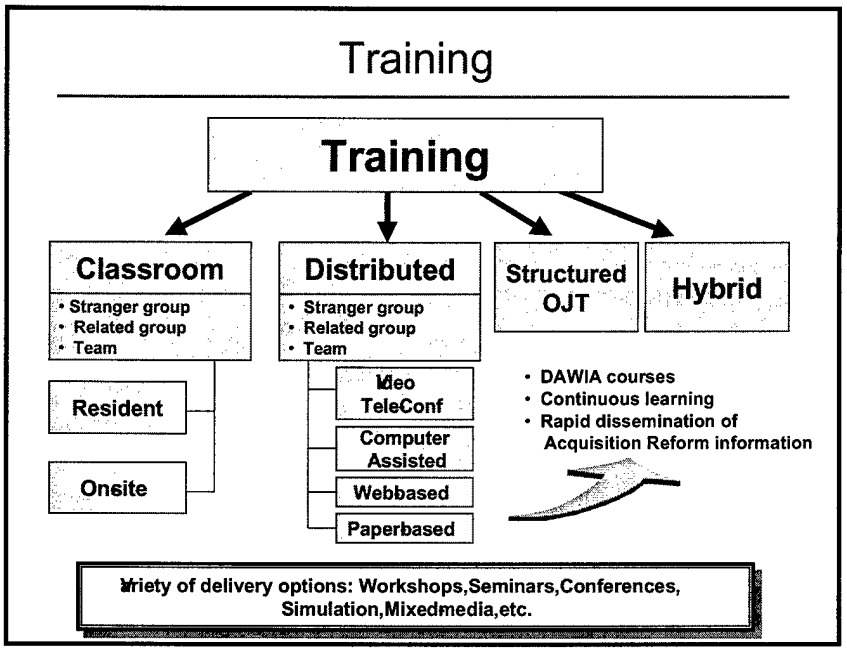
Education courses serve as an excellent means of giving employees a foundation for future development and growth, both in subsequent training and education and in on-the-job experience. By providing a broad-based foundation, education programs give workers more flexibility in subsequent career paths. Such courses can also contribute to

the development of the judgment-based skills, such as simulation, business analysis, and software and risk management, that are considered essential for the future acquisition workforce.

Education courses are usually conducted in an environment that takes the individual from their workplace for an extended period. This is in contrast to training courses, which are almost always shorter and sometimes allow the individual to return to the workplace periodically. Educational courses can also be more costly to conduct on a sustained basis. This drawback, coupled with the fact that education does not produce easily identifiable, measurable skills and competencies, can make education difficult to justify from a cost-benefit standpoint.

The Senior Steering Group expressed concern that the DAWIA tuition reimbursement authority (Section 1745(a)) will expire in September 2001. This provision of law, which requires DoD to "provide tuition reimbursement and training (including a full-time course of study leading to a degree) ",.has proven to be a beneficial program. The Senior Steering Group recommended that immediate action be taken to prepare legislation to extend authority for at least five years, or to make this a permanent authority.

Training



DESCRIPTION

The chart above illustrates the wide range of training alternatives available in today's environment. Training can be organic, or it can be outsourced to other federal agencies or the private sector.

Training in the traditional classroom setting still has a vital role, but technology has introduced a wide variety of training alternatives that did not exist a decade ago. In some cases it will not be a single alternative but, as the block on the far right suggests, a hybrid combination of several alternatives. DLAMP is an excellent example of a hybrid approach.

In the traditional classroom and distributed approaches, there are three student mix possibilities: stranger group, related group, and team. In the stranger group, the students have no common affiliation with one another. In the related group, students come from the same, or similar, organizations or functional areas and have a common affiliation. In the team approach, which the Working Group felt needed special emphasis, the students are all part of a team (for example, an IPT) and the training is usually delivered at when a new function or process is being introduced. Traditional "classrooms" have changed dramatically in recent years and often the classroom goes to the students~~the~~ "on-site" option.

The Internet, video-teleconferencing, and computer-assisted learning have dramatically enhanced the traditional paper-based mode of distributed training. Distributed learning will continue to deliver the traditional DAWIA courses, but it is also a valuable technique

for continuous learning and rapid dissemination of information concerning acquisition reform initiatives. Another valuable source of competencies is structured on-the-job training (OJT). OJT, as opposed to "experience on the job" discussed below, implies a conscious and monitored program of training.

ANALYSIS

Because distributed training is predominantly delivered via electronic media (the lone exception being paper-based training), it usually provides the greatest responsiveness and flexibility in scheduling. It will also often be the fastest way to reach the greatest number of students, particularly when they are geographically dispersed. Because electronic media facilitate the subdivision of material into discrete elements, they easily support situations where new or revised material must be inserted into curricula to meet the needs of rapidly changing functional requirements. Such training is also effective in providing quick training events that give an individual an introductory level of knowledge or general familiarity with a subject and thus can be used as a preliminary event leading to other, more traditional training activities.

In any form of training~~wh~~ether distributed or traditional classroom~~th~~ere are advantages and disadvantages to the use of a stranger group. On the negative side, if a group of students is disparate in terms of common experiences and orientation, they may be limited in their ability to learn from each other's previous experiences. ~~h~~wever, if they perform work in similar functional areas but under slightly different policies and procedures, they might benefit dramatically from hearing how their jobs are done elsewhere.

While some technologies enable students and instructors to interface with one another in a distributed learning environment, this medium is generally not the best way to conduct training that requires extensive interplay among the participants.

All training approaches other than experience on the job remove the individual from the workplace, at least for a limited period of time. Even when technology enables students to take training at their desks, they are, in effect, removed from the workplace for the period of time during which they receive the training.

The Working Group commended team training as a particularly effective innovation. Team training should be considered whenever the organization functions as a team. A good example of team training coupled with the on-site option occurs when an organization, such as a program management office, reorganizes into an IPT structure for the first time or into a much changed IPT structure. ~~h~~re, team training at the organization facility will promote a rapid spin-up to the new way of doing business. Team training was also cited as a very effective way to overcome organizational resistance to change, because the whole organization, as opposed to one or a few individuals from it, is exposed to the new concepts and processes simultaneously. This can overcome the "we don't do it that way here" syndrome many newly trained people experience when they return to their home organizations from training.

Some electronic delivery media allow students to take training at a time of their own choosing. This can result in an unexpected disadvantage of distributed training. Because of the flexibility the employee has, some supervisors expect their employees to complete distributed training on their own time (such as during lunch breaks) rather than on government time. This is an obvious deterrent to employees.

Economically, distributed training usually has significant start-up costs, both for training providers and for receiving organizations. Training providers must go through a rigorous process to convert classroom training to electronic media (or create it from scratch), and they must devote resources to the staffing of "help desks" to handle both technical and functional questions from students. At the receiving end, distributed training may require expenditures to upgrade local hardware and software to a level that supports the training media.

The primary strength of traditional classroom training lies in its ability to support situations that require a sustained dialogue with the instructor or with other students. Interplay among students might be needed in team learning situations, or when the subject matter requires an exchange of ideas and thoughts. Interplay with the instructor might also be required in hands-on training, where a student has to perform a required task under the watchful eyes of the instructor to demonstrate the required degree of proficiency.

Experience

DESCRIPTION

Experience is available from many sources. It can result in the attainment of competencies by itself, or it can be a powerful reinforcement of competencies initially gained through education or training. Perhaps the most universal source of experience is the daily performance of tasks and interaction with co-workers. This is usually the least structured way to gain experience, but with careful planning and guidance from the supervisor, it can be very effective. Planned, or naturally occurring, job rotation is another valuable way to gain experience and is encouraged in DAWIA.

Within "job rotation" there are several sub-options, some of which do not require physical relocation of the individual. In addition to rotations within the organization, rotations can be with other DoD organizations or with other federal agencies or departments. Rotational assignments may involve only one person, but they can also be "job swaps" for a specified period of time. Two sub-options within "job rotation" involve the private sector. One is experience with private-sector (the education with industry and training with industry programs) under which a DoD employee is assigned to a private-sector firm for a one- or two-year period. Another option is an exchange program with the private-sector, in which a private-sector employee comes to DoD for an experiential assignment. It should be noted that these programs do not have to be solely with industry; they can also involve academia.

ANALYSIS

Experience on the job is the only training delivery means that keeps workers in the workplace, learning new skills and competencies in the actual environment in which they have to operate every day. Because they oversee the experience on-the-job process, supervisors and managers can monitor and guide the acquisition of knowledge and ensure that workers are meeting local standards every step of the way. This gives newly trained workers automatic credibility in the workplace, because they learn new skills from using them in the real world.

The downside of experience on the job is that it is shaped by the local environment. If the trainee's supervisor has poor standards and does not insist on high-quality performance, then the training event is of questionable value, and it may be necessary for individuals to re-learn the skills and competencies at some later point in their careers.

An additional environmental factor is that the local workplace might not require individuals to perform the full range of functions associated with their career fields. The experience gained might be valid and up to standards, but it could still be incomplete. In such situations, relying on experience as the primary training medium may leave workers lacking in key competencies.

Experience through job rotation offers employees opportunities to acquire competencies not used, or used to a lesser extent, in their present work environment. This creates the ability to obtain multifunctional skills that benefit IPTs. Additionally, inter-organizational and inter-agency rotational assignments, such as those in DLAMP, offer broadened exposure to other DoD Components and other agencies. Job rotations with the private sector offer unique opportunities to acquire skills for which requirements are emerging but that are not yet available in the federal sector. The Continuous Learning Policy also encourages job rotation as an excellent source of experiential learning.

Section 8 Recommendations

This section summarizes the recommendations of the Working Group and the Senior Steering Group. They address three major categories: competencies, developing the workforce, and hiring and retirement. The paragraphs that follow discuss these categories and the recommendations relating to them.

RECOMMENDATIONS PERTAINING TO COMPETENCIES

Competencies Recommendations

- The DUSD (AR) and the DASD (CPP) should determine the strategy for incorporating universal competencies into A&T development/training programs, considering costs and competing demands on workforce. Complete by July 2000.
- The FIPTs/OAIPT, with oversight by a Senior Steering Group, should:
  - compare the future functional competencies with current competencies to determine:
    - gaps
    - changes required in audience/emphasis
    - current competencies that can be eliminated
  - present IPRs to the SSG every 60 days beginning as soon as possible
  - develop coordinated implementation plans with funding identified by July 2000

Major Recommendations

The preceding chart shows the major recommendations regarding competencies.

- The Senior Steering Group and the Working Group recommend that the universal competencies be incorporated in professional development programs for the A&T workforce. They recommend that the DUSD (AR) and the DASD (CPP) determine the best strategy for incorporating the universal competencies in the current A&T development programs and that effort be completed by July 2000. Existing training and programs should be examined to determine the degree to which they currently address universal competencies, especially at the entry and journey levels. This determination should also establish a realistic

balance between the competing demands on the workforce (e.g., mission accomplishment, functional training, career broadening, and universal competency development) as well as budgetary limitations. It also needs to consider whether a centralized, directive-driven implementation or a decentralized policy implementation approach is more appropriate. This recommendation builds on the provision in the Continuous Learning Policy that already states

> Workforce members expected to perform leadership duties (i.e., team leader, supervisory, managerial, or executive functions) will agree on the competencies needing special emphasis at a given stage of career development and seek out component and other training programs to supplement and enhance needed development of these competencies.

- The second major recommendation deals with integrating the future functional competencies into the Department's overall development programs for the acquisition and technology workforce. The FIPTs should analyze the functional competencies and supporting documentation produced by the Working Group and develop coordinated and funded implementation plans, as approved by the OAIPT, to attain the appropriate functional competencies. The FIPTs and OAIPTs should present in-progress reviews (IPRs) to a senior steering group (who's membership will be designated by the USD [AT&L]) every 60 days, beginning as soon as possible.

Supporting Recommendations

- The DUSD (AR), in coordination with the DASD (CPP), the FIPTs and the OAIPT should review the universal competencies developed by the Working Group and publish a final list in a format accessible to all members of the acquisition and technology workforce.

- Each FIPT should compile and maintain a comprehensive database of functional competencies for its career fields. DAU should continue to develop a database of competencies covered in current DAU courses. These two databases should be structured in a compatible manner in order to facilitate rapid "gap" assessments.

RECOMMENDATIONS PERTAINING TO DEVELOPING THE WORKFORCE

Developing the Workforce Recommendations

- The DUSD (AR), in coordination with the DASD (CPP), should ensure that:
  - a legislative proposal is prepared to extend DAWIA tuition assistance authority (expires September 2001)
  - DPG directs the Components to adequately fund the Continuous Learning Policy and monitor compliance
  - all Components have active rotational / developmental assignment programs
- DAU should increase Team Training

Major Recommendations

The chart above displays the major recommendations regarding the development of the workforce. The Senior Steering Group and the Working Group recommend actions that focus existing programs on the universal and functional competencies. Specifically they recommend that :

- Section 1745(a) of DAWIA requires the Department to provide tuition reimbursement for acquisition personnel. This authority expires in September 2001. Action should be taken as soon as possible to prepare legislation to extend the expiration date for that authority, or to make it permanent.
- Defense Planning Guidance (DPG) was issued for the FY2000 budget to ensure that the Components adequately funded the implementation of the Continuous Learning Policy. The FY2001 DPG should include similar guidance and the DUSD (AR) should monitor compliance with that guidance.
- Section 1734(e)1 of DAWIA directs the establishment of policy encouraging assignment rotations. While the Components have established such programs, the DUSD (AR) should review them to ensure their consistency and effectiveness.

- The members of the Working Group believe that Team Training is a very effective method of training, especially when the organization functions as a team or when cultural change within an entire organization is needed. They recommend that DAU expand its current Team Training offerings.

Supporting Recommendations

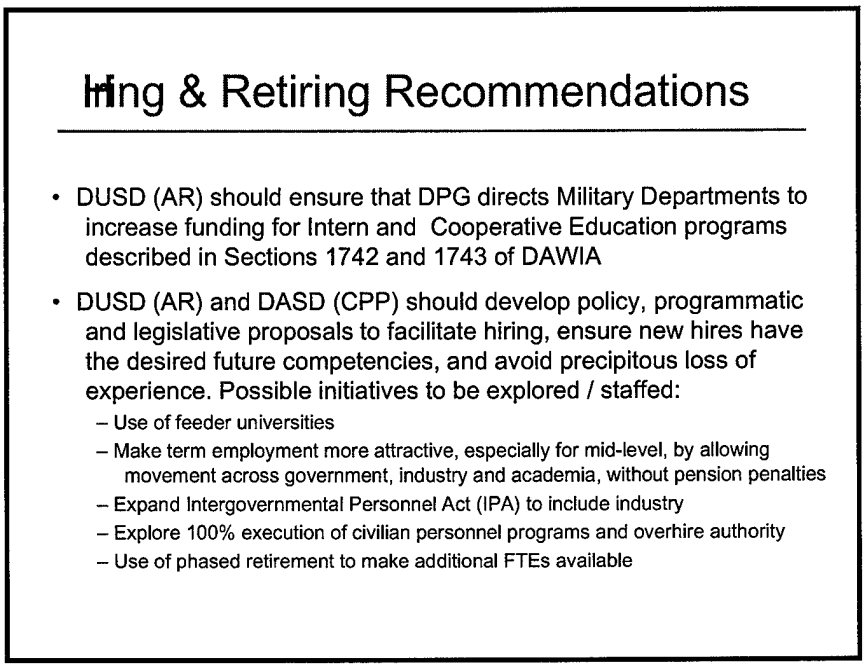
- Completion of a Leadership Effectiveness Inventory (LEI) assessment, and its use in preparing individual development plans (IDPs), should be made mandatory for all members of the acquisition and technology workforce. The DUSD (AR) should assess the implications of this policy change.

- The DUSD (Logistics) should develop appropriate Sustainment career paths, and education and training guidance, that parallels those for the rest of the acquisition and technology workforce.

- The Deputy Under Secretary of Defense (Science and Technology [S&T]) should develop appropriate S&T career paths, and education and training guidance, that parallels those for the rest of the acquisition and technology workforce. This effort should build on the findings of the separate working group currently assessing training and development needs for the S&T community.

- The Chairs of the Acquisition Management Functional Board and the Technical Management Functional Board, in coordination with the DUSD (S&T) and the OAIPT lead from Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), should determine the appropriate career field alignment and training needs for acquisition software development personnel.

RECOMMENDATIONS PERTAINING TO HIRING AND RETIREMENT



Major Recommendations

- In view of the projected large number of losses from the acquisition and technology workforce during the period from 1999 to 2005, the DUSD (AR) should ensure that DPG directs Military Departments to increase funding for Intern and Cooperative Education programs described in Sections 1742 and 1743, Chapter 87, 10 USC.
- The DUSD (AR) and the DASD (CPP) should develop policy and legislative proposals to facilitate hiring and to ensure that new hires have the desired future competencies. They should also explore the possibility of new legislation or policy and programmatic actions that would avoid the precipitous loss of experience predicted in the next five years. They should examine and, if appropriate, develop legislative, policy, and/or programmatic proposals in the following areas:
  - feeder university agreements.
  - amendments to various sections of Title 5, U.S. Code to enable DoD to attract term employees who can shift easily between jobs in government and industry, without pension penalties.

- an amendment to Title 5, U.S. Code to expand the use of the Intergovernmental Personnel Act (IPA) program to include personnel from industry. It should be noted that such legislation must address significant questions about the potential for conflicts of interest and abuse.
- legislation to permit phased retirements to avoid the precipitous loss of experience from the acquisition and technology workforce. Any such proposals should ensure that the phased retirements would make additional FTEs available for new hires.
- 100% execution of civilian personnel programs and overhire authority.
- implications of the revocation of "dual-comp" restrictions for retired officers.

Supporting Recommendation

The DUSD (AR) should convene a senior group to strategize appropriate forms of government-industry executive exchange.

Section 9 Summary and Conclusions

The defense environment of the first decade of the 21st Century will witness the heightened impact of resource and demographic pressures on the acquisition and technology workforce.

The cumulative effect of lean defense budgets will drive a continuation of the Department's efforts to ensure that available budget dollars field the most effective possible warfighting force. Decreasing the amount spent on acquisition and technology and base operations personnel and infrastructure will be decisive to this effort and will result in further consolidation within the department, greatly increased competitive sourcing of operations and functions, and increased reliance on information technology.

The acquisition and technology workforce, already reduced by previous personnel cuts, will continue to decline in size because of legislation governing end-strength, the effect of competitive sourcing efforts, retirements, and loss to the commercial sector of highly trained acquisition professionals covered by FERS. The remaining workforce will be older because of the use of seniority rules in making previous personnel reductions, the inability to hire in recent years, and the loss of younger employees to industry.

Clearly, programs must be put in place to attract new personnel where appropriate to the acquisition and technology workforce and develop them and current personnel to face the challenges of a changing environment. The workforce must be flexible. They must possess business acumen so they can become "smart acquirers" who manage producers not products. They must be results driven so they can operate in a performance based business environment that focuses on efficiently delivering products to their warfighter customers. They must be able to foresee and implement change. They must possess the management and personal skills needed to operate in a multifunctional, team-based, integrated digital environment.

Failure to shape the workforce by not hiring the skills needed for the future and agilely adapting the skills of the current workforce to these realities will jeopardize its ability to provide responsive, affordable support. This report has suggested measures that will allow DoD to realize a vision of a future acquisition and technology workforce that will be smaller, highly talented and motivated, adaptable, knowledgeable of commercial business practices and able to operate in a dynamic, rapidly-changing environment.

Appendix A.Future Acquisition and Technology Workforce Working Group Charter

INTRODUCTION AND BACKGROUND

Since the mid-1980s, the Department of Defense (DoD) has focused on increasing the professionalism of the workforce. These efforts have been marked by the passage of the Defense Acquisition Workforce Improvement Act, the establishment of the Defense Acquisition University, and expanded training opportunities through the Defense Systems Management College, among other activities.

The 1 April 1998 Secretary of Defense report to Congress, *Actions to Accelerate the Movement to the New Workforce Vision*, identified and described an urgent need to reskill the future workforce, to transition from a workforce of "do'ers" to a workforce that manages the work of others. This effort is to support that initiative.

AUTHORITY AND DIRECTION

The Director, Systems Acquisition is directed to establish a Working Group to describe the performance characteristics and training requirements of a future acquisition and technology workforce. The group will also outline action plans and the requisite documentation, legislation, and other tools to support career paths for transitioning from today's workforce to the DoD A&T workforce of the 21st century.

The Working Group membership shall include representatives from the Office of the Secretary of Defense staff, the military departments, and the defense agencies.

APPROACHM ETHODOLOGY

To implement the SecDef's April 1998 recommendations to Congress, numerous 912c Working Groups have been formed to address specific items contained in the report, *Actions to Accelerate the Movement to the New Workforce Vision*. These Working Groups are to report their findings by the first quarter FY2000. The Future Workforce Working Group will review the assumptions, findings, and products of the 912c Working Groups and other Working Groups whose efforts also focus on the future acquisition concept of operations, projected acquisition programs, and overall future business environment.

The Working Group will also consider related acquisition and technology workforce planning actions. Information on the projected trends in size and composition of the acquisition and technology workforce as reflected in current plans, programs, budgets, end-strengths, and workloads will be examined. The emerging concept of operations for acquisition of products, systems, and services will also be reviewed.

The Working Group will develop a methodology to integrate all related actions and information into a tool to support management of the future acquisition and technology workforce. The methodology will provide a process for translating functions to be performed by the workforce into key competencies. The competencies will, in turn, be structured into outlines for career development plans.

TASKS

The Future Acquisition and Technology Workforce Working Group will consider both near term and far term acquisition and technology workforce issues. At a minimum, the Working Group will:

- Assimilate projected changes to current acquisition and technology functions and processes to describe required future workforce functions.
- Identify knowledge, skills, and abilities required to accomplish acquisition functions and the types of career development actions necessary to support that development.
- Identify personnel, manpower, and information management issues that affect the transition of the workforce and the legislative, regulatory, or policy changes needed to support the transition.
- Provide an annotated action plan (tasks, responsibilities, schedule, milestones, and remaining actions) for professional development and force shaping of the acquisition and technology workforce.

SCHEDULE

Provide the annotated action plan by December 15, 1999.

Appendix B.Future Acquisition and Technology Workforce Study Senior Steering Group

Mr. John C. Wilson, Jr. -Director, Systems Acquisition, ODUSD (AT&L) - **Chair**

Dr. James McMichael -Director, AET & CD - **Executive Secretary**

Mr. Keith Charles - Army DACM

Mr. Herbert D. Cowles -OSD/Defense Agency DACM

Dr. Diane Disney -DASD, Civilian Personnel Policy

Ms. Marty T. Evans - Air Force DACM

Mr. William Hauenstein - Navy DACM

Mr. Jeff Jones - Deputy Director, Defense Logistics Agency

Mr. Roger W. Kallock -DUSD (Logistics)

Mr. Stan ZSoloway -DUSD (Acquisition Reform)

Ms. Eleanor R. Spector -Director, Defense Procurement

Mr. Bob Tuohy -DUSD (Science & Technology)

Appendix C.Future Acquisition and Technology Workforce Study Working Group

MEMBERS

Colonel (USA) Joseph Johnson –Working Group Chair

Mr. Lou Iari –Deputy Working Group Chair

Dr. Alan W. Beck - Defense Systems Management College

Mr. Matthew Barr - Acquisition Career Management Office (Army DACM)

Mr. Marcus CBerry - Defense Contract Management Command (BG)

Mr. Norman S. Bull –Defense Systems Management College (ISI)

Mr. Nelson Cahill –Defense Logistics Agency

Mr. Stephen F. Chester –Office of the Secretary of Defense (Civilian Personnel Management Service)

Mr. Steve Cohen –Office of the Director of Defense Procurement

Mr. Danal Dennison –Acquisition Education, Training and Career Development

Maj Wayne Descheneau - Air Force DACM

Mr. George Desiderio –Executive Secretary Technical Management Functional Board

Captain (USN)Steven Fahrenkrog - Acquisition Reform Acquisition Systems

Mr. Michael A. Ferraro - HDCMC Technical Operations Group

Ms. Joni Forman –Office of the Under Secretary of Defense (AT&L) SA/PM

Ms. Maria L. Holmes - Acquisition Career Management Office (Army DACM)

Mr. Dick Kane - DCMC Technical Operations Group

Colonel (USAF) Walter J. Kozak - Defense Logistics Agency

Ms. Karla Merritt - Office of the Under Secretary of Defense (AT&L)/DoD DACM

Mr. John Metzger - Business, Cost Estimating and Financial Management (BCEFM)

Ms. Betty Moseley-Brown - Navy DACM

Mr. Francis X. Donnan - Bunyard Enterprises, Inc.

Mr. R. Pillai - Defense Contract Management Command

Mr. Maurice Poulin - DCMC Technical Operations Group

Mr. Stephen R. Ramp - Office of the Deputy Assistant Secretary of Defense (Civilian Personnel Policy)

Mr. Ronald Richardson - Acquisition Reform Acquisition Systems

Ms. Joanne Spriggs - Deputy Under Secretary of Defense (Science and Technology), Plans and Programs Office

Mr. Jesse Stewart - Acquisition Management Functional Board

Ms. Jean Szutenbach - Navy DACM

Mr. Michael Taylor - Defense Contract Management Command

Ms. Fran Walinksy - Defense Logistics Agency, Defense Logistics Support Command

Mr. Leonard Yankosky - Defense Logistics Agency, Defense Logistics Support Command

Appendix D.Research Sources

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13. *Requirements and Acquisition* . February 1999. Section 912c Requirements and Acquisition Study Working Group.

14. *Product Support for the 21st Century* . Report of DoD Product Support Reengineering Implementation Team. March 1999.

15. *The Commercial Business Environment* : *Accelerating Change Through Enterprise Teaming* . Report of DoD Section 912c Commercial Business Environment Study Group. DRAFT. June 1999.

Appendix F.Global Future Acquisition Environment Trend Narrative

The acquisition business will rely more on technology and will increase the adoption of best practices. The following is a description of the acquisition environment global trends for the future acquisition and technology workforce.

SMALLER,M ORE JOINT WORKFORCE

The U.S. labor force will grow slowly and have a smaller entry workforce. It will remain predominantly white/non-Hispanic (some 70%) despite a higher growth rate for minorities and women. The defense acquisition and technology workforce will continue to shrink with continuing constraints on the federal budget. This will require a greater flexibility in federal recruitment and retention practices. With an increased focus on competitive sourcing, more commercial-compatible contracting practices, and interoperable systems, the role of non-federal individuals and organizations in performing appropriate acquisition functions will increase. Downsizing will require an increase of new, high quality hires at the entry level to replenish the retiring workforce. Cross-service coordination and support will enhance the growth of more joint programs and a more efficient and effective "purple" workforce.

- Acquisition workforce will shrink.
- The aging workforce will require replenishment.
- Increase in non-federal individuals and organizations performing appropriate acquisition functions.

OLDER WORKFORCE

In the civilian defense acquisition workforce, it is estimated that by the end of FY2004 the average age will be 47.4 years and that approximately 18% will be eligible to retire. The job series that make the primary contribution to the acquisition process are projected to experience losses that range from about 35 % to 50 %. We will be challenged to update this more senior workforce with latest technological advances and transition from functional depth of knowledge to multi-functional breadth of knowledge. Mobility—organizational, occupational, or geographic—will also be more problematic with an aging workforce. DoD must plan to replenish the skills being lost as the workforce retires through a structured development program for entry-level personnel.

- Technology and management skills training challenges.
- Mobility will become more problematic with aging workforce.
- Development programs for entry-level personnel will be critical.

FEWER MILITARY

The demands of global presence and continuing deployments will drive the reallocation of military positions to combat and frontline support units to relieve an ever-increasing demand for deployment. Accordingly, fewer military personnel will remain within the defense acquisition and technology workforce. However, military personnel will continue to play a critical role in leadership positions or advisory roles. More military personnel will come to acquisition with an operational background, providing effective interfaces with the warfighting community.

- Fewer military in acquisition workforce will serve as key interface with warfighter.

BUSINESS SKILLS

Successful acquisition managers will possess a broad range of knowledge, skills, and abilities in which leadership and critical thinking skills will be the most important and be required to pull teams together and lead integrated activities to optimize user requirements.

MORE GENERALISTS

With fewer people and greater responsibility, successful program managers will possess a higher degree of proficiency and flexibility in more functional skill areas than are required today. Broader education requirements will not obviate the need for individual technical expertise nor for continuing support from functional specialists supporting critical areas of contractor performance and compliance reviews. However, as a result of the combined effects of compensation imbalances with private industry and increasing outsourcing, these specialists may no longer readily be available organically but will be obtained through FFRDC or support contractor sources.

- PMs will require more proficiency in more functional areas.
- Increased reliance on contractor/FFRDC technical specialists.

INFORMATION TECHNOLOGY

Changes in communications and data management will increasingly enable workers to choose when, where, and how they work. It will also enable management to choose whether to buy, build, lease, or store/retrieve the intellectual capital needed to perform that work. Networks will be essential, and the ability of the nodes (weapon systems and offices) to link and communicate will demand that the members of the defense acquisition and technology workforce possess a high degree of competency in information technology. Although the concept of operation issues will have been established to ensure effective data management tools are available to support operations, there will

remain challenges with information flows and system integration. The most significant challenge remaining will be how to fuse data to provide timely, needed information in a secure environment without information overload.

- Acquisition workforce will require high competency in information technology.
- Fusing data to provide timely, needed information without overload will be a challenge.

VIRTUAL OFFICE

Rapid communication and common data availability to all members of an organization allow the organization to be dispersed geographically. The integrated data environment will enable workflow management that allows the virtual organization to make decisions. This trend toward virtual organization will accelerate as the workforce continues to decline and technology enables it. Telecommuting will increase~~re~~mote locations may be the hallmark of the early 21st century in private industry and government.

- Rapid communication and common data availability will allow organization dispersal.
- Cost savings and personnel reductions will drive PMOs to the user, tester, or contractor facility.

KNOWLEDGE MANAGEMENT

The increase of data available (amount and variety of sources) necessitates a translation of the data into information to support effective decision making (i.e., knowledge management).

- A knowledge management infrastructure that organizes and transfers information in meaningful ways will be imperative.

LEARNING ORGANIZATION

K~~o~~owledge~~glo~~bal, organizational, functional, business, technical~~will~~ be continually refreshed, as the acquisition and technology workforce moves from transaction work to management of processes. Creating and maintaining learning organizations that seek out and adopt best practices through such techniques as the Enterprise Change Model will be critical.

CROSS-FUNCTIONAL TEAMING

Although functional expertise will still be essential, multi-functional teaming, including industry, across enterprise organizational, functional, and geographic borders, will become institutionalized building on recent integrated product team successes.

COMMERCIAL PRACTICES

As we move toward a performance based business environment, there will be increased use of commercial practices to achieve required performance at the most reasonable cost.

PARTNERING WITH INDUSTRY

Conducting research and technology development in partnership with commercial activities and universities fills a critical void for work that cannot be accomplished in academia or industry alone. Partnerships with industry extend from collaboration on specific R&D projects, to contracts for general technical support, to making leasing arrangements for operation and maintenance facilities. Another example of partnering with industry is the unique public-private partnerships under competitive contracts (e.g., depot maintenance).

- Collaboration on specific R&D projectseentracts for general technical support.
- Competitive public-private partnerships (e.g. depot maintenance).

GOVERNMENT / INDUSTRY PERSONNEL MOBILITY

In order to make the most effective use of expertise, there will be a trend to reduce barriers to personnel mobility between government and industry. This will allow utilizing industry experts in government positions on a term basis. It will also support developmental assignments for government personnel within the private sector.

- Trend to reduce personnel mobility barriers between government and industry.
- Industry experts to be employed in term government positions.
- Developmental assignments in private sector for government personnel.

INTEGRATION OF THE ACQUISITION AND TECHNOLOGY FUNCTION

Improvements must be made by streamlining and integrating the development process from pre milestone 0 (Basic Research, Applied Research and Advanced Technology Development) stages to follow-on Milestone I, II and III stages of acquisition. This highlights the Departments life cycle, cradle-to-grave approach that includes integrating functions such as requirements development, systems planning, research, development, testing, evaluation, and science and engineering.

EMPHASIS ON SERVICES INSTEAD OF PRODUCTS

As the government turns to performance based acquisition and emphasizes competitive sourcing and management of suppliers, the number of service contracts and the dollar value that they represent will increase.

COMPETITIVE SOURCING

In all phases of the acquisition process the preference will be to obtain best value by competition between government and private industry to provide products and services.

- Competitive sourcing for products, services will increase to obtain best value.

ACTIVITY -BASED COSTING

Government activities will increasingly define their product and service outputs in terms of unit cost to support creation of most efficient government organizations and competitive sourcing and to permit an accurate and full transfer of costs to using activities.

- Define product and service outputs in terms of unit cost.
- Supports competitive sourcing and transfer of cost to user.

Appendix G.Functional Future Acquisition Environment Trend Narrative

The following is a description of the acquisition environment functional trends for the future acquisition and technology workforce. These trends are organized into major categories used in the *Report of the Defense Science Board Acquisition Workforce Study Panel of the Defense Acquisition Reform Task Force on Defense Reform.*

ADOPT NEW APPROACH TO ACQUISITION

Life Cycle Cost Reduced Total Ownership Cost Emphasis (RDT)

Requirements determination and acquisition strategies will stress cost as a military requirement (Cost as an Independent Variable [CAIV]). As fiscal constraints force the DoD to keep and operate systems longer, there will be ever increasing emphasis on controlling O&S costs. Providing program managers with responsibility and budget authority for systems management throughout the life cycle will provide incentives for proper tradeoffs during development, acquisition, and modification, thereby controlling total ownership costs. This trend will be constrained by the flexibility the operational commanders will lose as funding control is transferred to PMs.

- DoD will continue to operate systems for longer than originally planned and combined with fiscal constraints, will increase emphasis on controlling O&S costs.
- PMs will have greater insight and oversight of life cycle costs and will make better decisions to control O&S costs.

Evolutionary Acquisition Reduced Cycle Time

DoD will increasingly employ the industry concept of incremental development in addition to continued use of Advanced Concept Technology Demonstrations (ACTDs) to reduce cycle times. The decision to enter product development will be made when technology is mature and risks are understood. Designs will not be locked in until two or more years in advance of the technologies being available for use. These shorter cycle times will reduce the development cost and "time to market" with reduced risk, and improved capability to the warfighter in each increment. Latest technology advancements will continue to be integrated and incorporated in future upgrades through product improvement programs.

- Warfighters and acquirers will agree on militarily useful increments that will be developed and fielded quickly using current technology.
- Instances where large technology leaps requiring technology development concurrent with product development to meet a forecast threat will be the exception.

Flexible User Requirements

Flexible requirements will enable evolutionary acquisition with the Warfighter accepting militarily useful increments to capability. To address affordability and field a system more cost effectively, there will continue to be tradeoffs in requirements vs. cost and risk.

- Warfighters will increase their acceptance and use of flexible requirements.

Technology Refreshment of Systems (Modernization throgh Spares)

Emphasis on open architectures and modular designs will allow the insertion of newer technology into legacy and new-build systems to enhance performance and reliability and reduce near term and life cycle O&S costs while retaining the basic platform.

- Technology refreshment will be concurrent with sparing for both consumables and repairables.

Increased Scope of Other Transactions

To avoid accounting and oversight barriers to contracting for research and development, DoD will expand the use of other transaction authority to acquire such services. DoD will seek to expand this technique to prototype projects and production.

- The use of other transactions will increase in scope and migrate to include production.

Increased Use of Best Value Dissimilar Competition

There will be more use of system competitions decided with best value contracting practices that have a variety of solutions for meeting a requirement. This technique will introduce competition into some previously sole source environments. A constraint will be the warfighters' limited ability to change the force structure.

- There will be an increased reliance on best value to determine competitions.
- There will be an increase in our ability to use dissimilar competitions.

Increased Use of Performance-based Contracting

The trend throughout the entire acquisition spectrum to use Statements of Objectives rather than detailed, "how-to" specifications, will increase. Performance-based contracting will provide an increased opportunity for the contractor to introduce cost effective changes and increase profits through his innovation.

- Increased reliance on performance-based contracting.

hcrease Collabration Btwen ser and Aqsition Commaities

The continued emphasis on affordability and reduction of cycle times will cause a higher degree of interaction between the requirements and acquisition communities. User communities will increasingly consider cost and schedule trade-offs. This will enable the acquisition community to work toward more rapid fielding of incrementally increased capabilities.

- There will be an ever-closer working relationship between the user community and the acquisition and technology community.

EMPHASIZE COMMERCIAL/MILITARY INTEGRATION

Increasing access to the commercial industrial base will enable DoD to take advantage of the technology found in world-class commercial companies that have maintained leadership positions in worldwide commerce. At the same time DoD's traditional suppliers will transition their production to also include more commercial work. Through these actions DoD will be in a better position to take advantage of larger production runs to reduce costs through economies of scale. Enabled by open systems architecture, DoD will insert commercial technology and products into its systems to improve reliability, maintainability, and sustainability through continuous technology refreshment.

- The number of commercial firms that do business with DoD will increase.
- DoD suppliers will increase the commercial content of their business base and integrate their operations to be more commercial in nature.

It should be noted that concern for intellectual property rights is one of the primary barriers that prevent technology rich, commercial business units and their laboratories from allowing DoD access to their technology. Addressing this concern is essential for the CMI efforts to succeed.

hcreased se of Common Biness Pactices

The transition of DoD to a Performance Based Business Environment (PBBE), maximizing the use of commercial items and practices, is a key step toward achieving civil-military integration. The Single Process Initiative (SPI) was the mechanism the Department chose to implement changes to existing contracts. The replacement of multiple government-unique management and manufacturing processes with common, best, facility-wide processes that adopt best practices drawn from both commercial and government experience is expected to continue into the future. Emphasis must now also be placed on integrating suppliers into a performance based business environment as well. To assist in this integration, industry is working with the supplier base to facilitate supplier reform and acceptance of best practices. Corporate Single Process Initiative Management Councils will expedite the spread of common best practices among defense contractors, their suppliers, and the sectors in which they operate, thus further facilitating the integration of the defense industrial base and improving access to best value goods and services.

- The SPI will continue to spread best common practices throughout facilities, companies, and corporations and expand to include suppliers in the supply chain as well.

Employ Common Technology Bases

As DoD expands its access to commercial firms and its traditional suppliers do ever more commercial activity, the distinction between commercial and military technology will blur and DoD will rely more and more on a common technology base with the commercial world except in those areas where there is no commercial marketplace for a technology.

- Increased reliance on a common commercial technology base.

Employ Flexible Manufacturing (Economic Manufacture of Varying Size and Types)

As facilities, companies and corporations move to best-in-class processes, they will gain flexibility in their manufacturing that will allow them to mix products on common production lines. In addition, the suppliers will continue to exploit their ability to customize their products on common production lines at cost effective levels, even one unit, which will allow maximum responsiveness to customers. Flexible manufacturing is enhanced by the DoD SPI initiative. The day of dedicated production lines and process with unique, large production runs to support DoD will pass. Cost accounting issues related to flexible manufacturing will have to be addressed.

- Increased reliance on flexible, lean commercial manufacturing.

Extend MilSpec/Standard Reform to Reprocurements

The initial mil-specification and mil-standard reform policy was limited to new acquisitions. The intent was to move from reliance on detailed design specifications and process standards to stating requirements in performance terms. The trend will expand to apply these concepts to re-procurements.

- Reliance on performance specifications in re-procurements will increase.

MOVE TO INTEGRATED PAPERLESS ACQUISITION

Integrated Digital Environment

The DoD will continue to create a business environment characterized by the application of existing national and international standards, practices and technologies to automate the management and exchange of information. The overwhelming majority of acquisition and logistics operations will be based on digital methodologies and products. Program Managers will continue to have responsibility for data management systems and the appropriate digital environment. This will result in electronic data storage and greater

availability (access) where appropriate to a larger segment of people working on programs which should result in better and more timely decisions.

- Increased availability to data for appropriate people will result in better and more timely program decisions.

Simplifying the Integrated Digital Environment

DoD will align, to the maximum extent possible, with the commercial practice of a standard reference identification number in order to simplify DoD interfaces with the private and federal civilian sectors, facilitate Electronic Commerce/Electronic Data Interchange transaction routing, and minimize the infrastructure overhead required to process and maintain unique identification numbers.

- DoD will align with the commercial standard reference identification number system.

Achieve Paperless Contracting

The trend to paper-less contracting will accelerate, as the electronic medium becomes more versatile in creating, storing, displaying, retrieving, and modifying contractual material such as solicitations, proposals, contracts, and modifications. Electronic payment will be a key part of paper-less contracting. The department will accelerate the pace of ongoing initiatives for use of purchase cards, electronic catalogues, electronic commerce, and imaging.

- DoD will migrate to systems that rely on electronic mediums and eliminate the use of paper wherever practical.

Security/Proprietary Information

There will be a continuing challenge to provide secure access to information. Technology improvements, particularly in the information technology area, will allow for greater access to data while maintaining adequate and appropriate security. It will also facilitate our move to a virtually paperless environment.

- Technology improvements in security will increase access to data while protecting the classified and proprietary information.

RESEARCH, DEVELOPMENT, TEST AND EVALUATION (RDT&E)

Consolidation (Centers of Excellence)

Consolidation of RDT&E organizations may evolve naturally as a result of forces currently influencing organizations. For example, competition for budget and the continuing guidance to downsize could encourage organizational elements to migrate toward technology niches. The migration could also result in a set of centers of excellence to harvest

management efficiencies and economies of scale. The test and evaluation community is examining notions of a regional test range, presumably to achieve economies of scale while reducing overlap of function.

Increased Reliance on Non-DoD Organizations

Opportunities exist for DoD laboratories and test and evaluation centers to carry out cooperative activities with laboratories in industry, academia, and other federal agencies. Use of DoD organic capabilities remains in those areas where industry, academia and other government agencies do not possess the required capability. This trend of rationalizing the capabilities available in industry, academia, and other government agencies will also help reduce RDT&E infrastructure. However, as this trend continues, DoD needs to retain some in-house expertise in order to remain a "smart acquirer".

- Over time, a rationalization of government, academic, and industry capabilities will occur and result in consolidation/integration where appropriate.
- Retain in-house expertise to remain "smart acquirers."

Early Involvement of Operational Test and Evaluation

This concept calls for a greater participation of the operational test and evaluation community early in the acquisition process. Design decisions and trade-offs made during this period of an acquisition are a major determinant of a number of downstream activities including produceability, supportability and testability. While there are statutory requirements for operational test to be independent from the acquisition system, there is a general move within the DoD to combine some developmental and operational testing when appropriate. The goal is to make developmental testing more operationally realistic so critical failures can be discovered and fixed early, and to make the most efficient use of test resources.

- Greater and earlier participation of the test and evaluation communities while continuing to maintain their independence and objectivity.

Increased Use of Simulation-based Acquisition (SBA)

SBA is an emerging concept that will be expanded from segments of selected pilot acquisitions to the entire systems development process where appropriate. The intended purpose is to integrate modeling and simulation technology to impact all phases of systems acquisition including requirements generation. SBA encompasses more than just technology; it also includes cultural and process changes as well. The modeling and simulation domain will be utilized to identify the design issues and risks in the virtual world instead of actually bending metal thereby reducing total cost of ownership. SBA will be effectively applied up front in developing systems requirements as well as in testing the operational effectiveness of alternative approaches.

- The intended purpose is to integrate modeling and simulation technology to impact all phases of systems acquisition including requirements generation.

Separation of Technology Maturation from Product Development Combined with Rapid Advances in Technology

Many technologies will continue to develop faster than DoD can integrate them into weapons systems. Even with open architecture, fiscal constraints will drive acquisition processes to look for ways to limit the impact of technology turnover on cost and schedule. The trend will be to mature technology prior to use in product development. The use of mature technology in product development will allow EMD activities with risk low enough to allow fixed priced R&D as envisioned in the price-based acquisition trend and as routinely practiced in the commercial market place.

- Acquisition processes will strive to mature technology as a separate activity from product development.

Increased Emphasis on Interoperability as a Key Performance Parameter

There will be an increased emphasis for systems to be interoperable in a joint multi-service and combined (international coalition) environment. Interoperability will become an increasingly important key performance parameter for all programs.

- Interoperability will continue to increase in importance as a key performance parameter.

- Domestic and International programs must address the need for interoperability by identifying this as a key performance parameter.

Increased Emphasis on Software Development

Emphasis on acquisition software development and performance to reduce time and cost of systems integration and testing will increase. This will require program managers to ensure, during the source selection process, that each prospective contractor undergo an evaluation or assessment using either the tools developed by the Software Engineering Institute (SEI) or the techniques approved by the military departments. Following contract award, a software measurement process will be critical to assess and improve the development process and associated software product.

- Increased emphasis on acquisition software development and performance to reduce time and cost of systems integration and testing.

PRICE-BASED ACQUISITION

Though by no means exhaustive, the following are some of the topics that might be included under the broad heading of price-based acquisition, or perhaps even more broadly, pricing considerations.

Revision of Government Cost Accounting Standards

An Appendix to the FAR contains the 19 cost accounting standards potentially applicable to government contracts. The Appendix contains over 100 pages of guidance on these standards and related matters. These are not standards applied in the private sector and their presence has driven some companies away from government business and increased the costs associated with doing business with the government. It is reasonable to expect that the future will see some reduction, although probably not the elimination, of these standards to remove some of the barriers to doing business with the government and to reduce the cost of doing such business.

- The requirement to conform to government cost accounting standards will be diminished but probably not eliminated.

Longer Term Contractual Relationships

Current practice in the private sector involves, among other things, establishing long term relationships with reliable, competent suppliers. In addition to the confidence such relationships produce, suppliers are more likely to invest in technological improvements on their own, based on their expectation of an extended business relationship. This in turn tends to improve productivity and efficiency. Many in the acquisition and technology workforce would like to see the government engage in similar activities. Currently, the provisions of the Competition in Contracting Act may limit our ability to do this.

- Long-term contractual relationships, a feature of the private sector, may well extend into the government contracting arena, although this may require modification of the Competition In Contracting Act.

Increased Reliance on Price Analysis versus Cost Analysis

It is our current policy to not ask for certified cost or pricing data whenever possible, but rely instead on price analytical techniques (price comparisons with competitors, previous price histories, other market research activities, parametric analysis, etc.). We expect this policy to continue. As our training courses (both for our new and our legacy workforces) are revised to emphasize price analysis, we should see an even greater reliance on those techniques. By not asking for certified cost and pricing data we remove a barrier to doing business with the government and reduce the administrative cost to the contractor, which would naturally and allowably be passed along to the government. There may still be certain sole source situations, however, where such an approach would not be possible.

- Price analysis, particularly in a competitive environment, is and will continue to be the preferred method of determining price reasonableness.

- Certain sole source situations may still require cost analysis to support a contracting officer's price reasonableness determination.

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One of the significant achievements of acquisition reform has been the expansion of the definition of a commercial item (commercial-off-the-shelf (COTS) and modified commercial). Since the procedures for procuring commercial items are much simpler than for non-commercial items, Part 12 acquisitions are both user-friendly and quick. Since these are fixed price procurements in a commercial (and presumably competitive) marketplace, there is no need for cost or pricing data. We anticipate that the future will see a greater reliance on commercially available items rather than items uniquely developed for DoD, thus increasing the number of contract actions that will fall under FAR Part 12.

- Contracts for commercial items (using FAR Part 12) are the preferred method for meeting our needs wherever possible, and will likely expand in the future.

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Value analysis depends on a decision-maker or process (i.e., PPBS) establishing a value for a set of activities to achieve some goal or product. The "value" reflects how much money the decision-maker is willing to devote to the activity or product. Implementing a value-based strategy requires that the buying organization understand what results it can anticipate from varying levels of investment. The question is then how to establish the appropriate level of investment. The maximum level of investment will be determined by budget constraints and/or competing priorities for money. Since "value analysis" is a new concept it is likely to be used with other price analysis techniques initially and become more prominent as experience with this new technique is gained. Extrapolated, value-based analysis may allow fixed priced R&D efforts as is done in the commercial market place. Certain payments made under "other transactions" are current examples of this approach.

- Value-based analysis is a new concept requiring the decision-maker to determine the value of an activity or product in terms of money. If successful, it will be used as a form of price analysis with or without other price analysis techniques.

OPERATIONS AND SUPPORT

As we begin the 21st century, the changing world, changing national security environment, and changing nature of military operations and requirements continue to cause us to rethink how we best perform combat support. Among the changes:

- logistics will become more visible and more critical as warfare increases in sophistication, speed, and complexity;
- forces will operate in an increasingly joint warfighting environment;
- power projection of mostly CONS-based forces and support will require speed, agility, supply chain integration, distribution and transportation-based logistics, end-to-end visibility, and leading-edge technology;

- contingency operations and logistics will increase;
- contractors will replace many DoD employees who perform non-inherently government functions; and
- greater reliance on industry will require new and redefined partnerships and concepts of operation, and greater integration of processes.

Focused logistics, as defined in Joint Vision 2010, addresses many of these changes. The interdependent tenets of Focused Logistics are:

- joint deployment and rapid distribution,
- agile infrastructure,
- information infusion,
- joint theater logistics command and control,
- multi-national logistics, and
- joint health services support.

Consolidation

DoD will continue to consolidate responsibility for managing repair parts and commodities to joint activities or lead services to reduce overhead costs. The Services will also continue to consolidate inventory management at their level. The DoD initiative of corporate contracting, which aggregates all government contracts at a contract facility into one contract, will increasingly be used to leverage DoD's buying power.

- Joint activity or lead service responsibility for repair parts and commodities.
- Inventory management consolidation.
- Increased corporate contracting.

Reengineer the Product Support Process to Use Best Practices

Emphasis will shift from relying on DoD employees to acquire, store, distribute, upgrade and repair products and services to assigning the appropriate functions to the best value provider, either government or industry (*competitive sourcing*). This trend leads to reduction in infrastructure, inventory, and other overhead costs. Integration of logistics chains will continue as a result of business process reengineering and as government activities reorganize across functional lines and establish long-term supplier relationships (to the extent possible) to focus on delivery of products and services.

- Reengineer product support processes to use best practices.

- Rely on best value provider, either government or industry.
- Integrate logistics chains where possible and practical.

Expansion of Prime Vendor/Virtual Prime Vendor

This is a specific example of *managing suppliers not sites* in which DoD groups related repair parts and commodities and pays contractors to acquire, store, and deliver them directly to military customers within a specified time. This leverages DoD's corporate buying power.

- Continued expansion of Prime Vendor/Virtual Prime Vendor.

Increased Contractor Logistics Support

This includes maintenance, supply, and transportation support.

Increased Contractor Maintenance Support

In another example of managing suppliers, DoD will seek to expand the use of contractor responsibility for depot and some intermediate maintenance support for rebuild of fielded systems and appropriate repair parts. This action will lower infrastructure and repair costs. Performance-based contracts will incentivize contractors to design more reliable end items and reparable components.

- Expanded use of contractor maintenance support at the depot and intermediate levels.

Source Equipment Disposal Activities

Commercial firms will be contracted to handle the receipt, processing for reuse, necessary demilitarization, and resale of surplus equipment and materiel on a consignment basis even for equipment requiring special demilitarization to eliminate unique military characteristics. Funds generated through commercial disposal will be shared between the government and the commercial contractor.

- Commercial firms will be contracted to dispose surplus equipment and materiel.

Increased Use of Vendor Managed Inventory/Direct Vendor Delivery and Time Definite Delivery

By shipping repair parts and commodities directly from the contractor to the user and requiring the contractor to meet delivery timeliness requirements, DoD will reduce the need for extensive inventories stretching from wholesale depots to successive intermediate levels. Establishment of effective strategic interfaces between suppliers and strategic transportation systems will also take place.

- Direct shipment of products from contractor to the user and increased use of premium transportation for time-definite delivery and pipeline reduction.

Increased Influence on Funding to Reduce Total Ownership Cost

Program manager responsibility and funding control will be expanded to the post fielding support phase of the life cycle. This will reduce life cycle costs because it will enable program managers, during development or modification of systems, to design into the equipment features that will improve the reliability, availability, and maintainability of the fielded system. This trend will be constrained by the flexibility the operational commanders will lose as funding control is transferred to PMs.

- Increased PM Oversight and Funding Control of O&M dollars will enable the PM to place increased emphasis on reducing O&S costs when developing systems or system modifications.

Use of Electronic Commerce and Other Information Technology

Electronic commerce initiatives will continue to enable the restructure of sustainment from the acquisition of to the delivery and payment for products and services. For example, electronic catalogs will provide the user with instant visibility over inventory and allow orders to be sent from the user directly to the wholesale source of supply. This will reduce the requirement to maintain intermediate layers of inventory managers and stocks, thereby eliminating the largest component of currently high order and ship times. Shipment tracking systems will allow the user to have visibility of when an order is expected to be shipped and, once shipment is made, the progress of the shipment and expected arrival date. The use of purchase cards as strictly a payment mechanism on all purchases to save invoice-processing costs through DFAS will be expanded.

- Enable reduction in requirement to maintain intermediate inventory layers.
- Shipment tracking systems will allow user visibility of an order.
- Continued expanded use of purchase cards for payment.

Increase Competitive Sourcing of Services

DoD has traditionally provided base operations support and other commercial-type services to the department's vast array of bases and installations by having the work performed in-house by employees assigned to each installation, or by having each installation separately contract for the required services. Significant savings will be achievable by providing support on a regional basis and by contracting the functions out to industry. Policies will be established to make the regionalization and outsourcing of selected services the rule rather than the exception. A regional focus is where a single command assumes responsibility for support services in a given geographic area, coupled with the competitive sourcing of those activities. It has the potential for improved service with reduced cost. Further extension of this will be cross-service consolidations for support aligned along the same geographic areas such as the TRICARE initiative that regionalizes military health care. It will be extended to activities such as airspace management, training facilities, facility engineering, demolition, installation logistics

support, and to utilities with a resulting significant source of savings. The impact of these bundling strategies on Small Businesses may limit fully exploiting this trend. Following the same theory of a regional focus for support, commercial contracts will be awarded on a regional basis for all functions with economies of scale advantage. An intermediate step perhaps to take where regionalization is not practical, will be to combine all services into one omnibus contract. This will allow the contractor to reallocate resources during workload peaks in various functions and will also provide the commander a single support organization to deal with. Similarly, omnibus contracts will be awarded by region for communications and automatic data processing (ADP) support. The impact of these bundling strategies on small businesses may limit fully exploiting this trend. Industry's experience is that outsourcing ADP support saves money and frees internal managers to manage their primary business and spend less time on managing support functions. This commercial function will be discontinued in-house.

- Achieve significant savings by providing support on regional basis and contracting out to industry.
- Single command responsible for support services in geographic area.
- Further extensioncross-service consolidations for support.
- Commercial contracts on regional basis for all common functions.
- Intermediate stepcombine all services in one contract.
- ADP support will be mostly outsourced.

Appendix H

Future Aquisition and Technology Functions

Research,Development,Test and Evaluation

Consolidation (Centers of Excellence)

- Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).
- Develop streamlining and implementation planning for consolidation.
- Operate in a Multi-Service Environment.

Early Involvement of Operational Test and Evaluation

- Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.
- Perform design tradeoffs earlier in the acquisition process.
- Develop strategy to minimize operation/support problems, risks and fielding issues.
- Plan appropriate T&E of commercial and NDI items.
- Apply integrated product and process development.
- Develop verification/conformance metrics.

Increased Emphasis On Interoperability As A KPP

- Develop systems using International Interoperability Standards.
- Comply with Joint Technical Architecture requirements.
- Perform an Interoperability Performance Analysis.
- Perform a Cost as an Independent Variable (CAIV) analysis.

Increased Emphasis On Software Development

- Develop evaluation and assessment criteria to measure software progress.
- Apply parametric analysis for estimating cost.
- Apply newly developed software evaluation tools.

Increased Reliance on Non-DoD Organizations

- Conduct market research/analysis of the national base of technology.
- Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)
- Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.

Increased Use of Simulation Based Acquisition (SBA)

- Perform analysis on most appropriate SBA program application, select pilot programs.
- Use SBA to identify and simulate design issues and risks.
- Apply simulation and modeling techniques.

Separation of Tech Maturation From Product Development

- Perform S&T strategic planning.
- Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage
- Develop realistic Technology Transition Plans.
- Design Systems with open architectures.
- Conduct affordability assessments/analysis.
- Assess cost/schedule risk and influence on design.
- Match evolutionary requirements with mission needs.
- Assess supportability techniques for assessing systems requirements.
- Identify sources and methodologies for technology insertions.
- Apply Advanced Concept and Technological Demonstrations (ACTDs) as appropriate during product development.

Operations and Support

Consolidation

- Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).
- Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).
- Develop streamlining and implementation planning for consolidation.
- Ensure highest quality staff infrastructure is maintained.

Expansion of Prime Vendor/Virtual Prime Vendor/PBV-like arrangements

- Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.
- Tailor the application of best practices to the specific market sector and develop appropriate contractual vehicles.
- Tailor the application of best practices to international and contingency operations and develop appropriate contractual vehicles

Increase Competitive Sourcing of Services

- Determine appropriateness of competitive sourcing (inherently governmental).
- Determine acquisition strategy (e.g. regional, omnibus).
- Perform a support service capability assessment (including government capability).
- Conduct Best Value Analysis on services/cost.
- Establish Inter-Service Agreements.
- Perform A-76 Study.
- Select method and compute performance status indicators.
- Consider Small Business Issues.

Increased Contractor Logistics Support

- Develop integrated support strategies.
- Develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.

Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)

- Emphasize life-cycle cost implications in all program management phases and decisions.
- Develop or modify oversight processes and analysis tools.
- Perform trade-off analysis of capability, performance, and life-cycle cost considerations.

Increased Use of Vendor Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery

- Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.
- Monitor and track business volume information outside of DoD ownership.

Outsource Equipment Disposal Activities

- Conduct capability/environmental assessment.
- Assess contractor's security processes and procedures.

Reengineer the Product Support Process to Use Best Practices

- Benchmark government and industry to identify, adopt, and tailor best practices.
- Perform business case analysis.
- Involve customers early in the acquisition strategy process.
- Employ/Develop sourcing strategies that emphasize best value.
- Develop performance-based work statements or statements of objectives.
- Apply technology to enable implementation of reengineered and integrated business processes.
- Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.
- Apply integrated supply chain practices.

Use of Electronic commerce and Other Information Technology

- Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)
- Use purchase card as method of payment where appropriate.
- Perform electronic commerce in an integrated, closed looped process, transparent to the user.
- Require business partners to apply electronic commerce techniques and tools.

Price Based Acquisition

Increased Reliance on Price Analysis Versus Cost Analysis

- Perform basic and advanced price-based and technology-based market analysis and research.
- Use basic and advanced price comparative techniques including parametric analysis.

Introduction of Value Analysis

- Establish a value for a set of activities to achieve some goal or product.

Longer Term Contractual Relationships

- Perform analysis and determine the value of longer term contractual relationships.
- Establish long term contractual relationships (not limited to multi-year contracts for individual items/systems) where appropriate (e.g. CICA).

Maximize FAR Part 12 Acquisition

- Recognize items as commercial under expanded definition.
- Use FAR Part 12 procedures for procuring commercial items/services.
- Manage/oversee contracts for commercial services.
- Analyze and challenge requirements to promote use of commercial items.

Revision of Government Cost accounting Standards

- Operate in an environment where commercial accounting standards apply.

Move to Paperless Acquisition

Achieve Paperless Contracting

- Use electronic mediums to create, store, display, retrieve and modify contractual material.
- Use electronic mediums for electronic payments.
- Use purchase cards, electronic catalogs, electronic commerce and imaging.

Integrated Digital Environment

- Leverage commercial technology to support modern business operations (e.g. virtual office).
- Use commercial standard reference identification number system to simplify with private and federal sectors (e.g. Central Contractor registration).
- Apply existing national and international standards, practices and technologies to automate the management and exchange of information.

Introduction and Maturation of Knowledge Management Techniques and Practices

- Improve data management and availability (within government and between government and industry).

SecurityProprietary Information

- Use adequate security measures (to include protocols) to protect electronic information, as appropriate, and to provide ready access.

Emphasize Commercial/Military Integration

Employ Common Technology Bases

- Promote knowledge of world-class technology bases
- Participate in technology sector activities.

Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)

- Employ flexible manufacturing
- Coordinate supply chain requirements (consider and integrate all phases in manufacturing flow).

Extend MILSPEC/MILSTANDARD Reform to Reprocurements

- Reduce MILSPEC/MILSTANDARDS in reprocurements

Increased Commercial Military Integration

- Promote use of commercial items
- Participate in sector activities (e.g. professional associations)

Increased Use of Common Business Practices

- Promote use of common business practices

Adopt New Approach to Acquisition

Evolutionary Acquisition Reduced Cycle Time

- Promote evolutionary and incremental acquisition as appropriate
- Minimize cycle time

Flexible User Requirements

- Participate in development of user requirements.

Increase Collaboration Between User and Acquisition Communities

- Promote collaboration between user and acquisition communities

Increased Scope of Other Transactions

- Expand use and scope of other transactions

Increased use of Best value Dissimilar Competition

- Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission

Increased Use of Performance Based Contracting

- Capitalize on opportunities to develop performance based solicitations for products and services.

Life Cycle Reduced Total Ownership Cost Emphasis

- Reduce Life Cycle Cost/Total Ownership Cost
- Establish activity based costing for the life cycle process.

Technology Refreshment of Systems (Modernization through Spares)

- Promote technology refreshment of systems
- Develop performance based specifications
- Obtain and execute funding for modernization

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ATWF Universal Competencies and Traits	Suggested Actions or Steps ENTRY	Suggested Actions or Steps JOURNEY	OPM Validated Competency Definitions SENIOR
Continual Learning	Participate in OJT or developmental assignments, or pursue self-development activities that facilitate exposure to new information, new technical and business knowledge. Seek and accept feedback from others.	Participate in OJT or developmental assignments, or pursue self-development activities that permit application of new technical and business knowledge. Seek feedback from others on strengths and weaknesses and continuous learning opportunities that will reduce weaknesses.	Grasps the essence of new information; masters new technical and business knowledge; recognizes own strengths and weaknesses; pursues self-development; seeks feedback from others and opportunities to master new knowledge.
Creativity & Innovation (T)	Active in tasks or assignments that provide new insight into situations. Participates in innovative solutions for organizational improvement and seeks ways that enhance creative thinking and innovation.	Request tasks or assignments that provide new insight into situations. Recommend innovative solutions for organizational improvements. Support a work environment that encourages creative thinking and innovation. Develop and implement new or cutting-edge programs/processes.	Develops new insights into situations and applies innovative solutions to make organizational improvements; creates a work environment that encourages creative thinking and innovation; designs and implements new or cutting-edge programs/processes.
External Awareness	Seek information on current national and international events / policies that may impact the organization	Become aware of publicized information to identify economic, political, and social trends that may affect the organization. Seek opportunities to interface with other organizations, including private sector, to gain an understanding of potential business advantages.	Identifies and keeps up to date on key national and international policies and economic, political, and social trends that affect the organization. Understands near-term and long-range plans and determines how best to be positioned to achieve a competitive business advantage in a global economy.
Flexibility (T)	Adapt behavior and work methods in response to new information.	Accept change and new information. Adapt behavior and work methods in response to new information, changing conditions, or unexpected obstacles. Adjust to new situations warranting attention and resolution.	Is open to change and new information; adapts behavior and work methods in response to new information, changing conditions, or unexpected obstacles. Adjusts rapidly to new situations warranting attention and resolution.
Resilience (T)	Understand how to work under pressure. Maintain focus, intensity and optimism, even under adversity. Balance personal life and work.	Deal effectively with pressure; maintain focus and intensity and remain optimistic and persistent, even under adversity. Recover quickly from setbacks. Balance personal life and work.	Deals effectively with pressure; maintains focus and intensity and remains optimistic and persistent, even under adversity. Recovers quickly from setbacks. Effectively balances personal life and work.

Service Motivation	Provide quality service. Seek tools and support to perform well. Exhibit a commitment to public service.	Seek opportunities to support an organizational culture which encourages others to provide the quality of service essential to high performance. Help coworkers (and staff if applicable) to acquire the tools and support they need to perform well. Exhibit a commitment to public service. Influence others toward a spirit of service and meaningful contributions to mission accomplishment.	Creates and sustains an organizational culture which encourages others to provide the quality of service essential to high performance. Enables others to acquire the tools and support they need to perform well. Shows a commitment to public service. Influences others toward a spirit of service and meaningful contributions to mission accomplishment.
Strategic Thinking	Support the organizations long term objectives and priorities.	Seek tasks or assignments that will develop an understanding of strategy formulation. Support the organizations long term objectives and priorities. Identify potential threats or opportunities.	Formulates effective strategies consistent with the business and competitive strategy of the organization in a global economy. Examines policy issues and strategic planning with a long-term perspective. Determines objectives and sets priorities; anticipates potential threats or opportunities.
Vision	Accept assigned tasks and organizational change as a part of long term vision	Seek correlation between assigned responsibilities and a long term organizational view. Focus on translating organizational change into recommended actions	Takes a long-term view and acts as a catalyst for organizational change; builds a shared vision with others. Influences others to translate vision into action.
Conflict Management	Avoid potential situations that could result in unpleasant confrontations. Seek help to resolve conflicts and disagreements in a positive and constructive manner.	Identify and take steps to prevent potential situations that could result in unpleasant confrontations. Seek opportunities to manage and resolve conflicts and disagreements within immediate work unit in a positive and constructive manner to minimize negative impact. Apply for training in conflict management.	Identifies and takes steps to prevent potential situations that could result in unpleasant confrontations. Manages and resolves conflicts and disagreements in a positive and constructive manner to minimize negative impact.

Cultural Awareness	Become aware of cultural diversity within the organization and treat others in a fair and equitable manner. Seek cultural awareness training.	Pursue opportunities to initiate and manage cultural change within assigned organization to improve organizational effectiveness. Participate in activities that stress the value of cultural diversity and other individual differences in the workforce. Support organizational change that builds on these differences and treats employees in a fair and equitable manner. Seek cultural awareness training.	Initiates and manages cultural change within the organization to impact organizational effectiveness. Values cultural diversity and other individual differences in the workforce. Ensures that the organization builds on these differences and that employees are treated in a fair and equitable manner.
Integrity and Honesty (I)	Exhibit mutual trust, confidence and high standards of ethics. Behave in a fair and ethical manner toward others.	Instills mutual trust and confidence; supports a culture that fosters high standards of ethics; behaves in a fair and ethical manner toward others, and demonstrates a sense of corporate responsibility and commitment to public service.	Instills mutual trust and confidence; creates a culture that fosters high standards of ethics; behaves in a fair and ethical manner toward others, and demonstrates a sense of corporate responsibility and commitment to public service.
Team Building	Seek assignments that permit team interaction. Understand cooperative working relationships within the team or organization and with customers.	Be on a team or be a team leader. As a team member or leader motivate and guide other team members toward goal accomplishment. Seek ways to develop and sustain cooperative working relationships within the team or organization and with customer groups. Foster commitment, team spirit, pride, and trust. Consistent with team role, coach, mentor, reward, and guide other team members or co-workers.	Inspires, motivates, and guides others toward goal accomplishments. Consistently develops and sustains cooperative working relationships. Encourages and facilitates cooperation within the organization and with customer groups; fosters commitment, team spirit, pride, trust. Develops leadership in others through coaching, mentoring, rewarding, and guiding employees.
Accountability	Hold self accountable for rules and responsibilities. Complete assigned projects in a timely manner.	Assure that effective controls are maintained to ensure the integrity of the organization. Hold self, and others, accountable for rules and responsibilities. Ensure that projects within areas of specific responsibility are completed in a timely manner and within budget. Monitor and evaluate organizational or task plans, focusing on results and measuring attainment of outcomes.	Assures that effective controls are developed and maintained to ensure the integrity of the organization. Holds self and others accountable for rules and responsibilities. Can be relied upon to ensure that projects within areas of specific responsibility are completed in a timely manner and within budget. Monitors and evaluates plans; focuses on results and measuring attainment of outcomes.

Customer Service	Seek assignments that permit customer interaction. Learn to readjust to priorities of changing client demands.	Seek every opportunity to interact with the customer. Understand who the customers are and endeavor to meet their needs. Learn to balance the interests of a variety of clients and readily readjust priorities to respond to pressing and changing client demands. Establish a personal, and if within your authority, and organizational commitment to continuous improvement of services.	Balancing interests of a variety of clients; readily readjusts priorities to respond to pressing and changing client demands. Anticipates and meets the need of clients; achieves quality end-products; is committed to continuous improvement of services.
Decisiveness (I)	Exercise good judgment in assigned tasks. Develop sources of information to make effective and timely decisions. Be proactive and achievement oriented.	Exercise good judgment by making sound and well-informed decisions. Research the impact and implications of decisions. Make effective and timely decisions, even when data is limited. Alert senior management of potential consequences. Be proactive and achievement oriented.	Exercises good judgment by making sound and well-informed decisions; perceives the impact and implications of decisions; makes effective and timely decisions, even when data is limited or solutions produce unpleasant consequences; is proactive and achievement oriented.
Entrepeneurship	Understand the importance of new products and services to organizational success. Seek information on marketing new products.	Identify opportunities to develop and market new products and services within or outside of the organization. Within scope of authority, take risks to achieve a recognized benefit or advantage.	Identifies opportunities to develop and market new products and services within or outside of the organization. Is willing to take risks; initiates actions that involve a deliberate risk to achieve a recognized benefit or advantage.
Problem Solving	Identifies and analyzes problems; distinguishes between relevant and irrelevant information to make logical decisions; seeks solutions to individual and organizational problems.	Identifies and analyzes problems; distinguishes between relevant and irrelevant information to make logical decisions; provides solutions to individual and organizational problems.	Identifies and analyzes problems; distinguishes between relevant and irrelevant information to make logical decisions; provides solutions to individual and organizational problems.
Technical Credibility	Though OJT or training, develop an understanding and appropriately apply procedures, requirements, regulations, and policies related to specialized expertise.	Understand and appropriately apply procedures, requirements, regulations, and policies related to specialized expertise. If within authority, make sound recommendations for hiring and capital resource actions. Participate in decisions concerning the organization's training and development needs. Seek varied assignments or tasks that will develop an understanding of the linkages between administrative competencies and mission needs.	Understands and appropriately applies procedures, requirements, regulations, and policies related to specialized expertise. Is able to make sound hiring and capital resource decisions and to address training and development needs. Understands linkages between administrative competencies and mission needs.

Financial Management	Through OJT, or short course or seminar, or self study, develop an understanding of basic financial management within the Federal Government	Develop a sound understanding of the principles of DoD financial management and budget process by requesting the opportunity to perform budgetary tasks, for example, prepare, justify, and/or administer the budget for your immediate organization or program area. Use cost-benefit thinking to set priorities; monitor expenditures in support of programs and policies. Identify cost-effective approaches. Take courses or attend seminars in financial management.	Demonstrates broad understanding of principles of financial management and marketing expertise necessary to ensure appropriate funding levels. Prepares, justifies, and/or administers the budget for the program area; uses cost-benefit thinking to set priorities; monitors expenditures in support of programs and policies. Identifies cost-effective approaches. Manages procurement and contracting.
HR Management	Through OJT, or short course or seminar, or self study, develop an understanding of basic R management within the Federal Government	Develop a sound understanding of principles of DoD R management by performing organizational R tasks, for example, assess current and future staffing needs. Through self study, OJT or short course training, develop an understanding of Merit principles and use them (within assigned level of authority) to ensure staff are appropriately selected, developed, utilized, appraised, and rewarded; take corrective actions if with the scope of authority.	Assesses current and future staffing needs based on organizational goals and budget realities. Using merit principles, ensures staff are appropriately selected, developed, utilized, appraised, and rewarded; takes corrective action.
Technology Management	Ask for training and research documents on new technology and suggest ideas for improvements to supervisors. Request to work on teams or projects that integrate new technology into the office environment.	Seek opportunities to integrate the use of technology into your workplace. Use new technologies to improve program effectiveness and enhance decision making in your organization.	Uses efficient and cost-effective approaches to integrate technology into the workplace and improve program effectiveness. Develops strategies using new technology to enhance decision making. Understands the impact of technological changes on the organization.
Influencing /Negotiating	Seek opportunities to build consensus through give and take; gain cooperation from others to obtain information and accomplish goals.	As a team leader or member, or as a supervisor or coworker, influence others to positive performance and build consensus through give and take. Gain cooperation from others to obtain information and accomplish goals. Seek opportunities to act a facilitator and achieve 'win-win"situations.	Persuades others; builds consensus through give and take; gains cooperation from others to obtain information and accomplish goals; facilitates 'win-win"situations.

Interpersonal Skills	Seek opportunities to work with others to gain an understanding of their needs, feelings. Treat others with respect.	As a team leader or member, or as a supervisor or coworker, consider and respond appropriately to the needs, feelings, and capabilities of different people in different situations; be tactful, compassionate and sensitive, and treat others with respect.	Considers and responds appropriately to the needs, feelings, and capabilities of different people in different situations; is tactful, compassionate and sensitive, and treats others with respect.
Oral Communication	Seek opportunities to make oral presentations to individuals or groups. Learn to listen effectively.	Seek new and innovative ways to prepare and deliver oral presentations. Listen effectively and clarify information as needed. Participate in open exchange of ideas. Seek opportunities for public speaking outside of the workplace though organizations such as Toastmasters International.	Makes clear and convincing oral presentations to individuals or groups; listens effectively and clarifies information as needed; facilitates an open exchange of ideas and fosters an atmosphere of open communication
Partnering	Build interpersonal, organizational and professional alliances. Ask to work on or with cross functional teams. Build network within own organization.	Look for opportunities to build alliances and engage in cross-functional activities. Seek common ground with a widening range of stakeholders. Initiate contacts to build and strengthen internal and external networks.	Develops networks and builds alliances, engages in cross-functional activities; collaborates across boundaries, and finds common ground with a widening range of stakeholders. Utilizes contacts to build and strengthen internal support bases
Political Savvy	Seek information regarding organizational structure, methods and processes.	Learn to identify the internal and external politics. Seek the assistance of supervisors in understanding the formal and informal channels for decision making in your organizational setting.	Identifies the internal and external politics that impact the work of the organization. Approaches each problem situation with a clear perception of organizational and political reality; recognizes the impact of alternative courses of action.
Written Communications	Seek opportunities to write official correspondence and welcome constructive criticism	Volunteer for opportunities to write a wider variety of documents in a clear, convincing and organized manner.	Expresses facts and ideas in writing in a clear, convincing and organized manner.

Note: Flexibility, Decisiveness, Resilience, Integrity/Honesty, and Creativity/Innovation are actually "traits" and, as such are hard to gain through formal training and to measure (except perhaps by their absence) or, never-the-less they are extremely important to the successful performance of ATWF workforce

[illegible]

Environment	Trend	Intention	Capability	Capability D	Career Field ARKCS	TGHLDZ
RDT&E	Consolidation (Centers of Excellence)	Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).	1	Analyze and evaluate different categories of data such as cost and technical capabilities. Analyze business data to determine its adequacy and impact on consolidation of RDT&E organizations.		X X X X X
			2	Use tradeoff analyses to assess most appropriate consolidation recommendations.		X X X X X X X X X
			3	Know and understand service capabilities/core competencies		X X X X X X X X X
			4	Know critical elements contained in a Business Case Analysis (BCA) in order to justify sound business outcomes.		X X X X X X X X X X
			447	Identify when to use Cost as an Independent Variable (CAIV)		X
			465	Know and understand commercial capabilities and core competencies		X
		Develop streamlining and implementation planning for consolidation.	5	Use Business Case Analysis (BCA) to assess effectiveness of the economies of budgeting inherent government functions or centers of excellence and service contracting in the business sector.		X X X X X
			6	Know and understand joint and service strategic planning and requirements process; assess impact of consolidation options		X X X X X X X X X
			7	Know and understand methods for building innovative operations that consistently improve over time		X X
			8	Know and understand the Planning, Programming and Budgeting System (PPBS) and DoD monetary policies and procedures; Assess fiscal impacts and synthesize consolidation options		X X X X X X X X X
			9	Know effective streamlining and implementation planning documentation		X X X X X X X

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Environment Trend	Evolution	Competency ID		ARKCS TGHLDZ
RDT&E Consolidation (Centers of Excellence)	Develop streamlining and implementation planning for consolidation.	448	Describe the Congressional budget approval process	☐☐☒☐☐☐☐☐☐☐☐
	Operate in a Multi-Service Environment.	10	Know and understand RDT&E process; evaluate consolidation/process change options; synthesize win-win solutions	☐☐☒☐☒☒☐☐☒☒☒
		11	Know and understand virtual RDT&E resources/network applications; ability to assess applicability and determine best consolidation applications	☐☐☒☐☒☒☐☐☒☒☒
		12	Identify, select, and follow relevant procurement rules of multi-service participants	☐☐☒☒☐☐☐☐☐☐☒
		13	Know and understand how to function in a Multi-Service environment.	☒☒☒☐☒☐☒☒☐☒☒
		14	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	☒☒☐☒☒☒☒☒☒☒☒
		15	Operate in Integrated Product and Process Development (IPPD) environment in developing policy, provide guidance within DoD/Industry groups and support development of performance based work statements and definition of performance events.	☐☐☒☒☒☐☐☒☐☐☐
Increased Reliance on Non-DoD Organizations	Conduct market research/analysis of the national base of technology.	17	Understand basic market research techniques	☒☒☐☒☒☐☐☐☒☒☒
		18	Know technology for a specific business sector. Understand and evaluate unique conditions.	☒☒☐☐☒☐☐☐☐☐☒
		19	Understand sector pricing practices	☒☒☒☒☐☐☐☐☐☐☒
	Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	20	Know and understand technology insertion strategies and ability to apply to DoD needs.	☒☒☐☐☒☒☐☐☐☒☒
		21	Know DoD's unique technical and facilitation requirements.	☒☒☒☐☒☒☒☒☒☒☒
		22	Assess the alternative sources and methods most appropriate to handle the requirements not unique to DoD.	☒☒☐☐☒☒☒☒☒☒☒

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Environment	Trend	Action	Competency	ARKCS TGHLDZ
RDT&E	Increased Reliance on Non-DoD Organizations	Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	23 Know, understand and be able to benchmark and evaluate all RDT&E options/practices	X X X X X X X X X X
		Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	24 Evaluate the individual situation and select the appropriate contracting or assistance vehicle	X X X X X X X X X X
			25 Understand the applicability and advantages of the various contracting or assistance vehicles.	X X X X X X X X X X
			26 Know and understand dual use application of program/item needs and ability to incentivize dual-use focus	X X X X X X X X X X X
			27 Determine the most appropriate agreement, as well as pricing and facility arrangements that will mitigate risk in accordance with regulations, statutes and sound business judgement.	X X X X X X X X X X
	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	28 Determine where in the Test & Evaluation (T&E) process testing can be combined to ensure greater participation by the Operational Testers up front while maintaining their independence.	X X X X X X
			29 Understand responsible agencies for Developmental Test & Evaluation (DT&E), Operational Test & Evaluation (OT&E), and identify the major objectives and types of developmental and operational testing	X X X X X X
			30 Know, understand and be able to operate in an Integrated Product Team (IPT) environment	X X X X X X X X X X X
			31 Define the test team structure and their contributions in the Test & Evaluation Master Plan (TEMP). Know how the TEMP is used as an integrating document, supporting the acquisition strategy throughout the entire acquisition life cycle	X X X X X X
		Perform design tradeoffs earlier in the acquisition process.	32 Know, understand and be able to assess design tradeoffs	X X X X X X X X X X
			33 Evaluate use of the systems engineering process to reduce risk of operational / support problems	X X X X X X X X X X X

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RDT&E	Early Involvement of Operational Test and Evaluation	Perform design tradeoffs earlier in the acquisition process.	449	Identify when to use Cost as an Independent Variable (CAIV)		X
		Develop strategy to minimize operation/support problems, risks and fielding issues.	34	Understand the impact of design on the operations and test environment	X X	X X X X
		Plan appropriate T&E of commercial and NDI items.	35	Know proposed use of Commercial & Non-Developmental Items (NDI) be able to evaluate such items.	X X	X X X X
		Apply integrated product and process development.	36	Understand the use of Integrated Product and Process Development (IPPD) in successful acquisition management		X X X X X X
		Develop verification/conformance metrics.	37	Be capable of developing strategic, tactical and local metrics within the acquisition process.	X X	X X X
			38	Know and understand metric development and linkage to mission/operations and cost implications		X X X X X X X X
			39	Integrate verification/performance metrics into the appropriate contracting or assistance vehicle.		X X X
			464	Know and understand use of Technical Performance Measures and their impact on cost and ability to meet contract technical requirements		X
	Increased Use of Simulation Based Acquisition (SBA)	Perform analysis on most appropriate SBA program application, select pilot programs.	40	Know and understand potential DoD/Service growth areas for application of Simulation Based Acquisition (SBA) and Modeling (specifically O&S)	X X X	X X X
			41	Understand the use of Modeling and Simulation (M&S) across the total life cycle of a system.		X X X X X X X X
		Use SBA to identify and simulate design issues and risks.	42	Ensure risk profile are analytically determined using proper methods.		X X X
			43	Understand the factors that make up the simulation model and verify that logical and statistical relationships exist.		X X X X X X
			44	Understand and determine how to apply Modeling and Simulation (M&S) when conducting performance studies, effectiveness studies, tradeoff analysis, risk analysis, sensitivity analysis and cost analysis.	X X X	X X X

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Environment	Trend	Action	Competency	ARKCS TGHLDZ
RDT&E	Increased Use of Simulation Based Acquisition (SBA)	Apply simulation and modeling techniques.	45 Be capable of using and understanding the basic tenets of modeling and simulation	X X X X X X X X X X X
			46 Know and understand the types of models (physical, mathematical, logical) and the common pitfalls and limitations.	X X X X X X X X X X X
			47 Understand the models and simulations associated with the processes of requirements generation, program management, design and engineering, manufacturing, T&E, logistics support and training.	X X X X X X X X X X X
	Separation of Tech Maturation From Product Development	Perform S&T strategic planning.	48 Know and understand future technological advances that can be incorporated into system development programs.	X X X X X X X X X X X
			49 Know and understand strategic planning tools and techniques. Coordinate with Joint Warfighting requirements.	X X X X X X X X X X X
			450 Create an integrated program schedule	X X X X X X X X X X X
		Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50 Know and understand contingency planning and execution	X X X X X X X X X X X
			51 Assess technological opportunities and evaluate the feasibility, maturity, and risk.	X X X X X X X X X X X
			52 Know and understand current and future science and technology research and development.	X X X X X X X X X X X
			53 Know and understand risk reduction and risk assessment processes for acquisition process. Balancing risks and benefits in situations involving human safety, environmental risks, and financial uncertainties.	X X X X X X X X X X X
		Develop realistic Technology Transition Plans.	54 Convert Technology Transition Planning into effective and executable contract language	X X X X X X X X X X X
			55 Know the Planning, Programming and Budgeting System (PPBS) environment and budgeting process for insertion of out year funds for transition	X X X X X X X X X X X

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RDT&E	Separation of Tech Maturation From Product Development	Develop realistic Technology Transition Plans.	56	Know and understand technology transition planning/strategy and ability to assess/evaluate and synthesize best-value options into Technology Transition Plans	X	X	X		X	X	X		X	X	
			57	Understand the risks associated with current technology maturity in relation program needs	X	X			X						
		Design Systems with open architectures.	58	Know and understand open architecture discipline, tools, and methods and ability to apply to service interoperability	X	X			X	X	X		X	X	X
		Conduct affordability assessments/analysis.	59	Be able to do parametric analyses			X		X				X	X	X
			60	Understand the Cost as an Independent Variable (CAIV) policy concerning the authority of the program manager to make cost and performance tradeoffs	X	X	X	X	X	X	X	X	X	X	X
			61	Know and understand affordability assessment techniques and tools	X	X	X		X			X	X	X	X
			62	Understand theory and application of Integrated Product and Process Development (IPPD) for S&T programs that are expected to transition to the next phase of acquisition. Understand how to manage, conduct and participate in Integrated Product Teams (IPTs).					X	X				X	
		Assess cost/schedule risk and influence on design.	63	Know, understand and be able to perform/evaluate cost/schedule risk assessments	X	X	X		X				X	X	
			64	Know manufacturing cost implications resulting from product designs					X						
			65	Know Cost as an Independent Variable (CAIV)					X						
			66	Be able to determine, through the use of risk matrices, templates, or maturity models, the influence of design on risk.					X						
		Match evolutionary requirements with mission needs.	67	Assess technological opportunities and evaluate the feasibility, maturity and risk.					X						
			68	Understand how to incorporate a trade study methodology, conduct an analysis and provide rationale which address tradeoffs for system requirements.					X				X		

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Environment	Trend	Intention	Competency	D	ARKCS	TGHLDZ										
RDT&E	Separation of Tech Maturation From Product Development	Assess supportability techniques for assessing systems requirements.	69	Use systems engineering processes to reduce risk of operational and support problems.	X	X			X	X			X	X	X
			70	Manage experimentation and prototyping	X	X			X	X			X		
			71	Know and understand supportability analysis tools and techniques	X	X			X				X		X
			72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X	X	X	X	X	X	X	X	X	X	X
		Identify sources and methodologies for technology insertions.	73	Understand commercial and military state of the art technology applications.	X	X			X						
			74	Know and understand open architecture discipline, tools, methods to improve aging systems/platforms O&S (specifically for tech insertions)	X	X			X	X		X	X	X	X
			75	Know methodologies for inserting technology upgrades and maintaining technical currency	X	X			X	X				X	
		Apply Advanced Concept and Technological Demonstrations (ACTDs) as appropriate during product development.	76	Know and understand the Advanced Concept and Technological Demonstration (ACTD) process and their impact on Life Cycle Cost (LCC).	X	X	X		X	X		X	X		X
	Increased Emphasis On Interoperability As A RP	Develop systems using International Interoperability Standards.	77	Understand the increased emphasis of interoperability as a Key Performance Parameters (RP) and ensure it is reflected in the solicitation	X	X		X	X						
			78	Negotiate in the international political and business practice environments	X	X		X	X						
			79	Identify and describe basic principles of technical standards as they relate to system development and interoperability	X	X			X	X			X	X	X
		Comply with Joint Technical Architecture requirements.	80	Knowledge and understanding and ability to comply with Defense Information Infrastructure Common Operating Environment (DII COE)	X	X			X	X			X	X	X
			81	Understand and apply Joint Technical Architecture (JTA) requirements and standards	X	X			X				X	X	X

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RDT&E	Increased Emphasis On Interoperability As A RP	Perform an Interoperability Performance Analysis.	82	Perform analysis to identify linkages connections, processes and delay time that effect interoperability .	X X X X X X X
			83	Understand framework to look at interoperability through layers such as process ,software, information and influences	X X X X
		Perform a Cost as an Independent Variable (CAIV) analysis.	84	Understand the purpose and general method of execution of Cost as an Independent Variable (CAIV)	X X X X X X X X X X X
			85	Prepare and defend a Cost as an Independent Variable (CAIV)analysis. Discuss the relationship of CAIV analysis to other cost analyses	X X X X X X X X X X X
			86	Understand the Cost as an Independent Variable (CAIV) policy concerning the authority of the program manager to make cost and performance tradeoffs	X X X X X X X X X X X
	Increased Emphasis On Software Development	Develop evaluation and assessment criteria to measure software progress.	88	Know and understand software evaluation and assessment criteria	X X X X
			89	Understand and apply the software process development capability.	X X X X
			90	Know and understand customer/system integration requirements to design effective software measures	X X X X
			91	Understand Capability Maturity Models (CMM)	X X X X X
			92	Know software engineering principles and how it applies through the acquisition life cycle.	X X X X X X
		Apply parametric analysis for estimating cost.	93	Know and understand parametric analysis and ability to perform and analyze resulting data	X X X X X
			94	Understand parametric analyses and construct these analyses to support bid and solicitation development	X X X X X
		Apply newly developed software evaluation tools.	95	Know evolutionary spiral process as a framework for systems and software development programs.	X X X X X
			96	Know and understand software acquisition ri sks for systems, select appropriate mitigation strategies	X X X X

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RDT&E	Increased Emphasis On Software Development	Apply newly developed software evaluation tools.	97	Understand the software development and integration process and the impacts to the software technical life cycle.	X X X X
			98	Know and understand the integrated Capability Maturity Models (CMM) process and how it applies to software development	X X X X
			99	Know and understand leading/state of art software evaluation "best practices" and resources for software test program planning and execution	X X X X
			100	Be able to use and illustrate state of art tools and techniques available for planning, measuring and predicting software development progress	X X X X
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	101	Know and understand DoD operations & requirements	X X X
			102	Know and understand environmental rules/regulations	X X X X X X X X X X X
			103	Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X X X X X X X X X X X
			104	Know and understand commercial best practices	X X X X X X X X X X X
			466	Know and understand the political process, the BRAC process and implications and public affairs process	X
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105	Know and understand risk assessment methods and measurement tools	X X X X X X X X X X X
			106	Know and understand Business Case Analysis (BCA) process/rules and tools.	X X X X X X X X X X X
		Develop streamlining and implementation planning for consolidation.	107	Know and understand strategic planning	X X
			108	Know and understand organizational management and structures to include existing and options	X X

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O&S	Consolidation	Develop streamlining and implementation planning for consolidation.	109	Know and understand organizational processes and measurement	X X X X X X X X X X
			110	Know and understand personnel policies/procedures to include labor relations/union coordination	X X X X X X X X X X
			451	Create an integrated program schedule	X
		Ensure highest quality staff infrastructure is maintained.	112	Know and understand available training/education resources to include funding/opportunity	X X X X X X X X X X
	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	113	Understand techniques to determine best practices	X X X X
			114	Know and understand commercial best practices	X X X X X X X X X X
			115	Analyze government and industry to identify, adopt, and tailor best practices.	X X X X
			116	Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X X X X X X X X X X
			117	Know and understand benchmarking	X X X X X X X X X X
			118	Know and understand research methods literature, internet, corporate assets	X X X X X X X X X X
			119	Ability to analyze new experiment proposals and develop models for new business and technical processes.	X
		Perform business case analysis.	120	Know and understand Business Case Analysis (BCA) process/rules and tools.	X X X X X X X X X
			121	Understand how to perform Business Case Analysis (BCA)	X X
		Involve customers early in the acquisition strategy process.	122	Be able to identify and correct potential imbalances in level playing field involved in public-private competitions.	X X X X X X X X X
			123	Know and understand strategic planning	X X X X X X
			124	Know how to apply technology to implement reengineered and integrated business processes.	X X X
			125	Know and understand acquisition process	X X X X X X X X X X X

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O&S	Reengineer the Product Support Process to Use Best Practices	Involve customers early in the acquisition strategy process.	126 Know and understand the Planning, Programming and Budgeting System (PPBS)	X X X X X X X X X X X
			127 Know and understand requirements forecasting techniques & process	X X X X X X
			128 Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers.	X X X X X X X X X X
			452 Create an integrated program schedule	X
			454 Describe the Congressional budget approval process	X
		Employ/Develop sourcing strategies that emphasize best value.	129 Know and understand customer requirements	X X X X X X X X X X X
			130 Know and understand contracting options available	X X X X X X
			131 Ability to develop performance-based work statements or statements of objectives.	X X X X X X X
			132 Understand and use A-76 techniques for competitive sourcing using best value (Assume A-76 revised to permit best value selection)	X X X X X X
			133 Know and understand negotiations/plans and execution	X X X X X X X
			134 Select and apply selected contracting vehicle	X X X X X X
			135 Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X X X X
			136 Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault- tree methods for describing and making decisions.	X X X X X X X X X X X
			137 Know and understand current product support processes and interrelationships	X X X X X X X X X X X
			138 Know and understand commercial best practices	X X X X X X X X X X
			139 Know and understand partnering/alliance opportunities/execution	X X X X X X X X X

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O&S	Reengineer the Product Support Process to Use Best Practices	Employ/Develop sourcing strategies that emphasize best value.	140	Know and understand data analysis to include cost/price/performance tradeoffs In order to achieve affordable readiness.	X X X X X X X X X X X	
			455	Identify when to use Cost as an Independent Variable (CAIV)	X	
		Develop performance-based work statements or statements of objectives.	141	Know and understand product/service to be supported	X X X X X X X X X X X	
			142	Know and understand performance-based work statements or statement of objectives development/environment	X X X X X X X X X X X	
			143	Be able to develop performance metrics to describe customer/acquisition needs and evaluate outcomes.	X X X X X X X	
		Apply technology to enable implementation of reengineered and integrated business processes.	144	Know how to develop strategies for optimizing development over time and resolve uncertainties.	X X X X X X	
			145	Know and understand technology use in commercial /government operations	X X X X X X X	
			146	Evaluate/Analyze potential technology solutions to determine best approach/solution	X X X X X X X	
		Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	147	Be able to conduct tradeoff studies in support of decisions to reduce Total Ownership Cost (TOC).	X X X X X X X	
			148	Know and understand financial constraints	X X X X X X	
			149	Know and understand environmental barriers (regulatory/statutory)	X X X X X X X	
			150	Know and understand possible incentives available	X X X X X X X	
			151	Know and understand industry motivators	X X X X X X	
			152	Know and understand process change enablers	X X X X X X X X X X X	

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O&S	Reengineer the Product Support Process to Use Best Practices	Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	153	Know and understand life-cycle management processes and phases	X X X X X X
			154	Know how to identify and incorporate appropriate contractual requirements and incentives.	X X X X X X
			155	Know and understand components of Total Ownership Cost (TOC).	X X X X X X X X X X X
			445	Know government financial management rules, regulations and processes	X X
		Apply integrated supply chain practices.	156	Seek integrated Supply Chain Management (SCM) solutions	X X X X X X X X X X
			157	Know and understand ways to apply Single Process Initiative (SPI) to optimize logistics operations.	X X X X X X X X X X
			158	Know and understand quality requirements	X X X X X X
			159	Know and understand alternative sourcing options	X X X X X X X X
			160	Know and understand Supply Chain Management (SCM) evaluation/measurement models	X X X X X X
			161	Know and understand Supply Chain Management (SCM) purposes and processes - components and total	X X X X X X X X X X
			162	Apply Supply Chain Management (SCM) processes/methods to business opportunity/situation	X X X X X X X X X X
	Expansion of Prime Vendor/Virtual Prime Vendor/PVV like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	163	Know and understand applicable markets and market interrelationships, including markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies	X X X X X X X X
			164	Know how to develop appropriate contractual vehicles to implement Prime Vendor/Virtual Prime Vendor arrangements	X X X X X X
			165	Understand the Prime Vendor concept in the DoD acquisition of supplies and services	X X X X X X

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O&S	Expansion of Prime Vendor/Mutual Prime Vendor/PBL-like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	166	Know and understand commercial practices, including best practices of specific market sector	X X X X X X X X X X X	
			167	Know and understand market research methods	X X X X X X X X X X	
			456	Create an integrated program schedule	X	
		Tailor the application of best practices to the specific market sector and develop appropriate contractual vehicles.	169	Know and understand commercial best practices	X X X X X X X X X X X	
			171	Know and understand partnering/alliance opportunities/execution	X X X X X X X	
			172	Know and understand data analysis to include cost/price/performance tradeoffs	X X X X X X X	
			173	Know and understand customer requirements	X X X X X X X X X X X	
		Tailor the application of best practices to international and contingency operations and develop appropriate contractual vehicles	467	Negotiate in the international political and business practice environments	X	
	Increased Contractor Logistics Support	Develop integrated support strategies.	174	Know and understand common support requirements and tools and ability to leverage those opportunitiesconsolidated design and buying opportunities	X X X X X X X X X X	
			176	Know and understand organic and commercial options available	X X X X X X X	
			177	Know and understand contract oversight techniques and tools	X X X X X X X	
			178	Know and understand mission application and operating environment	X X X X X X X X	
			179	Know and understand sustainment/war reserve requirements	X X X X X X X X	

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Environment	Trend	Action	Competency		ARKCS TGHLDZ
O&S	Increased Contractor Logistics Support	Develop integrated support strategies.	180	Know and understand commercial inventory management processes/techniques	X X X X ☐ ☐ ☐ ☐ X X X
			181	Analyze market research/customer requirements/sourcing strategies to synthesize best value Contractor Logistics Support (CLS) solutions	X X X X ☐ ☐ ☐ ☐ X X X
			182	Know and understand alternative logistic support risks, costs, and performance in development of integrated support strategies and tools.	X X X X X ☐ ☐ ☐ X X X
			183	Know and understand sustainment processes/techniques and process interrelationships (specific emphasis on inventory management with a configuration management subset)	X X X X X X ☐ X X X X
		Develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	184	Know how to develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	☐ ☐ ☐ X X ☐ ☐ ☐ X X X
			185	Create performance-based statements of objectives and incentives for logistics support.	X X ☐ X ☐ ☐ ☐ X X X X
			186	Know flexible sustainment contracts and how to develop performance events to measure contractor progress.	☐ ☐ ☐ X ☐ ☐ ☐ X X X X
	Outsource Equipment Disposal Activities	Conduct capability/environmental assessment.	187	Know and understand commercial marketplace capabilities	X X X X ☐ ☐ ☐ ☐ ☐ X X
			188	Know and understand A-76 policies and processes	☐ ☐ X X ☐ ☐ ☐ ☐ ☐ X X
			189	Know and understand selling and marketing techniques to maximize sales return	☐ ☐ X ☐ ☐ ☐ ☐ ☐ ☐ X X
			190	Know how to identify hazardous property and recognize the existence of federal, state and local requirements that may impact on its disposal in accordance with EPA, RCRA, TSDA, FAR AND DFARS.	X X ☐ ☐ X ☐ ☐ X ☐ X X
			191	Know and understand environmental regulations and cost assessments.	X X X X X ☐ ☐ ☐ X ☐ X

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Environment	Trend	Action	Competency ID		ARKCS TGHLDZ
O&S	Outsource Equipment Disposal Activities	Conduct capability/environmental assessment.	192	Know and understand government disposal policy and procedures	X X X X X X
			457	Identify cost estimating methodologies	X
		Assess contractors security processes and procedures.	193	Know demilitarization requirements to assure resale of surplus material eliminates potential of hazardous/safety incidents.	X X X X
			194	Know and understand statutory/regulatory security policy/procedures	X X X X X X X X
			195	Know and understand resources to identify and conduct assessments	X X X X
	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.	196	Know and understand selected contract in order to apply oversight tools	X X X X X
			197	Know and understand contract oversight techniques and tools	X X X X X
			198	Analyze market research/customer requirements/sourcing strategies to synthesize best value Vendor Managed Inventories/Direct Vendor Delivery solutions	X X X X X X
			199	Understand and apply past performance in structuring of a solicitation.	X X X X X X X X X X X
			200	Know and understand current, market-ready commercial practices with end-to-end visibility of inventory.	X X X X X X X X X X
			201	Know and understand market research methods and tools	X X X X X X X
			202	Know and understand total asset visibility techniques	X X X X X X X
		Monitor and track business volume information outside of DoD ownership.	203	Know and understand shift to commercial practices reporting methodology/metrics	X X X X
			204	Understand production, planning and control systems that meet time-definite delivery requirements.	X X

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Environment	Trend	Action	Competency	ARKCS TGHLDZ
O&S	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Monitor and track business volume information outside of DoD ownership.	205 Analyze and interpret business volume information to evaluate organic and industry total system performance	X X X X X X X X	
			206 Know and understand shift to commercial practices business processes	X X X X X X X X	
	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	207 Know and understand life-cycle management processes and phases	X X X X X X X X X X	
			208 Understand Cost as an Independent Variable (CAIV)	X X X X X X X X	
			209 Know and understand negotiations strategy/methods/tools	X X X X X X X	
			210 Know and understand contracting options available	X X X X X X X X	
			211 Know and understand formal and informal organizational structure to generate best value solutions to reduce Total Ownership Cost (TOC)	X X X X X X X X	
			212 Know and understand weapon system/platform mission/operating environment	X X X X X X X X X	
			213 Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X X X X X X X	
			214 Know and understand data analysis to include cost/price/performance tradeoffs	X X X X X X X X X X	
			215 Know and understand risk assessment techniques and measurement tools	X X X X X X X X X X X	
			216 Know and understand Supply Chain Management (SCM) processes and tools	X X	
			218 Know and understand commercial Total Ownership Cost (TOC) and life-cycle practices and tools	X X X X X X X X	
			219 Know and understand the Planning, Programming and Budgeting System (PPBS) and defense fiscal management policies and practices	X X X X X X X X	

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Environment Trend	Intervention	Competency ID		ARKCS TGHLDZ
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	221 Know and understand Total Ownership Cost (TOC) variables and impacted areas, to include how to perform tradeoff analyses of capability performance, and life-cycle cost drivers and evaluation.	X X X X X X X X X X X
		Develop or modify oversight processes and analysis tools.	222 Know cost estimating methods.	X X X X X X X X X X
			223 Know which funding accounts the Program Manager must influence to reduce Total Ownership Cost (TOC).	X X X X X X X X X
			224 Know and understand commercial industry analysis tools and oversight processes	X X X X X X X X X
			225 Know cost models, contractor systems and process risks.	X X X X X X X X X
			226 Understand operating and support cost data and data sources (e.g., Service vs MOSC Systems) and their differences; cost estimating tools/models and their limitations.	X X X X X X X X X
			227 Know and understand existing oversight processes and analysis tools	X X X X X X X X X
			228 Understand Total Ownership Cost (TOC) from several O&S perspectives (e.g. weapon systems, units and organizations).	X X X X X X X X X
		Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	229 Know and understand data analysis to include cost/price/performance tradeoffs and cost drivers.	X X X X X
			230 Know and understand life-cycle management processes and phases	X X X X X X X X X X X
			231 Know and understand contingency planning through plan development and implementation	X X X X X X X X X X X
			232 Know and understand analysis techniques and tools	X X X X X X X X X X X
			233 Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X X X X X X X X X X X
			234 Know and understand contract incentives/disincentives through contract completion	X X X X X X X X X X X

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Environment	Trend	Action	Competency		ARKCS TGHLDZ
O&S	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	235	Know how to access web-based acquisition and work-flow systems.	X X X X
			236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X X X X X X X X X X X
			238	Apply web-based acquisition systems	X X X X
			239	Know and understand enterprise resource planning concepts and solutions	X X X X
			240	Know web-based acquisition systems	X X X X X X X X
		Use purchase card as method of payment where appropriate.	242	Know and understand audit/reconciliation process	X
			243	Know and understand marketing/selling methods and strategies	X
			244	Know and understand impediments of further application (e.g. security, financial)	X
			245	Know and understand purchase card regulations and procedures	X
			246	Know the appropriate use of purchase cards	X X X X X
		Require business partners to apply electronic commerce techniques and tools.	254	Know and understand contract incentives/disincentives through contract termination	X
			255	Understand DoD electronic commerce policy	X X X X X X X X X X X
			256	Know and understand incentives available to entice partners	X X
			258	Know how to explain electronic commercial techniques to business partners.	X X
			259	Know and understand marketing/selling methods and strategies	X X X X X X X X X X
			260	Require business partners to apply electronic commercial techniques relating to government property.	X X X X

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Environment	Trend	Action	Competency ID		ARKCS TGHLDZ
O&S	Use of Electronic commerce and Other Information Technology	Require business partners to apply electronic commerce techniques and tools.	446	Understand DoD policy regarding CCR, SPS, and EFT	
	Increase Competitive Sourcing of Services	Determine appropriateness of competitive sourcing (inherently governmental).	261	Know and understand competitive sourcing processes and procedures, including A-76 process and procedures	
			262	Understand the characteristics of inherently governmental functions.	
		Determine acquisition strategy (e.g. regional, omnibus).	263	Know and understand contract oversight techniques and tools	
			265	Know and understand regional/national statutory/regulatory/environmental impediments	
			266	Know and understand unit mission/operating environment and ability to define to requirements to task level	
			267	Know and understand strategic planning. Know how to develop acquisition strategy.	
			268	Know and understand resources available to support any stage of acquisition	
			459	Describe the Congressional budget approval process	
		Perform a support service capability assessment (including government capability).	269	Know and understand support service capability assessment	
		Conduct Best Value Analysis on services/cost.	270	Know how to perform cost estimating methods.	
			271	Know and understand Best Value Analysis and understand how to apply in source selections.	
		Establish Inter-Service Agreements.	272	Know and understand Inter-Service Agreements	
			274	Know and understand the MOA/MOU preparation and execution	
		Perform A-76 Study.	275	Know and understand A-76 policies and procedures	

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Environment	Trend	Action	Competency ID		ARKCS TGHLDZ
O&S	Increase Competitive Sourcing of Services	Perform A-76 Study.	276	Know and understand business processes (unit specific is preferred)	X
		Consider Small Business Issues.	278	Know and understand FAR and Small Business policies and issues	XX XX
			279	Understand potential bundling issues and alert program manager.	X XX
PBA	Revision of Government Cost accounting Standards	Operate in an environment where commercial accounting standards apply.	280	Understand generally accepted accounting principles as they apply to Government property	XX
			281	Understand commercial cost accounting standards.	X XX
			282	Understand commercial cost accounting standards as it applies to Government property	XX
			283	Apply commercial accounting standards where appropriate and possible	X X
	Longer Term Contractual Relationships	Perform analysis and determine the value of longer term contractual relationships.	284	Develop appropriate contracts for long term relationships where appropriate and possible	XX XX
			285	Analyze and determine the value of longer term contractual relationships [but just repeats function]	XX XX
			286	Acquire detailed knowledge of the business sector(s). See market research.	X XX
		Establish long term contractual relationships (not limited to multi-year contracts for individual items/systems) where appropriate (e.g. CICA).	287	Understand the limitations imposed by the Competition in Contracting Act (CICA).	XX X X
	Increased Reliance on Price Analysis versus Cost Analysis	Perform basic and advanced price-based and technology-based market analysis and research.	288	Apply basic and advanced price comparative techniques including parametric analysis	X XX
			289	Understand and employ price-based analytical techniques.	XX X XX
			460	Identify cost estimating methodologies	X

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Environment	Trend	Definition	Competency		ARKCS TGHLDZ
PBA	Maximize FAR Part 12 Acquisition	Recognize items as commercial under expanded definition.	291	Properly identify potential procurements under FAR Part 2.	X
		Use FAR Part 12 procedures for procuring commercial items/services.	292	Know and understand customer requirements	X X X
			293	Understand and employ FAR Part 12 and Part 13.	X X X
			461	Identify cost estimating methodologies	X
		Analyze and challenge requirements to promote use of commercial items.	295	Apply basic and advanced price comparative techniques including parametric analysis	X X X X
			444	Know how to challenge requirements to promote use of commercial items	X X
	Introduction of Value Analysis	Establish a value for a set of activities to achieve some goal or product.	296	Apply value analysis to determine the anticipated results from varying levels of investment	X X X X
			297	Apply value analysis with other price analysis techniques to evaluate the usefulness of this analysis	X X
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	300	Know and understand hardware, software, and network requirements and applications and interoperability	X X X X X X X X X X
			301	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X X X X X X X X X X X
			302	Know and understand electronic commerce system relationship to existing business process and their interrelationships	X X X X X X X X X X X
			303	Know, understand and be able to apply business process reengineering	X X X X X X X X X X X
			304	Know and understand statutory/regulatory environment	X X X X X X X X X X X
			305	Know and understand marketing/selling methods and strategies	X X X X X X X X X X
			306	Know and understand performance metrics	X X X X X X X X X X

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Environment	Trend	Action	Competency		ARKCS TGHLDZ
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	307	Know and understand enterprise resource planning concepts and solutions	X X X X X X X X X X X
			308	Know and understand commercial electronic commerce processes	X X X X X X X X X X X
			309	Develop affordable requirements document for establishing software/hardware architecture for Integrated Digital Environment (IDE)	X X X X X X X X X X
		Use commercial standard reference identification number system to simplify with private and federal sectors (e.g. Central Contractor registration).	310	Know and understand unique software requirements and applications	X X X X X X X X X X X
			311	Know, understand and be able to incorporate standards into paperless operating systems of commercial standard reference identification number system	X X X X X X X X X X X
		Apply existing national and international standards, practices and technologies to automate the management and exchange of information.	312	Know and understand Defense Information Infrastructure Common Operating Environment (DII COE) and ability to synthesize	X
			313	Know and understand national and international standards, practices and technologies used to automate and manage and exchange information.	X X X X X X X X X X X
	Achieve Paperless Contracting	Use electronic mediums to create, store, display, retrieve and modify contractual material.	314	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X X X X X X X X X X
			315	Know and understand commercial electronic commerce processes	X X X X X X X X X X
			317	Apply the use of electronic media within the career field	X X
			318	Understand how to use electronic media	X X
			319	Understand the latest version of the Standard Procurement System	X X X X X X X X X X

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Environment	Trend	Action	Competency		ARKCS TGHLDZ
PLA	Achieve Paperless Contracting	Use electronic mediums to create, store, display, retrieve and modify contractual material.	320	Validate information contained in electronic media	☐☐☐☐☐☐☐☐☐☐XX
		Use electronic mediums for electronic payments.	321	Understand the electronic payments process as it applies to the plant clearance process	☐☐X☐☐☐☐☐☐XX
			322	Know and understand electronic mediums for electronic payment.	XX☐X X☐☐☐☐☐X
			323	Know and understand strengths and weaknesses of integration	XX☐X X☐☐☐X☐X
			324	Recognize Government and commercial cultures to effectively educate/market/encourage commercial participation	XX☐X X☐☐☐X☐X
		Use purchase cards, electronic catalogs, electronic commerce and imaging.	325	Recognize statutes, rules, policies, and procedures.	XX☐X X☐☐☐☐XX
			326	Recognize when to apply electronic commerce	☐☐☐X☐☐☐☐☐XX
	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	327	Know, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	XXXXXXXXXXXX
			328	Recognize data management sources	☐☐☐X☐☐☐☐☐XX
			329	Integrate data management systems such as PCARSS and CPMS	☐☐☐☐☐☐☐☐☐X☐
	Security/Proprietary Information	Use adequate security measures (to include protocols) to protect electronic information, as appropriate, and to provide ready access.	330	Know and understand security statutory/regulatory environment	XXX☐XXXXXXXX
			331	Know and understand adequate security measures	XXX☐XXXXXXXX
CMI	Increased Commercial Military Integration	Promote use of commercial items	332	Know, comprehend and apply commercial accounting principles as they relate to Government property	☐☐☐☐☐☐☐☐☐XX
			333	Perform advanced market research of commercial and military products	XX☐X X☐☐☐X☐X

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Environment	Trend	Intention	Competency		ARKCS TGHLDZ
CMI	Increased Commercial Military Integration	Promote use of commercial items	334	Know, understand and be able to understand benefits of opportunities of using/transitioning to commercial items where available.	X X X X X X X
			335	Know and understand commercial and MILSPEC systems and specific sector practices; ability to develop solutions and deconflict to eliminate military specifications where commercial products and practices fulfill the requirement	X X X X X X X
			336	Know Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X X X X X X X X X X X
			337	Know operational organizations, concepts and data sources.	X X X X X X X
			338	Perform an analysis of alternatives.	X X X X X X X
			339	Analyze/challenge requirement in order to accept commercial items.	X X X X X X X
			340	Develop and maintain knowledge of the commercial/industrial/academic sectors.	X X X X X X X X
		Participate in sector activities (e.g. professional associations)	341	Know and understand sector resources, activities, world-class practices, processes, technologies, and integration impediments.	X X X X X X X
			342	Be able to synthesize Government and commercial cultures to effectively educate/market/encourage commercial participation in CMI	X X X X X X X
			343	Know relevant professional associations	X X
	Increased Use of Common Business Practices	Promote use of common business practices	344	Know and understand benchmarking methods and tools	X X X X X X X X X X X
			345	Understand commercial auditing techniques	X X
			346	Know and understand industry data exchange programs	X X X X X X X
			347	Identify and adapt common and/or better practices.	X X X X X X X X X X
			348	Know and understand warranties/guarantees and ability to synthesize into Government system	X X X X X X X X X X X

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Environment	Trend	Intention	Competency		ARKCS TGHLDZ
CMI	Increased Use of Common Business Practices	Promote use of common business practices	349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X X X X X X X X X X X
			350	Perform advanced market research of commercial and military products.	X X X X X X X X X
			351	Apply commercial auditing techniques to government property control processes	X X
	Employ Common Technology Bases	Promote knowledge of world-class technology bases	352	Know and understand potential DoD/Service growth areas for application of CMI/technology bases (specifically O&S)	X X X X X X X
			353	Develop knowledge of relevant technology bases, resources, and capabilities.	X X X X X X X
		Participate in technology sector activities.	354	Know and understand sector resources, activities, world-class practices, processes, technologies, and integration impediments.	X X X X X X X
			355	Know and understand dual-use application of program/item needs and ability to incentivize dual-use focus	X X X X X X X X
	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Employ flexible manufacturing	356	Know and understand flexible manufacturing techniques and tools (e.g. CAD/CAM)	X X X X X X X X
			357	Evaluate adequacy of workload planning	X X X X X X X
			358	Evaluate adequacy of contractor manufacturing capabilities	X X X X X X
			359	Know and understand agile manufacturing	X X X X X X X X
			360	Know and understand surge manufacturing and ability to develop best solution for CMI when factoring in surge requirements	X X X X X X X
			361	Know and understand Diminishing Manufacturing Sources (DMS) commodities	X X X X X X X
			362	Know and understand and ability to evaluate adequacy of government/contractor manufacturing capabilities/flexible manufacturing tools	X X X X X X X X

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Environment	Trend	Intention	Competency		ARKCS TGHLDZ
CMI	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Coordinate supply chain requirements (consider and integrate all phases in manufacturing flow).	363	Know and understand Supply Chain Management (SCM) practices and tools	X X X X
			364	Be able to develop and evaluate Supply Chain Management (SCM) options for CMI	X X X X X X X X X
	Extend MILSPEC/MILSTANDARD Reform to Re-procurements	Reduce MILSPEC/MILSTANDARDS in reprocurements	365	Develop performance-based specifications.	X X X X X
			366	Know, understand and be able to determine if CMI or military spec is applicable safety/health/mission needs	X X X X X X
			367	Develop sources as required.	X X X X X X
			368	Know and understand quality and testing needs/requirements	X X X X X X
			369	Know and understand customer requirements	X X X X X X X X
			370	Perform market analyses.	X X X X X X X
			371	Analyze impact on logistics system (supply and maintenance).	X X X X X
			372	Manage multiple configurations.	X X X X X X X X
			373	Develop and maintain a flexible supply and delivery system.	X X X X
			374	Know and understand commercial and MILSPEC systems and specific sector practices; ability to develop solutions and deconflict to eliminate military specifications where commercial products and practices fulfill the requirement	X X X X X X
N	Life Cycle/Reduced Total Ownership Cost Emphasis	Reduce Life Cycle Cost/Total Ownership Cost	377	Understand role of program manager	X X X X X
			378	Apply Cost as an Independent Variable (CAIV) and reduced Total Ownership Cost (TOC)	X X X X X X X X
			379	Apply program management requirements	X X
			380	Know, understand and be able to adapt activity based costing to life cycle process.	X X X X X

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Environment	Trend	Intention	Opteny	D	ARKCS TGHLDZ											
A	Life Cycle/Reduced Total Ownership Cost Emphasis	Reduce Life Cycle Cost/Total Ownership Cost	381	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X	X	X		X				X	X	X
			382	Know and understand cost analysis and life-cycle management	X	X	X		X				X	X	X
			462	Identify cost estimating methodologies			X								
		Establish activity based costing for the life cycle process.	383	Comprehend DoD's corporate implementation of activity based costing and management	X	X	X		X				X	X	X
	Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate	384	Perform risk analysis.	X	X			X		X	X		X	
			385	Know and understand spiral development on resourcing and supportability (funding, sustainment)	X	X	X	X					X	X	X
			386	Know, understand and be able to assess, evaluate, and synthesize evolutionary/incremental enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution.	X	X			X		X		X	X	X
			387	Assess and forecast technology maturation for system insertion	X	X			X					X	
			388	Analyze and evaluate requirements for validity of evolutionary and incremental acquisitions	X	X		X	X				X	X	X
		Minimize cycle time	389	Evaluate technology maturation to support short cycle time in product development	X	X			X				X	X	
			390	Know and understand benchmarking/metrics analysis and ability to apply and evaluate in acquisition process to baseline and reduce cycle time	X	X			X					X	X
			391	Understand technology maturation vs. product application	X	X	X		X					X	X
	Flexible User Requirements	Participate in development of user requirements.	392	Perform risk analysis.	X	X	X	X	X	X	X	X	X	X	X
			393	Know operational organizations, concepts and data sources.	X	X			X	X			X		X
			394	Comprehend and apply risk management methods and techniques as they relate to Government property										X	X

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Environment Trend	Function	Opteny D	ARKCS TGHLDZ											
Flexible User Requirements	Participate in development of user requirements.	395	Comprehend and apply alternative risk techniques										X	X
		396	Perform Risk Based Surveillance	X	X			X	X	X	X	X		
		397	Know and understand user and joint operating requirements	X	X	X		X	X	X	X	X	X	X
		398	Define and analyze alternatives.	X	X			X				X	X	X
		399	Know, understand and be able to operate in Integrated Product Team (IPT) environment	X	X	X	X	X	X	X	X	X	X	X
Technology Refreshment of Systems (Modernization through Spares)	Promote technology refreshment of systems	400	Know and understand inventory management methods and practices and interrelationships to inventory reprocurements.	X	X			X		X				X
		401	Know, understand and be able to assess, evaluate, and synthesize technology refreshment enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution)	X	X			X		X		X	X	X
		402	Assess and forecast technology maturation.	X	X			X				X	X	
		403	Apply open systems architectures.	X	X			X				X	X	
		404	Know and understand interchangeability/interoperability and substitution	X	X			X		X		X	X	X
		405	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X	X	X		X				X	X	X
	Develop performance based specifications	406	Know, understand and be able to use engineering change process methods and tools	X	X			X				X	X	X
		407	Know, understand and be able to use value engineering methods and tools	X	X			X				X	X	X
		408	Know and understand motivation techniques to incentivize industry to develop product improvements	X	X			X				X	X	X
		409	Evaluate performance-based work statements and advise program office as appropriate	X	X		X	X				X		X
	Obtain and execute funding for modernization	410	Synthesize the functions of the Planning, Programming and Budgeting System (PPBS)	X	X	X		X				X	X	X

Career Field Legend: A = Program Management; R = Communications/Computer Systems; K = BCEFM; C = Defense Contracting; S = SPRDE; T = Test and Evaluation; G = Manufacturing and Production; H = Quality Assurance; L = Acquisition Logistics; D = Property Management; Z = Wholesale Logistics

Environment Trend	Initiation	Competency D		ARKCS TGHLDZ
N	Increased Scope of Other Transactions	Expand use and scope of other transactions	411 Apply appropriate post-award oversight techniques.	X X X X X X
			412 Know OT unique characteristics.	X X X X X X
			413 Recognize differences between other transactions and contracts as they relate to Government property	X X
			414 Manage/oversee other transactions	X X X X X X
			415 Know and understand potential DoD/Service growth areas for application of other transactions (specifically O&S)	X X X X X X
			416 Understand, evaluate and recommend the appropriate Other Transaction.	X X
			417 Comprehend and apply requirements of other transactions	X X X X X X
			418 Define, select and adapt terms to the specific agreement.	X X X X X X
			419 Know the components of an Other Transaction.	X X X X X X
			420 Perform advanced market research.	X X X X X X
			421 Know, understand and be able to access/evaluate and synthesize data of Other Transaction Authority (OTA) low/policy/resources	X X X X X
	Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	422 Know and understand best value methods and tools to synthesize best value options based on tradeoff	X X X X X X
			423 Develop performance based solicitation.	X X X X X X
			424 Perform strategic analysis to include impact on force structure.	X X
			425 Apply modeling and simulation techniques.	X X X X X X X X X X
			426 Perform business analysis to include impact on force structure.	X X X X
			427 Analyze expected system performance outcomes for best value.	X X X X X X
			428 Analyze user requirements.	X X X X X X

Career Field Legend: A = Program Management; R = Communications/Computer Systems; K = BCEFM; C = Defense Contracting; S = SPRDE; T = Test and Evaluation; G = Manufacturing and Production; H = Quality Assurance; L = Acquisition Logistics; D = Property Management; Z = Wholesale Logistics

Environment Trend	Action	Competency D		ARKCS TGHLDZ
N	Increased Use of Performance Based Contracting	Capitalize on opportunities to develop performance based solicitations for products and services.	429 Apply performance based contracting methodologies	X X X X X X X X X X
			430 Develop performance expectations incentives and metrics to describe acquisition needs and evaluate outcomes	X X X X X X X X X X X
			431 Know and understand sector resources and activities	X X X X X X X X X X
			432 Know and understand common business practices	X X X X X X X X X X
			433 Know and understand world-class sector practices processes and technologies (e.g. Single Process Initiative (SPI)).	X X X X X X X X X X
	Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	435 Know and understand the Integrated Product Team (IPT) environment	X X X X X X X X X X X
			436 Engage in analysis and tradeoff decisions on requirements to contract for the right product at the right time.	X X X X X
			437 Be able to synthesize Government and commercial cultures to effectively educate/market/encourage collaboration between user and acquisition communities	X X X X X X X X X
			438 Know and understand collaboration impediments	X X X X X X X X X
			439 Understand roles and functions of a logistician	X X
			440 Understand roles and functions of a program manager	X X
			441 Develop mutual understanding of user roles and functions and the acquisition system capabilities.	X X X X X X X X
			442 Model and analyze manufacturing system performance	X X
			443 Maintain open communications through all phases of the life cycle.	X X X X X X X X X X X

Total number of competencies 43

Career Field Legend: A = Program Management; R = Communications/Computer Systems; K = BCEFM; C = Defense Contracting; S = SPRDE; T = Test and Evaluation; G = Manufacturing and Production; H = Quality Assurance; L = Acquisition Logistics; D = Property Management; Z = Wholesale Logistics

Appendix K1.Program Management (PM)and CommunicationsComputer Systems Career Fields

INTRODUCTION

There will be a significant change in personnel activities and skills in both career fields in the next 5 to 10 years. The following discussions depict potential changes in the performance required of Program Management and Communications-Computer Systems career fields. In most cases, the trend has already started; however, the final impact or trend evolution has not yet been clearly defined. There are clear actions that DoD must take to keep pace with commercial practices, as well as with the DoD (A, T &L) vision of transforming the workforce to support the "Revolution in Business Affairs." The key element in our summary and recommendations is that the pace of change is rapid and there must be a sense of urgency in addressing these recommendations to implement the departmental vision.

The discussion is directed at the Program Management practitioners in ACAT I-II\programs/IPT leads and ACAT IA program management personnel. In the Communications-Computer Systems career field, both the Program Management and SPRDE competency trends will generally apply. The extremely rapid change in information technology will also drive the technical knowledge and skill requirements of many individuals well beyond the basic program management/SPRDE DoD practices and policies which are the study's focus. These changes, along with the implementation of the Cohen Act and the trend to have DoD personnel manage rather than do in the information technology will cause structural change in career field implementation and management.

The fundamental thrust of this discussion is directed at increasing the use of commercial business practices while fielding affordable systems that the operational commander wants. In a changing world, our management practices must be "best practices" that also connote up-to-date business practices. The vital trends and the global trends, discussed below, are not all inclusive; however, clearly there will be change in our current training thrusts. Additionally, it must be recognized that program management is about both management and leadership. The melding of management and leadership to manage both DoD and our industrial partners is a key enabler.

SUMMARY OF VITAL COMPETENCIES

This section identifies thirteen functional trends that will drive most of the changes in the PM and Comm/Computer Systems career fields between now and 2005. These vital trends were not decomposed into competencies because at the competency level the impact becomes so focused and narrow to be less meaningful and invite significant debate as to which are the vital ones because the number is so much larger. It is easier and more reasonable to get agreement at the trend level.

- Trends relative to the career fields' relationship with external organizations:
  - ➤ Increased collaboration between User and Acquisition communities
  - ➤ Flexible User Requirements
  - ➤ Increased PM influence to reduce Total Ownership Cost
  - ➤ Re-engineer the product support process to use best practices
  - ➤ Increased reliance on Non-DoD organizations.
- Trends where the career fields will change or refine internal processes in response to the changes in external relationships described in the first group
  - ➤ Separation of Technical Maturation from Product Development
  - ➤ Evolutionary Acquisition/Reduced Cycle Time
  - ➤ Promote use of commercial items
  - ➤ Increased emphasis on software development
  - ➤ Increased use of common business practices
  - ➤ Increased reliance on price analysis
  - ➤ Longer term contractual relationships
- Trend describing an enabler that is expected to mature during the next few years thus making the attainment of the other two groups of trends more likely
  - ➤ Introduction and maturation of Knowledge Management techniques and practices/information technology

IMPACT OF GLOBAL AND FUNCTIONAL TRENDS

The Global Trends have been assigned to three groupings (Business, Functional, and Knowledge) to address possible impacts on the PM, Comm/Computer Systems career fields.

Impact of Business Skills Gap on PM

A major impact of the **Business Skills** global trend, in general and specifically, on PMs will be a need for PMs to obtain a solid graduate level business school education. All graduate level business school curriculum topics should be mastered by PMs to at least the "comprehension" level in terms of Blooms Taxonomy. In selected graduate level business courses, PMs should ensure they acquire an "Application" level of education. This awareness of how domestic and international business functions, combined with unique DoD PM education and experience, may allow the PM to begin to understand the

incentives and goals of industry while reducing traditional DoD institutional biases and suspicions. In a more positive sense, such education should enhance **Partnering With Industry** in that the PM should be capable of developing the potential areas for meaningful interfaces between DoD and industry. Ideas and concepts can be developed that provide both parties (government and industry) net short and/or long term gains in terms of meeting respective mission (corporate) needs, that fit within resource constraints, and emphasize areas where gains outweigh the losses. Other members of the PM workforce should also acquire knowledge or comprehension levels of education in specific business topics.

The need for an **Emphasis On Services Instead Of Products** is tied to many of the changes within the DoD that have rapidly evolved since the end of the Cold War, e.g., relatively lower level of funding within DoD, relatively lower manpower levels, and major DoD mission shifts. These fact-of-life changes have been accommodated by DoD Acquisition Reform initiatives and the many related actions of DoD's senior leadership in the early 90s. Only by initiating and vigorously pursuing significant changes in the way it did business could DoD function within its new funding and manpower constraints. Thus, "Buying Services" instead of "Products" in selected areas fits within the noted constraints while allowing DoD to meet most of its near term mission needs in the selected area. To further enhance this action, the purchased "Services" are stated in performance terms as required by Acquisition Reform. However, PMs must learn how to solicit such services, select a provider, and then perform appropriate oversight. Typically, the PM must also become involved with financial penalties and incentives that are frequently associated with such services. Thus, a solid grounding in business by the government PM is essential when buying competencies in the form of services.

Competitive Sourcing and **Activity Based Costing** are considerations for the PM in buying "best value" for the DoD. This is true in terms of systems acquisition or services to support those systems. Opportunities in both of these subject areas are, however, constrained by the few surviving defense contractors. But a PM with a good business education (above) should be able to meet the needs of these global trends with increased understanding of what is driving industry (cash flow, return on investment, etc), their issues and problems, and how to optimize DoD's position. This should be particularly true as applies to **Activity Based Costing** and comprehending how the PM may be able to achieve dollar savings for DoD while offering industry the opportunity to maintain or enhance profit levels.

Impact of Functional Integration Group on PM

A major impact of the global trends, identified here as the **Functional Integration Group**, is the continuing need for the PM to emphasize and become highly skilled in all aspects of the **Integrated Product and Process Development (IPPD)** as well as understanding the motivations and work preferences of the team. This will include a PM initiating and coordinating actions to ensure most individuals directly or indirectly linked to his or her program are ready to be productive team members in their respective functions in an IPPD context. This need equally applies across all three of the topics noted above as being part of the **Functional Integration Group.** The PM, in his or her leadership role, must also do those things that, within the law, policy, and personal career goals enhance **Government-industry Personnel Mobility.** As of this writing, no significant changes have occurred in law or policy that would enhance mobility or impact the

PM differently than current law/policy. Working in an IPPD context within industry and between industry and DoD remains undiminished. This is also true as applies to **Cross-functional Teaming** and **Integration Of The Acquisition,Logistics,and Technology Functions.** The impact here on the PM is to ensure IPPD training and processes are administered at optimum levels to achieve program goals.

Impact of Knowledge Management Group on PM

The major impact of this group is a continuation of the need to manage with fewer people/decreasing budgets, enhance PM education/training, and be far more productive. The trends, noted in the above list for this group, have developed throughout the 1990s within DoD and to some extent within industry. In the next five to ten years, the impact of these trends are likely to increase. This will only offer opportunities to the PM to employ the positive aspects of all the global trends. However, a specific impact in the **Knowledge Management Group** will include awareness of technology advances **(nformation Technology and Virtual Office)** that will do much to support the positive aspects of living with a smaller and older workforce, fewer military, and more generalists. The **Learning Organization** trend will have the impact of facilitating knowledge of technology advances leading also to enhanced productivity.

VISION

Successful program managers in 2005 will possess a broad range of competencies in which leadership and critical thinking skills will be the most important but business acumen will also be at a premium. The successful managers will possess a higher degree of proficiency and flexibility in more functional skill areas than is the norm today. There will be fewer "cookbook rules" thus more creativity will be required. The program manager will have to employ effective strategic, tactical, and day-to-day planning and performance management techniques in order to deliver the required products on cost and schedule. Ever improving productivity, as facilitated by information technology, will be essential. This will be particularly true when partnering with industry. The demands of planning, management, and detailed budgeting will combine to create the need for more highly competent integrators of the functional disciplines than ever before. The rapid globalization of commerce will result in development and production activities scattered worldwide. Operating in a constantly changing international business arena will increase the challenge of acquiring business acumen.

The DoD's inability and failure to attract and retain new, younger civilian employees in defense acquisition will continue and potentially result in a crisis in the civilian acquisition workforce. The majority of the remaining smaller acquisition workforce will be older, at or near retirement age. They will have significant technical depth but little breadth. Personnel management, including career management, will have become a priority for the Services with an increased emphasis on identification of future leaders. Variations, particularly in career management practices and timing of actions among the services and defense agencies will result in variations in their end states. A robust and adequately funded education and training program will be developed to assist those few new hires that have been acquired and retained. As a result of continued outsourcing and privatization activities, academia and the private sector will increasingly provide training to the DoD A&T workforce. Where training remains in-house, it will be through competition or by conscious recognition that it is in the best interest of the DoD to retain the capability.

The broader education requirements for the successful manager will not obviate the need for individual technical expertise nor for continuing support from functional specialists supporting critical areas of contractor performance/compliance reviews.

There will continue to be pressure to reduce acquisition overhead in both dollars and personnel. The overall acquisition "footprint" will continue to shrink steadily and significantly, adding pressure to decentralize the acquisition workforce from the current large, centrally-located, service-unique acquisition office complexes to a confederation of geographically dispersed PM offices (PMO). As a result of the combined effects of compensation imbalances with private industry and increased outsourcing, civilian specialists will no longer be readily available from organic sources but will be attainable through FFRDC or support contractor sources. The standard PMO will consist of a small nucleus of military and civil service (organic) personnel supplemented by contractor support. More responsive and flexible risk management will allow the empowerment of remotely located personnel. Improved cross-service collaboration and support will enhance the growth of more joint programs and a more efficient and effective "purple" workforce.

Nothing will be "free". Implementation of enhanced managerial accounting and information systems including activity-based costing throughout the DoD will permit a more complete transfer of costs to using activities. Accordingly, while users will be required to pay directly for virtually all DoD provided services they will enjoy greatly increased visibility into the full costs of individual programs. Inherently governmental functions will be strictly limited to programmatic decision-making and direction, contracting, and funds certification. In addition, this more narrow interpretation of "inherently governmental functions" will open many previously organic acquisition activities to public-private competition. Realizing the vision of more insight vs. oversight, program management will be highly collaborative with the PM office working in concert with the prime contractor, the user, DCMC and the tester in an integrated product team (IPT) environment. Much of the "headquarters staff" will be gone and those remaining will focus on top-level assistance - not micro-managing programs. Congressional oversight will remain.

There will be fewer new starts, with more emphasis on modifications both using more commercial products and software intensive subsystems. While legacy systems will be updated, the process will not be fast enough to counter the impact of older systems' increasing O&S costs continuing to constrain the stream of research and development dollars available for modernization.

Private sector demands and technical innovation will continue to replace military requirements as the driving force behind military technological development. Commercial solutions acquired using commercial practices will be the preferred practice for a growing portion of military acquisitions. To be successful, program managers will be required to understand general commercial business practices as well as unique defense acquisition principles. Flexible and rapidly executable business practices will increasingly replace rule-based, risk adverse acquisition.

The ability and requirement to link and communicate will demand that the members of the PM and Comm/Computer System career fields possess a high degree of competency in information technology. This knowledge will be required not only to satisfy the interoperability requirement of the individual system to the greater "system of systems" but also to improve productivity and facilitate interaction with and/or management of their team. Knowledge Management will be refined but there will remain

a significant challenge in how to fuse data to provide timely, needed information without overloading the PMO or the operational commander's systems.

IMPROVEMENTS RECOMMENDATIONS

- **Training/Education must keep pace with the current and projected rapid rate of change.** These recommendations can not be implemented one at a time. The program management/communications-computer person of the future must have different skills with a much different and supportive information technology infrastructure in the future.

  - ➤ Adapt current training programs to global trends, particularly application of commercial business practices.

  - ➤ Increase acquisition leadership (universal competency) content in acquisition training to insure acquisition personnel apply leadership in context.

  - ➤ Provide increased team training for specific program events.

  - ➤ Provide performance based support modules for many tasks.

  - ➤ Require graduate level business school for senior program management personnel.

  - ➤ Increase software management and information technology emphasis in the program management courses

  - ➤ Provide updates to policies and best practices to the workforce to support continuous learning and workforce currency.

  - ➤ Increase use of educational processes which enhance individual self-directed learning ability and motivation to self-assess, research/seek, and apply needed information.

- **Increased training and experience opportunities required.** Simply put, without more emphasis on training to directly support an individual's job performance, often provided just-in-time, and a managed career process to gain the requisite experience to accept broad responsibilities, our program management system will find it difficult to perform effectively.

BARRIERS

There are many barriers to efficiently and effectively work our way to the future. All actions in this area have proponents/opponents. The rationale for the change is the need to adapt to the future trends discussed above.

Career Field Status

The Communications-Computer Systems career field is faced with a dramatically changing technology that changes what the people do. The 1950-1980s approach to communications has given way to the Local Area Networks. The trend to network centric operations and knowledge management are again changing the skills of workers in this area. In the defense hardware arena, managing programs routinely demands more communications, software management, and computer skills than ever before. The trend is for higher program content in these areas. One action that can better deploy workforce skills and build a higher performing workforce in this area is to redefine the Communications-Computer career field.

- Action: The Communications-Computer Systems career field should be renamed Information Technology to reflect the changing commercial market and the expected deployment of those people within DoD in the future. The career field would have potentially a single track through all or part of Level II. Then the career field would have two to three tracks with the DAWIA portion being the Automated Information Systems (ACAT IA) program management and the CIO portion supporting the CIO track. The technical track of the career field would be broad based, with the engineers supporting both the AIS and the CIO efforts. Whether the technical personnel would be in the SPRDE career field or in the information technology career field would be the subject of further study.

  Combining the expected increase in information technology emphasis and the likelihood of outsourcing more and more of the local area networks/computer seats, the personnel in the CIO track of the career field will be more clearly directly supporting CIO functions. The CIO training would support the apex of this career field. (This group would not include those people currently practicing program management.)

- Automated Information Systems (ACAT IA) personnel who practice program management are overseen by the PM Functional Adviser today for determining training for program management. The deficiency in this area is that there is no defined mechanism to identify the requisite experience and background for these assignments in conjunction with the Communications-Computer career field. In the future, Automated Information Systems (ACAT IA) personnel who practice program management would be under the Program Management Career field, as today, but with a set of joint CIO/PM coursesmodified Communications-Computer coursesto support the technical requirements and experience unique to the managing of ACAT IA systems or "systems of systems." This track, within the PM career field and under the oversight of the PM Functional Advisor, could be managed by OSD(C3I) in conjunction with the PM Functional Adviser and would also allow for definition of the requirements for qualification for either a CIO or ACAT IA program management related assignment. The CIO, or the delegated representative, would clearly be the Functional Adviser for CIO related functions as is the case today. This recommendation would formalize the working together of the PM Functional Adviser and the CIO representative to mutually identify clear career paths, particularly where there may be overlapping issues.

- Rationale: The Communications-Computer Systems career field, as we now define it, is caught between differing visions of the future~~CIO~~ related and/or ACAT IA program management activities. This recommendation addresses a methodology to better develop personnel and provide multiple career paths, particularly for civil service personnel. There clearly needs to be coordination between and definition of the roles of the functional advisers for PM, CIO, and SPDRE.

Certification Issues

Certification within a career field has been either grandfathered since the inception of DAWIA or has been simply meeting the minimum qualifications. There has been no attempt to determine whether or not the person maintains or improves their performance as a professional within the career field. Most commercial professional associations require a modest number of continuing education units of approved topics to be taken per year. This issue affects both training and maintenance of certification.

Career Field Continuous Learning: Within the career fields, there is no mechanism for addressing currency of the practitioners other than the efforts of the major commands and their overall civil service hiring practices. Fundamentally, if a person is not perceived as competent and current, a person is not competitive for another job. Within a job, a person's willingness to undergo training is tempered by the supervisor and command priorities. ~~H~~wever, the career fields are populated by good people who want to remain current and abreast of the department's latest initiatives. The outcome of the present system is unevenness in maintaining currency, and in many cases, a reluctance to use the training. Given a trend for DoD to change its management practices, there needs to be a consistent methodology to provide management updates to members of the career fields.

Concurrently, there should be support of individual self-directed learning so personnel can seek what they need when they need it. They should not have to wait for a committee consensus and directed course development to provide needed competencies. Often individuals will be able to get useful development and needed knowledge via the Internet, "target of opportunity" seminars, or individual benchmarking efforts. Such a process would be an employee "pull" system instead of a DoD "push" system. Removing barriers to individual initiative in determining their educational needs and obtaining needed education could enhance intrinsic motivation and result in improved morale and more dedicated job performance. The recent DoD continuous learning policy does not provide enough focus on maintaining currency. The career fields have no defined updates or even a requirement for update.

- Action: Develop a short policy/practices update course (updated annually at a minimum) to provide the Program Management career field members an opportunity to maintain currency in their career field via the continuous learning policy.

- Rationale: Given the trend for DoD to change its management practices to be more commercial, there needs to be a periodic method for program management personnel to keep current. Since the career field is composed of good people that generally want to remain current, the availability of an update course through continuous learning is expected to obviate the need for a continuous certification or periodic re-certification program, if management is supportive.

Development of a Generalist as a Program Manager

With the workforce shrinking and less reliance on the military in program offices, the Program Manager of the future will have more responsibility but less assistance in mission accomplishment. This person will have to make decisions over a broader area than today. Development of such a person demands experience in multiple areas with supplemental just-in-time/performance based support systems as aids. Obtaining the experience in multiple areas, while currently lauded, is up to the individual and there is no mechanism for the major commands to manage development of a talent pool. Yet there is a desire to increase the number of civilian personnel in program manager/deputy billets. Given the relatively large number of the persons in the work force, and the additional costs for moving a large number of people, such a program would have to be initiated at least at the GS-14 level and above for affordability reasons. There would have to be a senior level decision to implement such a program. Within the constraints of the current mobility agreements as well as the rotation policy in PL 101-510 Section 1734, a limited program could be implemented once a management infrastructure is in place and funds available.

- Action: Institute a centralized career management program administered by the Services with OSD oversight by the Director of Acquisition Training, Education and Career Development for the acquisition workforce, including billet management, with the goal of developing a cadre of high potential managers. Initiate a definitional study to determine the bounds of a career management program.

- Rationale: The rapid change in processes and policies needs personnel with not only the right education and training but with the experience in hands-on work.

INTERPLAY WITH OTHER CAREER FIELDS

The global trends that will drive our knowledge management practices, more refined business skills and have program management as the focus for integration also will tend to drive the Program Management career field and the Information Technology (evolved Communications-Computer Systems) career field close together in many skill areas.

Redefining the Communications-Computer Systems (including its renaming to Information Technology) career field carries with it a potential dual track with Program Management through Level II to allow better development of ACAT IA or other program management personnel and enhance mobility between PM and IT fields. To accomplish this end, there will have to be a common vision for management of the PM and IT personnel, particularly since the Cohen Act and subsequent updates have given training responsibilities to the CIO for the CIO related activities. To manage personnel better and prevent duplication of training, there will need to be a convergence of the OUSD(AT&L), (S&T) and C3I senior management on their joint management philosophy and practices.

Recommendation: Establish a senior level steering group to oversee the weapons, software, and C3I career field management and training requirements.

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Environment	Trend	Intion	Cpteny	D	R	A	Cmnt Nes
RDT&E	Consolidation (Centers of Excellence)	Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).	4	Know critical elements contained in a Business Case Analysis (BCA) in order to justify sound business outcomes.	X	X	Need basic business case analysis--not specifically on consolidation
		Operate in a Multi-Service Environment.	13	Know and understand how to function in a Multi-Service environment.	X	X	Program Managers will routinely operate with other services centers of excellence
			14	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	X	X	Need appreciation from customer perspective
	Increased Reliance on Non-DoD Organizations	Conduct market research/analysis of the national base of technology.	17	Understand basic market research techniques	X	X	Increasing requirement for PM to be aware of national and international marketing practices and availability, particularly for technologies relating to the product line.
			18	Know technology for a specific business sector. Understand and evaluate unique conditions.	X	X	
			19	Understand sector pricing practices	X	X	
		Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	20	Know and understand technology insertion strategies and ability to apply to DoD needs.	X	X	Supports evolutionary acquisition trends.
			21	Know DoD's unique technical and facilitation requirements.	X	X	
			22	Assess the alternative sources and methods most appropriate to handle the requirements not unique to DoD.	X	X	
			23	Know, understand and be able to benchmark and evaluate all RDT&E options/practices	X	X	Overview of applicable practices

Environment	Trend	Intention	Criteria	Description	R	A	Comments
RDT&E	Increased Reliance on Non-DoD Organizations	Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	24	Evaluate the individual situation and select the appropriate contracting or assistance vehicle	X	X	Have enough understanding to formulate overall strategy
			25	Understand the applicability and advantages of the various contracting or assistance vehicles.	X	X	Have enough understanding to formulate overall strategy
			26	Know and understand dual use application of program/item needs and ability to incentivize dual-use focus	X	X	Have enough understanding to formulate overall strategy
	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	28	Determine where in the Test & Evaluation (T&E) process testing can be combined to ensure greater participation by the Operational Testers up front while maintaining their independence.	X	X	Have enough understanding to formulate overall strategy
			29	Understand responsible agencies for Developmental Test & Evaluation (DT&E), Operational Test & Evaluation (OT&E), and identify the major objectives and types of developmental and operational testing	X	X	Have enough understanding to formulate overall strategy
			30	Know, understand and be able to operate in an Integrated Product Team (IPT) environment	X	X	
			31	Define the test team structure and their contributions in the Test & Evaluation Master Plan (TEMP). Know how the TEMP is used as an integrating document, supporting the acquisition strategy throughout the entire acquisition life cycle	X	X	Need general understanding
		Perform design tradeoffs earlier in the acquisition process.	32	Know, understand and be able to assess design tradeoffs	X	X	Have enough understanding to formulate overall strategy
			33	Evaluate use of the systems engineering process to reduce risk of operational / support problems	X	X	Have enough understanding to formulate overall strategy
		Develop strategy to minimize operation/support problems, risks and fielding issues.	34	Understand the impact of design on the operations and test environment	X	X	Have enough understanding to formulate overall strategy
		Plan appropriate T&E of commercial and NDI items.	35	Know proposed use of Commercial & Non-Developmental Items (NDI) be able to evaluate such items.	X	X	General understanding only

Environment	Trend	Intention	Criteria	Description	R	A	Comments
RDT&E	Early Involvement of Operational Test and Evaluation	Develop verification/conformance metrics.	37	Be capable of developing strategic, tactical and local metrics within the acquisition process.	X	X	Need capability to develop metrics appropriate to every area PM is responsible for
	Increased Use of Simulation Based Acquisition (SBA)	Perform analysis on most appropriate SBA program application, select pilot programs.	40	Know and understand potential DoD/Service growth areas for application of Simulation Based Acquisition (SBA) and Modeling (specifically O&S)	X	X	Have enough understanding to formulate overall SBA strategy.
		Use SBA to identify and simulate design issues and risks.	44	Understand and determine how to apply Modeling and Simulation (M&S) when conducting performance studies, effectiveness studies, tradeoff analysis, risk analysis, sensitivity analysis and cost analysis.	X	X	Have enough understanding to formulate overall strategy
		Apply simulation and modeling techniques.	45	Be capable of using and understanding the basic tenets of modeling and simulation	X	X	Have enough understanding to formulate overall strategy
	Separation of Tech Maturation From Product Development	Perform S&T strategic planning.	48	Know and understand future technological advances that can be incorporated into system development programs.	X	X	PM needs general understanding
			49	Know and understand strategic planning tools and techniques. Coordinate with Joint Warfighting requirements.	X	X	PM needs general understanding
		Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50	Know and understand contingency planning and execution	X	X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			51	Assess technological opportunities and evaluate the feasibility, maturity, and risk.	X	X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			53	Know and understand risk reduction and risk assessment processes for acquisition process. Balancing risks and benefits in situations involving human safety, environmental risks, and financial uncertainties.	X	X	Already teaching this adequately
		Develop realistic Technology Transition Plans.	55	Know the Planning, Programming and Budgeting System (PPBS) environment and budgeting process for insertion of out year funds for transition	X	X	Already teaching this adequately

Environment	Trend	Tention	Opteny	D	R	A	Comments
RDT&E	Separation of Tech Maturation From Product Development	Develop realistic Technology Transition Plans.	56	Know and understand technology transition planning/strategy and ability to assess/evaluate and synthesize best-value options into Technology Transition Plans	X	X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			57	Understand the risks associated with current technology maturity in relation program needs	X	X	PM needs general understanding
		Design Systems with open architectures.	58	Know and understand open architecture discipline, tools, and methods and ability to apply to service interoperability	X	X	PM needs general understanding but will have to devote more effort in this area as the trend develops
		Conduct affordability assessments/analysis.	60	Understand the Cost as an Independent Variable (CAI)/policy concerning the authority of the program manager to make cost and performance tradeoffs	X	X	
			61	Know and understand affordability assessment techniques and tools	X	X	PM needs general understanding
		Assess cost/schedule risk and influence on design.	63	Know, understand and be able to perform/evaluate cost/schedule risk assessments	X	X	Taught today
		Assess supportability techniques for assessing systems requirements.	69	Use systems engineering processes to reduce risk of operational and support problems.	X	X	Need general understanding of Systems Engineering
			70	Manage experimentation and prototyping	X	X	Understand prototyping impact on trend
			71	Know and understand supportability analysis tools and techniques	X	X	Need to know where to get support
			72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X	X	PM needs general understanding but will have to devote more effort in this area as the trend develops
		Identify sources and methodologies for technology insertions.	73	Understand commercial and military state of the art technology applications.	X	X	Particularly in commercial areas
			74	Know and understand open architecture discipline, tools, methods to improve aging systems/platforms O&S (specifically for tech insertions)	X	X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			75	Know methodologies for inserting technology upgrades and maintaining technical currency	X	X	Needs general understanding to formulate overall strategy

Environment	Trend	Action	Criteria	Key Data	R	A	Comments
RDT&E	Separation of Tech Maturation From Product Development	Apply Advanced Concept and Technological Demonstrations (ACTDs) as appropriate during product development.	76	Know and understand the Advanced Concept and Technological Demonstration (ACTD) process and their impact on Life Cycle Cost (LCC).	X	X	Needs general understanding
	Increased Emphasis On Interoperability As A RP	Develop systems using International Interoperability Standards.	77	Understand the increased emphasis of interoperability as a Key Performance Parameters (RP) and ensure it is reflected in the solicitation	X	X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			78	Negotiate in the international political and business practice environments	X	X	PM needs general understanding
			79	Identify and describe basic principles of technical standards as they relate to system development and interoperability	X	X	Needs basic awareness
		Comply with Joint Technical Architecture requirements.	80	Knowledge and understanding and ability to comply with Defense Information Infrastructure Common Operating Environment (DII COE)	X	X	Taught today but need basic awareness
			81	Understand and apply Joint Technical Architecture (JTA) requirements and standards	X	X	Taught today but need basic awareness
		Perform an Interoperability Performance Analysis.	82	Perform analysis to identify linkages connections, processes and delay time that effect interoperability .		X	
		Perform a Cost as an Independent Variable (CAIV) analysis.	84	Understand the purpose and general method of execution of Cost as an Independent Variable (CAIV)	X	X	Taught today
			85	Prepare and defend a Cost as an Independent Variable (CAIV) analysis. Discuss the relationship of CAIV analysis to other cost analyses	X	X	Taught today
			86	Understand the Cost as an Independent Variable (CAIV) policy concerning the authority of the program manager to make cost and performance tradeoffs	X	X	Taught today
	Increased Emphasis On Software Development	Develop evaluation and assessment criteria to measure software progress.	88	Know and understand software evaluation and assessment criteria	X	X	Know but will have to devote more effort in this area as the trend develops
			89	Understand and apply the software process development capability.		X	

Environment	Trend	Intention	Criteria	ID	R	A	Comments
RDT&E	Increased Emphasis On Software Development	Develop evaluation and assessment criteria to measure software progress.		90	Know and understand customer/system integration requirements to design effective software measures		X	
				91	Understand Capability Maturity Models (CMM)	X	X	Have basic knowledge and will get additional emphasis as trend develops
				92	Know software engineering principles and how it applies through the acquisition life cycle.		X	
			Apply parametric analysis for estimating cost.	93	Know and understand parametric analysis and ability to perform and analyze resulting data		X	
				94	Understand parametric analyses and construct these analyses to support bid and solicitation development		X	
			Apply newly developed software evaluation tools.	95	Know evolutionary spiral process as a framework for systems and software development programs.	X	X	
				96	Know and understand software acquisition ri sks for systems, select appropriate mitigation strategies	X	X	PM requires general awareness only
				97	Understand the software development and integration process and the impacts to the software technical life cycle.	X	X	
				98	Know and understand the integrated Capability Maturity Models (CMM) process and how it applies to software development	X	X	
				99	Know and understand leading/state of art software evaluation 'best practices"and resources for software test program planning and execution		X	
				100	Be able to use and illustrate state of art tools and techniques available for planning, measuring and predicting software development progress		X	
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).		101	Know and understand DoD operations & requirements	X	X	General awareness
				102	Know and understand environmental rules/regulations	X	X	

Environment	Trend	Intervention	Competency	D	R	A	Comments
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	103		Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X X	
			104		Know and understand commercial best practices	X X	
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105		Know and understand risk assessment methods and measurement tools	X X	
			106		Know and understand Business Case Analysis (BCA) process/rules and tools.	X X	
		Develop streamlining and implementation planning for consolidation.	110		Know and understand personnel policies/procedures to include labor relations/union coordination	X	
		Ensure highest quality staff infrastructure is maintained.	112		Know and understand available training/education resources to include funding/opportunity	X X	
	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	113		Understand techniques to determine best practices	X X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			114		Know and understand commercial best practices	X X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			115		Analyze government and industry to identify, adopt, and tailor best practices.	X X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			116		Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			117		Know and understand benchmarking	X X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			118		Know and understand research methods literature, internet, corporate assets	X X	PM needs general understanding but will have to devote more effort in this area as the trend develops
		Perform business case analysis.	120		Know and understand Business Case Analysis (BCA) process/rules and tools.	X X	

Environment	Trend	Intention	Competency	D	R	A	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Involve customers early in the acquisition strategy process.	123	Know and understand strategic planning	X	X	
			124	Know how to apply technology to implement reengineered and integrated business processes.	X	X	
			125	Know and understand acquisition process	X	X	
			126	Know and understand the Planning, Programming and Budgeting System (PPBS)	X	X	
			127	Know and understand requirements forecasting techniques & process	X	X	
		Employ/Develop sourcing strategies that emphasize best value.	129	Know and understand customer requirements	X	X	
			130	Know and understand contracting options available	X	X	
			131	Ability to develop performance-based work statements or statements of objectives.	X	X	PM needs general understanding
			132	Understand and use A-76 techniques for competitive sourcing using best value (Assume A-76 revised to permit best value selection)	X	X	
			133	Know and understand negotiations/plans and execution	X	X	
			135	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	X	Logistics Personel need supervision in this area
			136	Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault- tree methods for describing and making decisions.	X	X	
			137	Know and understand current product support processes and interrelationships	X	X	
			138	Know and understand commercial best practices	X	X	
			139	Know and understand partnering/alliance opportunities/execution	X	X	

Environment	Trend	Intention	Criteria	Key Data	R	A	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Employ/Develop sourcing strategies that emphasize best value.	140	Know and understand data analysis to include cost/price/performance tradeoffs In order to achieve affordable readiness.	X	X	
		Develop performance-based work statements or statements of objectives.	141	Know and understand product/service to be supported	X	X	
			142	Know and understand performance-based work statements or statement of objectives development/environment	X	X	
			143	Be able to develop performance metrics to describe customer/acquisition needs and evaluate outcomes.	X	X	
		Apply technology to enable implementation of reengineered and integrated business processes.	144	Know how to develop strategies for optimizing development over time and resolve uncertainties.	X	X	
			145	Know and understand technology use in commercial /government operations	X	X	
			146	Evaluate/Analyze potential technology solutions to determine best approach/solution	X	X	Need general understanding
		Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	147	Be able to conduct tradeoff studies in support of decisions to reduce Total Ownership Cost (TOC).	X	X	
			148	Know and understand financial constraints	X	X	
			149	Know and understand environmental barriers (regulatory/statutory)	X	X	
			150	Know and understand possible incentives available	X	X	
			151	Know and understand industry motivators	X	X	
			152	Know and understand process change enablers	X	X	
			153	Know and understand life-cycle management processes and phases	X	X	Taught today

Environment	Trend	Intention	Opteny	D	R	A	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	154	Know how to identify and incorporate appropriate contractual requirements and incentives.	X	X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			155	Know and understand components of Total Ownership Cost (TOC).	X	X	
		Apply integrated supply chain practices.	156	Seek integrated Supply Chain Management (SCM) solutions	X	X	
			157	Know and understand ways to apply Single Process Initiative (SPI) to optimize logistics operations.	X	X	
			158	Know and understand quality requirements	X	X	
			159	Know and understand alternative sourcing options	X	X	
			160	Know and understand Supply Chain Management (SCM) evaluation/measurement models	X	X	PM needs general understanding but will have to devote more effort in this area as the trend develops.
			161	Know and understand Supply Chain Management (SCM) purposes and processes - components and total	X	X	
			162	Apply Supply Chain Management (SCM) processes/methods to business opportunity/situation	X	X	PM needs general understanding but will have to devote more effort in this area as the trend develops
	Expansion of Prime Vendor/Virtual Prime Vendor/PVP-Vike arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	163	Know and understand applicable markets and market interrelationships, including markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies	X	X	
			164	Know how to develop appropriate contractual vehicles to implement Prime Vendor/Virtual Prime Vendor arrangements	X	X	PM needs general understanding but will have to devote more effort in this area as the trend develops
			165	Understand the Prime Vendor concept in the DoD acquisition of supplies and services	X	X	Trend issue
			166	Know and understand commercial practices, including best practices of specific market sector	X	X	
			167	Know and understand market research methods	X	X	

Environment	Trend	Action	Capacity	D	R	A	Comments
O&S	Expansion of Prime Vendor/Mutual Prime Vendor/PVP-like arrangements	Tailor the application of best practices to the specific market sector and develop appropriate contractual vehicles.	169	Know and understand commercial best practices	X	X	
			171	Know and understand partnering/alliance opportunities/execution	X	X	
			172	Know and understand data analysis to include cost/price/performance tradeoffs	X	X	
			173	Know and understand customer requirements	X	X	
	Increased Contractor Logistics Support	Develop integrated support strategies.	174	Know and understand common support requirements and tools and ability to leverage those opportunities consolidated design and buying opportunities	X	X	
			176	Know and understand organic and commercial options available	X	X	
			177	Know and understand contract oversight techniques and tools	X	X	
			178	Know and understand mission application and operating environment	X	X	
			179	Know and understand sustainment/war reserve requirements	X	X	
			180	Know and understand commercial inventory management processes/techniques	X	X	
			181	Analyze market research/customer requirements/sourcing strategies to synthesize best value Contractor Logistics Support (CLS) solutions	X	X	General knowledge only
			182	Know and understand alternative logistic support risks, costs, and performance in development of integrated support strategies and tools.	X	X	
			183	Know and understand sustainment processes/techniques and process interrelationships (specific emphasis on inventory management with a configuration management subset)	X	X	

Environment	Trend	Intention	Criteria	D	R	A	Comments
O&S	Increased Contractor Logistics Support	Develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.		185	Create performance-based statements of objectives and incentives for logistics support.	X X	PM needs general understanding but will have to devote more effort in this area as the trend develops.
	Outsource Equipment Disposal Activities	Conduct capability/environmental assessment.		187	Know and understand commercial marketplace capabilities	X X	
				190	Know how to identify hazardous property and recognize the existence of federal, state and local requirements that may impact on its disposal in accordance with NPA, RCRA, TSDA, FAR AND DFARS.	X X	
				191	Know and understand environmental regulations and cost assessments.	X X	
				192	Know and understand government disposal policy and procedures	X X	
		Assess contractor's security processes and procedures.		194	Know and understand statutory/regulatory security policy/procedures	X X	
				195	Know and understand resources to identify and conduct assessments	X X	
	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.		196	Know and understand selected contract in order to apply oversight tools	X X	
				197	Know and understand contract oversight techniques and tools	X X	
				198	Analyze market research/customer requirements/sourcing strategies to synthesize best value Vendor Managed Inventories/Direct Vendor Delivery solutions	X X	
				199	Understand and apply past performance in structuring of a solicitation.	X X	
				200	Know and understand current, market-ready commercial practices with end-to-end visibility of inventory.	X X	

Environment	Trend	Intention	Capability	D	R	A	Comments
O&S	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.		201	Know and understand market research methods and tools	X	X
				202	Know and understand total asset visibility techniques	X	X
		Monitor and track business volume information outside of DoD ownership.		206	Know and understand shift to commercial practices business processes	X	X
	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.		207	Know and understand life-cycle management processes and phases	X	X
				209	Know and understand negotiations strategy/methods/tools	X	X
				210	Know and understand contracting options available	X	X
				211	Know and understand formal and informal organizational structure to generate best value solutions to reduce Total Ownership Cost (TOC)	X	X
				212	Know and understand weapon system/platform mission/operating environment	X	X
				214	Know and understand data analysis to include cost/price/performance tradeoffs	X	X
				215	Know and understand risk assessment techniques and measurement tools	X	X
				218	Know and understand commercial Total Ownership Cost (TOC) and life-cycle practices and tools	X	X
				221	Know and understand Total Ownership Cost (TOC) variables and impacted areas, to include how to perform tradeoff analyses of capability performance, and life-cycle cost drivers and evaluation.	X	X
		Develop or modify oversight processes and analysis tools.		222	Know cost estimating methods.	X	X

Environment	Trend	Intention	Capacity	D	R	A	Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Develop or modify oversight processes and analysis tools.	223	Know which funding accounts the Program Manager must influence to reduce Total Ownership Cost (TOC).	X	X	
			224	Know and understand commercial industry analysis tools and oversight processes	X	X	Trend issue
			225	Know cost models, contractor systems and process risks.	X	X	
			226	Understand operating and support cost data and data sources (e.g., Service XMOSC Systems) and their differences; cost estimating tools/models and their limitations.	X	X	
			227	Know and understand existing oversight processes and analysis tools	X	X	
			228	Understand Total Ownership Cost (TOC) from several O&S perspectives (e.g. weapon systems, units and organizations).	X	X	
		Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	229	Know and understand data analysis to include cost/price/performance tradeoffs and cost drivers.	X	X	
			230	Know and understand life-cycle management processes and phases	X	X	
			231	Know and understand contingency planning through plan development and implementation	X	X	
			232	Know and understand analysis techniques and tools	X	X	
			233	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	X	Apply as opposed to synthesize
			234	Know and understand contract incentives/disincentives through contract completion	X	X	
	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	235	Know how to access web-based acquisition and work-flow systems.	X	X	

Environment	Trend	Function	Competency	D	R	A	Comments
O&S	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X	X	
			239	Know and understand enterprise resource planning concepts and solutions	X	X	
			240	Know web-based acquisition systems	X	X	
		Use purchase card as method of payment where appropriate.	246	Know the appropriate use of purchase cards	X	X	
		Require business partners to apply electronic commerce techniques and tools.	255	Understand DoD electronic commerce policy	X	X	
			259	Know and understand marketing/selling methods and strategies	X	X	
	Increase Competitive Sourcing of Services	Determine appropriateness of competitive sourcing (inherently governmental).	261	Know and understand competitive sourcing processes and procedures, including A-76 process and procedures	X	X	Corporate vice PM issue
			262	Understand the characteristics of inherently governmental functions.	X	X	
		Determine acquisition strategy (e.g. regional, omnibus).	263	Know and understand contract oversight techniques and tools	X	X	
			265	Know and understand regional/national statutory/regulatory/environmental impediments	X	X	General Awareness
			267	Know and understand strategic planning. Know how to develop acquisition strategy.	X	X	
		Conduct Best Value Analysis on services/cost.	271	Know and understand Best Value Analysis and understand how to apply in source selections.	X	X	
		Establish Inter-Service Agreements.	272	Know and understand Inter-Service Agreements	X	X	
			274	Know and understand the MOA/MOU preparation and execution	X	X	
		Consider Small Business Issues.	278	Know and understand FAR and Small Business policies and issues	X	X	

Environment	Trend	Tention	Cpteny	D	R	A	Comments
PBA	Longer Term Contractual Relationships	Perform analysis and determine the value of longer term contractual relationships.	284	Develop appropriate contracts for long term relationships where appropriate and possible	X	X	Trend issue
			285	Analyze and determine the value of longer term contractual relationships [but just repeats function]	X	X	
		Establish long term contractual relationships (not limited to multi-year contracts for individual items/systems) where appropriate (e.g. CICA).	287	Understand the limitations imposed by the Competition in Contracting Act (CICA).	X	X	
	Increased Reliance on Price Analysis Versus Cost Analysis	Perform basic and advanced price-based and technology-based market analysis and research.	289	Understand and employ price-based analytical techniques.	X	X	General understanding only
	Maximize FAR Part 12 Acquisition	Use FAR Part 12 procedures for procuring commercial items/services.	292	Know and understand customer requirements	X	X	
			293	Understand and employ FAR Part 12 and Part 13.	X	X	General understanding only
		Analyze and challenge requirements to promote use of commercial items.	295	Apply basic and advanced price comparative techniques including parametric analysis	X	X	
			444	Know how to challenge requirements to promote use of commercial items	X		
	Introduction of Value Analysis	Establish a value for a set of activities to achieve some goal or product.	296	Apply value analysis to determine the anticipated results from varying levels of investment	X	X	Assist both requirements generation and contracting personnel
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	300	Know and understand hardware, software, and network requirements and applications and interoperability	X	X	
			301	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	X	
			302	Know and understand electronic commerce system relationship to existing business process and their interrelationships	X	X	

Environment	Trend	Intention	Opteny	D	R	A	Comments
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).		303	Know, understand and be able to apply business process reengineering	X	X
				304	Know and understand statutory/regulatory environment	X	X
				305	Know and understand marketing/selling methods and strategies	X	X
				306	Know and understand performance metrics	X	X
				307	Know and understand enterprise resource planning concepts and solutions	X	X
				308	Know and understand commercial electronic commerce processes	X	X
				309	Develop affordable requirements document for establishing software/hardware architecture for Integrated Digital Environment (IDE)	X	X
		Use commercial standard reference identification number system to simplify with private and federal sectors (e.g. Central Contractor registration).		310	Know and understand unique software requirements and applications	X	X
				311	Know, understand and be able to incorporate standards into paperless operating systems of commercial standard reference identification number system	X	X
		Apply existing national and international standards, practices and technologies to automate the management and exchange of information.		313	Know and understand national and international standards, practices and technologies used to automate and manage and exchange information.	X	X
	Achieve Paperless Contracting	Use electronic mediums to create, store, display, retrieve and modify contractual material.		314	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	X
				315	Know and understand commercial electronic commerce processes	X	X

Environment	Trend	Intention	Competency	D	R	A	Comments
PLA	Achieve Paperless Contracting	Use electronic mediums to create, store, display, retrieve and modify contractual material.	319	Understand the latest version of the Standard Procurement System	X	X	
		Use electronic mediums for electronic payments.	322	Know and understand electronic mediums for electronic payment.	X	X	
			323	Know and understand strengths and weaknesses of integration	X	X	
			324	Recognize Government and commercial cultures to effectively educate/market/encourage commercial participation	X	X	
		Use purchase cards, electronic catalogs, electronic commerce and imaging.	325	Recognize statutes, rules, policies, and procedures.	X	X	
	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	327	Know, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	X	X	
	Security/Proprietary Information	Use adequate security measures (to include protocols) to protect electronic information, as appropriate, and to provide ready access.	330	Know and understand security statutory/regulatory environment	X	X	
			331	Know and understand adequate security measures	X	X	
CMI	Increased Commercial Military Integration	Promote use of commercial items	333	Perform advanced market research of commercial and military products	X	X	
			334	Know, understand and be able to understand benefits of opportunities of using/transitioning to commercial items where available.	X	X	
			335	Know and understand commercial and MILSPEC systems and specific sector practices; ability to develop solutions and deconflict to eliminate military specifications where commercial products and practices fulfill the requirement	X	X	
			336	Know Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X	X	

Environment	Trend	Function	Capacity	Description	R	A	Comments
CMI	Increased Commercial Military Integration	Promote use of commercial items	337	Know operational organizations, concepts and data sources.	X	X	
			338	Perform an analysis of alternatives.	X	X	
			339	Analyze/challenge requirement in order to accept commercial items.	X	X	
			340	Develop and maintain knowledge of the commercial/industrial/academic sectors.	X	X	
		Participate in sector activities (e.g. professional associations)	341	Know and understand sector resources, activities, world-class practices, processes, technologies, and integration impediments.	X	X	
			342	Be able to synthesize Government and commercial cultures to effectively educate/market/encourage commercial participation in CMI	X	X	
	Increased Use of Common Business Practices	Promote use of common business practices	344	Know and understand benchmarking methods and tools	X	X	
			346	Know and understand industry data exchange programs	X	X	
			347	Identify and adapt common and/or better practices.	X	X	
			348	Know and understand warranties/guarantees and ability to synthesize into Government system	X	X	
			349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X	X	
			350	Perform advanced market research of commercial and military products.	X	X	
	Employ Common Technology Bases	Promote knowledge of world-class technology bases	352	Know and understand potential DoD/Service growth areas for application of CMI/technology bases (specifically O&S)	X	X	
			353	Develop knowledge of relevant technology bases, resources, and capabilities.	X	X	
		Participate in technology sector activities.	354	Know and understand sector resources, activities, world-class practices, processes, technologies, and integration impediments.	X	X	

Environment	Trend	Intention	Capacity	Description	R	A	Comments
CMI	Employ Common Technology Bases	Participate in technology sector activities.	355	Know and understand dual-use application of program/item needs and ability to incentivize dual-use focus	X	X	
	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Employ flexible manufacturing	356	Know and understand flexible manufacturing techniques and tools (e.g. CAD/CAM)	X	X	
			357	Evaluate adequacy of workload planning	X	X	
			358	Evaluate adequacy of contractor manufacturing capabilities	X	X	
			359	Know and understand agile manufacturing	X	X	
			360	Know and understand surge manufacturing and ability to develop best solution for CMI when factoring in surge requirements	X	X	
			361	Know and understand Diminishing Manufacturing Sources (DMS) commodities	X	X	
			362	Know and understand and ability to evaluate adequacy of government/contractor manufacturing capabilities/flexible manufacturing tools	X	X	
		Coordinate supply chain requirements (consider and integrate all phases in manufacturing flow).	363	Know and understand Supply Chain Management (SCM) practices and tools	X	X	
			364	Be able to develop and evaluate Supply Chain Management (SCM) options for CMI	X	X	
	Extend MILSPEC/MILSTANDARD Reform to Re-procurements	Reduce MILSPEC/MILSTANDARDS in reprocurements	365	Develop performance-based specifications.	X	X	
			366	Know, understand and be able to determine if CMI or military spec is applicable safety/health/mission needs	X	X	
			367	Develop sources as required.	X	X	
			368	Know and understand quality and testing needs/requirements	X	X	
			369	Know and understand customer requirements	X	X	

Environment	Trend	Intention	Capacity	D	R	A	Comments
CMI	Extend MILSPEC/MILSTANDARD Reform to Re-procurements	Reduce MILSPEC/MILSTANDARDS in reprocurements	370	Perform market analyses.	X	X	
			371	Analyze impact on logistics system (supply and maintenance).	X	X	
			372	Manage multiple configurations.	X	X	
			373	Develop and maintain a flexible supply and delivery system.	X	X	
			374	Know and understand commercial and MILSPEC systems and specific sector practices; ability to develop solutions and deconflict to eliminate military specifications where commercial products and practices fulfill the requirement	X	X	
AN	Life Cycle/Reduced Total Ownership Cost Emphasis	Reduce Life Cycle Cost/Total Ownership Cost	377	Understand role of program manager	X	X	
			378	Apply Cost as an Independent Variable (CAIV) and reduced Total Ownership Cost (TOC)	X	X	
			380	Know, understand and be able to adapt activity based costing to life cycle process.	X	X	
			381	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X	X	
			382	Know and understand cost analysis and life-cycle management	X	X	
		Establish activity based costing for the life cycle process.	383	Comprehend DoD's corporate implementation of activity based costing and management	X	X	
	Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate	384	Perform risk analysis.	X	X	
			385	Know and understand spiral development on resourcing and supportability (funding, sustainment)	X	X	

Environment	Trend	Intention	Criteria	Description	R	A	Comments
N	Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate	386	Know, understand and be able to assess, evaluate, and synthesize evolutionary/incremental enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution.	X	X	
			387	Assess and forecast technology maturation for system insertion	X	X	
			388	Analyze and evaluate requirements for validity of evolutionary and incremental acquisitions	X	X	
		Minimize cycle time	389	Evaluate technology maturation to support short cycle time in product development	X	X	
			390	Know and understand benchmarking/metrics analysis and ability to apply and evaluate in acquisition process to baseline and reduce cycle time	X	X	
			391	Understand technology maturation vs. product application	X	X	
	Flexible User Requirements	Participate in development of user requirements.	392	Perform risk analysis.	X	X	
			393	Know operational organizations, concepts and data sources.	X	X	
			396	Perform Risk Based Surveillance	X	X	
			397	Know and understand user and joint operating requirements	X	X	
			398	Define and analyze alternatives.	X	X	
			399	Know, understand and be able to operate in Integrated Product Team (IPT) environment	X	X	
	Technology Refreshment of Systems (Modernization through Spares)	Promote technology refreshment of systems	400	Know and understand inventory management methods and practices and interrelationships to inventory reprocurements.	X	X	
			401	Know, understand and be able to assess, evaluate, and synthesize technology refreshment enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution)	X	X	

Environment	Trend	Intention	Competency ID	R	A	Comments
N	Technology Refreshment of Systems (Modernization through Spares)	Promote technology refreshment of systems	402 Assess and forecast technology maturation.	X	X	
			403 Apply open systems architectures.	X	X	
			404 Know and understand interchangeability/interoperability and substitution	X	X	
			405 Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X	X	
		Develop performance based specifications	406 Know, understand and be able to use engineering change process methods and tools	X	X	
			407 Know, understand and be able to use value engineering methods and tools	X	X	
			408 Know and understand motivation techniques to incentivize industry to develop product improvements	X	X	
			409 Evaluate performance-based work statements and advise program office as appropriate	X	X	
		Obtain and execute funding for modernization	410 Synthesize the functions of the Planning, Programming and Budgeting System (PPBS)	X	X	
	Increased Scope of Other Transactions	Expand use and scope of other transactions	411 Apply appropriate post-award oversight techniques.	X	X	General understanding only
			412 Know OT unique characteristics.	X	X	
			414 Manage/oversee other transactions	X	X	
			415 Know and understand potential DoD/Service growth areas for application of other transactions (specifically O&S)	X	X	
			417 Comprehend and apply requirements of other transactions	X	X	
			418 Define, select and adapt terms to the specific agreement.	X	X	
			419 Know the components of an 'Other Transaction'	X	X	
			420 Perform advanced market research.	X	X	

Environment	Trend	Intention	Opteny	D	R	A	Comments
N	Increased Scope of Other Transactions	Expand use and scope of other transactions	421	Know, understand and be able to access/evaluate and synthesize data of Other Transaction Authority (OTA) low/policy/resources	X	X	
	Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	422	Know and understand best value methods and tools to synthesize best value options based on tradeoff	X	X	
			423	Develop performance based solicitation.	X	X	
			424	Perform strategic analysis to include impact on force structure.	X	X	
			425	Apply modeling and simulation techniques.	X	X	
			426	Perform business analysis to include impact on force structure.	X	X	
			427	Analyze expected system performance outcomes for best value.	X	X	
			428	Analyze user requirements.	X	X	
	Increased Use of Performance Based Contracting	Capitalize on opportunities to develop performance based solicitations for products and services.	429	Apply performance based contracting methodologies	X	X	
			430	Develop performance expectations incentives and metrics to describe acquisition needs and evaluate outcomes	X	X	
			431	Know and understand sector resources and activities	X	X	
			432	Know and understand common business practices	X	X	
			433	Know and understand world-class sector practices processes and technologies (e.g. Single Process Initiative (SPI)).	X	X	
	Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	435	Know and understand the Integrated Product Team (IPT) environment	X	X	
			436	Engage in analysis and tradeoff decisions on requirements to contract for the right product at the right time.	X	X	

Environment	Trend	Intention	Capacity	D	R	A	Comments
A	Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	437	Be able to synthesize Government and commercial cultures to effectively educate/market/encourage collaboration between user and acquisition communities	X	X	
			438	Know and understand collaboration impediments	X	X	
			441	Develop mutual understanding of user roles and functions and the acquisition system capabilities.	X	X	
			443	Maintain open communications through all phases of the life cycle.	X	X	

Attributes of Capacity

Appendix K2. Systems Planning, Research, Development & Engineering (SPRD&E) Career Field Narrative

INTRODUCTION

The main focus of this narrative is on DoD systems acquisition as defined in DoDD 5000.1 and DoD 5000.2-R. The principal objectives are controlling Total Ownership Costs (TOC), fielding systems within the proper timeframes, and meeting customer technical and systems requirements. It should be noted that with the inclusion of the Science and Technology (S&T) community into the newly defined Acquisition and Technology Workforce, decisions regarding establishment of a Career Functional Board and certification issues are currently being discussed with the DACMs. To date, most of the S&T community is not included in the SPRDE Career Functional Area. The DACMs agreed to separate the S&T community into performers (usually at Laboratories) and managers. S&T performers are excluded from DAWIA requirements. The decision to establish separate career paths, position category descriptions and functional career boards for S&T managers is currently pending.

SUMMARY OF VITAL COMPETENCIES

This section discusses the competencies determined to be critical because of their importance to the future, all encompassing nature, or "newness" to the SPRD&E career field.

- **Ability to operate in an Integrated Product and Process Development (PPD) environment.** SPRD&E personnel will need to be productive members of Integrated Product Teams. They must have the ability to operate in a performance-based environment and produce performance-based specifications satisfying user requirements.

- **Understanding and mastering competencies to control TOC.** Since budgets will continue to be under pressure in the future, the overarching focus, other than meeting user needs, will be controlling TOC. To meet TOC objectives, personnel will need a number of competencies.

- **Ability to understand and use the systems engineering process to reduce risks, control costs, and meet requirements.** In conjunction with this, engineers will need to be able to perform trade-off analyses, assess design trades, and analyze alternatives. They will also need to be aware of the impact of the design on logistics, testing, and manufacturing (i.e., ability of the design to meet the reliability, availability, and maintainability requirements of logistics; proper and effective testing; and manufacturing cost and producibility implications).

- **Ability to perform parametric analyses for both hardware and software systems.** Engineers need this competency along with doing trade-off analyses in systems engineering. This will support negotiations, TOC efforts, technology insertions, commercial item applicability, and cost and schedule risk assessments.

- **Understand what Modeling & Simulation (M&S) tools are available and how to best use.** Part of the effort to reduce TOC is being able to reduce acquisition cycle times. This can be accomplished through the proper use of M&S across the system life cycle.

- **Understanding and proper use of open systems and open architectures.** This competency will help reduce the cost of technology upgrades and future technology insertions. This means understanding if, when, and how technology advancements can be used. Engineers will need to keep up with future technology advancements, understand the acceptability of commercial items, and know about technology developments in the commercial, industrial, and academic sectors.

- **Evaluation, assessment, development, and integration of software products/efforts that support the acquisition of new systems.** This is important for software engineers since software is a major part and cost of every new acquisition effort. Software engineers will need to maintain knowledge of world class engineering and software practices, processes, and technologies. All engineers will need to know and understand the implications of software development on their systems.

- **Understand how to perform comprehensive risk analyses and risk assessments**. This includes know how these assessments tie into cost and schedule performance and how technical performance measures give indications of continuing or improving risk, cost, and schedule conditions.

IMPACT OF GLOBAL TRENDS/FUNCTIONAL TRENDS ON YOUR CAREER FIELD

This section discusses trends which will critically impact what the SPRD&E career field personnel will have to know or how they will have to operate in the future.

- **Smaller workforce.** There will be fewer SPRD&E personnel to do "new" duties, but who must continue to do what will be traditional duties during the transition. The number of scientists and engineers is declining rapidly due to retirements and people leaving the government for commercial positions. It's increasingly difficult to attract new personnel with the right qualifications and keep them.

- **Older workforce.** It will be more difficult to train an older workforce and the utility of the training will have a shorter duration.

- **Information Technology (IT)** To perform the new functions, keep up with technology advancements, do proper analyses, etc, and do it all with a smaller workforce, information technology will have to be there and be working.

- **Knowledge management and learning organization.** Training people to be effective in these new duties is going to have to be provided, despite budget reductions and time constraints. When using fee-for-service, program managers will only pay for the services they feel are absolutely necessary. This may further reduce the workforce that is needed. However, this workforce will need continual training, so overhead costs may increase, driving up fees as people are taken off programs for training purposes.

- **Crossfunctional teaming and personnel mobility.** Since everyone won't know everything, or even what they may need to know, teaming will be one way to bring a critical mass of knowledge to bear where needed. Fewer people in the workforce may result in trained teams not being available in all places so teams may have to be sent where and when needed. Teaming will also occur with industry and academia. SPRD&E personnel will spend time working in government/industry/academia consortiums and may even occupy industry and academic positions for an extended period.

- **Competitive sourcing.** Some of the current workforce can already perform functions needed in the future. However, they could be hampered by government bureaucracy, traditional duties, and extra/staff duties. Teams of these employees, if supported by the government, could break from the bureaucratic shackles and provide the exact cost-effective work needed. Whether outsourcing or buying services within the government (fee-for-service), the fee must be available when the services need to be performed or the result will be "out-of-cycle" and ineffective support for the money spent.

VISION

In 2005, based on the global and functional trends just discussed, government engineers will either be part of IPTs or themselves will form small IPTs that cover critical engineering competency areas. The team will be able to operate in a performance-based environment and will have the skills necessary to help customers meet cost, schedule, and technical targets. They will have a thorough understanding of, and maintain currency in, systems and design engineering, risk management, logistics, test, manufacturing, modeling and simulation, open systems, software, and their interactions, integration, and effect on cost, schedule, and technical performance. Engineers will be well versed in commercial, industrial, and academic technology and management developments. Small teams of engineers will be able to react quickly to customer needs, perform the necessary analyses, and make proper recommendations to help preclude or fix technical program, system, or process problems.

IMPROVEMENTS RECOMMENDATIONS

To achieve the above career field vision, leadership needs to devote the proper resources (money, people, time) and training, so personnel can focus on the "new" duties of the future acquisition workforce. These new duties will have to be properly matched to the current or revamped SPRD&E career field. Consideration should also be given to having small teams of government personnel perform these new duties. If it is difficult to

do this, there may be personnel who would consider contracting with the government to provide these "new" services as contracted teams.

BARRIERS

This section lists any statutes, policies or cultural barriers to making the improvements and changes discussed above. The barriers are primarily cultural and resource related. Leadership needs to understand the need for the SPRDE acquisition function and the impact lack of resources has on the downstream areas of manufacturing and logistics. Current personnel will still be mainly focused on current operations and traditional duties versus the duties of the future acquisition workforce. There is currently considerable overlap in what certain career fields understand their functions to be in acquisition. New performance goals can threaten the existence of personnel in certain career fields and many others may be unwilling to accept their new duties.

INTERPLAY WITH OTHER CAREER FIELDS

SPRD&E needs to be closely aligned with the career fields of Acquisition Logistics, Test & Evaluation, and Manufacturing. The design and systems engineering efforts will greatly affect these areas in either cost, schedule, or their ability to perform their own function properly.

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Environmtl	Tend	Intion	Cpteny	D	S		Cmtnes
RDT&E	Consolidation (Centers of Excellence)	Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).		1	Analyze and evaluate different categories of data such as cost and technical capabilities. Analyze business data to determine its adequacy and impact on consolidation of RDT&E organizations.	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
				2	Use tradeoff analyses to assess most appropriate consolidation recommendations.	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
				3	Know and understand service capabilities/core competencies	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
				4	Know critical elements contained in a Business Case Analysis (BCA) in order to justify sound business outcomes.	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
		Develop streamlining and implementation planning for consolidation.		5	Use Business Case Analysis (BCA) to assess effectiveness of the economies of budgeting inherent government functions or centers of excellence and service contracting in the business sector.	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
				6	Know and understand joint and service strategic planning and requirements process; assess impact of consolidation options	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
				7	Know and understand methods for building innovative operations that consistently improve over time	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
				8	Know and understand the Planning, Programming and Budgeting System (PPBS) and DoD monetary policies and procedures; Assess fiscal impacts and synthesize consolidation options	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.

Environment	Trend	Intention	Competency	D	S	Comments
RDT&E	Consolidation (Centers of Excellence)	Develop streamlining and implementation planning for consolidation.	9	Know effective streamlining and implementation planning documentation	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
		Operate in a Multi-Service Environment.	10	Know and understand RDT&E process; evaluate consolidation/process change options; synthesize win-win solutions	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
			11	Know and understand virtual RDT&E resources/network applications; ability to assess applicability and determine best consolidation applications	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
			13	Know and understand how to function in a Multi-Service environment.	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
			14	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
			15	Operate in Integrated Product and Process Development (IPPD) environment in developing policy, provide guidance within DoD/Industry groups and support development of performance based work statements and definition of performance events.	X	Critical for personnel in proposed consolidation decisions. Training should be specifically focused to the Labs and Centers.
	Increased Reliance on Non-DoD Organizations	Conduct market research/analysis of the national base of technology.	17	Understand basic market research techniques	X	Emphasis needs to shift to enhance market research and analysis techniques.
			18	Know technology for a specific business sector. Understand and evaluate unique conditions.	X	Critical for those in labs and centers.
		Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	20	Know and understand technology insertion strategies and ability to apply to DoD needs.	X	Critical
			21	Know DoD's unique technical and facilitation requirements.	X	Critical skill for those in DoD Labs and Centers. Current training needs to be expanded

Environment	Trend	Intention	Competency		S	Guidelines
RDT&E	Increased Reliance on Non-DoD Organizations	Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	22	Assess the alternative sources and methods most appropriate to handle the requirements not unique to DoD.	X	Critical skill for those in DoD Labs and Centers. Current training needs to be expanded
			23	Know, understand and be able to benchmark and evaluate all RDT&E options/practices	X	Critical skill for those in DoD Labs and Centers. Current training needs to be expanded
		Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	24	Evaluate the individual situation and select the appropriate contracting or assistance vehicle	X	Have knowledge and understanding of appropriate contracting or assistance vehicle.
			25	Understand the applicability and advantages of the various contracting or assistance vehicles.	X	
			26	Know and understand dual use application of program/item needs and ability to incentivize dual-use focus	X	
			27	Determine the most appropriate agreement, as well as pricing and facility arrangements that will mitigate risk in accordance with regulations, statutes and sound business judgement.	X	Training emphasis needs to be placed in this area. Critical for S/Es in Labs and Centers
	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	28	Determine where in the Test & Evaluation (T&E) process testing can be combined to ensure greater participation by the Operational Testers up front while maintaining their independence.	X	
			29	Understand responsible agencies for Developmental Test & Evaluation (DT&E), Operational Test & Evaluation (OT&E), and identify the major objectives and types of developmental and operational testing	X	Training emphasis needs to be placed in this area. Critical for S/Es in Labs and Centers
			30	Know, understand and be able to operate in an Integrated Product Team (IPT) environment	X	Training emphasis needs to be placed in this area. Critical for S/Es in Labs and Centers
			31	Define the test team structure and their contributions in the Test & Evaluation Master Plan (TEMP). Know how the TEMP is used as an integrating document, supporting the acquisition strategy throughout the entire acquisition life cycle	X	Training emphasis needs to be placed in this area. Critical for S/Es in Labs and Centers

Environment	Trend	Intention	Competency		Comments
RDT&E	Early Involvement of Operational Test and Evaluation	Perform design tradeoffs earlier in the acquisition process.	32 Know, understand and be able to assess design tradeoffs	X	Critical to engineering
			33 Evaluate use of the systems engineering process to reduce risk of operational / support problems	X	Critical to engineering
		Develop strategy to minimize operation/support problems, risks and fielding issues.	34 Understand the impact of design on the operations and test environment	X	Critical to engineering
		Plan appropriate T&E of commercial and NDI items.	35 Know proposed use of Commercial & Non-Developmental Items (NDI) be able to evaluate such items.	X	Shift training emphasis to commercial/NDI requirements. Critical to engineering
		Apply integrated product and process development.	36 Understand the use of Integrated Product and Process Development (IPPD) in successful acquisition management	X	
		Develop verification/conformance metrics.	37 Be capable of developing strategic, tactical and local metrics within the acquisition process.	X	
			38 Know and understand metric development and linkage to mission/operations and cost implications	X	
			39 Integrate verification/performance metrics into the appropriate contracting or assistance vehicle.	X	Knowledge only
			464 Know and understand use of Technical Performance Measures and their impact on cost and ability to meet contract technical requirements	X	
	Increased Use of Simulation Based Acquisition (SBA)	Perform analysis on most appropriate SBA program application, select pilot programs.	40 Know and understand potential DoD/Service growth areas for application of Simulation Based Acquisition (SBA) and Modeling (specifically O&S)	X	Critical for engineering; Training emphasis needs to be placed in M&S area.
			41 Understand the use of Modeling and Simulation (M&S) across the total life cycle of a system.	X	Critical for engineering; Training emphasis needs to be placed in M&S area.
		Use SBA to identify and simulate design issues and risks.	42 Ensure risk profile are analytically determined using proper methods.	X	Critical for engineering; Training emphasis needs to be placed in M&S area.
			43 Understand the factors that make up the simulation model and verify that logical and statistical relationships exist.	X	Critical for engineering; Training emphasis needs to be placed in M&S area.

Environment	Trend	Intention	Opteny	D	S		Comments
RDT&E	Increased Use of Simulation Based Acquisition (SBA)	Use SBA to identify and simulate design issues and risks.	44	Understand and determine how to apply Modeling and Simulation (M&S) when conducting performance studies, effectiveness studies, tradeoff analysis, risk analysis, sensitivity analysis and cost analysis.	X	Critical for engineering; Training emphasis needs to be placed in M&S area.
		Apply simulation and modeling techniques.	45	Be capable of using and understanding the basic tenets of modeling and simulation	X	Critical for engineering; Training emphasis needs to be placed in M&S area.
			46	Know and understand the types of models (physical, mathematical, logical) and the common pitfalls and limitations.	X	Critical for engineering; Training emphasis needs to be placed in M&S area.
			47	Understand the models and simulations associated with the processes of requirements generation, program management, design and engineering, manufacturing, T&E, logistics support and training.	X	Critical for engineering; Training emphasis needs to be placed in M&S area.
	Separation of Tech Maturation From Product Development	Perform S&T strategic planning.	48	Know and understand future technological advances that can be incorporated into system development programs.	X	Critical for S&Es. Incorporate S&T planning process in training.
			49	Know and understand strategic planning tools and techniques. Coordinate with Joint Warfighting requirements.	X	Critical for S&Es. Incorporate S&T planning process in training.
		Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50	Know and understand contingency planning and execution	X	
			51	Assess technological opportunities and evaluate the feasibility, maturity, and risk.	X	Critical for S&Es. Training emphasis on current tech.
			52	Know and understand current and future science and technology research and development.	X	Critical for S&Es. Training emphasis on current tech.
			53	Know and understand risk reduction and risk assessment processes for acquisition process. Balancing risks and benefits in situations involving human safety, environmental risks, and financial uncertainties.	X	Critical for S&Es
		Develop realistic Technology Transition Plans.	54	Convert Technology Transition Planning into effective and executable contract language	X	Knowledge only
			55	Know the Planning, Programming and Budgeting System (PPBS) environment and budgeting process for insertion of out year funds for transition	X	Knowledge only

Environment	Trend	Intention	Competency		S	Comments
RDT&E	Separation of Tech Maturation From Product Development	Develop realistic Technology Transition Plans.	56	Know and understand technology transition planning/strategy and ability to assess/evaluate and synthesize best-value options into Technology Transition Plans	X	
			57	Understand the risks associated with current technology maturity in relation program needs	X	
		Design Systems with open architectures.	58	Know and understand open architecture discipline, tools, and methods and ability to apply to service interoperability	X	Critical for S&Es
		Conduct affordability assessments/analysis.	59	Be able to do parametric analyses	X	Shift training emphasis to performing Parametric Analysis. Critical for engineering
			60	Understand the Cost as an Independent Variable (CAIV)/policy concerning the authority of the program manager to make cost and performance tradeoffs	X	Knowledge and understanding of CAIV policy
			61	Know and understand affordability assessment techniques and tools	X	
			62	Understand theory and application of Integrated Product and Process Development (IPPD) for S&T programs that are expected to transition to the next phase of acquisition. Understand how to manage, conduct and participate in Integrated Product Teams (IPTs).	X	
		Assess cost/schedule risk and influence on design.	63	Know, understand and be able to perform/evaluate cost/schedule risk assessments	X	Critical skill required
			64	Know manufacturing cost implications resulting from product designs	X	Training emphasis on this area. Critical skill
			65	Know Cost as an Independent Variable (CAIV)	X	
			66	Be able to determine, through the use of risk matrices, templates, or maturity models, the influence of design on risk.	X	
		Match evolutionary requirements with mission needs.	67	Assess technological opportunities and evaluate the feasibility, maturity and risk.	X	

Environment	Trend	Tention	Opteny	D	S	Comments	Notes
RDT&E	Separation of Tech Maturation From Product Development	Match evolutionary requirements with mission needs.	68	Understand how to incorporate a trade study methodology, conduct an analysis and provide rationale which address tradeoffs for system requirements.	X	Critical skill required	
		Assess supportability techniques for assessing systems requirements.	69	Use systems engineering processes to reduce risk of operational and support problems.	X	Critical skill required	
			70	Manage experimentation and prototyping	X		
			71	Know and understand supportability analysis tools and techniques	X	Training emphasis on supportability analysis tools. Critical skill required.	
			72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X	Shift training emphasis in this area to address TOC impacts. Critical skill required.	
		Identify sources and methodologies for technology insertions.	73	Understand commercial and military state of the art technology applications.	X		
			74	Know and understand open architecture discipline, tools, methods to improve aging systems/platforms O&S (specifically for tech insertions)	X	Critical for S&Es at labs and centers.	
			75	Know methodologies for inserting technology upgrades and maintaining technical currency	X		
		Apply Advanced Concept and Technological Demonstrations (ACTDs) as appropriate during product development.	76	Know and understand the Advanced Concept and Technological Demonstration (ACTD) process and their impact on Life Cycle Cost (LCC).	X		
	Increased Emphasis On Interoperability As A RP	Develop systems using International Interoperability Standards.	77	Understand the increased emphasis of interoperability as a Key Performance Parameters (RP) and ensure it is reflected in the solicitation	X		
			78	Negotiate in the international political and business practice environments	X	Knowledge only	
			79	Identify and describe basic principles of technical standards as they relate to system development and interoperability	X		
		Comply with Joint Technical Architecture requirements.	80	Knowledge and understanding and ability to comply with Defense Information Infrastructure Common Operating Environment (DII COE)	X	Knowledge only	

Environment Trend		Intention	Competency			Comments
RDT&E	Increased Emphasis On Interoperability As A RP	Comply with Joint Technical Architecture requirements.	81	Understand and apply Joint Technical Architecture (JTA) requirements and standards	X	Knowledge only
		Perform an Interoperability Performance Analysis.	82	Perform analysis to identify linkages connections, processes and delay time that effect interoperability .	X	Knowledge as opposed to perform
			83	Understand framework to look at interoperability through layers such as process ,software, information and influences	X	
		Perform a Cost as an Independent Variable (CAIV) analysis.	84	Understand the purpose and general method of execution of Cost as an Independent Variable (CAIV)	X	
			85	Prepare and defend a Cost as an Independent Variable (CAIV)analysis. Discuss the relationship of CAIV analysis to other cost analyses	X	
			86	Understand the Cost as an Independent Variable (CAIV)policy concerning the authority of the program manager to make cost and performance tradeoffs	X	
	Increased Emphasis On Software Development	Develop evaluation and assessment criteria to measure software progress.	88	Know and understand software evaluation and assessment criteria	X	Critical for engineers working software. Knowledge area for others.
			89	Understand and apply the software process development capability.	X	Critical for engineers working software. Knowledge area for others.
			90	Know and understand customer/system integration requirements to design effective software measures	X	Critical for engineers working software. Knowledge area for others.
			91	Understand Capability Maturity Models (CMM)	X	Critical for engineers working software. Knowledge area for others.
			92	Know software engineering principles and how it applies through the acquisition life cycle.	X	Critical for engineers working software. Knowledge area for others.
		Apply parametric analysis for estimating cost.	93	Know and understand parametric analysis and ability to perform and analyze resulting data	X	Critical for engineers working software. Knowledge area for others.
			94	Understand parametric analyses and construct these analyses to support bid and solicitation development	X	Critical for engineers working software. Knowledge area for others.
		Apply newly developed software evaluation tools.	95	Know evolutionary spiral process as a framework for systems and software development programs.	X	Critical for engineers working software. Knowledge area for others.

Environment	Trend	Action	Competency		S	Comments
RDT&E	Increased Emphasis On Software Development	Apply newly developed software evaluation tools.	96	Know and understand software acquisition risks for systems, select appropriate mitigation strategies	X	Critical for engineers working software. Knowledge area for others.
			97	Understand the software development and integration process and the impacts to the software technical life cycle.	X	Critical for engineers working software. Knowledge area for others.
			98	Know and understand the integrated Capability Maturity Models (CMM) process and how it applies to software development	X	Critical for engineers working software. Knowledge area for others.
			99	Know and understand leading/state of art software evaluation best practices"and resources for software test program planning and execution	X	Shift training to state of art evaluation best practices. Critical for S/W engineering
			100	Be able to use and illustrate state of art tools and techniques available for planning, measuring and predicting software development progress	X	
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	102	Know and understand environmental rules/regulations	X	Knowledge only
			103	Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X	Knowledge only
			104	Know and understand commercial best practices	X	Knowledge only
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105	Know and understand risk assessment methods and measurement tools	X	
			106	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	
		Develop streamlining and implementation planning for consolidation.	109	Know and understand organizational processes and measurement	X	Knowledge only
			110	Know and understand personnel policies/procedures to include labor relations/union coordination	X	Knowledge only
		Ensure highest quality staff infrastructure is maintained.	112	Know and understand available training/education resources to include funding/opportunity	X	

Environment	Trend	Intention	Competency	D	S	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	114	Know and understand commercial best practices	X	Knowledge only
			116	Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X	
			117	Know and understand benchmarking	X	Knowledge only
			118	Know and understand research methods literature, internet, corporate assets	X	Knowledge only
		Perform business case analysis.	120	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	Knowledge only
		Involve customers early in the acquisition strategy process.	122	Be able to identify and correct potential imbalances in level playing field involved in public-private competitions.	X	
			125	Know and understand acquisition process	X	
			126	Know and understand the Planning, Programming and Budgeting System (PPBS)	X	
			128	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers.	X	Knowledge only
		Employ/Develop sourcing strategies that emphasize best value.	129	Know and understand customer requirements	X	
			131	Ability to develop performance-based work statements or statements of objectives.	X	Critical for those developing work statements otherwise, knowledge only
			136	Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault-tree methods for describing and making decisions.	X	
			137	Know and understand current product support processes and interrelationships	X	Knowledge only
			138	Know and understand commercial best practices	X	Knowledge only
			140	Know and understand data analysis to include cost/price/performance tradeoffs in order to achieve affordable readiness.	X	

Environment	Trend	Action	Competency			Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Develop performance-based work statements or statements of objectives.	141	Know and understand product/service to be supported	X	Knowledge only
			142	Know and understand performance-based work statements or statement of objectives development/environment	X	Critical for those developing work statements otherwise knowledge of
			143	Be able to develop performance metrics to describe customer/acquisition needs and evaluate outcomes.	X	Critical. Training emphasis needs to be placed on developing meaningful metrics.
		Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	152	Know and understand process change enablers	X	
			155	Know and understand components of Total Ownership Cost (TOC).	X	Critical skill required
		Apply integrated supply chain practices.	156	Seek integrated Supply Chain Management (SCM) solutions	X	Knowledge only
			157	Know and understand ways to apply Single Process Initiative (SPI) to optimize logistics operations.	X	Knowledge only
			161	Know and understand Supply Chain Management (SCM) purposes and processes - components and total	X	Knowledge only
			162	Apply Supply Chain Management (SCM) processes/methods to business opportunity/situation	X	Knowledge only
	Expansion of Prime Vendor/Mutual Prime Vendor/PVF like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	166	Know and understand commercial practices, including best practices of specific market sector	X	Knowledge only
		Tailor the application of best practices to the specific market sector and develop appropriate contractual vehicles.	169	Know and understand commercial best practices	X	Knowledge only
			173	Know and understand customer requirements	X	
	Increased Contractor Logistics Support	Develop integrated support strategies.	174	Know and understand common support requirements and tools and ability to leverage those opportunitiesconsolidated design and buying opportunities	X	

Environment	Trend	Intention	Opteny	D	S		Comments
O&S	Increased Contractor Logistics Support	Develop integrated support strategies.		179	Know and understand sustainment/war reserve requirements	X	Knowledge only
				182	Know and understand alternative logistic support risks, costs, and performance in development of integrated support strategies and tools.	X	Knowledge only
				183	Know and understand sustainment processes/techniques and process interrelationships (specific emphasis on inventory management with a configuration management subset)	X	Knowledge only
		Develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.		184	Know how to develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	X	Knowledge only
	Outsource Equipment Disposal Activities	Conduct capability/environmental assessment.		190	Know how to identify hazardous property and recognize the existence of federal, state and local requirements that may impact on its disposal in accordance with NPA, RCRA, TSDA, FAR AND DFARS.	X	Additional training emphasis on this area.
				191	Know and understand environmental regulations and cost assessments.	X	Knowledge only
		Assess contractor's security processes and procedures.		193	Know demilitarization requirements to assure resale of surplus material eliminates potential of hazardous/safety incidents.	X	Critical for engineering involved in safety. Training emphasis needs to occur in this area.
	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.		199	Understand and apply past performance in structuring of a solicitation.	X	Knowledge only
				200	Know and understand current, market-ready commercial practices with end-to-end visibility of inventory.	X	Knowledge only
	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.		207	Know and understand life-cycle management processes and phases	X	
				208	Understand Cost as an Independent Variable (CAIV)	X	

Environment	Trend	Intention	Competency	D	S	Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	210	Know and understand contracting options available	X	
			211	Know and understand formal and informal organizational structure to generate best value solutions to reduce Total Ownership Cost (TOC)	X	
			212	Know and understand weapon system/platform mission/operating environment	X	
			213	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	
			214	Know and understand data analysis to include cost/price/performance tradeoffs	X	
			215	Know and understand risk assessment techniques and measurement tools	X	
			218	Know and understand commercial Total Ownership Cost (TOC) and life-cycle practices and tools	X	
			219	Know and understand the Planning, Programming and Budgeting System (PPBS) and defense fiscal management policies and practices	X	
			221	Know and understand Total Ownership Cost (TOC) variables and impacted areas, to include how to perform tradeoff analyses of capability performance, and life-cycle cost drivers and evaluation.	X	
		Develop or modify oversight processes and analysis tools.	222	Know cost estimating methods.	X	
			223	Know which funding accounts the Program Manager must influence to reduce Total Ownership Cost (TOC).	X	
			224	Know and understand commercial industry analysis tools and oversight processes	X	
			225	Know cost models, contractor systems and process risks.	X	

Environment	Trend	Intention	Competency	D	S	Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Develop or modify oversight processes and analysis tools.	226	Understand operating and support cost data and data sources (e.g., Service XMOSC Systems) and their differences; cost estimating tools/models and their limitations.	X	
			227	Know and understand existing oversight processes and analysis tools	X	
			228	Understand Total Ownership Cost (TOC) from several O&S perspectives (e.g. weapon systems, units and organizations).	X	
		Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	230	Know and understand life-cycle management processes and phases	X	Knowledge only
			231	Know and understand contingency planning through plan development and implementation	X	Knowledge only
			232	Know and understand analysis techniques and tools	X	Knowledge only
			233	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	Knowledge only
			234	Know and understand contract incentives/disincentives through contract completion	X	Knowledge only
	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X	Knowledge only
		Require business partners to apply electronic commerce techniques and tools.	255	Understand DoD electronic commerce policy	X	
			259	Know and understand marketing/selling methods and strategies	X	
	Increase Competitive Sourcing of Services	Determine acquisition strategy (e.g. regional, omnibus).	267	Know and understand strategic planning. Know how to develop acquisition strategy.	X	
		Conduct Best Value Analysis on services/cost.	271	Know and understand Best Value Analysis and understand how to apply in source selections.	X	Knowledge only Critical for those involved in source selections

Environment	Trend	Intention	Competency	D	S		Comments
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).		300	Know and understand hardware, software, and network requirements and applications and interoperability	X	Knowledge only
				301	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	Knowledge only
				302	Know and understand electronic commerce system relationship to existing business process and their interrelationships	X	Knowledge only
				303	Know, understand and be able to apply business process reengineering	X	Knowledge only
				304	Know and understand statutory/regulatory environment	X	Knowledge only
				305	Know and understand marketing/selling methods and strategies	X	Knowledge only
				306	Know and understand performance metrics	X	Knowledge only
				307	Know and understand enterprise resource planning concepts and solutions	X	Knowledge only
				308	Know and understand commercial electronic commerce processes	X	Knowledge only
				309	Develop affordable requirements document for establishing software/hardware architecture for Integrated Digital Environment (IDE)	X	Critical for those generating requirements
		Use commercial standard reference identification number system to simplify with private and federal sectors (e.g. Central Contractor registration).		310	Know and understand unique software requirements and applications	X	Critical for those working S/W requirements. Knowledge of for all others.
				311	Know, understand and be able to incorporate standards into paperless operating systems of commercial standard reference identification number system	X	Knowledge only
		Apply existing national and international standards, practices and technologies to automate the management and exchange of information.		313	Know and understand national and international standards, practices and technologies used to automate and manage and exchange information.	X	Knowledge only. Critical for those working standards program.

Environment	Trend	Intention	Competency		Skills	Comments
PLA	Achieve Paperless Contracting	Use electronic mediums for electronic payments.	322	Know and understand electronic mediums for electronic payment.	X	Knowledge only
			323	Know and understand strengths and weaknesses of integration	X	Knowledge only
			324	Recognize Government and commercial cultures to effectively educate/market/encourage commercial participation	X	Knowledge only
		Use purchase cards, electronic catalogs, electronic commerce and imaging.	325	Recognize statutes, rules, policies, and procedures.	X	Knowledge only
	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	327	Know, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	X	Knowledge only
	Security/Proprietary Information	Use adequate security measures (to include protocols) to protect electronic information, as appropriate, and to provide ready access.	330	Know and understand security statutory/regulatory environment	X	Knowledge only
			331	Know and understand adequate security measures	X	Knowledge only
CMI	Increased Commercial Military Integration	Promote use of commercial items	333	Perform advanced market research of commercial and military products	X	As it applies to SPRDE, only the performance of basic market research should be expected
			334	Know, understand and be able to understand benefits of opportunities of using/transitioning to commercial items where available.	X	Knowledge only
			335	Know and understand commercial and MILSPEC systems and specific sector practices; ability to develop solutions and deconflict to eliminate military specifications where commercial products and practices fulfill the requirement	X	Knowledge only
			336	Know Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X	Critical skill
			337	Know operational organizations, concepts and data sources.	X	Knowledge only

Environment	Trend	Intention	Competency ID	S		Comments
CMI	Increased Commercial Military Integration	Promote use of commercial items	338	Perform an analysis of alternatives.	X	Critical skill
			339	Analyze/challenge requirement in order to accept commercial items.	X	Critical Skill
			340	Develop and maintain knowledge of the commercial/industrial/academic sectors.	X	Critical for S&E
		Participate in sector activities (e.g. professional associations)	341	Know and understand sector resources, activities, world-class practices, processes, technologies, and integration impediments.	X	
			342	Be able to synthesize Government and commercial cultures to effectively educate/market/encourage commercial participation in CMI	X	Knowledge only
	Increased Use of Common Business Practices	Promote use of common business practices	344	Know and understand benchmarking methods and tools	X	Knowledge only
			346	Know and understand industry data exchange programs	X	This is GIDEP.
			347	Identify and adapt common and/or better practices.	X	
			348	Know and understand warranties/guarantees and ability to synthesize into Government system	X	
			349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X	Knowledge only
			350	Perform advanced market research of commercial and military products.	X	
	Employ Common Technology Bases	Promote knowledge of world-class technology bases	352	Know and understand potential DoD/Service growth areas for application of CMI/technology bases (specifically O&S)	X	Critical for S&Es directly involved. Knowledge only for others
			353	Develop knowledge of relevant technology bases, resources, and capabilities.	X	Critical for S&Es directly involved. Knowledge only for others
		Participate in technology sector activities.	354	Know and understand sector resources, activities, world-class practices, processes, technologies, and integration impediments.	X	Critical for S&Es
			355	Know and understand dual-use application of program/item needs and ability to incentivize dual-use focus	X	Critical for S&Es involved in tech transition and dual use programs.

Environment	Trend	Intention	Optency	D	S	Comments	Notes
CMI	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Employ flexible manufacturing		356	Know and understand flexible manufacturing techniques and tools (e.g. CAD/CAM)	X	
				357	Evaluate adequacy of workload planning	X	Knowledge only
				358	Evaluate adequacy of contractor manufacturing capabilities	X	Knowledge only
				359	Know and understand agile manufacturing	X	Knowledge only
				360	Know and understand surge manufacturing and ability to develop best solution for CMI when factoring in surge requirements	X	Knowledge only
				361	Know and understand Diminishing Manufacturing Sources (DMS) commodities	X	
				362	Know and understand and ability to evaluate adequacy of government/contractor manufacturing capabilities/flexible manufacturing tools	X	Knowledge only
			Coordinate supply chain requirements (consider and integrate all phases in manufacturing flow).	363	Know and understand Supply Chain Management (SCM) practices and tools	X	Knowledge only
				364	Be able to develop and evaluate Supply Chain Management (SCM) options for CMI	X	Knowledge only
	Extend MILSPEC/MILSTANDARD Reform to Re-procurements		Reduce MILSPEC/MILSTANDARDS in reprocurements	365	Develop performance-based specifications.	X	Critical for S&Es
				366	Know, understand and be able to determine if CMI or military spec is applicable safety/health/mission needs	X	Critical for S&Es
				367	Develop sources as required.	X	Critical for S&Es
				368	Know and understand quality and testing needs/requirements	X	
				369	Know and understand customer requirements	X	
				370	Perform market analyses.	X	
				372	Manage multiple configurations.	X	

Environment	Trend	Intention	Criteria	Description	Comments
CMI	Extend MILSPEC/MILSTANDARD Reform to Re-procurements	Reduce MILSPEC/MILSTANDARDS in reprocurements	374	Know and understand commercial and MILSPEC systems and specific sector practices; ability to develop solutions and deconflict to eliminate military specifications where commercial products and practices fulfill the requirement	X
N	Life Cycle/Reduced Total Ownership Cost Emphasis	Reduce Life Cycle Cost/Total Ownership Cost	378	Apply Cost as an Independent Variable (CAI) and reduced Total Ownership Cost (TOC)	X
			381	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X
			382	Know and understand cost analysis and life-cycle management	X
		Establish activity based costing for the life cycle process.	383	Comprehend DoD's corporate implementation of activity based costing and management	X
	Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate	384	Perform risk analysis.	X
			386	Know, understand and be able to assess, evaluate, and synthesize evolutionary/incremental enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution.	X
			387	Assess and forecast technology maturation for system insertion	X
			388	Analyze and evaluate requirements for validity of evolutionary and incremental acquisitions	X
		Minimize cycle time	389	Evaluate technology maturation to support short cycle time in product development	X
			390	Know and understand benchmarking/metrics analysis and ability to apply and evaluate in acquisition process to baseline and reduce cycle time	X
			391	Understand technology maturation vs. product application	X
	Flexible User Requirements	Participate in development of user requirements.	392	Perform risk analysis.	X

N	Flexible User Requirements	Participate in development of user requirements.	393	Kow operational organizations, concepts and data sources.	X	
			396	Perform Risk Based Surveillance	X	Critical skill
			397	Kow and understand user and joint operating requirements	X	
			398	Define and analyze alternatives.	X	
			399	Kow, understand and be able to operate in Integrated Product Team (IPT) environment	X	
	Technology Refreshment of Systems (Modernization through Spares)	Promote technology refreshment of systems	400	Kow and understand inventory management methods and practices and interrelationships to inventory reprocurements.	X	Kowledge only
			401	Kow, understand and be able to assess, evaluate, and synthesize technology refreshment enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution)	X	
			402	Assess and forecast technology maturation.	X	
			403	Apply open systems architectures.	X	
			404	Kow and understand interchangeability/interoperability and substitution	X	
			405	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X	
		Develop performance based specifications	406	Kow, understand and be able to use engineering change process methods and tools	X	
			407	Kow, understand and be able to use value engineering methods and tools	X	
			408	Kow and understand motivation techniques to incentivize industry to develop product improvements	X	
			409	Evaluate performance-based work statements and advise program office as appropriate	X	
		Obtain and execute funding for modernization	410	Synthesize the functions of the Planning, Programming and Budgeting System (PPBS)	X	Kowledge only

Environment Trend	Intention	Competency D	S		Comments
N	Increased Scope of Other Transactions	Expand use and scope of other transactions	414 Manage/oversee other transactions	X	
			415 Know and understand potential DoD/Service growth areas for application of other transactions (specifically O&S)	X	
			418 Define, select and adapt terms to the specific agreement.	X	
			420 Perform advanced market research.	X	
			421 Know, understand and be able to access/evaluate and synthesize data of Other Transaction Authority (OTA) low/policy/resources	X	
	Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	423 Develop performance based solicitation.	X	
			425 Apply modeling and simulation techniques.	X	
			427 Analyze expected system performance outcomes for best value.	X	
			428 Analyze user requirements.	X	
	Increased Use of Performance Based Contracting	Capitalize on opportunities to develop performance based solicitations for products and services.	430 Develop performance expectations incentives and metrics to describe acquisition needs and evaluate outcomes	X	
			431 Know and understand sector resources and activities	X	
			432 Know and understand common business practices	X	
			433 Know and understand world-class sector practices processes and technologies (e.g. Single Process Initiative (SPI)).	X	
	Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	435 Know and understand the Integrated Product Team (IPT) environment	X	
			437 Be able to synthesize Government and commercial cultures to effectively educate/market/encourage collaboration between user and acquisition communities	X	Kowledge only

Environment	Trend	Intention	Opteny	D	S		Comments
A	Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	438	Know and understand collaboration impediments	X		Knowledge only
			441	Develop mutual understanding of user roles and functions and the acquisition system capabilities.	X		Knowledge only
			442	Model and analyze manufacturing system performance	X		Knowledge only
			443	Maintain open communications through all phases of the life cycle.	X		

Total number of opteniex 2

Appendix K3. Test & Evaluation Career Field Narrative

INTRODUCTION

Individuals who work in Test and Evaluation (T&E) career field under the Defense Acquisition Workforce Improvement Act (DAWIA) are usually engineers, scientists, operations researchers, computer scientists and other degree-holding technical personnel who perform test and evaluation tasks in support of acquisition. It includes managers and technical specialists in engineering, physics, operations research, mathematics, and computer science fields who are responsible for planning, monitoring, conducting, and evaluating tests of prototype, new, or modified weapon systems equipment or materiel. Individuals also analyze, assess, and evaluate test data and results; prepare assessments of test data and results; and write reports of findings.

It should be recognized that the competencies contained in the ATWF function/competency worksheet are a subset of those used in the development of the DAU's Test and Evaluation courses (i.e., TST 101, 202, and 301). A review of this list of competencies does not indicate any new ones that need to be folded into the T&E courses.

The information contained in these guidelines needs to be reviewed and approved by the T&E functional working group.

SUMMARY OF VITAL COMPETENCIES

The following competencies will continue to be important to the future Test and Evaluation workforce:

- **Knowledge, understanding, and ability to operate in an IPT environment.** While the concept of IPTs is not new to the T&E community, they continue to provide a forum to identify and resolve T&E planning issues early in the process.

- **Determine where in the T&E process, testing can be combined to ensure greater participation by the operational testers up front while maintaining their independence.** Earlier operational involvement in the acquisition process provides an opportunity to roll their insight into the development process. Like the consolidation that has taken place with contractor testing and government developmental testing (DT), combining Development/Operational, when practical, aids in reducing cycle time and program costs.

  However, whenever consolidating developmental and operational testing, it's important to ensure that DT activities are still robust enough to support the PM's risk reduction testing requirements, while providing the independent OT evaluators with credible data for analysis. Due to the Title 10 requirement to conduct an

independent operational test prior to the production decision, it's important not to compromise on the scope of DT when combining DT/OT tests.

- **Understand the environment that commercial and nondevelopmental items will be used in and be able to evaluate these items.** Improvements in market research studies need to be made in selecting COTS items that will best suit DoD applications. The difference between commercial and DoD operating environments needs to factored into the market research process.

  COTS requires a different T&E approach for the following reasons: 1) dynamic user requirements, rapidly evolving COTS items, and the need to support DoD-unique requirements, including interoperability and information assurance, require T&E on an incremental basis; 2) actual usable functionality of COTS items has proven to be consistently less than planned largely due to the difference in commercial and DoD operating environments; and 3) COTS item performance may not be robust enough to support DoD requirements. In summary, COTS and NDI systems should be tested as they will be used to determine if they can accomplish their intended mission.

  End-to-end and System of Systems T&E must address diverse requirements, approaches, and challenges (e.g., JV 2010, Joint Vision 2010, Network Centric Warfare, Digital Battlefield) which require DoD mission-level evaluation versus system-level evaluation.

- **Understand the use of Modeling and Simulation (M&S) across the total life cycle of a system**. Understand models and simulations associated with the process of requirements generation, program management, design & engineering, manufacturing, T&E, logistics support and training. M&S is key to reduce cycle time and test costs. It also enables testing the performance of systems in numerous scenarios to provide confidence to the decision-maker.

  The concept of utilizing M&S during T&E is contained in the System Test and Evaluation Process (STEP) guidelines which DTSE&E and DOT&E jointly published in 1997. STEP seeks to improve the acquisition process by integrating M&S with T&E, and involving T&E early and continuously with development. STEP is a shift from the "test, fix, test" to "model-simulate-fix-test-iterate" approach.

  The Simulation Based Acquisition (SBA) initiative will enable the use of M&S across programs and acquisition phases -and this will benefit the T&E community in terms of cost and schedule savings.

  M&S tools are being used by most, if not all, major defense contractors during their design process to produce a workable and reliable item well before "metal-bending" takes place. In the case of missile systems, most flight missions are "flown" in the computer to predict performance results before the actual missile is flight-tested.

  M&S tools, such as hardware-in-the-loop, have become the standard for use, not the exception. The difficulty comes with using M&S to evaluate system

performance. It is with these models, and more often the simulations, where validation, verification & accreditation (V&A) plays a major role.

- **Knowledge of software engineering principles and how it applies throughout the acquisition life cycle.** The majority of the Department's programs have software problems that impact their cost, schedule, and performance. Software problems have recently necessitated postponing the OPEVALs for several major programs. The T&E community needs to pay particular attention to software engineering and maturity issues.

- **Knowledge and understanding of the Advance Concept Technology Demonstration (ACTD) process and its impact on life cycle costs.** ACTDs provide the Services with insight into the capabilities of systems before deciding if they should become acquisition programs. Because ACTDs can transition to ACAT programs at MS II, and sometimes at MS III, testers and evaluators must be familiar with the ACTD performance to support the transition. Early involvement will foster their understanding.

  ACTDs are equivalent to Program Definition and Risk Reduction (PDRR) phase in many cases, and should provide usable evidence of technical risk reduction sufficient to warrant entry into the Engineering and Manufacturing Development (EMD) phase.

- **Knowledge of evolutionary spiral process as a framework for systems and software development programs.** While the evolutionary spiral development process is common, it presents challenges to the T&E community in this age of systems of systems testing. Specifically, the spiral development of each segment in the systems of systems needs to be coordinated to ensure interoperability and testability.

- **Use systems engineering processes to reduce risk of operational and support problems.** The focus of the T&E career field is on supporting the acquisition process by ensuring the program manager has a reasonable plan for technical risk reduction by means of a T&E program. This concept has not changed with acquisition reform. However, the tendency seems to be for the government to accept more technical risk than in the past. This is due to reduced testing resources and the government's desire to expedite the T&E process. Future T&E planning must be geared towards obtaining the greatest amount of system performance information possible, to satisfy designers, developers, and technical/operational evaluators, from a consolidated T&E strategy. Sequential contractor testing (CT)/government developmental testing (DT)/government operational testing (OT) of the past is no longer affordable.

IMPACT OF GLOBAL TRENDS FUNCTIONAL TRENDS

This section discusses trends which will critically impact what the T&E personnel will have to know or how they will have to operate in the future.

- **Early involvement of operational test & evaluation.** The increase in OSD management's desire to have more operational insight early in the

developmental testing of programs will contribute to increased combined development & operational testing (DT/OT) in the future (*DT/OT has already been used on many programs*). The operational test community's goals are to provide feedback into the development process and to reduce the program's cycle time by decreasing the duration of the independent operating test and evaluation period (IOT&E). The DAWIA courses must teach the future T&E workforce to utilize the DT/OT initiative to support reducing cycle time and total ownership costs.

- **Increased use of joint warfighting experiments in the testing and acquisition process.** The update to DOD 5000.2-R focuses on evolutionary acquisition. The aim is to demonstrate the maturity of new capabilities prior to making long term acquisition commitments. It's foreseen that a link is going to be made between the user's long-term modernization needs and the Science & Technology (S&T) community -and the testing of the military worth of S&T projects and Advanced Concept Technology Demonstrations (ACTDs) will be conducted during Joint Warfighting Experiments (JWEs). As currently structured, JWEs are less formal than traditional developmental and operational testing. Programs typically enter the acquisition process at Milestone II, and then go through the traditional developmental and operational testing. In support of the goal of reducing cycle time and total ownership costs, the T&E community "may" be challenged to learn more about the technical performance, effectiveness and suitability of systems during JWEs.

- **Adoption of commercial T&E best practices.** To reduce cycle time and total ownership costs, the T&E community will have to look at adopting T&E best practices from government and commercial test facilities. OUSD(AT&L)/S&TS/DT&E recently completed a study on T&E best practices and will hold a conference to present them to the public and private sector. We need to roll these best practices into the TST 202 and 301 courses (in-work) to guide the T&E community into properly sizing their test programs to reduce cycle time and total ownership costs.

- **Reengineering the aging T&E infrastructure.** The majority of T&E facilities making up the Major Range and Test Facility Base (MRTFB) are antiquated. They are also coping with a loss of technical expertise, obsolete equipment, increased operating costs, and inaccurate data systems. The Services and OSD need to focus attention on reengineering these aging T&E facilities to better support users. The use of state-of-the-art equipment (i.e., COTS) will reduce manpower requirements as well as contribute to lower institutional (i.e., cost the Service pays for operating the facility) and reimbursable costs (i.e., cost the program pays for using the facilities for conducting required tests). The future workforce will need to know how to best reengineer the Department's aging T&E facilities (similar to what Arnold Engineering Development Center recently did). Segments of the future T&E workforce may also be asked to support consolidation studies that will focus on how functions within some of them can be consolidated for maximum benefit.

- **Systems of systems/interoperability testing.** Interoperability problems between weapon systems continue to be a problem for the Services. The development communities need to design interoperability into systems and the T&E community needs to get a better hold on how to assess it quantitatively. In this emerging age of system of systems, interoperability is paramount. This is probably one of the biggest issues facing the T&E community both today and in the future.

VISION

The future Test and Evaluation worker will need to develop broad technical skills in all the systems engineering disciplines as well as a thorough grounding in modeling and simulation. He will also be involved in more interoperability testing and be more resource and cycle time conscious.

IMPROVEMENTS RECOMMENDATIONS

To achieve the above career field vision, the workforce needs to gain more competency in the areas of systems engineering and modeling and simulation. Personnel will also need insight into how to reengineer the aging T&E infrastructure.

INTERPLAY WITH OTHER CAREER FIELDS

T&E personnel need to build closer relationships with all the technical career fields especially SPRD&E, Acquisition Logistics, Program Management and the Sustainment functional area to better embrace the integrated product and process development initiatives. In this age of relying more on the contractor to both develop and conduct developmental testing on the systems, the T&E and contracting career fields must also work closer to address the implications of a T&E program failing its test program.

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Environment	Trend	Intion	Cpteny	D	T	Cmt	Nes
RDT&E	Consolidation (Centers of Excellence)	Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).		2	Use tradeoff analyses to assess most appropriate consolidation recommendations.	X	
		Develop streamlining and implementation planning for consolidation.		6	Know and understand joint and service strategic planning and requirements process; assess impact of consolidation options	X	
				8	Know and understand the Planning, Programming and Budgeting System (PPBS) and DoD monetary policies and procedures; Assess fiscal impacts and synthesize consolidation options	X	
				9	Know effective streamlining and implementation planning documentation	X	
		Operate in a Multi-Service Environment.		10	Know and understand RDT&E process; evaluate consolidation/process change options; synthesize win-win solutions	X	
				11	Know and understand virtual RDT&E resources/network applications; ability to assess applicability and determine best consolidation applications	X	
				14	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	X	
	Increased Reliance on Non-DoD Organizations	Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)		20	Know and understand technology insertion strategies and ability to apply to DoD needs.	X	
				21	Know DoD's unique technical and facilitation requirements.	X	
				22	Assess the alternative sources and methods most appropriate to handle the requirements not unique to DoD.	X	

Environment	Trend	Intention	Criteria	Description	Comments
RDT&E	Increased Reliance on Non-DoD Organizations	Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	23	Know, understand and be able to benchmark and evaluate all RDT&E options/practices	X
		Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	26	Know and understand dual use application of program/item needs and ability to incentivize dual-use focus	X
			27	Determine the most appropriate agreement, as well as pricing and facility arrangements that will mitigate risk in accordance with regulations, statutes and sound business judgement.	X
	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	28	Determine where in the Test & Evaluation (T&E) process testing can be combined to ensure greater participation by the Operational Testers up front while maintaining their independence.	X
			29	Understand responsible agencies for Developmental Test & Evaluation (DT&E), Operational Test & Evaluation (OT&E), and identify the major objectives and types of developmental and operational testing	X
			30	Know, understand and be able to operate in an Integrated Product Team (IPT) environment	X
			31	Define the test team structure and their contributions in the Test & Evaluation Master Plan (TEMP). Know how the TEMP is used as an integrating document, supporting the acquisition strategy throughout the entire acquisition life cycle	X
		Perform design tradeoffs earlier in the acquisition process.	32	Know, understand and be able to assess design tradeoffs	X
			33	Evaluate use of the systems engineering process to reduce risk of operational / support problems	X
		Develop strategy to minimize operation/support problems, risks and fielding issues.	34	Understand the impact of design on the operations and test environment	X
		Plan appropriate T&E of commercial and NDI items.	35	Know proposed use of Commercial & Non-Developmental Items (NDI) be able to evaluate such items.	X

Environment	Trend	Intention	Optency	D	T	Comments
RDT&E	Early Involvement of Operational Test and Evaluation	Apply integrated product and process development.	36	Understand the use of Integrated Product and Process Development (IPPD) in successful acquisition management	X	
		Develop verification/conformance metrics.	39	Integrate verification/performance metrics into the appropriate contracting or assistance vehicle.	X	
	Increased Use of Simulation Based Acquisition (SBA)	Perform analysis on most appropriate SBA program application, select pilot programs.	40	Know and understand potential DoD/Service growth areas for application of Simulation Based Acquisition (SBA) and Modeling (specifically O&S)	X	
			41	Understand the use of Modeling and Simulation (M&S) across the total life cycle of a system.	X	
		Use SBA to identify and simulate design issues and risks.	42	Ensure risk profile are analytically determined using proper methods.	X	
			43	Understand the factors that make up the simulation model and verify that logical and statistical relationships exist.	X	
			44	Understand and determine how to apply Modeling and Simulation (M&S) when conducting performance studies, effectiveness studies, tradeoff analysis, risk analysis, sensitivity analysis and cost analysis.	X	
		Apply simulation and modeling techniques.	45	Be capable of using and understanding the basic tenets of modeling and simulation	X	
			46	Know and understand the types of models (physical, mathematical, logical) and the common pitfalls and limitations.	X	
			47	Understand the models and simulations associated with the processes of requirements generation, program management, design and engineering, manufacturing, T&E, logistics support and training.	X	
	Separation of Tech Maturation From Product Development	Perform S&T strategic planning.	48	Know and understand future technological advances that can be incorporated into system development programs.	X	Knowledge only
		Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50	Know and understand contingency planning and execution	X	Knowledge only

Environment	Trend	Intention	Competency	Description	Comments
RDT&E	Separation of Tech Maturation From Product Development	Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	53	Know and understand risk reduction and risk assessment processes for acquisition process. Balancing risks and benefits in situations involving human safety, environmental risks, and financial uncertainties.	X
		Develop realistic Technology Transition Plans.	56	Know and understand technology transition planning/strategy and ability to assess/evaluate and synthesize best-value options into Technology Transition Plans	X
		Design Systems with open architectures.	58	Know and understand open architecture discipline, tools, and methods and ability to apply to service interoperability	X
		Conduct affordability assessments/analysis.	60	Understand the Cost as an Independent Variable (CAI)/policy concerning the authority of the program manager to make cost and performance tradeoffs	X
			62	Understand theory and application of Integrated Product and Process Development (IPPD) for S&T programs that are expected to transition to the next phase of acquisition. Understand how to manage, conduct and participate in Integrated Product Teams (IPTs).	X
		Assess supportability techniques for assessing systems requirements.	69	Use systems engineering processes to reduce risk of operational and support problems.	X
			70	Manage experimentation and prototyping	X
			72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X
		Identify sources and methodologies for technology insertions.	74	Know and understand open architecture discipline, tools, methods to improve aging systems/platforms O&S (specifically for tech insertions)	X
			75	Know methodologies for inserting technology upgrades and maintaining technical currency	X
		Apply Advanced Concept and Technological Demonstrations (ACTDs) as appropriate during product development.	76	Know and understand the Advanced Concept and Technological Demonstration (ACTD) process and their impact on Life Cycle Cost (LCC).	X

Environment	Trend	Action	Competency	T		Comments
RDT&E	Increased Emphasis On Interoperability As A KP	Develop systems using International Interoperability Standards.	79	Identify and describe basic principles of technical standards as they relate to system development and interoperability	X	
		Comply with Joint Technical Architecture requirements.	80	Knowledge and understanding and ability to comply with Defense Information Infrastructure Common Operating Environment (DII COE)	X	
		Perform an Interoperability Performance Analysis.	82	Perform analysis to identify linkages connections, processes and delay time that effect interoperability .	X	
			83	Understand framework to look at interoperability through layers such as process ,software, information and influences	X	
		Perform a Cost as an Independent Variable (CAIV) analysis.	85	Prepare and defend a Cost as an Independent Variable (CAIV)analysis. Discuss the relationship of CAIVanalysis to other cost analyses	X	
			86	Understand the Cost as an Independent Variable (CAIV)policy concerning the authority of the program manager to make cost and performance tradeoffs	X	
	Increased Emphasis On Software Development	Develop evaluation and assessment criteria to measure software progress.	89	Understand and apply the software process development capability.	X	
			92	Know software engineering principles and how it applies through the acquisition life cycle.	X	
		Apply newly developed software evaluation tools.	95	Know evolutionary spiral process as a framework for systems and software development programs.	X	
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	102	Know and understand environmental rules/regulations	X	
			103	Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X	Knowledge only
			104	Know and understand commercial best practices	X	
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105	Know and understand risk assessment methods and measurement tools	X	

Environment	Trend	Intention	Competency	D	T	Comments
O&S	Consolidation	Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	106	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	
		Develop streamlining and implementation planning for consolidation.	109	Know and understand organizational processes and measurement	X	
			110	Know and understand personnel policies/procedures to include labor relations/union coordination	X	
		Ensure highest quality staff infrastructure is maintained.	112	Know and understand available training/education resources to include funding/opportunity	X	
	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	114	Know and understand commercial best practices	X	
			116	Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X	
			117	Know and understand benchmarking	X	
			118	Know and understand research methods literature, internet, corporate assets	X	
		Involve customers early in the acquisition strategy process.	125	Know and understand acquisition process	X	
			126	Know and understand the Planning, Programming and Budgeting System (PPBS)	X	
		Employ/Develop sourcing strategies that emphasize best value.	129	Know and understand customer requirements	X	
			136	Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault-tree methods for describing and making decisions.	X	
			137	Know and understand current product support processes and interrelationships	X	
			140	Know and understand data analysis to include cost/price/performance tradeoffs In order to achieve affordable readiness.	X	

Environment	Trend	Intention	Capability	D	T	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Develop performance-based work statements or statements of objectives.	141	Know and understand product/service to be supported	X	
			142	Know and understand performance-based work statements or statement of objectives development/environment	X	
		Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	152	Know and understand process change enablers	X	
			155	Know and understand components of Total Ownership Cost (TOC).	X	
	Increased Contractor Logistics Support	Develop integrated support strategies.	183	Know and understand sustainment processes/techniques and process interrelationships (specific emphasis on inventory management with a configuration management subset)	X	
	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.	199	Understand and apply past performance in structuring of a solicitation.	X	
			200	Know and understand current, market-ready commercial practices with end-to-end visibility of inventory.	X	
	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	207	Know and understand life-cycle management processes and phases	X	
			211	Know and understand formal and informal organizational structure to generate best value solutions to reduce Total Ownership Cost (TOC)	X	
			212	Know and understand weapon system/platform mission/operating environment	X	
			215	Know and understand risk assessment techniques and measurement tools	X	

Environment	Trend	Intention	Opteny	D	T	Continues
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	219	Know and understand the Planning, Programming and Budgeting System (PPBS) and defense fiscal management policies and practices	X	
		Develop or modify oversight processes and analysis tools.	227	Know and understand existing oversight processes and analysis tools	X	
		Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	230	Know and understand life-cycle management processes and phases	X	
			231	Know and understand contingency planning through plan development and implementation	X	
			232	Know and understand analysis techniques and tools	X	
			233	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	
			234	Know and understand contract incentives/disincentives through contract completion	X	
	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X	
		Require business partners to apply electronic commerce techniques and tools.	255	Understand DoD electronic commerce policy	X	
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	301	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	
			303	Know, understand and be able to apply business process reengineering	X	
			304	Know and understand statutory/regulatory environment	X	
			308	Know and understand commercial electronic commerce processes	X	

Environment	Trend	Intention	Opteny	D	T	Comments
PLA	Integrated Digital Environment	Use commercial standard reference identification number system to simplify with private and federal sectors (e.g. Central Contractor registration).		310	Know and understand unique software requirements and applications	X
				311	Know, understand and be able to incorporate standards into paperless operating systems of commercial standard reference identification number system	X
		Apply existing national and international standards, practices and technologies to automate the management and exchange of information.		313	Know and understand national and international standards, practices and technologies used to automate and manage and exchange information.	X
	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).		327	Know, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	X
	Security/Proprietary Information	Use adequate security measures (to include protocols) to protect electronic information, as appropriate, and to provide ready access.		330	Know and understand security statutory/regulatory environment	X
				331	Know and understand adequate security measures	X
CMI	Increased Commercial Military Integration	Promote use of commercial items		336	Know Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X
	Increased Use of Common Business Practices	Promote use of common business practices		344	Know and understand benchmarking methods and tools	X
				347	Identify and adapt common and/or better practices.	X
				348	Know and understand warranties/guarantees and ability to synthesize into Government system	X
				349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X
N	Flexible User Requirements	Participate in development of user requirements.		392	Perform risk analysis.	X

Environment	Trend	Intention	Opteny	D	T	Comments	Notes
N	Flexible User Requirements	Participate in development of user requirements.	393	Know operational organizations, concepts and data sources.	X		
			396	Perform Risk Based Surveillance	X		
			397	Know and understand user and joint operating requirements	X		
			399	Know, understand and be able to operate in Integrated Product Team (IPT) environment	X		
	Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	425	Apply modeling and simulation techniques.	X		
	Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	435	Know and understand the Integrated Product Team (IPT) environment	X		
			443	Maintain open communications through all phases of the life cycle.	X		

Total number of opteniers 4

Appendix K4. Acquisition Logistics Career Field Narrative

INTRODUCTION

Individuals in the Acquisition Logistics career field primarily support acquisition program office activities as defined in DoDD 5000.1 and DoD 5000.2-R. The Acquisition Logistician's principal objectives in this environment are: to influence the design of the system to ensure it is cost effectively supportable; to design a support system that cost effectively supports the selected design alternative; and to acquire the necessary logistics elements (e.g., initial spares, technical manuals, support equipment) to ensure cost effective system support upon initital fielding. While the actual designation of Acquisition Logistics positions differs slightly across the Services, there is Department-wide agreement that the program office related activities constitute the "core" of an acquisition logistician's functions. Basically a hybrid engineer and logistician, the acquisition logistician is expected to possess knowledge, skills and abilities that are significantly more technical or engineering oriented than those expected of the logistician working in system and force sustainment areas. Accordingly, the existing career field education, training and experience requirements are heavily weighted towards the program office environment, especially the systems engineering disciplines including design, reliability, maintainability, and supportability. This heavy orientation towards program office activities and engineering disciplines is the primary distinction between the Acquisition Logistics career field and Sustainment functional areas.

SUMMARY OF VITAL COMPETENCIES

The following competencies should be considered critical for Acquisition Logisticians to perform effectively in the future acquisition environment:

- **Understand the use of modeling and simulation (M&S) across the total life cycle of a system.** A good working knowledge of M&S (including capabilities and limitations) would greatly facilitate the Acquisition Logistician's ability to predict the supportability and downstream logistics impacts of competing design alternatives. This will allow the Acquisition Logistician to provide Program Managers and system designers with defensible recommendations prior to the critical design "lock-in" period.

- **Know and understand open architecture discipline, tools, and methods and ability to apply to service interoperability.** Incorporation of open systems approaches to design allow rapid technology refreshment and when properly applied can extend the capabilities and service life of weapon systems. This approach can also contribute effectively to lowering total ownership costs of legacy systems by installing more reliable and maintainable spares and components as the technology improves. The Acquisition Logistician must develop a better understanding in this area to ensure that design and cost trade-offs involving

open systems design approaches include considerations for other downstream support related activities to include configuration and inventory management.

- **Analyze market research, customer requirements, sourcing strategies to synthesize best value solutions.** As related to re-engineering the product support process to use best practices, it is essential that Acquisition Logisticians develop knowledge, skills and abilities in this area to facilitate the development of alternative weapon system support concepts that cost effectively meet warfighter requirements.

- **Develop performance-based work statements or statements of objectives.** The Acquisition Logistician must acquire competencies in this area to effectively develop both contractual system design and system support requirements in the Performance Based Business Environment.

- **Know and understand components of total ownership cost.** The Acquisition Logistician is the principal advocate within the acquisition system for the sustainment system. The Acquisition Logistician must be able to articulate to acquisition mangers and system designers, the downstream impacts of their design decisions. Since dollars is a concept everyone can understand, the Acquisition Logistician can be more effective in making defensible recommendations with an in-depth understanding of the complex relationships between acquisition and operations and support costs including return on investment principles.

IMPACT OF GLOBAL TRENDS, FUNCTIONAL TRENDS ON YOUR CAREER FIELD

Global trends that will have the most significant impact on the Acquisition Logistics career field are the following:

- **Smaller, more joint workforce.** This trend will require acquisition logisticians to acquire much broader technical and business skills than most presently have. Gone will be the days when program offices can afford to devote one acquisition logistician to each of the 10 traditional acquisition logistics elements defined in the current DoD 5000.2-R. This trend will also require Acquisition Logisticians to become more familiar with the operational support environments beyond those of their assigned Service.

- **Fewer military.** Military members contribute a sense of operational reality to the Program Office. Their experience in the operational support environment is invaluable in assessing potential logistics impacts of alternative design and support concepts. With fewer military members available to pass on their experiences, it will be incumbent upon Acquisition Logisticians to develop a much greater understanding of the operational support environment. These types of experiences are very difficult to learn from a book or a classroom environment and may require career managers to strongly reconsider how acquisition logisticians are accessed (e.g., it may be more effective to "grow" acquisition logisticians by bringing individuals with technical or engineering degrees into the workforce first

as traditional sustainment logisticians and then migrating them over to acquisition after gaining several years operational logistics experience).

- **Reengineer the product support environment to use best practices.** This trend will require Acquisition Logisticians to understand the capabilities and limitations of all sources of potential system support including contractors in order to determine the most cost effective support concept that continues to provide the warfighter with what he needs.

VISION

The future Acquisition Logistician will have broad technical (systems engineering oriented) and business skills. He/she will be well versed in engineering disciplines such as design, reliability, maintainability, and supportability and business skills that include scheduling, life-cycle costing, and negotiation. In addition, the Acquisition Logistician will have a thorough understanding of the operational support environment

IMPROVEMENTS AND RECOMMENDATIONS

Current training will need to be supplemented with additional coverage in areas such as product support, life-cycle costing, modeling and simulation; development of contractual performance based supportability and support requirements.

BARRIERS

There are no known statutory barriers. There will be several cultural barriers to moving this career field towards an engineering and technical orientation due to its current population (i.e., it includes both engineers and non-engineers in series 346, 801, 1515, 1670, 2001).

INTERPLAY WITH OTHER CAREER FIELDS

This is a hybrid function that plays primarily in the acquisition environment but whose actions and decisions have significant impact on the sustainment workforce and environment. To be most effective, workers in this career field will need to develop much closer relationships with their counterparts in both the systems engineering and sustainment fields.

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Environmtend	Intion	Cpteny D	L	Cmtnes
RDT&E Consolidation (Centers of Excellence)	Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).	1	Analyze and evaluate different categories of data such as cost and technical capabilities. Analyze business data to determine its adequacy and impact on consolidation of RDT&E organizations.	X
		2	Use tradeoff analyses to assess most appropriate consolidation recommendations.	X
		3	Know and understand service capabilities/core competencies	X
		4	Know critical elements contained in a Business Case Analysis (BCA) in order to justify sound business outcomes.	X
	Develop streamlining and implementation planning for consolidation.	6	Know and understand joint and service strategic planning and requirements process; assess impact of consolidation options	X Kowledge only
		8	Know and understand the Planning, Programming and Budgeting System (PPBS) and DoD monetary policies and procedures; Assess fiscal impacts and synthesize consolidation options	X Recommend only for top level
	Operate in a Multi-Service Environment.	10	Know and understand RDT&E process; evaluate consolidation/process change options; synthesize win-win solutions	X Kowledge only
		11	Know and understand virtual RDT&E resources/network applications; ability to assess applicability and determine best consolidation applications	X Top level knowledge only
		14	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	X
Increased Reliance on Non-DoD Organizations	Conduct market research/analysis of the national base of technology.	17	Understand basic market research techniques	X

Environment	Trend	Intention	Criteria	D	L	Comments
RDT&E	Increased Reliance on Non-DoD Organizations	Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	21	Know DoD's unique technical and facilitation requirements.	X	
			22	Assess the alternative sources and methods most appropriate to handle the requirements not unique to DoD.	X	
			23	Know, understand and be able to benchmark and evaluate all RDT&E options/practices	X	Knowledge only
		Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	26	Know and understand dual use application of program/item needs and ability to incentivize dual-use focus	X	
	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	30	Know, understand and be able to operate in an Integrated Product Team (IPT) environment	X	
		Perform design tradeoffs earlier in the acquisition process.	32	Know, understand and be able to assess design tradeoffs	X	Only as related to support
			33	Evaluate use of the systems engineering process to reduce risk of operational / support problems	X	
		Develop strategy to minimize operation/support problems, risks and fielding issues.	34	Understand the impact of design on the operations and test environment	X	
		Plan appropriate T&E of commercial and NDI items.	35	Know proposed use of Commercial & Non-Developmental Items (NDI) be able to evaluate such items.	X	
		Apply integrated product and process development.	36	Understand the use of Integrated Product and Process Development (IPPD) in successful acquisition management	X	
		Develop verification/conformance metrics.	37	Be capable of developing strategic, tactical and local metrics within the acquisition process.	X	
			38	Know and understand metric development and linkage to mission/operations and cost implications	X	

Environment	Trend	Intention	Competency		L	Comments
RDT&E	Increased Use of Simulation Based Acquisition (SBA)	Perform analysis on most appropriate SBA program application, select pilot programs.	41	Understand the use of Modeling and Simulation (M&S) across the total life cycle of a system.	X	Top level except specific to support
		Use SBA to identify and simulate design issues and risks.	43	Understand the factors that make up the simulation model and verify that logical and statistical relationships exist.	X	Top level understanding only
		Apply simulation and modeling techniques.	45	Be capable of using and understanding the basic tenets of modeling and simulation	X	Top level knowledge only
			46	Know and understand the types of models (physical, mathematical, logical) and the common pitfalls and limitations.	X	Knowledge only
			47	Understand the models and simulations associated with the processes of requirements generation, program management, design and engineering, manufacturing, T&E, logistics support and training.	X	Top level understanding only
	Separation of Tech Maturation From Product Development	Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50	Know and understand contingency planning and execution	X	
			53	Know and understand risk reduction and risk assessment processes for acquisition process. Balancing risks and benefits in situations involving human safety, environmental risks, and financial uncertainties.	X	
		Develop realistic Technology Transition Plans.	56	Know and understand technology transition planning/strategy and ability to assess/evaluate and synthesize best-value options into Technology Transition Plans	X	Knowledge only
		Design Systems with open architectures.	58	Know and understand open architecture discipline, tools, and methods and ability to apply to service interoperability	X	Understanding of support implications
		Conduct affordability assessments/analysis.	59	Be able to do parametric analyses	X	
			60	Understand the Cost as an Independent Variable (CAIV)/policy concerning the authority of the program manager to make cost and performance tradeoffs	X	

Environment	Trend	Intention	Criteria	Description	Level	Comments
RDT&E	Separation of Tech Maturation From Product Development	Conduct affordability assessments/analysis.	61	Know and understand affordability assessment techniques and tools	X	
		Assess cost/schedule risk and influence on design.	63	Know, understand and be able to perform/evaluate cost/schedule risk assessments	X	
		Match evolutionary requirements with mission needs.	68	Understand how to incorporate a trade study methodology, conduct an analysis and provide rationale which address tradeoffs for system requirements.	X	
		Assess supportability techniques for assessing systems requirements.	69	Use systems engineering processes to reduce risk of operational and support problems.	X	Understanding of system engineering processes
			70	Manage experimentation and prototyping	X	
			71	Know and understand supportability analysis tools and techniques	X	
			72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X	
		Identify sources and methodologies for technology insertions.	74	Know and understand open architecture discipline, tools, methods to improve aging systems/platforms O&S (specifically for tech insertions)	X	
		Apply Advanced Concept and Technological Demonstrations (ACTDs) as appropriate during product development.	76	Know and understand the Advanced Concept and Technological Demonstration (ACTD) process and their impact on Life Cycle Cost (LCC).	X	
	Increased Emphasis On Interoperability As A RP	Develop systems using International Interoperability Standards.	79	Identify and describe basic principles of technical standards as they relate to system development and interoperability	X	
		Comply with Joint Technical Architecture requirements.	80	Knowledge and understanding and ability to comply with Defense Information Infrastructure Common Operating Environment (DII COE)	X	Knowledge only
			81	Understand and apply Joint Technical Architecture (JTA) requirements and standards	X	
		Perform an Interoperability Performance Analysis.	82	Perform analysis to identify linkages connections, processes and delay time that effect interoperability .	X	

Environment	Trend	Function	Competency		L	Comments
RDT&E	Increased Emphasis On Interoperability As A KP	Perform a Cost as an Independent Variable (CAIV) analysis.	84	Understand the purpose and general method of execution of Cost as an Independent Variable (CAIV)	X	
			85	Prepare and defend a Cost as an Independent Variable (CAIV) analysis. Discuss the relationship of CAIV analysis to other cost analyses	X	
			86	Understand the Cost as an Independent Variable (CAIV) policy concerning the authority of the program manager to make cost and performance tradeoffs	X	
	Increased Emphasis On Software Development	Develop evaluation and assessment criteria to measure software progress.	91	Understand Capability Maturity Models (CMM)	X	Knowledge of application only
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	102	Know and understand environmental rules/regulations	X	Knowledge only
			103	Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X	
			104	Know and understand commercial best practices	X	Knowledge only
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105	Know and understand risk assessment methods and measurement tools	X	
			106	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	
		Develop streamlining and implementation planning for consolidation.	109	Know and understand organizational processes and measurement	X	
			110	Know and understand personnel policies/procedures to include labor relations/union coordination	X	
		Ensure highest quality staff infrastructure is maintained.	112	Know and understand available training/education resources to include funding/opportunity	X	
	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	114	Know and understand commercial best practices	X	

Environment	Trend	Intention	Competency	D	L	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	116	Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X	
			117	Know and understand benchmarking	X	
			118	Know and understand research methods literature, internet, corporate assets	X	
		Perform business case analysis.	120	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	
		Involve customers early in the acquisition strategy process.	122	Be able to identify and correct potential imbalances in level playing field involved in public-private competitions.	X	Knowledge only
			125	Know and understand acquisition process	X	
			126	Know and understand the Planning, Programming and Budgeting System (PPBS)	X	
			127	Know and understand requirements forecasting techniques & process	X	
			128	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers.	X	Knowledge only
		Employ/Develop sourcing strategies that emphasize best value.	129	Know and understand customer requirements	X	
			130	Know and understand contracting options available	X	
			131	Ability to develop performance-based work statements or statements of objectives.	X	
			133	Know and understand negotiations/plans and execution	X	
			134	Select and apply selected contracting vehicle	X	
			135	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	
			136	Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault-tree methods for describing and making decisions.	X	

Environment	Trend	Intention	Capacity	D	L	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Employ/Develop sourcing strategies that emphasize best value.	137	Know and understand current product support processes and interrelationships	X	
			138	Know and understand commercial best practices	X	
			139	Know and understand partnering/alliance opportunities/execution	X	
			140	Know and understand data analysis to include cost/price/performance tradeoffs In order to achieve affordable readiness.	X	
		Develop performance-based work statements or statements of objectives.	141	Know and understand product/service to be supported	X	
			142	Know and understand performance-based work statements or statement of objectives development/environment	X	
		Apply technology to enable implementation of reengineered and integrated business processes.	145	Know and understand technology use in commercial /government operations	X	
			146	Evaluate/Analyze potential technology solutions to determine best approach/solution	X	
		Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	148	Know and understand financial constraints	X	
			149	Know and understand environmental barriers (regulatory/statutory)	X	
			150	Know and understand possible incentives available	X	
			151	Know and understand industry motivators	X	
			152	Know and understand process change enablers	X	
			155	Know and understand components of Total Ownership Cost (TOC).	X	

Environment	Trend	Intention	Capacity	Description	Level	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Apply integrated supply chain practices.	156	Seek integrated Supply Chain Management (SCM) solutions	X	
			157	Know and understand ways to apply Single Process Initiative (SPI) to optimize logistics operations.	X	
			158	Know and understand quality requirements	X	
			159	Know and understand alternative sourcing options	X	
			160	Know and understand Supply Chain Management (SCM) evaluation/measurement models	X	
			161	Know and understand Supply Chain Management (SCM) purposes and processes - components and total	X	
	Expansion of Prime Vendor/Virtual Prime Vendor/P-V Like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	163	Know and understand applicable markets and market interrelationships, including markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies	X	Knowledge only
			166	Know and understand commercial practices, including best practices of specific market sector	X	
			167	Know and understand market research methods	X	
		Tailor the application of best practices to the specific market sector and develop appropriate contractual vehicles.	168	Know and understand negotiations/plans and execution	X	
			169	Know and understand commercial best practices	X	
			170	Know and understand current product support processes and interrelationships	X	
			171	Know and understand partnering/alliance opportunities/execution	X	
			172	Know and understand data analysis to include cost/price/performance tradeoffs	X	
			173	Know and understand customer requirements	X	

Environment	Trend	Intention	Competency	D	L	Comments
O&S	Increased Contractor Logistics Support	Develop integrated support strategies.	174	Know and understand common support requirements and tools and ability to leverage those opportunities consolidated design and buying opportunities	X	
			175	Know and understand selected contract to apply oversight tools	X	
			176	Know and understand organic and commercial options available	X	
			177	Know and understand contract oversight techniques and tools	X	
			178	Know and understand mission application and operating environment	X	
			179	Know and understand sustainment/war reserve requirements	X	Top level knowledge only
			180	Know and understand commercial inventory management processes/techniques	X	
			181	Analyze market research/customer requirements/sourcing strategies to synthesize best value Contractor Logistics Support (CLS) solutions	X	
			182	Know and understand alternative logistic support risks, costs, and performance in development of integrated support strategies and tools.	X	
			183	Know and understand sustainment processes/techniques and process interrelationships (specific emphasis on inventory management with a configuration management subset)	X	Inventory management detail not required
		Develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	184	Know how to develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	X	
			185	Create performance-based statements of objectives and incentives for logistics support.	X	

Environment	Trend	Intention	Capability	Description	Level	Comments
O&S	Increased Contractor Logistics Support	Develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	186	Know flexible sustainment contracts and how to develop performance events to measure contractor progress.	X	
	Outsource Equipment Disposal Activities	Conduct capability/environmental assessment.	191	Know and understand environmental regulations and cost assessments.	X	
			192	Know and understand government disposal policy and procedures	X	Knowledge of implications
		Assess contractor's security processes and procedures.	194	Know and understand statutory/regulatory security policy/procedures	X	Knowledge only
	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.	196	Know and understand selected contract in order to apply oversight tools	X	
			198	Analyze market research/customer requirements/sourcing strategies to synthesize best value Vendor Managed Inventories/Direct Vendor Delivery solutions	X	
			199	Understand and apply past performance in structuring of a solicitation.	X	
			201	Know and understand market research methods and tools	X	
			202	Know and understand total asset visibility techniques	X	Knowledge only
		Monitor and track business volume information outside of DoD ownership.	203	Know and understand shift to commercial practices reporting methodology/metrics	X	
			205	Analyze and interpret business volume information to evaluate organic and industry total system performance	X	
			206	Know and understand shift to commercial practices business processes	X	

Environment	Trend	Intention	Competency	D	L	Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	207	Know and understand life-cycle management processes and phases	X	
			208	Understand Cost as an Independent Variable (CAIV)	X	
			211	Know and understand formal and informal organizational structure to generate best value solutions to reduce Total Ownership Cost (TOC)	X	
			212	Know and understand weapon system/platform mission/operating environment	X	
			214	Know and understand data analysis to include cost/price/performance tradeoffs	X	
			215	Know and understand risk assessment techniques and measurement tools	X	
			218	Know and understand commercial Total Ownership Cost (TOC) and life-cycle practices and tools	X	
			219	Know and understand the Planning, Programming and Budgeting System (PPBS) and defense fiscal management policies and practices	X	
			221	Know and understand Total Ownership Cost (TOC) variables and impacted areas, to include how to perform tradeoff analyses of capability performance, and life-cycle cost drivers and evaluation.	X	
		Develop or modify oversight processes and analysis tools.	222	Know cost estimating methods.	X	
			223	Know which funding accounts the Program Manager must influence to reduce Total Ownership Cost (TOC).	X	
			224	Know and understand commercial industry analysis tools and oversight processes	X	
			226	Understand operating and support cost data and data sources (e.g., Service XMOSC Systems) and their differences; cost estimating tools/models and their limitations.	X	
			227	Know and understand existing oversight processes and analysis tools	X	

Environment	Trend	Intention	Competency	D	L	Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Develop or modify oversight processes and analysis tools.	228	Understand Total Ownership Cost (TOC) from several O&S perspectives (e.g. weapon systems, units and organizations).	X	
		Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	230	Know and understand life-cycle management processes and phases	X	
			231	Know and understand contingency planning through plan development and implementation	X	
			232	Know and understand analysis techniques and tools	X	
			233	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	
			234	Know and understand contract incentives/disincentives through contract completion	X	
	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X	
		Require business partners to apply electronic commerce techniques and tools.	255	Understand DoD electronic commerce policy	X	
			259	Know and understand marketing/selling methods and strategies	X	
	Increase Competitive Sourcing of Services	Determine acquisition strategy (e.g. regional, omnibus).	267	Know and understand strategic planning. Know how to develop acquisition strategy.	X	
		Conduct Best Value Analysis on services/cost.	271	Know and understand Best Value Analysis and understand how to apply in source selections.	X	
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	300	Know and understand hardware, software, and network requirements and applications and interoperability	X	
			301	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	
			302	Know and understand electronic commerce system relationship to existing business process and their interrelationships	X	

Environment	Trend	Intention	Competency			Comments
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	303	Know, understand and be able to apply business process reengineering	X	
			304	Know and understand statutory/regulatory environment	X	
			305	Know and understand marketing/selling methods and strategies	X	
			306	Know and understand performance metrics	X	
			307	Know and understand enterprise resource planning concepts and solutions	X	
			308	Know and understand commercial electronic commerce processes	X	
			309	Develop affordable requirements document for establishing software/hardware architecture for Integrated Digital Environment (IDE)	X	Knowledge only
		Use commercial standard reference identification number system to simplify with private and federal sectors (e.g. Central Contractor registration).	310	Know and understand unique software requirements and applications	X	
			311	Know, understand and be able to incorporate standards into paperless operating systems of commercial standard reference identification number system	X	
		Apply existing national and international standards, practices and technologies to automate the management and exchange of information.	313	Know and understand national and international standards, practices and technologies used to automate and manage and exchange information.	X	
	Achieve Paperless Contracting	Use electronic mediums to create, store, display, retrieve and modify contractual material.	314	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	
			316	Know and understand marketing/selling methods and strategies	X	
		Use electronic mediums for electronic payments.	323	Know and understand strengths and weaknesses of integration	X	

Environment	Trend	Intention	Capacity	Description	Level	Comments
PLA	Achieve Paperless Contracting	Use electronic mediums for electronic payments.	324	Recognize Government and commercial cultures to effectively educate/market/encourage commercial participation	X	
	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	327	Know, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	X	
	Security/Proprietary Information	Use adequate security measures (to include protocols) to protect electronic information, as appropriate, and to provide ready access.	330	Know and understand security statutory/regulatory environment	X	
			331	Know and understand adequate security measures	X	
CMI	Increased Commercial Military Integration	Promote use of commercial items	333	Perform advanced market research of commercial and military products	X	Knowledge only
			334	Know, understand and be able to understand benefits of opportunities of using/transitioning to commercial items where available.	X	
			335	Know and understand commercial and MILSPEC systems and specific sector practices; ability to develop solutions and deconflict to eliminate military specifications where commercial products and practices fulfill the requirement	X	
			336	Know Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X	
			337	Know operational organizations, concepts and data sources.	X	
			338	Perform an analysis of alternatives.	X	
			339	Analyze/challenge requirement in order to accept commercial items.	X	
			340	Develop and maintain knowledge of the commercial/industrial/academic sectors.	X	
		Participate in sector activities (e.g. professional associations)	341	Know and understand sector resources, activities, world-class practices, processes, technologies, and integration impediments.	X	

Environment	Trend	Intention	Capability			Comments
CMI	Increased Commercial Military Integration	Participate in sector activities (e.g. professional associations)	342	Be able to synthesize Government and commercial cultures to effectively educate/market/encourage commercial participation in CMI	X	
	Increased Use of Common Business Practices	Promote use of common business practices	344	Know and understand benchmarking methods and tools	X	
			346	Know and understand industry data exchange programs	X	
			347	Identify and adapt common and/or better practices.	X	
			348	Know and understand warranties/guarantees and ability to synthesize into Government system	X	
			349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X	
			350	Perform advanced market research of commercial and military products.	X	Knowledge only
	Employ Common Technology Bases	Promote knowledge of world-class technology bases	352	Know and understand potential DoD/Service growth areas for application of CMI/technology bases (specifically O&S)	X	
			353	Develop knowledge of relevant technology bases, resources, and capabilities.	X	
		Participate in technology sector activities.	354	Know and understand sector resources, activities, world-class practices, processes, technologies, and integration impediments.	X	
			355	Know and understand dual-use application of program/item needs and ability to incentivize dual-use focus	X	
	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Employ flexible manufacturing	356	Know and understand flexible manufacturing techniques and tools (e.g. CAD/CAM)	X	
			357	Evaluate adequacy of workload planning	X	
			359	Know and understand agile manufacturing	X	Knowledge only
			360	Know and understand surge manufacturing and ability to develop best solution for CMI when factoring in surge requirements	X	Knowledge only

Environment	Trend	Intention	Competency D	L		Comments
CMI	Employ Flexible manufacturing (Economic manufacture of varying Size and Types)	Employ flexible manufacturing	361	Know and understand Diminishing Manufacturing Sources (DMS) commodities	X	
			362	Know and understand and ability to evaluate adequacy of government/contractor manufacturing capabilities/flexible manufacturing tools	X	Knowledge only
		Coordinate supply chain requirements (consider and integrate all phases in manufacturing flow).	364	Be able to develop and evaluate Supply Chain Management (SCM) options for CMI	X	
	Extend MILSPEC/MILSTANDARD Reform to Re-procurements	Reduce MILSPEC/MILSTANDARDS in reprocurements	365	Develop performance-based specifications.	X	
			366	Know, understand and be able to determine if CMI or military spec is applicablesafety/health/mission needs	X	
			368	Know and understand quality and testing needs/requirements	X	
			369	Know and understand customer requirements	X	
			371	Analyze impact on logistics system (supply and maintenance).	X	
			372	Manage multiple configurations.	X	
			374	Know and understand commercial and MILSPEC systems and specific sector practices; ability to develop solutions and deconflict to eliminate military specifications where commercial products and practices fulfill the requirement	X	
N	Life Cycle/Reduced Total Ownership Cost Emphasis	Reduce Life Cycle Cost/Total Ownership Cost	378	Apply Cost as an Independent Variable (CAIV) and reduced Total Ownership Cost (TOC)	X	
			381	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X	
			382	Know and understand cost analysis and life-cycle management	X	
		Establish activity based costing for the life cycle process.	383	Comprehend DoD's corporate implementation of activity based costing and management	X	

Environment	Trend	Intention	Criteria	Description	Level	Comments
A	Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate	385	Know and understand spiral development on resourcing and supportability (funding, sustainment)	X	
			386	Know, understand and be able to assess, evaluate, and synthesize evolutionary/incremental enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution.	X	
			388	Analyze and evaluate requirements for validity of evolutionary and incremental acquisitions	X	
		Minimize cycle time	389	Evaluate technology maturation to support short cycle time in product development	X	
	Flexible User Requirements	Participate in development of user requirements.	392	Perform risk analysis.	X	
			393	Know operational organizations, concepts and data sources.	X	
			396	Perform Risk Based Surveillance	X	
			397	Know and understand user and joint operating requirements	X	
			398	Define and analyze alternatives.	X	
			399	Know, understand and be able to operate in Integrated Product Team (IPT) environment	X	
	Technology Refreshment of Systems (Modernization through Spares)	Promote technology refreshment of systems	401	Know, understand and be able to assess, evaluate, and synthesize technology refreshment enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution)	X	
			402	Assess and forecast technology maturation.	X	
			403	Apply open systems architectures.	X	Knowledge only
			404	Know and understand interchangeability/interoperability and substitution	X	
			405	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X	Identify only

Environment	Trend	Intention	Competency			Comments
N	Technology Refreshment of Systems (Modernization through Spares)	Develop performance based specifications	406	Know, understand and be able to use engineering change process methods and tools	X	Knowledge and understanding only
			407	Know, understand and be able to use value engineering methods and tools	X	
			408	Know and understand motivation techniques to incentivize industry to develop product improvements	X	
			409	Evaluate performance-based work statements and advise program office as appropriate	X	
		Obtain and execute funding for modernization	410	Synthesize the functions of the Planning, Programming and Budgeting System (PPBS)	X	
	Increased Scope of Other Transactions	Expand use and scope of other transactions	414	Manage/oversee other transactions	X	
			415	Know and understand potential DoD/Service growth areas for application of other transactions (specifically O&S)	X	
			418	Define, select and adapt terms to the specific agreement.	X	
			420	Perform advanced market research.	X	
			421	Know, understand and be able to access/evaluate and synthesize data of Other Transaction Authority (OTA) low/policy/resources	X	
	Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	422	Know and understand best value methods and tools to synthesize best value options based on tradeoff	X	
			423	Develop performance based solicitation.	X	
			425	Apply modeling and simulation techniques.	X	Understand only
			427	Analyze expected system performance outcomes for best value.	X	
			428	Analyze user requirements.	X	For Support implications

Environment	Trend	Intention	Competency	D	L	Comments
N	Increased Use of Performance Based Contracting	Capitalize on opportunities to develop performance based solicitations for products and services.	430	Develop performance expectations incentives and metrics to describe acquisition needs and evaluate outcomes	X	
			431	Know and understand sector resources and activities	X	
			432	Know and understand common business practices	X	
			433	Know and understand world-class sector practices processes and technologies (e.g. Single Process Initiative (SPI)).	X	
	Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	435	Know and understand the Integrated Product Team (IPT) environment	X	
			437	Be able to synthesize Government and commercial cultures to effectively educate/market/encourage collaboration between user and acquisition communities	X	
			438	Know and understand collaboration impediments	X	
			441	Develop mutual understanding of user roles and functions and the acquisition system capabilities.	X	
			443	Maintain open communications through all phases of the life cycle.	X	

Appendix K: Manufacturing, Production & Quality Assurance Career Field Narrative

INTRODUCTION

The Manufacturing, Production & Quality Assurance Career Field includes Quality Assurance Specialists (GS-1910) and Industrial Specialists (GS-1150). While all of these individuals are engaged in work with similar objectives, they are often assigned widely varying duties, depending on the particular position they occupy. For example, a Defense Contract Management Command (DCMC) Quality Assurance Specialist is typically assigned to contractor production facilities to assure defense contractors comply with contract technical/quality requirements and meet required delivery schedules. A Quality Assurance Specialist from another organization might be assigned to a buying command or program office and be responsible for assuring that contracts contain appropriate quality requirements. Although the positions may be quite different, the future trends will impact all of them. The competencies discussed herein should be valuable for all personnel in the Manufacturing, Production & Quality Assurance Career Field, although it is important to understand the extent will vary depending on the exact nature of an individual's position and assignments.

SUMMARY OF VITAL COMPETENCIES

This section discusses the competencies determined to be critical because of their importance to the future, all-encompassing nature, or "newness" to the Manufacturing, Production & Quality Assurance career field.

- **Knowledge and understanding of data analysis.** This will be even more crucial to the success of DoD and most of the individuals in the career field. Data analysis provides the information needed to make risk assessments and critical decisions regarding what Government oversight is necessary, and the nature, frequency, and intensity of that oversight. Data analysis is also particularly helpful when evaluating contractor performance under performance contracts.

- **Knowledge and understanding of risk assessment methods and tools.** These are quickly becoming essential skills for most personnel in Manufacturing, Production & Quality Assurance. Data analyses provide the basis for risk assessment but assigned personnel must also know how to consider the likelihood and consequences of potential failures, how to transform all of that information into accurate risk assessments, and how to design actions that will effectively mitigate those risks.

- **Knowledge and understanding of competitive outsourcing techniques and the policies and procedures that govern competitive outsourcing**. In the future, competitive outsourcing may be necessary to accomplish mission requirements in the face of new workload and a shrinking Manufacturing, Production & Quality Assurance workforce.

- Other competencies needed for the future include the ability to operate in an IPT environment, understand the Prime Vendor concept (and other new acquisition/supply techniques), recognize and understand FAR Part 12 contracts, and communicate effectively with customers and contractors.

IMPACT OF GLOBAL TRENDS/FUNCTIONAL TRENDS

- **Smaller, "more generalist workforce" and the growth of crossfunctional teaming**. Individuals will have to know more about a much broader range of subjects, and be called upon to perform duties across a wider spectrum, and the trend is already underway. For example, many DCMC Quality Assurance Specialists are already performing production/delivery surveillance duties historically performed by Industrial Specialists. That trend will likely continue across the Manufacturing, Production, & Quality Assurance Career Field.

- **Move toward commercial business practices** . This will probably change the ground rules that historically have governed the work of personnel in the Manufacturing, Production & Quality Assurance Career Field. For example, commercial (FAR Part 12) contract terms typically do not permit DCMC Quality Assurance Specialists to perform in-process surveillance of defense contractor production operations. Personnel must be able to recognize these contracts and refrain from providing the usual in-process surveillance, lest the Government violate contract terms. Personnel in the Manufacturing, Production & Quality Assurance Career Field must be kept up to date on an increasing variety of new initiatives that are very different from traditional practices.

- **Aging workforce** . The experience drain over the past decade has been precipitous. For example, the DCMC Quality Assurance workforce has been cut about 62% over the past 9 years. There have been few new hires during that drawdown. The effects of the drawdown are about to be compounded by the aging of the remaining workforce, most of who will be eligible for retirement by the end of 2005. Clearly, workforce competencies and how to maintain them will be a major part of the DoD challenge to have an effective Manufacturing, Production & Quality Assurance workforce in the year 2005.

Much has already been done, and to some degree, these trends are offsetting. For example, while there have been severe reductions in the number of quality assurance personnel, as a result of acquisition reform initiatives, many fewer contracts require Government source inspection. This permits the application of limited quality assurance resources across a smaller workload, but the smaller workforce also presents new challenges maintaining on-hand the necessary skills to accomplish the mission. In order to prepare for their future, personnel in the Manufacturing, Production & Quality Assurance Career Field will need a broader skill set that permits them to perform a wider array of duties.

VISION

Due in part to the significant effect of DoD management initiatives (e.g., MRM #0), a smaller percentage of contracts issued will require government source inspection. Only acquisitions presenting significant risks to the government will require government source inspection. DoD's Manufacturing, Production & Quality Assurance workforce of 2005 will likely be smaller but more effective. Some of the work traditionally performed by the primary job series (1910, Quality Assurance Specialists & 1150, Industrial Specialists) within the career field will likely continue to be performed by personnel from either series. However, the two series will probably continue to separately exist within the Manufacturing, Production & Quality Assurance Career Field because significant work performed by each series is not easily assigned to personnel in the other series, due to different skill sets. All personnel will be fully knowledgeable of the latest contracting techniques and methods, and fully capable of implementing surveillance where it is necessary. No unnecessary Government surveillance will be initiated. Career field personnel will also be data analysis experts, capable of gathering and quickly analyzing Government and contractor data using a wide variety of tools. Personnel will use those analyses to perform highly reliable risk assessments. Once risks are identified, they will be openly discussed and addressed in an IPT environment. In all cases, significant risks will effectively be mitigated. The result: on-time delivery of high quality supplies/services.

IMPROVEMENTS RECOMMENDATIONS

To achieve the above career field vision, the following actions need to be taken:

- Assure all employees can effectively perform data analysis; understand/perform accurate risk analysis and develop plans for effectively mitigating significant risks; and understand and operate in an IPT environment.
- Provide all employees periodic training/updates on contracting issues/ techniques.
- Cross-train employees before they are called to perform unfamiliar tasks.

BARRIERS

This section lists any statutes, policies or cultural barriers to making the improvements and changes discussed above.

- **Must develop detailed plans for implementing recommendations**, complete with measurement criteria for the individual competencies and for measuring implementation progress.
- **Must get top management to support these recommendations**, authorize implementation, provide resources, and require progress reports.
- **Must get first line supervisor support** to ensure employees actually have/acquire the necessary competencies.

- **Must coordinate with union representatives prior to implementation .**
- **Must get employee cooperation/support prior to implementation .**

INTERPLAY WITH OTHER CAREER FIELDS

Personnel in the Manufacturing, Production, & Quality Assurance career field are closely aligned with personnel from other career fields, i.e., Contracting, SPRD&E, Test and Evaluation, and Acquisition Logistics. There are numerous areas of mutual interest among these career fields that individually and collectively can significantly influence contract cost, schedule, and technical performance.

Environment	Trend	Action	Competency		Comments
RDT&E	Consolidation (Centers of Excellence)	Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).	2 Use tradeoff analyses to assess most appropriate consolidation recommendations.	X	Only applicable to personnel at the RDT&E Centers
			3 Know and understand service capabilities/core competencies	X	Only applicable to personnel at the RDT&E Centers
			4 Know critical elements contained in a Business Case Analysis (BCA) in order to justify sound business outcomes.	X	Only applicable to personnel at the RDT&E Centers
		Develop streamlining and implementation planning for consolidation.	6 Know and understand joint and service strategic planning and requirements process; assess impact of consolidation options	X	Only applicable to personnel at the RDT&E Centers
			8 Know and understand the Planning, Programming and Budgeting System (PPBS) and DoD monetary policies and procedures; Assess fiscal impacts and synthesize consolidation options	X	Only applicable to personnel at the RDT&E Centers
			9 Know effective streamlining and implementation planning documentation	X	Only applicable to personnel at the RDT&E Centers
		Operate in a Multi-Service Environment.	13 Know and understand how to function in a Multi-Service environment.	X	
			14 Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	X	
	Increased Reliance on Non-DoD Organizations	Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	21 Know DoD's unique technical and facilitation requirements.	X	Familiarization only for personnel working exclusively in a CAS environment
			22 Assess the alternative sources and methods most appropriate to handle the requirements not unique to DoD.	X	Familiarization only for personnel working exclusively in a CAS environment

Environment	Trend	Intention	Opteny	D	G		Comments
RDT&E	Increased Reliance on Non-DoD Organizations	Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	26	Know and understand dual use application of program/item needs and ability to incentivize dual-use focus		X	
	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	30	Know, understand and be able to operate in an Integrated Product Team (IPT) environment		X	Critical Skill
		Perform design tradeoffs earlier in the acquisition process.	32	Know, understand and be able to assess design tradeoffs		X	Familiarization only for personnel working exclusively in a CAS environment
			33	Evaluate use of the systems engineering process to reduce risk of operational / support problems		X	Familiarization only for personnel working exclusively in a CAS environment
		Plan appropriate T&E of commercial and NDI items.	35	Know proposed use of Commercial & Non-Developmental Items (NDI) be able to evaluate such items.		X	Familiarization only for personnel working exclusively in a CAS environment
		Apply integrated product and process development.	36	Understand the use of Integrated Product and Process Development (IPPD) in successful acquisition management		X	
		Develop verification/conformance metrics.	38	Know and understand metric development and linkage to mission/operations and cost implications		X	
	Increased Use of Simulation Based Acquisition (SBA)	Perform analysis on most appropriate SBA program application, select pilot programs.	41	Understand the use of Modeling and Simulation (M&S) across the total life cycle of a system.		X	Familiarization only for personnel working exclusively in a CAS environment
		Use SBA to identify and simulate design issues and risks.	43	Understand the factors that make up the simulation model and verify that logical and statistical relationships exist.		X	Familiarization only for personnel working exclusively in a CAS environment
		Apply simulation and modeling techniques.	45	Be capable of using and understanding the basic tenets of modeling and simulation		X	Familiarization only for personnel working exclusively in a CAS environment
			46	Know and understand the types of models (physical, mathematical, logical) and the common pitfalls and limitations.		X	Familiarization only for personnel working exclusively in a CAS environment
			47	Understand the models and simulations associated with the processes of requirements generation, program management, design and engineering, manufacturing, T&E, logistics support and training.		X	Familiarization only for personnel working exclusively in a CAS environment

Environment	Trend	Intention	Criteria	Dimension	Comments
RDT&E	Separation of Tech Maturation From Product Development	Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50	Know and understand contingency planning and execution	X Familiarization only for personnel working exclusively in a CAS environment
			53	Know and understand risk reduction and risk assessment processes for acquisition process. Balancing risks and benefits in situations involving human safety, environmental risks, and financial uncertainties.	X Critical Skill
		Develop realistic Technology Transition Plans.	56	Know and understand technology transition planning/strategy and ability to assess/evaluate and synthesize best-value options into Technology Transition Plans	X Familiarization only for personnel working exclusively in a CAS environment
		Design Systems with open architectures.	58	Know and understand open architecture discipline, tools, and methods and ability to apply to service interoperability	X Familiarization only for personnel working exclusively in a CAS environment
		Conduct affordability assessments/analysis.	60	Understand the Cost as an Independent Variable (CAIV)/policy concerning the authority of the program manager to make cost and performance tradeoffs	X
		Assess supportability techniques for assessing systems requirements.	72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X Familiarization only for personnel working exclusively in a CAS environment
	Increased Emphasis On Interoperability As A RP	Perform a Cost as an Independent Variable (CAIV) analysis.	84	Understand the purpose and general method of execution of Cost as an Independent Variable (CAIV)	X Familiarization only for personnel working exclusively in a CAS environment
			85	Prepare and defend a Cost as an Independent Variable (CAIV)/analysis. Discuss the relationship of CAIV analysis to other cost analyses	X Familiarization only for personnel working exclusively in a CAS environment
			86	Understand the Cost as an Independent Variable (CAIV)/policy concerning the authority of the program manager to make cost and performance tradeoffs	X
	Increased Emphasis On Software Development	Develop evaluation and assessment criteria to measure software progress.	92	Know software engineering principles and how it applies through the acquisition life cycle.	X

Environment	Trend	Intention	Competency		G	Comments
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	102	Know and understand environmental rules/regulations	X	
			103	Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X	
			104	Know and understand commercial best practices	X	
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105	Know and understand risk assessment methods and measurement tools	X	Critical Skill
			106	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	
		Develop streamlining and implementation planning for consolidation.	109	Know and understand organizational processes and measurement	X	
			110	Know and understand personnel policies/procedures to include labor relations/union coordination	X	
		Ensure highest quality staff infrastructure is maintained.	112	Know and understand available training/education resources to include funding/opportunity	X	
	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	114	Know and understand commercial best practices	X	
			116	Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X	
			117	Know and understand benchmarking	X	
			118	Know and understand research methods literature, internet, corporate assets	X	
		Perform business case analysis.	120	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	
		Involve customers early in the acquisition strategy process.	122	Be able to identify and correct potential imbalances in level playing field involved in public-private competitions.	X	Familiarization only for personnel working exclusively in a CAS environment

Environment	Trend	Intention	Competency	Description	Generic	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Involve customers early in the acquisition strategy process.	125	Know and understand acquisition process	X	
			126	Know and understand the Planning, Programming and Budgeting System (PPBS)	X	
			128	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers.	X	
		Employ/Develop sourcing strategies that emphasize best value.	129	Know and understand customer requirements	X	
			136	Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault-tree methods for describing and making decisions.	X	Critical Skill
			137	Know and understand current product support processes and interrelationships	X	
			138	Know and understand commercial best practices	X	
			139	Know and understand partnering/alliance opportunities/execution	X	
			140	Know and understand data analysis to include cost/price/performance tradeoffs In order to achieve affordable readiness.	X	
		Develop performance-based work statements or statements of objectives.	141	Know and understand product/service to be supported	X	
			142	Know and understand performance-based work statements or statement of objectives development/environment	X	
		Apply technology to enable implementation of reengineered and integrated business processes.	144	Know how to develop strategies for optimizing development over time and resolve uncertainties.	X	Familiarization only for personnel working exclusively in a CAS environment
			145	Know and understand technology use in commercial /government operations	X	

Environment	Trend	Intention	Competency	D	G	Comments	Notes
O&S	Reengineer the Product Support Process to Use Best Practices	Apply technology to enable implementation of reengineered and integrated business processes.	146	Evaluate/Analyze potential technology solutions to determine best approach/solution	X	Familiarization only for personnel working exclusively in a CAS environment	
		Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	152	Know and understand process change enablers	X	Familiarization only for personnel working exclusively in a CAS environment	
			155	Know and understand components of Total Ownership Cost (TOC).	X		
		Apply integrated supply chain practices.	156	Seek integrated Supply Chain Management (SCM) solutions	X		
			157	Know and understand ways to apply Single Process Initiative (SPI) to optimize logistics operations.	X		
			158	Know and understand quality requirements	X		
			159	Know and understand alternative sourcing options	X		
			161	Know and understand Supply Chain Management (SCM) purposes and processes - components and total	X		
			162	Apply Supply Chain Management (SCM) processes/methods to business opportunity/situation	X		
	Expansion of Prime Vendor/Virtual Prime Vendor/PVP-Like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	166	Know and understand commercial practices, including best practices of specific market sector	X	Familiarization only for personnel working exclusively in a CAS environment	
		Tailor the application of best practices to the specific market sector and develop appropriate contractual vehicles.	169	Know and understand commercial best practices	X	Familiarization only for personnel working exclusively in a CAS environment	
			173	Know and understand customer requirements	X		
	Increased Contractor Logistics Support	Develop integrated support strategies.	178	Know and understand mission application and operating environment	X		

Environment	Trend	Intention	Competency	Description	Generic	Comments
O&S	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.	198	Analyze market research/customer requirements/sourcing strategies to synthesize best value Vendor Managed Inventories/Direct Vendor Delivery solutions	X	
			199	Understand and apply past performance in structuring of a solicitation.	X	Familiarization only for personnel working exclusively in a CAS environment
			200	Know and understand current, market-ready commercial practices with end-to-end visibility of inventory.	X	
			201	Know and understand market research methods and tools	X	Familiarization only for personnel working exclusively in a CAS environment
		Monitor and track business volume information outside of DoD ownership.	204	Understand production, planning and control systems that meet time-definite delivery requirements.	X	Critical Skill
			205	Analyze and interpret business volume information to evaluate organic and industry total system performance	X	
	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	214	Know and understand data analysis to include cost/price/performance tradeoffs	X	
			215	Know and understand risk assessment techniques and measurement tools	X	
			221	Know and understand Total Ownership Cost (TOC) variables and impacted areas, to include how to perform tradeoff analyses of capability performance, and life-cycle cost drivers and evaluation.	X	
		Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	230	Know and understand life-cycle management processes and phases	X	
			231	Know and understand contingency planning through plan development and implementation	X	
			232	Know and understand analysis techniques and tools	X	
			233	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	Familiarization only for personnel working exclusively in a CAS environment

Environment	Trend	Intention	Competency	D	G	Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	234	Know and understand contract incentives/disincentives through contract completion	X	Familiarization only for personnel working exclusively in a CAS environment
	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	235	Know how to access web-based acquisition and work-flow systems.	X	
			236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X	
		Require business partners to apply electronic commerce techniques and tools.	255	Understand DoD electronic commerce policy	X	
			259	Know and understand marketing/selling methods and strategies	X	Familiarization only for personnel working exclusively in a CAS environment
	Increase Competitive Sourcing of Services	Determine acquisition strategy (e.g. regional, omnibus).	267	Know and understand strategic planning. Know how to develop acquisition strategy.	X	Familiarization only for personnel working exclusively in a CAS environment
		Conduct Best Value Analysis on services/cost.	271	Know and understand Best Value Analysis and understand how to apply in source selections.	X	Familiarization only for personnel working exclusively in a CAS environment
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	301	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	
			302	Know and understand electronic commerce system relationship to existing business process and their interrelationships	X	
			303	Know, understand and be able to apply business process reengineering	X	
			304	Know and understand statutory/regulatory environment	X	
			305	Know and understand marketing/selling methods and strategies	X	Familiarization only for personnel working exclusively in a CAS environment
			306	Know and understand performance metrics	X	
			307	Know and understand enterprise resource planning concepts and solutions	X	

Environment	Trend	Intention	Competency	Description	Comments	Notes
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	308	Know and understand commercial electronic commerce processes	X	
		Use commercial standard reference identification number system to simplify with private and federal sectors (e.g. Central Contractor registration).	310	Know and understand unique software requirements and applications	X	
			311	Know, understand and be able to incorporate standards into paperless operating systems of commercial standard reference identification number system	X	
		Apply existing national and international standards, practices and technologies to automate the management and exchange of information.	313	Know and understand national and international standards, practices and technologies used to automate and manage and exchange information.	X	
	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	327	Know, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	X	
	Security/Proprietary Information	Use adequate security measures (to include protocols) to protect electronic information, as appropriate, and to provide ready access.	330	Know and understand security statutory/regulatory environment	X	
			331	Know and understand adequate security measures	X	
CMI	Increased Commercial Military Integration	Promote use of commercial items	336	Know Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X	Critical Skill
	Increased Use of Common Business Practices	Promote use of common business practices	344	Know and understand benchmarking methods and tools	X	
			347	Identify and adapt common and/or better practices.	X	
			348	Know and understand warranties/guarantees and ability to synthesize into Government system	X	

Environment	Trend	Intention	Competency	D	G	Comments	Notes
CMI	Increased Use of Common Business Practices	Promote use of common business practices		349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X	Critical Skill
	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Employ flexible manufacturing		356	Know and understand flexible manufacturing techniques and tools (e.g. CAD/CAM)	X	
				358	Evaluate adequacy of contractor manufacturing capabilities	X	
				359	Know and understand agile manufacturing	X	
				360	Know and understand surge manufacturing and ability to develop best solution for CMI when factoring in surge requirements	X	
				362	Know and understand and ability to evaluate adequacy of government/contractor manufacturing capabilities/flexible manufacturing tools	X	
		Coordinate supply chain requirements (consider and integrate all phases in manufacturing flow).		364	Be able to develop and evaluate Supply Chain Management (SCM) options for CMI	X	
	Extend MILSPEC/MILSTANDARD Reform to Re-procurements	Reduce MILSPEC/MILSTANDARDS in reprocurements		372	Manage multiple configurations.	X	Familiarization only for personnel working exclusively in a CAS environment
				375	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	X	
N	Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate		384	Perform risk analysis.	X	Critical Skill
				386	Know, understand and be able to assess, evaluate, and synthesize evolutionary/incremental enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution.	X	
	Flexible User Requirements	Participate in development of user requirements.		392	Perform risk analysis.	X	Critical Skill
				396	Perform Risk Based Surveillance	X	Critical Skill

Environment Trend	Intention	Competency D	G		Comments
N Flexible User Requirements	Participate in development of user requirements.	397	Know and understand user and joint operating requirements	X	
		399	Know, understand and be able to operate in Integrated Product Team (IPT) environment	X	Critical Skill
Technology Refreshment of Systems (Modernization through Spares)	Promote technology refreshment of systems	400	Know and understand inventory management methods and practices and interrelationships to inventory reprocurements.	X	
		401	Know, understand and be able to assess, evaluate, and synthesize technology refreshment enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution)	X	
		404	Know and understand interchangeability/interoperability and substitution	X	
Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	425	Apply modeling and simulation techniques.	X	Familiarization only for personnel working exclusively in a CAS environment
Increased Use of Performance Based Contracting	Capitalize on opportunities to develop performance based solicitations for products and services.	430	Develop performance expectations incentives and metrics to describe acquisition needs and evaluate outcomes	X	Familiarization only for personnel working exclusively in a CAS environment
Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	435	Know and understand the Integrated Product Team (IPT) environment	X	Critical Skill
		441	Develop mutual understanding of user roles and functions and the acquisition system capabilities.	X	
		442	Model and analyze manufacturing system performance	X	
		443	Maintain open communications through all phases of the life cycle.	X	Critical Skill

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Environmt	Tend	Intion	Cpteny	D	H		Cmt Nes
RDT&E	Consolidation (Centers of Excellence)	Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).		2	Use tradeoff analyses to assess most appropriate consolidation recommendations.	X	Applies only to personnel at RDT&E Centers
				3	Know and understand service capabilities/core competencies	X	Applies only to personnel at RDT&E Centers
				4	Know critical elements contained in a Business Case Analysis (BCA) in order to justify sound business outcomes.	X	Applies only to personnel at RDT&E Centers
		Develop streamlining and implementation planning for consolidation.		5	Use Business Case Analysis (BCA) to assess effectiveness of the economies of budgeting inherent government functions or centers of excellence and service contracting in the business sector.	X	Applies only to personnel at RDT&E Centers
				6	Know and understand joint and service strategic planning and requirements process; assess impact of consolidation options	X	Applies only to personnel at RDT&E Centers
				8	Know and understand the Planning, Programming and Budgeting System (PPBS) and DoD monetary policies and procedures; Assess fiscal impacts and synthesize consolidation options	X	Applies only to personnel at RDT&E Centers
				9	Know effective streamlining and implementation planning documentation	X	Applies only to personnel at RDT&E Centers
		Operate in a Multi-Service Environment.		13	Know and understand how to function in a Multi-Service environment.	X	Familiarity only for personnel working exclusively in a CAS environment
				14	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	X	Familiarity only for personnel working exclusively in a CAS environment
				15	Operate in Integrated Product and Process Development (IPPD) environment in developing policy, provide guidance within DoD/Industry groups and support development of performance based work statements and definition of performance events.	X	

Environment	Trend	Intention	Competency			Comments
RDT&E	Increased Reliance on Non-DoD Organizations	Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	21	Know DoD's unique technical and facilitation requirements.	X	
			22	Assess the alternative sources and methods most appropriate to handle the requirements not unique to DoD.	X	
		Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	26	Know and understand dual use application of program/item needs and ability to incentivize dual-use focus	X	
			27	Determine the most appropriate agreement, as well as pricing and facility arrangements that will mitigate risk in accordance with regulations, statutes and sound business judgement.	X	
	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	30	Know, understand and be able to operate in an Integrated Product Team (IPT) environment	X	Critical skill
		Perform design tradeoffs earlier in the acquisition process.	33	Evaluate use of the systems engineering process to reduce risk of operational / support problems	X	Familiarity only for personnel working exclusively in a CAS environment
		Apply integrated product and process development.	36	Understand the use of Integrated Product and Process Development (IPPD) in successful acquisition management	X	
		Develop verification/conformance metrics.	37	Be capable of developing strategic, tactical and local metrics within the acquisition process.	X	
			38	Know and understand metric development and linkage to mission/operations and cost implications	X	
	Increased Use of Simulation Based Acquisition (SBA)	Perform analysis on most appropriate SBA program application, select pilot programs.	41	Understand the use of Modeling and Simulation (M&S) across the total life cycle of a system.	X	Familiarity only for personnel working exclusively in a CAS environment
		Apply simulation and modeling techniques.	45	Be capable of using and understanding the basic tenets of modeling and simulation	X	Familiarity only for personnel working exclusively in a CAS environment
			46	Know and understand the types of models (physical, mathematical, logical) and the common pitfalls and limitations.	X	Familiarity only for personnel working exclusively in a CAS environment

Environment	Trend	Intention	Competency			Comments
RDT&E	Increased Use of Simulation Based Acquisition (SBA)	Apply simulation and modeling techniques.	47	Understand the models and simulations associated with the processes of requirements generation, program management, design and engineering, manufacturing, T&E, logistics support and training.	X	Familiarity only for personnel working exclusively in a CAS environment
	Separation of Tech Maturation From Product Development	Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50	Know and understand contingency planning and execution	X	Familiarity only for personnel working exclusively in a CAS environment
		Conduct affordability assessments/analysis.	60	Understand the Cost as an Independent Variable (CAIV) policy concerning the authority of the program manager to make cost and performance tradeoffs	X	Familiarity only for personnel working exclusively in a CAS environment
			61	Know and understand affordability assessment techniques and tools	X	Familiarity only for personnel working exclusively in a CAS environment
		Assess supportability techniques for assessing systems requirements.	72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X	Familiarity only for personnel working exclusively in a CAS environment
		Identify sources and methodologies for technology insertions.	74	Know and understand open architecture discipline, tools, methods to improve aging systems/platforms O&S (specifically for tech insertions)	X	Familiarity only for personnel working exclusively in a CAS environment
		Apply Advanced Concept and Technological Demonstrations (ACTDs) as appropriate during product development.	76	Know and understand the Advanced Concept and Technological Demonstration (ACTD) process and their impact on Life Cycle Cost (LCC).	X	Familiarity only for personnel working exclusively in the CAS environment
	Increased Emphasis On Interoperability As A KPP	Perform a Cost as an Independent Variable (CAIV) analysis.	84	Understand the purpose and general method of execution of Cost as an Independent Variable (CAIV)	X	Familiarity only for personnel working exclusively in the CAS environment
			85	Prepare and defend a Cost as an Independent Variable (CAIV) analysis. Discuss the relationship of CAIV analysis to other cost analyses	X	Familiarity only for personnel working exclusively in the CAS environment
			86	Understand the Cost as an Independent Variable (CAIV) policy concerning the authority of the program manager to make cost and performance tradeoffs	X	Familiarity only for personnel working exclusively in the CAS environment
	Increased Emphasis On Software Development	Develop evaluation and assessment criteria to measure software progress.	92	Know software engineering principles and how it applies through the acquisition life cycle.	X	
		Apply newly developed software evaluation tools.	95	Know evolutionary spiral process as a framework for systems and software development programs.	X	

Environment	Trend	Intention	Competency	D	H	Comments
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	102	Know and understand environmental rules/regulations	X	
			103	Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X	
			104	Know and understand commercial best practices	X	
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105	Know and understand risk assessment methods and measurement tools	X	Critical skill
			106	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	
		Develop streamlining and implementation planning for consolidation.	109	Know and understand organizational processes and measurement	X	
			110	Know and understand personnel policies/procedures to include labor relations/union coordination	X	
		Ensure highest quality staff infrastructure is maintained.	112	Know and understand available training/education resources to include funding/opportunity	X	
	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	114	Know and understand commercial best practices	X	
			116	Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X	
			117	Know and understand benchmarking	X	
			118	Know and understand research methods literature, internet, corporate assets	X	
		Perform business case analysis.	120	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	
		Involve customers early in the acquisition strategy process.	122	Be able to identify and correct potential imbalances in level playing field involved in public-private competitions.	X	Familiarity only for personnel working exclusively in the CAS environment

Environment	Trend	Intention	Competency	D	H	Comments	Notes
O&S	Reengineer the Product Support Process to Use Best Practices	Involve customers early in the acquisition strategy process.	125	Know and understand acquisition process	X		
			126	Know and understand the Planning, Programming and Budgeting System (PPBS)	X		
			128	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers.	X		
		Employ/Develop sourcing strategies that emphasize best value.	129	Know and understand customer requirements	X		
			136	Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault-tree methods for describing and making decisions.	X	Critical skill	
			137	Know and understand current product support processes and interrelationships	X		
			138	Know and understand commercial best practices	X		
			140	Know and understand data analysis to include cost/price/performance tradeoffs In order to achieve affordable readiness.	X	Critical skill	
		Develop performance-based work statements or statements of objectives.	141	Know and understand product/service to be supported	X	Critical skill -- Especially need to be knowledgeable of applications to perform accurate risk assessments	
			142	Know and understand performance-based work statements or statement of objectives development/environment	X	Familiarity only for personnel working exclusively in the CAS environment	
			143	Be able to develop performance metrics to describe customer/acquisition needs and evaluate outcomes.	X		
		Apply technology to enable implementation of reengineered and integrated business processes.	144	Know how to develop strategies for optimizing development over time and resolve uncertainties.	X	Familiarity only for personnel working exclusively in the CAS environment	

Environment	Trend	Intention	Competency			Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	152	Know and understand process change enablers	X	Familiarity only for personnel working exclusively in the CAS environment
			155	Know and understand components of Total Ownership Cost (TOC).	X	Familiarity only for personnel working exclusively in the CAS environment
		Apply integrated supply chain practices.	156	Seek integrated Supply Chain Management (SCM) solutions	X	Familiarity only for personnel working exclusively in the CAS environment
			157	Know and understand ways to apply Single Process Initiative (SPI) to optimize logistics operations.	X	Critical skill
			161	Know and understand Supply Chain Management (SCM) purposes and processes - components and total	X	
			162	Apply Supply Chain Management (SCM) processes/methods to business opportunity/situation	X	Familiarity only for personnel working exclusively in the CAS environment
	Expansion of Prime Vendor/Mutual Prime Vendor/PVF like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	165	Understand the Prime Vendor concept in the DoD acquisition of supplies and services	X	Critical skill
			166	Know and understand commercial practices, including best practices of specific market sector	X	Essential skill for personnel working at Contracting activities -- Familiarity only for personnel working exclusively in the CAS environment
		Tailor the application of best practices to the specific market sector and develop appropriate contractual vehicles.	169	Know and understand commercial best practices	X	Essential skill for personnel working at Contracting activities -- Familiarity only for personnel working exclusively in the CAS environment
			173	Know and understand customer requirements	X	
	Increased Contractor Logistics Support	Develop integrated support strategies.	174	Know and understand common support requirements and tools and ability to leverage those opportunitiesconsolidated design and buying opportunities	X	Familiarity only for personnel working exclusively in the CAS environment
			179	Know and understand sustainment/war reserve requirements	X	Familiarity only for personnel working exclusively in the CAS environment

Environment	Trend	Action	Capacity	Description	Comments	Comments
O&S	Increased Contractor Logistics Support	Develop integrated support strategies.	183	Know and understand sustainment processes/techniques and process interrelationships (specific emphasis on inventory management with a configuration management subset)	X	Familiarity only for personnel working exclusively in the CAS environment
		Develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	185	Create performance-based statements of objectives and incentives for logistics support.	X	Familiarity only for personnel working exclusively in the CAS environment
			186	Know flexible sustainment contracts and how to develop performance events to measure contractor progress.	X	Familiarity only for personnel working exclusively in the CAS environment
	Outsource Equipment Disposal Activities	Conduct capability/environmental assessment.	190	Know how to identify hazardous property and recognize the existence of federal, state and local requirements that may impact on its disposal in accordance with NPA, RCRA, TSDA, FAR AND DFARS.	X	
		Assess contractor's security processes and procedures.	193	Know demilitarization requirements to assure resale of surplus material eliminates potential of hazardous/safety incidents.	X	
	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.	199	Understand and apply past performance in structuring of a solicitation.	X	Familiarity only for personnel working exclusively in the CAS environment
			200	Know and understand current, market-ready commercial practices with end-to-end visibility of inventory.	X	Familiarity only for personnel working exclusively in the CAS environment
	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	214	Know and understand data analysis to include cost/price/performance tradeoffs	X	
			215	Know and understand risk assessment techniques and measurement tools	X	
			221	Know and understand Total Ownership Cost (TOC) variables and impacted areas, to include how to perform tradeoff analyses of capability performance, and life-cycle cost drivers and evaluation.	X	Familiarity only for personnel working exclusively in the CAS environment

Environment	Trend	Intention	Competency	D	H	Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	230	Know and understand life-cycle management processes and phases	X	
			231	Know and understand contingency planning through plan development and implementation	X	Familiarity only for personnel working exclusively in the CAS environment
			232	Know and understand analysis techniques and tools	X	
			233	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	Familiarity only for personnel working exclusively in the CAS environment
			234	Know and understand contract incentives/disincentives through contract completion	X	
	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	235	Know how to access web-based acquisition and work-flow systems.	X	
			236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X	
		Require business partners to apply electronic commerce techniques and tools.	255	Understand DoD electronic commerce policy	X	
			259	Know and understand marketing/selling methods and strategies	X	
	Increase Competitive Sourcing of Services	Determine acquisition strategy (e.g. regional, omnibus).	267	Know and understand strategic planning. Know how to develop acquisition strategy.	X	Familiarity only for personnel working exclusively in the CAS environment
		Conduct Best Value Analysis on services/cost.	271	Know and understand Best Value Analysis and understand how to apply in source selections.	X	Familiarity only for personnel working exclusively in the CAS environment
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	300	Know and understand hardware, software, and network requirements and applications and interoperability	X	
			301	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	
			302	Know and understand electronic commerce system relationship to existing business process and their interrelationships	X	

Environment	Trend	Intention	Criteria	ID	How	Comments
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).		303	How, understand and be able to apply business process reengineering	X
				304	How and understand statutory/regulatory environment	X
				305	How and understand marketing/selling methods and strategies	X
				306	How and understand performance metrics	X
				307	How and understand enterprise resource planning concepts and solutions	X
				308	How and understand commercial electronic commerce processes	X
				309	Develop affordable requirements document for establishing software/hardware architecture for Integrated Digital Environment (IDE)	X
		Use commercial standard reference identification number system to simplify with private and federal sectors (e.g. Central Contractor registration).		310	How and understand unique software requirements and applications	X
				311	How, understand and be able to incorporate standards into paperless operating systems of commercial standard reference identification number system	X
		Apply existing national and international standards, practices and technologies to automate the management and exchange of information.		313	How and understand national and international standards, practices and technologies used to automate and manage and exchange information.	X
	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).		327	How, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	X

Environment	Trend	Intention	Capacity	Description	Comments	Comments
PLA	Security/Proprietary Information	Use adequate security measures (to include protocols) to protect electronic information, as appropriate, and to provide ready access.	330	Know and understand security statutory/regulatory environment	X	
			331	Know and understand adequate security measures	X	
CMI	Increased Commercial Military Integration	Promote use of commercial items	336	Know Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X	Critical skill
	Increased Use of Common Business Practices	Promote use of common business practices	344	Know and understand benchmarking methods and tools	X	
			347	Identify and adapt common and/or better practices.	X	
			348	Know and understand warranties/guarantees and ability to synthesize into Government system	X	
			349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X	
	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Coordinate supply chain requirements (consider and integrate all phases in manufacturing flow).	364	Be able to develop and evaluate Supply Chain Management (SCM) options for CMI	X	
	Extend MILSPEC/MILSTANDARD Reform to Re-procurements	Reduce MILSPEC/MILSTANDARDS in reprocurements	372	Manage multiple configurations.	X	Familiarity only for personnel working exclusively in the CAS environment
N	Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate	384	Perform risk analysis.	X	Critical skill
	Flexible User Requirements	Participate in development of user requirements.	392	Perform risk analysis.	X	
			396	Perform Risk Based Surveillance	X	Critical skill
			397	Know and understand user and joint operating requirements	X	Essential for performing accurate risk assessments.
			399	Know, understand and be able to operate in Integrated Product Team (IPT) environment	X	Critical skill

Environment Trend	Intention	Competency	D	H	Comments	Notes
Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	425	Apply modeling and simulation techniques.	X	Familiarity only for personnel working exclusively in the CAS environment	
Increased Use of Performance Based Contracting	Capitalize on opportunities to develop performance based solicitations for products and services.	430	Develop performance expectations incentives and metrics to describe acquisition needs and evaluate outcomes	X	Familiarity only for personnel working exclusively in the CAS environment	
Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	435	Know and understand the Integrated Product Team (IPT) environment	X	Critical skill	
		443	Maintain open communications through all phases of the life cycle.	X	Critical skill	

Total Number of Competencies 1

Appendix K6Contracting Career Field Narrative

INTRODUCTION

Our discussion of competencies does not reflect the fact that different career levels will exhibit the competencies to varying degrees. Further, the Contracting career field is not monolithic. For example, specific skills needed to work on major systems may not be needed in R&D offices, construction contracts, or other subspecialties within the Contracting career field.

SUMMARY OF VITAL COMPETENCIES

This section discusses the competencies determined to be critical because of their importance to the future, all encompassing nature, or "newness" to the Contracting career field.

- **Market research.** This will go beyond the identification of potential sources to include a deeper understanding of the technical aspects of the goods and services to be bought. The characteristics of the market in which these goods and services are commercially bought and sold will have to be well understood if we are to adopt a more user-friendly, commercial approach to contracting.

- **Pricebased acquisition.** Contracting personnel will need strong skills in price analytical techniques (e.g., parametric analysis in large complex situations) since certified cost data is not usually provided in support of proposals in private sector cases. Alternate techniques in establishing the reasonableness of price, particularly in sole source situations, will have to be adopted.

- **Role of past performance in solicitations.** Contracting personnel, working with their colleagues in the technical community, will have to become increasingly effective in their use of past performance as a source selection criterion. Skills in determining sources of such information, as well as assessments of its worth (e.g., more objective or more subjective), will be essential.

- **Information Technology (IT)Electronic Data Interchange.** Contracting specialists of the future will work almost exclusively in an electronic environment. It is essential they be both comfortable and skilled in the use of IT in conducting business. This will involve not only the electronic interaction of government and industry, but also the use of electronic tools (e.g., the Internet) for internal analysis.

- **Other transactions.** New firms propelling the leading edge of technology may have little or no experience in dealing with the government. They may not be so inclined to seek government work due to perceptions of the intrusive nature of government and the relatively lower profit margins. As a result, future contract

specialists will have to employ innovative techniques (e.g., use of "other transactions") which require special skills both to draft and administer.

- **Performancebased contracting.** The use of detailed government specifications and statements of work will continue to decline. Instead, personnel will require specialized skills to write performance-based contracts that will include objectives with a measurable performance standard and incentives for better performance.

IMPACT OF GLOBAL TRENDSF UNCTIONAL TRENDS

This section discusses trends which will critically impact what the Contracting career field personnel will have to know or how they will have to operate in the future.

- **Smaller orkforce.** There will be fewer people to do the work, which may negatively impact the depth of analysis of proposals and the extent of market research. At the same time, higher quality work is expected.

- **Joint orkforce.** Participants (and their home organizations) may have to suspend service loyalty to maximize effective acquisition.

- **Older orkforce.** They tend to be more conservative, as well as highly expert, in the contracting function. They will have to be persuaded to adopt new approaches (in pricing, formation, administration, etc.) by sound, reasonably objective arguments, rather than slogans.

- **Fewr Military.** This mainly affects the Air Force where enlisted military make smaller purchases. Civilians may also have to play a greater role in contingency contracting operations, now mostly manned by the military.

- **More generalists.** The trend toward more generalists should not be allowed to impact the primary technical function of the contracting career field.

- **Knowledge management.** This will help (and may be essential) as workforce size diminishes. This will require input by knowledgeable managers.

- **Crossfunctional teaming.** The last section of this narrative addresses this area.

- **Competitive sourcing.** If this area significantly increases, contracting personnel throughout the career field will need greater skill in applying A-76 techniques (e.g., how to maintain a level playing field in source selections).

VISION

Based on the global and functional trends just discussed, the Contracting career field of 2005 will be comprised of a professional corps of acquisition leaders who are dedicated to equipping the force in the 21st Century. They will set a standard of excellence in business management thoroughly integrated in performing the acquisition mission. They will need to be well educated and sufficiently knowledgeable of the roles of the other functional components in the acquisition system to operate on a well-integrated team. As we

reduce the application of government-unique rules and requirements in business dealings, and begin to operate more like commercial firms, we need to expand our skills in enhanced market research (i.e., beyond the mere identification of sources), price analytical techniques that do not rely on certified cost data, and IT as a tool to more effectively accomplish techniques (e.g., use "other transactions") to attract more high quality vendors to our marketplace.

IMPROVEMENTS RECOMMENDATIONS

To achieve the above career field vision, the following actions need to be taken:

- **Legislative changes** to DAWIA and Title 5 to require at least an undergraduate degree from an accredited institution for entry into the 1102 series.
- **Congressional hold** on further reductions to the acquisition workforce.
- **Identify legitimate functions** for which and in which contracting professionals could obtain broadening, developmental experience (i.e., most contracting professionals could not be engineers and vice versa).
- **Identify and offer development programs** that support the leadership elements of the vision statement.
- **Select best qualified personnel**; do not depend solely upon application pool
- **Ability to backfill positions left vacant for longterm training** .
- **Ability to support midlevel managers while personnel are out for training** .

BARRIERS

This section lists any statutes, policies or cultural barriers to making the improvements and changes discussed above.

- **Failure of some participants** (e.g., user community, comptroller) to recognize their role in the acquisition process.
- **Competition in Contracting Act** (as it currently exists) hinders employing supply chain management. Long term commitments to a vendor may run counter to the notion of full and open competition -or even efficient competition.
- **Lack of familiarity with functional competencies** and a lack of appreciation for the need to retain and promote functional expertise.
- **Lack of demonstrated buyin from senior leaders.** Some are unconvinced new reform initiatives represent a significant improvement over the pre-AR acquisition process. This results in a lack of willingness to commit resources.
- **OPM reluctance to approve degree requirement.**

- **Lack of training account** (similar to Army's Transient, Training, Holding & Student account) in civilian staffing model precludes supporting those workers who are in developmental/educational activities.

- **Requirement to invest in programs with no obvious or measurable outcomes**.

- **Smaller workforce may not be less expensive** because the fewer workers must become more knowledgeable and productive translating into higher pay.

INTERPLAY WITH OTHER CAREER FIELDS

There is a growing recognition by the entire acquisition workforce that acquisition, to be most effective, must be an integrated activity. Early involvement of team members, whose training permits them to communicate reasonably well with each other, will minimize future problems. Problems tend to result from the lack of awareness by one functional component of the negative impact of a proposed course of action on another functional component. Contracting specialists need to be involved early in the creation of a procurement request, which will involve interaction with most of the other functional specialties. This will be invaluable both in contract formation and administration.

Environment	Trend	Action	Competency		DAU	Comments
RDT&E	Consolidation (Centers of Excellence)	Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).	2	Use tradeoff analyses to assess most appropriate consolidation recommendations.	X	Familiarity for contracting people in an R&D environment
			3	Know and understand service capabilities/core competencies	X	Familiarity for contracting people in an R&D environment
			4	Know critical elements contained in a Business Case Analysis (BCA) in order to justify sound business outcomes.	X	
		Develop streamlining and implementation planning for consolidation.	6	Know and understand joint and service strategic planning and requirements process; assess impact of consolidation options	X	Familiarity for contracting people in an R&D environment
			8	Know and understand the Planning, Programming and Budgeting System (PPBS) and DoD monetary policies and procedures; Assess fiscal impacts and synthesize consolidation options	X	Familiarity for contracting people in an R&D environment
		Operate in a Multi-Service Environment.	12	Identify, select, and follow relevant procurement rules of multi-service participants	X	
			14	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	X	Familiarity for contracting people in an R&D environment
			15	Operate in Integrated Product and Process Development (IPPD) environment in developing policy, provide guidance within DoD/Industry groups and support development of performance based work statements and definition of performance events.	X	
	Increased Reliance on Non-DoD Organizations	Conduct market research/analysis of the national base of technology.	17	Understand basic market research techniques	X	
			19	Understand sector pricing practices	X	Familiarity for contracting people in an R&D environment

Environment	Trend	Intention	Competency	D	C	Comments
RDT&E	Increased Reliance on Non-DoD Organizations	Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	24	Evaluate the individual situation and select the appropriate contracting or assistance vehicle	X	
			25	Understand the applicability and advantages of the various contracting or assistance vehicles.	X	
			26	Know and understand dual use application of program/item needs and ability to incentivize dual-use focus	X	Familiarity for contracting people in an R&D environment
			27	Determine the most appropriate agreement, as well as pricing and facility arrangements that will mitigate risk in accordance with regulations, statutes and sound business judgement.	X	Facility arrangements are not part of the contracting competency
	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	30	Know, understand and be able to operate in an Integrated Product Team (IPT) environment	X	
		Develop verification/conformance metrics.	38	Know and understand metric development and linkage to mission/operations and cost implications	X	Familiarity for contracting people in an R&D environment
			39	Integrate verification/performance metrics into the appropriate contracting or assistance vehicle.	X	
	Increased Use of Simulation Based Acquisition (SBA)	Perform analysis on most appropriate SBA program application, select pilot programs.	41	Understand the use of Modeling and Simulation (M&S) across the total life cycle of a system.	X	Familiarity for contracting people in an R&D environment
		Apply simulation and modeling techniques.	47	Understand the models and simulations associated with the processes of requirements generation, program management, design and engineering, manufacturing, T&E, logistics support and training.	X	Familiarity for contracting people in an R&D environment
	Separation of Tech Maturation From Product Development	Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50	Know and understand contingency planning and execution	X	Familiarity for contracting people in an R&D environment
		Develop realistic Technology Transition Plans.	54	Convert Technology Transition Planning into effective and executable contract language	X	
		Conduct affordability assessments/analysis.	60	Understand the Cost as an Independent Variable (CAI)/policy concerning the authority of the program manager to make cost and performance tradeoffs	X	Familiarity for contracting people in an R&D environment

Environment	Trend	Intention	Competency	Description	Comments	Comments
RDT&E	Separation of Tech Maturation From Product Development	Assess supportability techniques for assessing systems requirements.	72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X	Familiarity for contracting people in an R&D environment
	Increased Emphasis On Interoperability As A RP	Develop systems using International Interoperability Standards.	77	Understand the increased emphasis of interoperability as a Key Performance Parameters (RP) and ensure it is reflected in the solicitation	X	Familiarity for contracting people in an R&D environment
			78	Negotiate in the international political and business practice environments	X	
		Perform a Cost as an Independent Variable (CAIV) analysis.	84	Understand the purpose and general method of execution of Cost as an Independent Variable (CAIV)	X	Familiarity for contracting people in an R&D environment
	Increased Emphasis On Software Development	Apply parametric analysis for estimating cost.	93	Know and understand parametric analysis and ability to perform and analyze resulting data	X	
			94	Understand parametric analyses and construct these analyses to support bid and solicitation development	X	
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	102	Know and understand environmental rules/regulations	X	Familiarity only
			103	Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X	There seems to be something missing from this competency
			104	Know and understand commercial best practices	X	
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105	Know and understand risk assessment methods and measurement tools	X	Familiarity only
		Develop streamlining and implementation planning for consolidation.	109	Know and understand organizational processes and measurement	X	Familiarity only
			110	Know and understand personnel policies/procedures to include labor relations/union coordination	X	Familiarity only
	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	114	Know and understand commercial best practices	X	

Environment	Trend	Intention	Competency D	C	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	116 Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X	
			117 Know and understand benchmarking	X	Familiarity only
			118 Know and understand research methods literature, internet, corporate assets	X	Familiarity only
		Involve customers early in the acquisition strategy process.	122 Be able to identify and correct potential imbalances in level playing field involved in public-private competitions.	X	
			123 Know and understand strategic planning	X	Familiarity only
			125 Know and understand acquisition process	X	
			126 Know and understand the Planning, Programming and Budgeting System (PPBS)	X	
			127 Know and understand requirements forecasting techniques & process	X	Familiarity only
			128 Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers.	X	
		Employ/Develop sourcing strategies that emphasize best value.	129 Know and understand customer requirements	X	
			130 Know and understand contracting options available	X	
			131 Ability to develop performance-based work statements or statements of objectives.	X	
			132 Understand and use A-76 techniques for competitive sourcing using best value (Assume A-76 revised to permit best value selection)	X	Applies only to contracting personnel involved in A-76 cases
			133 Know and understand negotiations/plans and execution	X	
			134 Select and apply selected contracting vehicle	X	
			136 Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault-tree methods for describing and making decisions.	X	Familiarity only

O&S	Reengineer the Product Support Process to Use Best Practices	Employ/Develop sourcing strategies that emphasize best value.	137	Know and understand current product support processes and interrelationships	X	Familiarity only
			138	Know and understand commercial best practices	X	
			139	Know and understand partnering/alliance opportunities/execution	X	Familiarity only
			140	Know and understand data analysis to include cost/price/performance tradeoffs In order to achieve affordable readiness.	X	Familiarity only
		Develop performance-based work statements or statements of objectives.	141	Know and understand product/service to be supported	X	
			142	Know and understand performance-based work statements or statement of objectives development/environment	X	
		Apply technology to enable implementation of reengineered and integrated business processes.	145	Know and understand technology use in commercial /government operations	X	Familiarity only
		Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	148	Know and understand financial constraints	X	
			149	Know and understand environmental barriers (regulatory/statutory)	X	Familiarity only
			150	Know and understand possible incentives available	X	Familiarity only
			153	Know and understand life-cycle management processes and phases	X	Familiarity only
			154	Know how to identify and incorporate appropriate contractual requirements and incentives.	X	
			155	Know and understand components of Total Ownership Cost (TOC).	X	Familiarity only
			445	Know government financial management rules, regulations and processes	X	

Environment	Trend	Intention	Competency	D	C	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Apply integrated supply chain practices.	159	Know and understand alternative sourcing options	X	
			160	Know and understand Supply Chain Management (SCM) evaluation/measurement models	X	Familiarity only once the concept has been better defined
			161	Know and understand Supply Chain Management (SCM) purposes and processes - components and total	X	Familiarity only once the concept has been better defined
			162	Apply Supply Chain Management (SCM) processes/methods to business opportunity/situation	X	Familiarity only once the concept has been better defined
	Expansion of Prime Vendor/Virtual Prime Vendor/PVP-like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	163	Know and understand applicable markets and market interrelationships, including markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies	X	
			164	Know how to develop appropriate contractual vehicles to implement Prime Vendor/Virtual Prime Vendor arrangements	X	
			166	Know and understand commercial practices, including best practices of specific market sector	X	
			167	Know and understand market research methods	X	
		Tailor the application of best practices to the specific market sector and develop appropriate contractual vehicles.	169	Know and understand commercial best practices	X	
			172	Know and understand data analysis to include cost/price/performance tradeoffs	X	
			173	Know and understand customer requirements	X	
	Increased Contractor Logistics Support	Develop integrated support strategies.	174	Know and understand common support requirements and tools and ability to leverage those opportunities consolidated design and buying opportunities	X	
			176	Know and understand organic and commercial options available	X	Familiarity only
			177	Know and understand contract oversight techniques and tools	X	

Environment	Trend	Action	Competency		Comments
O&S	Increased Contractor Logistics Support	Develop integrated support strategies.	178 Know and understand mission application and operating environment	X	Familiarity only
			180 Know and understand commercial inventory management processes/techniques	X	Familiarity only
			181 Analyze market research/customer requirements/sourcing strategies to synthesize best value Contractor Logistics Support (CLS) solutions	X	Familiarity only
			182 Know and understand alternative logistic support risks, costs, and performance in development of integrated support strategies and tools.	X	Familiarity only
			183 Know and understand sustainment processes/techniques and process interrelationships (specific emphasis on inventory management with a configuration management subset)	X	Familiarity only
		Develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	184 Know how to develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	X	Familiarity only
			185 Create performance-based statements of objectives and incentives for logistics support.	X	
			186 Know flexible sustainment contracts and how to develop performance events to measure contractor progress.	X	
	Outsource Equipment Disposal Activities	Conduct capability/environmental assessment.	187 Know and understand commercial marketplace capabilities	X	
			188 Know and understand A-76 policies and processes	X	Familiarity for those in A-76 cases
			191 Know and understand environmental regulations and cost assessments.	X	
			192 Know and understand government disposal policy and procedures	X	Familiarity only
		Assess contractor's security processes and procedures.	194 Know and understand statutory/regulatory security policy/procedures	X	Familiarity only

Environment	Trend	Action	Competency	D	C	Comments
O&S	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.	197 Know and understand contract oversight techniques and tools	X		
			198 Analyze market research/customer requirements/sourcing strategies to synthesize best value Vendor Managed Inventories/Direct Vendor Delivery solutions	X		Familiarity only
			199 Understand and apply past performance in structuring of a solicitation.	X		
			200 Know and understand current, market-ready commercial practices with end-to-end visibility of inventory.	X		Familiarity only
			201 Know and understand market research methods and tools	X		
		Monitor and track business volume information outside of DoD ownership.	205 Analyze and interpret business volume information to evaluate organic and industry total system performance	X		Familiarity only
			206 Know and understand shift to commercial practices business processes	X		Familiarity only
	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	207 Know and understand life-cycle management processes and phases	X		Familiarity only
			208 Understand Cost as an Independent Variable (CAIV)	X		Familiarity only
			210 Know and understand contracting options available	X		Familiarity only
			212 Know and understand weapon system/platform mission/operating environment	X		Familiarity only
			213 Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X		Familiarity only
			214 Know and understand data analysis to include cost/price/performance tradeoffs	X		Familiarity only
			215 Know and understand risk assessment techniques and measurement tools	X		Familiarity only

Environment	Trend	Action	Competency		C	Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	218	Know and understand commercial Total Ownership Cost (TOC) and life-cycle practices and tools	X	Familiarity only
			219	Know and understand the Planning, Programming and Budgeting System (PPBS) and defense fiscal management policies and practices	X	Familiarity only
			221	Know and understand Total Ownership Cost (TOC) variables and impacted areas, to include how to perform tradeoff analyses of capability performance, and life-cycle cost drivers and evaluation.	X	Familiarity only
		Develop or modify oversight processes and analysis tools.	222	Know cost estimating methods.	X	
			224	Know and understand commercial industry analysis tools and oversight processes	X	Familiarity only
			225	Know cost models, contractor systems and process risks.	X	Familiarity only
		Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	230	Know and understand life-cycle management processes and phases	X	Familiarity only
			231	Know and understand contingency planning through plan development and implementation	X	Familiarity only
			232	Know and understand analysis techniques and tools	X	Familiarity only
			233	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	
			234	Know and understand contract incentives/disincentives through contract completion	X	
	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X	
		Use purchase card as method of payment where appropriate.	246	Know the appropriate use of purchase cards	X	

Environment	Trend	Intention	Competency	D	C	Comments	Notes
O&S	Use of Electronic commerce and Other Information Technology	Require business partners to apply electronic commerce techniques and tools.	255	Understand DoD electronic commerce policy	X		
			446	Understand DoD policy regarding CCR, SPS, and EFT	X		
	Increase Competitive Sourcing of Services	Determine appropriateness of competitive sourcing (inherently governmental).	261	Know and understand competitive sourcing processes and procedures, including A-76 process and procedures	X	Applies only to those with a need to know A-76 processes	
			262	Understand the characteristics of inherently governmental functions.	X		
		Determine acquisition strategy (e.g. regional, omnibus).	267	Know and understand strategic planning. Know how to develop acquisition strategy.	X	Familiarity only	
		Perform a support service capability assessment (including government capability).	269	Know and understand support service capability assessment	X		
		Conduct Best Value Analysis on services/cost.	271	Know and understand Best Value Analysis and understand how to apply in source selections.	X		
		Consider Small Business Issues.	279	Understand potential bundling issues and alert program manager.	X		
PBA	Revision of Government Cost accounting Standards	Operate in an environment where commercial accounting standards apply.	281	Understand commercial cost accounting standards.	X		
			283	Apply commercial accounting standards where appropriate and possible	X		
	Longer Term Contractual Relationships	Perform analysis and determine the value of longer term contractual relationships.	286	Acquire detailed knowledge of the business sector(s). See market research.	X		
		Establish long term contractual relationships (not limited to multi-year contracts for individual items/systems) where appropriate (e.g. CICA).	287	Understand the limitations imposed by the Competition in Contracting Act (CICA).	X		
	Increased Reliance on Price Analysis Versus Cost Analysis	Perform basic and advanced price-based and technology-based market analysis and research.	289	Understand and employ price-based analytical techniques.	X		

Environment	Trend	Function	Opt.	Key Competency	C	Comments
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	301	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	
			302	Know and understand electronic commerce system relationship to existing business process and their interrelationships	X	Familiarity only
			303	Know, understand and be able to apply business process reengineering	X	Familiarity only
			304	Know and understand statutory/regulatory environment	X	
			306	Know and understand performance metrics	X	Familiarity only
			307	Know and understand enterprise resource planning concepts and solutions	X	Familiarity only
			308	Know and understand commercial electronic commerce processes	X	Familiarity only
	Achieve Paperless Contracting	Use electronic mediums to create, store, display, retrieve and modify contractual material.	314	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	
			315	Know and understand commercial electronic commerce processes	X	Familiarity only
			319	Understand the latest version of the Standard Procurement System	X	
		Use electronic mediums for electronic payments.	322	Know and understand electronic mediums for electronic payment.	X	Familiarity only
			323	Know and understand strengths and weaknesses of integration	X	
			324	Recognize Government and commercial cultures to effectively educate/market/encourage commercial participation	X	
		Use purchase cards, electronic catalogs, electronic commerce and imaging.	325	Recognize statutes, rules, policies, and procedures.	X	
			326	Recognize when to apply electronic commerce	X	

Environment	Trend	Intention	Competency		C	Comments
PLA	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	327	Know, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	X	Familiarity only
			328	Recognize data management sources	X	
CMI	Increased Commercial Military Integration	Promote use of commercial items	333	Perform advanced market research of commercial and military products	X	
			334	Know, understand and be able to understand benefits of opportunities of using/transitioning to commercial items where available.	X	Familiarity only
			335	Know and understand commercial and MILSPEC systems and specific sector practices; ability to develop solutions and deconflict to eliminate military specifications where commercial products and practices fulfill the requirement	X	Familiarity only
			336	Know Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X	
			339	Analyze/challenge requirement in order to accept commercial items.	X	Familiarity only
			340	Develop and maintain knowledge of the commercial/industrial/academic sectors.	X	Familiarity only
		Participate in sector activities (e.g. professional associations)	341	Know and understand sector resources, activities, world-class practices, processes, technologies, and integration impediments.	X	Familiarity only
			342	Be able to synthesize Government and commercial cultures to effectively educate/market/encourage commercial participation in CMI	X	Familiarity only
	Increased Use of Common Business Practices	Promote use of common business practices	344	Know and understand benchmarking methods and tools	X	Familiarity only
			348	Know and understand warranties/guarantees and ability to synthesize into Government system	X	Familiarity only
			349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X	Familiarity only

Environment	Trend	Intention	Competency	D	C	Comments	Notes
CMI	Increased Use of Common Business Practices	Promote use of common business practices	350	Perform advanced market research of commercial and military products.	X		
	Employ Common Technology Bases	Participate in technology sector activities.	355	Know and understand dual-use application of program/item needs and ability to incentivize dual-use focus	X	Familiarity only	
	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Employ flexible manufacturing	359	Know and understand agile manufacturing	X	Familiarity only	
	Extend MILSPEC/MILSTANDARD Reform to Re-procurements	Reduce MILSPEC/MILSTANDARDS in reprocurements	366	Know, understand and be able to determine if CMI or military spec is applicable safety/health/mission needs	X	Familiarity only	
			367	Develop sources as required.	X	Familiarity only	
			368	Know and understand quality and testing needs/requirements	X	Familiarity only	
			369	Know and understand customer requirements	X		
			370	Perform market analyses.	X	Familiarity only	
N	Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate	385	Know and understand spiral development on resourcing and supportability (funding, sustainment)	X	Familiarity only	
			388	Analyze and evaluate requirements for validity of evolutionary and incremental acquisitions	X	Familiarity only	
	Flexible User Requirements	Participate in development of user requirements.	392	Perform risk analysis.	X	Familiarity only	
			399	Know, understand and be able to operate in Integrated Product Team (IPT) environment	X		
	Technology Refreshment of Systems (Modernization through Spares)	Develop performance based specifications	409	Evaluate performance-based work statements and advise program office as appropriate	X		
	Increased Scope of Other Transactions	Expand use and scope of other transactions	411	Apply appropriate post-award oversight techniques.	X		
			412	Know OT unique characteristics.	X		
			416	Understand, evaluate and recommend the appropriate Other Transaction.	X		

Environment Trend	Intention	Competency D	C	Comments
N Increased Scope of Other Transactions	Expand use and scope of other transactions	417 Comprehend and apply requirements of other transactions	X	
		418 Define, select and adapt terms to the specific agreement.	X	
		419 Know the components of an 'Other Transaction'	X	
		420 Perform advanced market research.	X	
Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	422 Know and understand best value methods and tools to synthesize best value options based on tradeoff	X	Familiarity only
		423 Develop performance based solicitation.	X	
		426 Perform business analysis to include impact on force structure.	X	
Increased Use of Performance Based Contracting	Capitalize on opportunities to develop performance based solicitations for products and services.	429 Apply performance based contracting methodologies	X	
		430 Develop performance expectations incentives and metrics to describe acquisition needs and evaluate outcomes	X	
		432 Know and understand common business practices	X	
		433 Know and understand world-class sector practices processes and technologies (e.g. Single Process Initiative (SPI)).	X	Familiarity only
Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	437 Be able to synthesize Government and commercial cultures to effectively educate/market/encourage collaboration between user and acquisition communities	X	
		438 Know and understand collaboration impediments	X	
		443 Maintain open communications through all phases of the life cycle.	X	

Attributes of Competencies

Appendix K7Business,Cost Estimating,Financial Management BCEFM)Career Field Narrative

INTRODUCTION

The business, cost estimating, financial management (BCEFM) workforce in 2005 will need to concentrate more on business process reengineering, commercial practices, contract administration, program management, integration, teaming, and leadership/management skills.

There will be less stovepipes or walls between the functional career fields. Engineers, logisticians, contract administrators, and business managers/cost estimators will be integrated into one team focused on managing the efforts in an integrated fashion throughout the entire process.

SUMMARY OF VITAL COMPETENCIES

The BCEFM working group did not identify new competencies. Existing BCEFM competencies cover those functions necessary to execute the future trends. Nevertheless, the BCEFM workforce could make significant contributions to particular trends in the following areas:

- **Increased contractor logistics support, and increased use of vendor-managed inventory, direct vendor delivery, and timedefinite delivery** . Important competencies include understanding commercial logistics support practices, commercial contracting for logistics support, Government contracting for contractor logistics support, market research and business case analyses, criteria to determine best value contractor logistics support practices, and knowledge of inventory and configuration management. These competencies are important because they impact cost estimation, budgeting, financial management, and total ownership costs.

- **Separating technical maturation from product development.** Important competencies include understanding technology transition planning, tools to evaluate and insert best-value options into technical transition plans, and understanding the advanced concept technology demonstration process and its impact on life cycle cost. Training in these areas can give the BCEFM workforce the background to produce more effective cost estimates, adequate funding, and total ownership cost reduction opportunities.

- **Integrated digital environment.** Important competencies include knowledge of electronic commerce system relationships to existing business processes and their interrelationships, hardware/software/network requirements, applications

and interoperability, and knowing how to develop an affordable requirements document for establishing software/hardware architecture for an integrated digital environment. Training in these areas can again give the BCEFM workforce the background to produce more effective cost estimates, adequate funding, and total ownership cost reduction opportunities. In addition it can give the workforce tools to reengineer cost estimating and financial management practices.

IMPACT OF GLOBAL TRENDSF UNCTIONAL TRENDS

This section discusses trends that will critically impact what the BCEFM career field personnel will have to know or how they will have to operate in the future.

- **Smaller, more joint workforce.** As the workforce downsizes, knowledge of business skills and contracting principles are two competencies that a majority of the workforce will be required to know. Knowledge of PPBS and hiring of support contractors and the rules governing management of the contract and contractor personnel is something not all workforce members are familiar with. As well, with downsizing and centralization of the procurement workforce, program offices are having to train their employees on contracting principles to be able to discuss/understand contracting matters in an IPT.

- **Cross Functional Teaming.** More significant decisions will be made in IPTs. The BCEFM workforce will need to know more about contracts (e.g., contracts for price based acquisition), technical subjects (e.g., modeling and simulation, block upgrades, software development), and their relationships to budgeting and program management.

VISION

Today's BCEFM career field consists of a majority of government functionals doing either cost estimating, financial management, or earned value management. In some cases, however, a functional person may be doing at least two of the three functions. As downsizing continues, there will be fewer functionals performing these tasks and more managers managing the efforts of support contractors performing the tasks.

Although today's environment pushes IPTs with functionals working together, there is still a distinction of jobs and who should be performing them. As we move to the future, all functionals must work harder as a team accomplishing the mission in its entirety. There will be less stovepipes or walls between the functional career fields. Engineers, logisticians, contract administrators, and business managers/cost estimators will be integrated into one team focused on managing the efforts in an integrated fashion throughout the entire process.

By 2005, most training will need to concentrate more on business process reengineering, commercial practices, contract administration, program management, integration, teaming, and leadership and management skills.

IMPROVEMENTS RECOMMENDATIONS

vision should be towards an integrated manager and not on stove piped career field experts. Training should be geared to all functional disciplines. The BCEFM workforce needs training opportunities in commercial practices, contract administration, program management, integration, teaming, technical areas, and leadership and management skills. If the additional training is going to be assignment specific and not required for certification, supervisors must be rated on the training opportunities they allow for their staff. In addition, offering the BCEFM workforce promotion and financial incentives can inspire the workforce to take additional training.

BARRIERS

This section lists any statutes, policies, or cultural barriers to making the improvements and changes discussed above.

- **Existing Policies.** DAWIA Policies require Service Career Managers to identify all workforce members and positions as a specific career field. These stovepipes are not in line with future movement of government.

- **Supervisor Reluctance to Allow Staff to Attend Training.** The Secretary of Defense and Undersecretary of Defense (Acquisition Technology & Logistics) must convince supervisors of the high priority to train the workforce in other functional disciplines. Promotion and financial incentives can inspire supervisors to allow their staff to attend training.

INTERPLAY WITH OTHER CAREER FIELDS

Relationships with other career fields is fairly strong with the use of IPTs. It could be better with the members being better informed of PPBES and cost estimating principles. Understanding how to plan, estimate, program, budget and execute resources is key to the success of providing material and services to the warfighter. Of the future acquisition trends addressed, knowledge of the business area is highlighted in many of the competencies identified. Although no new competencies were identified for the BCEFM career field, "new" business competencies were identified by other career fields. It is felt that current BCEFM training may adequately cover the "new" competencies identified. Availability of the BCEFM training to the other career fields can be accomplished if the Chairs of the Functional IPTs plan and budget how to make their respective training available to each other's workforce. All career fields should identify more business training for their workforce members.

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Environmt	Tend	Intion	Cpteny	D	K		Cmt Nes
RDT&E	Consolidation (Centers of Excellence)	Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).		1	Analyze and evaluate different categories of data such as cost and technical capabilities. Analyze business data to determine its adequacy and impact on consolidation of RDT&E organizations.	X	Cover cost estimating methodologies
				2	Use tradeoff analyses to assess most appropriate consolidation recommendations.	X	
				3	Know and understand service capabilities/core competencies	X	Basic understanding only
				4	Know critical elements contained in a Business Case Analysis (BCA) in order to justify sound business outcomes.	X	
				447	Identify when to use Cost as an Independent Variable (CAIV)	X	
		Develop streamlining and implementation planning for consolidation.		5	Use Business Case Analysis (BCA) to assess effectiveness of the economies of budgeting inherent government functions or centers of excellence and service contracting in the business sector.	X	
				6	Know and understand joint and service strategic planning and requirements process; assess impact of consolidation options	X	
				8	Know and understand the Planning, Programming and Budgeting System (PPBS) and DoD monetary policies and procedures; Assess fiscal impacts and synthesize consolidation options	X	
				9	Know effective streamlining and implementation planning documentation	X	
				448	Describe the Congressional budget approval process	X	
		Operate in a Multi-Service Environment.		10	Know and understand RDT&E process; evaluate consolidation/process change options; synthesize win-win solutions	X	Basic understanding only

Environment	Trend	Intention	Opteny	D	K	Comments	Notes
RDT&E	Consolidation (Centers of Excellence)	Operate in a Multi-Service Environment.	11	Know and understand virtual RDT&E resources/network applications; ability to assess applicability and determine best consolidation applications	X	Basic understanding only	
			12	Identify, select, and follow relevant procurement rules of multi-service participants	X	Basic understanding only	
			13	Know and understand how to function in a Multi-Service environment.	X		
			15	Operate in Integrated Product and Process Development (IPPD) environment in developing policy, provide guidance within DoD/Industry groups and support development of performance based work statements and definition of performance events.	X		
	Increased Reliance on Non-DoD Organizations	Conduct market research/analysis of the national base of technology.	19	Understand sector pricing practices	X	Cover cost estimating methodologies	
		Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	21	Know DoD's unique technical and facilitation requirements.	X	Basic understanding only	
		Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	26	Know and understand dual use application of program/item needs and ability to incentivize dual-use focus	X		
			27	Determine the most appropriate agreement, as well as pricing and facility arrangements that will mitigate risk in accordance with regulations, statutes and sound business judgement.	X		
	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	30	Know, understand and be able to operate in an Integrated Product Team (IPT) environment	X		
		Perform design tradeoffs earlier in the acquisition process.	32	Know, understand and be able to assess design tradeoffs	X		
			33	Evaluate use of the systems engineering process to reduce risk of operational / support problems	X		
			449	Identify when to use Cost as an Independent Variable (CAIV)	X		

Environment	Trend	Intention	Opteny	D	K		Comments
RDT&E	Early Involvement of Operational Test and Evaluation	Apply integrated product and process development.	36	Understand the use of Integrated Product and Process Development (IPPD) in successful acquisition management		X	
		Develop verification/conformance metrics.	38	Know and understand metric development and linkage to mission/operations and cost implications		X	Include linkage to budget implications also
	Increased Use of Simulation Based Acquisition (SBA)	Perform analysis on most appropriate SBA program application, select pilot programs.	40	Know and understand potential DoD/Service growth areas for application of Simulation Based Acquisition (SBA) and Modeling (specifically O&S)		X	Basic understanding only.
			41	Understand the use of Modeling and Simulation (M&S) across the total life cycle of a system.		X	
		Use SBA to identify and simulate design issues and risks.	43	Understand the factors that make up the simulation model and verify that logical and statistical relationships exist.		X	
			44	Understand and determine how to apply Modeling and Simulation (M&S) when conducting performance studies, effectiveness studies, tradeoff analysis, risk analysis, sensitivity analysis and cost analysis.		X	Basic understanding only
		Apply simulation and modeling techniques.	45	Be capable of using and understanding the basic tenets of modeling and simulation		X	Basic understanding only
			46	Know and understand the types of models (physical, mathematical, logical) and the common pitfalls and limitations.		X	Basic understanding only
			47	Understand the models and simulations associated with the processes of requirements generation, program management, design and engineering, manufacturing, T&E, logistics support and training.		X	Basic understanding only
	Separation of Tech Maturation From Product Development	Perform S&T strategic planning.	48	Know and understand future technological advances that can be incorporated into system development programs.		X	Basic understanding only -- Recommend including an understanding of the PPBS
			450	Create an integrated program schedule		X	
		Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50	Know and understand contingency planning and execution		X	Basic understanding only

Environment	Trend	Intention	Criteria	Criteria Description	K	Comments
RDT&E	Separation of Tech Maturation From Product Development	Develop realistic Technology Transition Plans.	56	Know and understand technology transition planning/strategy and ability to assess/evaluate and synthesize best-value options into Technology Transition Plans	X	
		Conduct affordability assessments/analysis.	59	Be able to do parametric analyses	X	
			60	Understand the Cost as an Independent Variable (CAIV) policy concerning the authority of the program manager to make cost and performance tradeoffs	X	
			61	Know and understand affordability assessment techniques and tools	X	
		Assess cost/schedule risk and influence on design.	63	Know, understand and be able to perform/evaluate cost/schedule risk assessments	X	
		Assess supportability techniques for assessing systems requirements.	72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X	
		Apply Advanced Concept and Technological Demonstrations (ACTDs) as appropriate during product development.	76	Know and understand the Advanced Concept and Technological Demonstration (ACTD) process and their impact on Life Cycle Cost (LCC).	X	Should include the PPBS
	Increased Emphasis On Interoperability As A RP	Perform an Interoperability Performance Analysis.	82	Perform analysis to identify linkages connections, processes and delay time that effect interoperability .	X	Basic understanding only
		Perform a Cost as an Independent Variable (CAIV) analysis.	84	Understand the purpose and general method of execution of Cost as an Independent Variable (CAIV)	X	
			85	Prepare and defend a Cost as an Independent Variable (CAIV) analysis. Discuss the relationship of CAIV analysis to other cost analyses	X	
			86	Understand the Cost as an Independent Variable (CAIV) policy concerning the authority of the program manager to make cost and performance tradeoffs	X	
	Increased Emphasis On Software Development	Apply parametric analysis for estimating cost.	93	Know and understand parametric analysis and ability to perform and analyze resulting data	X	
			94	Understand parametric analyses and construct these analyses to support bid and solicitation development	X	

Environment	Trend	Intention	Competency	KSA		Comments
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	102	Know and understand environmental rules/regulations	X	Basic understanding only
			103	Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X	
			104	Know and understand commercial best practices	X	Basic understanding only
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105	Know and understand risk assessment methods and measurement tools	X	Basic understanding only
			106	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	Basic understanding only
		Develop streamlining and implementation planning for consolidation.	107	Know and understand strategic planning	X	
			109	Know and understand organizational processes and measurement	X	Basic understanding only
			110	Know and understand personnel policies/procedures to include labor relations/union coordination	X	Basic understanding only
			451	Create an integrated program schedule	X	
		Ensure highest quality staff infrastructure is maintained.	112	Know and understand available training/education resources to include funding/opportunity	X	Critical to success of this effort -- Move to global
	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	114	Know and understand commercial best practices	X	Basic understanding only
			116	Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X	Basic understanding only
			117	Know and understand benchmarking	X	Basic understanding only
			118	Know and understand research methods literature, internet, corporate assets	X	Basic understanding only
		Perform business case analysis.	120	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	

Environment	Trend	Intention	Opteny	D	K	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Involve customers early in the acquisition strategy process.	122	Be able to identify and correct potential imbalances in level playing field involved in public-private competitions.	X	
			123	Know and understand strategic planning	X	
			125	Know and understand acquisition process	X	
			126	Know and understand the Planning, Programming and Budgeting System (PPBS)	X	
			127	Know and understand requirements forecasting techniques & process	X	
			452	Create an integrated program schedule	X	
			454	Describe the Congressional budget approval process	X	
		Employ/Develop sourcing strategies that emphasize best value.	129	Know and understand customer requirements	X	
			133	Know and understand negotiations/plans and execution	X	
			136	Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault-tree methods for describing and making decisions.	X	
			137	Know and understand current product support processes and interrelationships	X	Basic understanding only
			138	Know and understand commercial best practices	X	Basic understanding only
			139	Know and understand partnering/alliance opportunities/execution	X	Basic understanding only
			140	Know and understand data analysis to include cost/price/performance tradeoffs In order to achieve affordable readiness.	X	
			455	Identify when to use Cost as an Independent Variable (CAIV)	X	
		Develop performance-based work statements or statements of objectives.	141	Know and understand product/service to be supported	X	Basic understanding only

Environment	Trend	Intention	Competency	D	K	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Develop performance-based work statements or statements of objectives.	142	Know and understand performance-based work statements or statement of objectives development/environment	X	
		Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	147	Be able to conduct tradeoff studies in support of decisions to reduce Total Ownership Cost (TOC).	X	
			148	Know and understand financial constraints	X	Include describing the PPBS
			150	Know and understand possible incentives available	X	
			151	Know and understand industry motivators	X	
			152	Know and understand process change enablers	X	
			153	Know and understand life-cycle management processes and phases	X	
			155	Know and understand components of Total Ownership Cost (TOC).	X	
		Apply integrated supply chain practices.	156	Seek integrated Supply Chain Management (SCM) solutions	X	Basic understanding only
			157	Know and understand ways to apply Single Process Initiative (SPI) to optimize logistics operations.	X	Basic understanding only
			159	Know and understand alternative sourcing options	X	Basic understanding only
			160	Know and understand Supply Chain Management (SCM) evaluation/measurement models	X	Basic understanding only
			161	Know and understand Supply Chain Management (SCM) purposes and processes - components and total	X	Basic understanding only.
			162	Apply Supply Chain Management (SCM) processes/methods to business opportunity/situation	X	Basic understanding only
	Expansion of Prime Vendor/Virtual Prime Vendor/PVP-like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	163	Know and understand applicable markets and market interrelationships, including markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies	X	
			166	Know and understand commercial practices, including best practices of specific market sector	X	

Environment	Trend	Intention	Opteny	D	K	Comments
O&S	Expansion of Prime Vendor/Virtual Prime Vendor/PVP-like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	167	Know and understand market research methods	X	
			456	Create an integrated program schedule	X	
		Tailor the application of best practices to the specific market sector and develop appropriate contractual vehicles.	169	Know and understand commercial best practices	X	
			170	Know and understand current product support processes and interrelationships	X	
			171	Know and understand partnering/alliance opportunities/execution	X	Basic understanding only
			172	Know and understand data analysis to include cost/price/performance tradeoffs	X	
			173	Know and understand customer requirements	X	Basic understanding only
	Increased Contractor Logistics Support	Develop integrated support strategies.	174	Know and understand common support requirements and tools and ability to leverage those opportunities consolidated design and buying opportunities	X	Basic understanding only
			176	Know and understand organic and commercial options available	X	Basic understanding only
			178	Know and understand mission application and operating environment	X	Basic understanding only
			179	Know and understand sustainment/war reserve requirements	X	Basic understanding only
			180	Know and understand commercial inventory management processes/techniques	X	
			181	Analyze market research/customer requirements/sourcing strategies to synthesize best value Contractor Logistics Support (CLS) solutions	X	Basic understanding only
			182	Know and understand alternative logistic support risks, costs, and performance in development of integrated support strategies and tools.	X	Basic understanding only -- Recommend including an understanding of the PPBS, and integrated program scheduling

Environment	Trend	Intention	Competency	KSA	Comments
O&S	Increased Contractor Logistics Support	Develop integrated support strategies.	183	Know and understand sustainment processes/techniques and process interrelationships (specific emphasis on inventory management with a configuration management subset)	X	
	Outsource Equipment Disposal Activities	Conduct capability/environmental assessment.	187	Know and understand commercial marketplace capabilities	X	Basic understanding only
			188	Know and understand A-76 policies and processes	X	
			189	Know and understand selling and marketing techniques to maximize sales return	X	
			191	Know and understand environmental regulations and cost assessments.	X	
			457	Identify cost estimating methodologies	X	
	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.	199	Understand and apply past performance in structuring of a solicitation.	X	
			200	Know and understand current, market-ready commercial practices with end-to-end visibility of inventory.	X	
			202	Know and understand total asset visibility techniques	X	
		Monitor and track business volume information outside of DoD ownership.	203	Know and understand shift to commercial practices reporting methodology/metrics	X	
			205	Analyze and interpret business volume information to evaluate organic and industry total system performance	X	
			206	Know and understand shift to commercial practices business processes	X	
			458	Create an integrated program schedule	X	
	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	207	Know and understand life-cycle management processes and phases	X	
			208	Understand Cost as an Independent Variable (CAIV)	X	

Environment	Trend	Intention	Competency	KSA	Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	209	Know and understand negotiations strategy/methods/tools	X
			210	Know and understand contracting options available	X
			211	Know and understand formal and informal organizational structure to generate best value solutions to reduce Total Ownership Cost (TOC)	X
			212	Know and understand weapon system/platform mission/operating environment	X
			213	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X
			214	Know and understand data analysis to include cost/price/performance tradeoffs	X
			215	Know and understand risk assessment techniques and measurement tools	X
			218	Know and understand commercial Total Ownership Cost (TOC) and life-cycle practices and tools	X
			219	Know and understand the Planning, Programming and Budgeting System (PPBS) and defense fiscal management policies and practices	X
			221	Know and understand Total Ownership Cost (TOC) variables and impacted areas, to include how to perform tradeoff analyses of capability performance, and life-cycle cost drivers and evaluation.	X
		Develop or modify oversight processes and analysis tools.	222	Know cost estimating methods.	X
			223	Know which funding accounts the Program Manager must influence to reduce Total Ownership Cost (TOC).	X
			224	Know and understand commercial industry analysis tools and oversight processes	X
			225	Know cost models, contractor systems and process risks.	X

Environment	Trend	Intention	Competency		K		Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Develop or modify oversight processes and analysis tools.	226	Understand operating and support cost data and data sources (e.g., Service/MOSC Systems) and their differences; cost estimating tools/models and their limitations.	X		
			227	Know and understand existing oversight processes and analysis tools	X		
			228	Understand Total Ownership Cost (TOC) from several O&S perspectives (e.g. weapon systems, units and organizations).	X		
		Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	229	Know and understand data analysis to include cost/price/performance tradeoffs and cost drivers.	X		Recommend including an understanding of the PPBS, and integrated program scheduling
			230	Know and understand life-cycle management processes and phases	X		
			231	Know and understand contingency planning through plan development and implementation	X		Recommend including an understanding of the PPBS, and integrated program scheduling
			232	Know and understand analysis techniques and tools	X		Recommend including an understanding of the PPBS, and integrated program scheduling
			233	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X		Basic understanding only
			234	Know and understand contract incentives/disincentives through contract completion	X		Basic understanding only
	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X		Basic understanding only
			238	Apply web-based acquisition systems	X		Basic understanding only
			239	Know and understand enterprise resource planning concepts and solutions	X		Basic understanding only
			240	Know web-based acquisition systems	X		Basic understanding only
		Perform electronic commerce in an integrated, closed looped process, transparent to the user.	247	Know and understand statutory/regulatory environment	X		Basic understanding only

Environment	Trend	Intention	Opteny	D	K		Comments
O&S	Use of Electronic commerce and Other Information Technology	Perform electronic commerce in an integrated, closed looped process, transparent to the user.	248	Know and understand Internet, World Wide Web and Intranet Tools and Applications		X	Basic understanding only
			249	Know and understand commercial electronic commerce processes		X	Basic understanding only
			250	Know and understand electronic commerce system relationship to existing business process and their interrelationships		X	Basic understanding only
			251	Know and understand performance metrics		X	Basic understanding only
		Require business partners to apply electronic commerce techniques and tools.	255	Understand DoD electronic commerce policy		X	
			260	Require business partners to apply electronic commercial techniques relating to government property.		X	Basic understanding only
	Increase Competitive Sourcing of Services	Determine acquisition strategy (e.g. regional, omnibus).	265	Know and understand regional/national statutory/regulatory/environmental impediments		X	Recommend including an understanding of the PPBS, and integrated program scheduling
			267	Know and understand strategic planning. Know how to develop acquisition strategy.		X	Recommend including an understanding of the PPBS, and integrated program scheduling
			459	Describe the Congressional budget approval process		X	
		Conduct Best Value Analysis on services/cost.	270	Know how to perform cost estimating methods.		X	
			271	Know and understand Best Value Analysis and understand how to apply in source selections.		X	Basic understanding only
PBA	Increased Reliance on Price Analysis Versus Cost Analysis	Perform basic and advanced price-based and technology-based market analysis and research.	288	Apply basic and advanced price comparative techniques including parametric analysis		X	Basic understanding only
			460	Identify cost estimating methodologies		X	
	Maximize FAR Part 12 Acquisition	Use FAR Part 12 procedures for procuring commercial items/services.	461	Identify cost estimating methodologies		X	

Environment	Trend	Intention	Opteny	D	K		Comments
PBA	Maximize FAR Part 12 Acquisition	Analyze and challenge requirements to promote use of commercial items.	295		Apply basic and advanced price comparative techniques including parametric analysis	X	Basic understanding only
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	300		Know and understand hardware, software, and network requirements and applications and interoperability	X	Basic understanding only
			301		Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	
			302		Know and understand electronic commerce system relationship to existing business process and their interrelationships	X	
			303		Know, understand and be able to apply business process reengineering	X	Basic understanding only
			304		Know and understand statutory/regulatory environment	X	Basic understanding only
			305		Know and understand marketing/selling methods and strategies	X	Basic understanding only
			306		Know and understand performance metrics	X	Basic understanding only
			307		Know and understand enterprise resource planning concepts and solutions	X	Recommend including an understanding of the PPBS, and integrated program scheduling
			308		Know and understand commercial electronic commerce processes	X	Basic understanding only
			309		Develop affordable requirements document for establishing software/hardware architecture for Integrated Digital Environment (IDE)	X	Recommend including an understanding of the PPBS, and integrated program scheduling
		Use commercial standard reference identification number system to simplify with private and federal sectors (e.g. Central Contractor registration).	310		Know and understand unique software requirements and applications	X	Basic understanding only
			311		Know, understand and be able to incorporate standards into paperless operating systems of commercial standard reference identification number system	X	

Environment	Trend	Definition	Competency		K	Comments
PLA	Integrated Digital Environment	Apply existing national and international standards, practices and technologies to automate the management and exchange of information.	313	Know and understand national and international standards, practices and technologies used to automate and manage and exchange information.	X	
	Achieve Paperless Contracting	Use electronic mediums for electronic payments.	321	Understand the electronic payments process as it applies to the plant clearance process	X	
	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	327	Know, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	X	
	Security/Proprietary Information	Use adequate security measures (to include protocols) to protect electronic information, as appropriate, and to provide ready access.	330	Know and understand security statutory/regulatory environment	X	Basic understanding only
			331	Know and understand adequate security measures	X	Basic understanding only
CMI	Increased Commercial Military Integration	Promote use of commercial items	336	Know Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X	Basic understanding only
	Increased Use of Common Business Practices	Promote use of common business practices	344	Know and understand benchmarking methods and tools	X	
			347	Identify and adapt common and/or better practices.	X	
			348	Know and understand warranties/guarantees and ability to synthesize into Government system	X	
			349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X	
	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Coordinate supply chain requirements (consider and integrate all phases in manufacturing flow).	364	Be able to develop and evaluate Supply Chain Management (SCM) options for CMI	X	
N	Life Cycle/Reduced Total Ownership Cost Emphasis	Reduce Life Cycle Cost/Total Ownership Cost	377	Understand role of program manager	X	
			378	Apply Cost as an Independent Variable (CAIV) and reduced Total Ownership Cost (TOC)	X	Recommend including an understanding of the PPBS, and integrated program scheduling

Environment Trend	Intention	Opteny D	K	Comments
Life Cycle/Reduced Total Ownership Cost Emphasis	Reduce Life Cycle Cost/Total Ownership Cost	380	Know, understand and be able to adapt activity based costing to life cycle process.	X Recommend including an understanding of the PPBS, and integrated program scheduling
		381	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X Recommend including an understanding of the PPBS, and integrated program scheduling
		382	Know and understand cost analysis and life-cycle management	X Recommend including an understanding of the PPBS, and integrated program scheduling
		462	Identify cost estimating methodologies	X
	Establish activity based costing for the life cycle process.	383	Comprehend DoD's corporate implementation of activity based costing and management	X
Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate	385	Know and understand spiral development on resourcing and supportability (funding, sustainment)	X Recommend including an understanding of the PPBS, and integrated program scheduling
	Minimize cycle time	391	Understand technology maturation vs. product application	X
Flexible User Requirements	Participate in development of user requirements.	392	Perform risk analysis.	X
		397	Know and understand user and joint operating requirements	X
		399	Know, understand and be able to operate in Integrated Product Team (IPT) environment	X
Technology Refreshment of Systems (Modernization through Spares)	Promote technology refreshment of systems	405	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X Recommend including an understanding of the PPBS, and integrated program scheduling
	Obtain and execute funding for modernization	410	Synthesize the functions of the Planning, Programming and Budgeting System (PPBS)	X
Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	422	Know and understand best value methods and tools to synthesize best value options based on tradeoff	X
		426	Perform business analysis to include impact on force structure.	X Recommend including an understanding of the PPBS, and integrated program scheduling

Environment Trend	Intention	Opportunity	D	K	Comments
Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	427	Analyze expected system performance outcomes for best value.	X	
		463	Identify when to use Cost as an Independent Variable (CAIV)	X	
Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	435	Know and understand the Integrated Product Team (IPT) environment	X	
		443	Maintain open communications through all phases of the life cycle.	X	Recommend including an understanding of the PPBS, and integrated program scheduling

Table of Opportunities

Appendix K Industrial and/or Contract Property Management Career Field Narrative

INTRODUCTION

Starting with an effort to rewrite FAR Part 45 in 1995, Government property has been the topic of increased visibility within the highest levels of the Government/Department of Defense. As a result, the role of the Government Property Administrator and Plant Clearance Officer is not going away, and in fact, may be increasing in the future. DoD compliance with the Chief Financial Officers (CFO) Act of 1990 may require Property Administrators to assist in the reconciliation of the Governments financial records versus the property accounting records maintained by the contractors. Senior procurement officials have stated that as long as contractors possess Government property (Government-Furnished or Contractor-Acquired), there will be some form of Government oversight.

SUMMARY OF VITAL COMPETENCIES

This section discusses the competencies determined to be critical because of their importance to the future, all encompassing nature, or "newness" to the Property Management career field.

- **Understanding common business practices.** With the pending publication of a proposed rule to revise FAR Part 45, we are moving to contractors using common (sound) business practices to manage Government property in the future in lieu of Government mandated processes. This will require Government property administrators to obtain a thorough knowledge of exactly what is meant by sound business practices. The knowledge of common business practices in the area of property management is essential to ensure that property administrators dont have different standards or attempt to apply different meanings to what constitutes sound business practices. We need to ensure consistency of interpretation of common business practices. We foresee the property administrators role becoming more difficult as future changes in the FAR Part 45 authorize the use of sound business practices in lieu of mandating exactly what contractors must do for the proper care and control of Government property. If property administrators are not properly versed in business practices, disagreements between the property administrators and contractors may require more involvement by contracting officers to resolve issues. Applying commercial auditing techniques as well as a thorough knowledge of cost accounting standards and generally accepted accounting principles will be a must for property administrators in the future.

- **Electronic Commerce marketing &selling strategies.** Plant Clearance Officers will be authorizing defense contractors to sell surplus Government property using the Internet. They will need a thorough understanding of DoD policy and how it affects property management. They will also need to know and understand electronic commerce marketing and selling methods and strategies. Plant Clearance Officers are responsible for monitoring the cost of the sales versus the expected sales proceeds to ensure the Government is receiving the maximum return for the sale of the surplus property.

- **Risk management.** Due to the rightsizing/downsizing of Government property management personnel, we will have to apply risk management techniques to determine the level of oversight. Based on criteria that is currently contained in DCMC's One Book, and anticipated inclusion in the DoD Property Manual, a determination will need to be made regarding the level of surveillance to be placed by the Government on the contractor, i.e., annual, biennial, or triennial system analyses. Government property administrators will need to work closely with contractors to determine where contractors can perform their own oversight (Contractor Self Oversight (CSO) with validation by the Government. They will also be required to work together to determine when joint Government/Contractor reviews can be performed.

- **Financial accounting.** The CFO Act of 1990 may have a large impact on the property administrator's role in the future. Currently contractors maintain the Government's official property records, and the Government is prohibited by the FAR to maintain duplicate records. However, the CFO Act of 1990 requires the Government to financially account for all Government property (estimated at $900 billion, of which 10% or $90 billion is in the possession of defense contractors). Thus the Government will need to establish financial accounting for property in the custody of contractors. It is unclear what the property administrator's role will be when the Government's financial records and the contractor's property accountability records dont match. What type, if any, reconciliation will be necessary and who will perform the reconciliation is also uncertain at this time. If it is determined the property administrators will assist in the accomplishment of the reconciliation, then the property administrator will need a thorough understanding of what is meant by Financially Accounting for Government Property as required by the CFO Act of 1990 and implementing DoD policy.

IMPACT OF GLOBAL TRENDSF UNCTIONAL TRENDS

All trends are expected to critically impact what the career field personnel will have to know or how they will have to operate in the future.

VISION

Between now and 2005 and beyond, we do not anticipate any major changes in the amount of Government property being furnished to or acquired by defense contractors. Instead of caring for and controlling Government property in accordance with mandated Government requirements, contractors will be required to care for and control it in accordance with sound business practices. In effect, property administrators will be placed in

a more difficult position to determine what constitutes sound business practices. Plant Clearance Officers will need to completely understand electronic commerce as we envision a vast majority of surplus Government property being sold over the Internet.

IMPROVEMENTS RECOMMENDATIONS

Courses will need to be revised, developed, or identified that will provide property management personnel with a thorough knowledge and understanding of what is meant by sound (common) business practices. Property Administrators will need to be able to apply commercial auditing techniques and knowledge of how and what is required to comply with the CFO Act of 1990. Plant Clearance Officers will need a through understanding of how to use the Internet to sell surplus Government property and the ability to stay abreast with Internet technology changes. Many of the property reporting requirements and systems will be Web-based applications that will impact property administrators and Plant Clearance Officers.

BARRIERS

The Federal Property and Administrative Services Act of 1949, as amended, is a barrier to some of the recommended changes to streamline/improve the plant clearance process. However, these barriers have been identified and are in the process of being worked.

The CFO Act of 1990 may be a big player in the future role of the Government property administrator. The anticipated requirement to depreciate Government property in the possession of contractors, what the capitalization threshold will be, etc., will result in FAR changes that may impact the property administrator's role. Depending on how and who will actually calculate and/or validate the depreciated value may require property administrators to have a thorough knowledge of how to depreciate Government property.

INTERPLAY WITH OTHER CAREER FIELDS

Expanded interface with the Contracting field is essential to ensure effective property management. DoD has been striving for many years to decrease the amount of Government property in the possession of defense contractors. Procuring Contracting Officers (PCOs) and Program Mangers need to have a thorough understanding of the DoD policies on furnishing Government property to contractors. Over the years PCOs, continue to either furnish property to or allow defense contractor to acquire property for the Governments account clearly in violation of the FAR/DFARS. PCOs/Program Managers need to understand when it is appropriate to provide Government property. PCOs need to understand the application of total ownership costs (TOC). TOC needs to include a business case analysis regarding the benefit of allowing the contractor to acquire property to which the Government will take title and the costs to dispose of those items requiring demilitarization and/or are hazardous. Administrative Contracting Officers (ACOs) need a through understanding of Cost Accounting Standards on how property is charged, either as a direct cost or indirect cost. What is the company policy for the contractors own property and the requirement to use the same rules for the purchase of Government property?Instruction on property management for PCOs/ACOs and Program Managers is highly recommended.

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Environmt	End	Ention	Cpteny D	D		Cmt Nes
RDT&E	Consolidation (Centers of Excellence)	Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).	2	Use tradeoff analyses to assess most appropriate consolidation recommendations.	X	Adequate determination of Govt. property value and recognition of disposal efforts should be a part of the trade off analysis
			3	Know and understand service capabilities/core competencies	X	Ensure visibility of govt. property which provides for unique capabilities/competencies
			4	Know critical elements contained in a Business Case Analysis (BCA) in order to justify sound business outcomes.	X	Basic understanding of business case analysis is desired
		Develop streamlining and implementation planning for consolidation.	5	Use Business Case Analysis (BCA) to assess effectiveness of the economies of budgeting inherent government functions or centers of excellence and service contracting in the business sector.	X	Ensure Government property is included in the business case analysis as an inherently Government function
			6	Know and understand joint and service strategic planning and requirements process; assess impact of consolidation options	X	Basic understanding of joint/service strategic planning (as it relates to consolidations) is desired
			7	Know and understand methods for building innovative operations that consistently improve over time	X	Understand how new innovations affect Government property management and title
			8	Know and understand the Planning, Programming and Budgeting System (PPBS) and DoD monetary policies and procedures; Assess fiscal impacts and synthesize consolidation options	X	Basic understanding of PPBS and defense monetary policies/procedures is desired
			9	Know effective streamlining and implementation planning documentation	X	Understand how new innovations effect Government property management and title
		Operate in a Multi-Service Environment.	10	Know and understand RDT&E process; evaluate consolidation/process change options; synthesize win-win solutions	X	The decision to provide Government property is essential to the evaluation process
			11	Know and understand virtual RDT&E resources/network applications; ability to assess applicability and determine best consolidation applications	X	The decision to provide Government property is essential to the evaluation process

Environment	Trend	Action	Competency		
RDT&E	Consolidation (Centers of Excellence)	Operate in a Multi-Service Environment.	13 Know and understand how to function in a Multi-Service environment.	X	Basic understanding of the Multi-Service environment is essential to Government property management
			14 Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	X	Basic understanding of system operation and awareness of govt. property ramifications are desired
	Increased Reliance on Non-DoD Organizations	Conduct market research/analysis of the national base of technology.	17 Understand basic market research techniques	X	Basic understanding of how market research could effect disposition process
		Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	20 Know and understand technology insertion strategies and ability to apply to DoD needs.	X	Basic understanding of how technology insertion strategies impact Government property requirements
			21 Know DoD's unique technical and facilitation requirements.	X	Basic understanding of Government property availability to provide for unique capabilities/competencies
			22 Assess the alternative sources and methods most appropriate to handle the requirements not unique to DoD.	X	Ensure Government property & commercial property costs are considered
			23 Know, understand and be able to benchmark and evaluate all RDT&E options/practices	X	Basic understanding of benchmarking techniques is required
		Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	24 Evaluate the individual situation and select the appropriate contracting or assistance vehicle	X	Evaluating the appropriate vehicle impacts the property control system acquisition & title
			25 Understand the applicability and advantages of the various contracting or assistance vehicles.	X	Evaluating the appropriate vehicle impacts the property control system acquisition & title.
			26 Know and understand dual use application of program/item needs and ability to incentivize dual-use focus	X	Recognize that accountability and classification of dual use property will be dependant on agreement method/vehicle.
			27 Determine the most appropriate agreement, as well as pricing and facility arrangements that will mitigate risk in accordance with regulations, statutes and sound business judgement.	X	Facility agreements affect Government property requirements

Environment	Trend	Intention	Competency ID		Competency Statement	Comments
RDT&E	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	30	X	Know, understand and be able to operate in an Integrated Product Team (IPT) environment	Basic understanding of the roles and responsibilities of the acquisition career fields
		Perform design tradeoffs earlier in the acquisition process.	33	X	Evaluate use of the systems engineering process to reduce risk of operational / support problems	Ensure Government property ownership, storage, and disposal ramifications are specifically addressed in the acquisition process
		Develop strategy to minimize operation/support problems, risks and fielding issues.	34	X	Understand the impact of design on the operations and test environment	OT&E results will drive changes in Government property requirements.
		Develop verification/conformance metrics.	38	X	Know and understand metric development and linkage to mission/operations and cost implications	Ensure metrics include property costs
	Increased Use of Simulation Based Acquisition (SBA)	Perform analysis on most appropriate SBA program application, select pilot programs.	41	X	Understand the use of Modeling and Simulation (M&S) across the total life cycle of a system.	Desire basic understanding of how property costs and availability tradeoffs are addressed in M&S
		Use SBA to identify and simulate design issues and risks.	42	X	Ensure risk profile are analytically determined using proper methods.	Ensure property administrators have a through knowledge of the risk assessment process for Government Property.
			44	X	Understand and determine how to apply Modeling and Simulation (M&S) when conducting performance studies, effectiveness studies, tradeoff analysis, risk analysis, sensitivity analysis and cost analysis.	A basic understanding of M&S costs to ensure Government Property is included.
		Apply simulation and modeling techniques.	45	X	Be capable of using and understanding the basic tenets of modeling and simulation	Desire basic understanding of how property costs and availability tradeoffs are addressed in M&S
			46	X	Know and understand the types of models (physical, mathematical, logical) and the common pitfalls and limitations.	Desire basic understanding of how property costs and availability tradeoffs are addressed in M&S
			47	X	Understand the models and simulations associated with the processes of requirements generation, program management, design and engineering, manufacturing, T&E, logistics support and training.	Desire basic understanding of how property costs and availability tradeoffs are addressed in M&S
	Separation of Tech Maturation From Product Development	Perform S&T strategic planning.	48	X	Know and understand future technological advances that can be incorporated into system development programs.	Basic understanding of technological advances is required to support or enable incorporation of technology into the product

Environment	Trend	Intention	Criteria	Criteria	Comments	Notes
RDT&E	Separation of Tech Maturation From Product Development	Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50	Know and understand contingency planning and execution	X	Impacts of govt. property ownership, use, modification and disposition should be addressed in contingency planning
			53	Know and understand risk reduction and risk assessment processes for acquisition process. Balancing risks and benefits in situations involving human safety, environmental risks, and financial uncertainties.	X	Property Administrator only
		Develop realistic Technology Transition Plans.	54	Convert Technology Transition Planning into effective and executable contract language	X	Government property needs to be addressed in transition plans
			55	Know the Planning, Programming and Budgeting System (PPBS) environment and budgeting process for insertion of out year funds for transition	X	Government property needs to be addressed in transition plans
			56	Know and understand technology transition planning/strategy and ability to assess/evaluate and synthesize best-value options into Technology Transition Plans	X	Government property needs to be addressed in transition plans
		Design Systems with open architectures.	58	Know and understand open architecture discipline, tools, and methods and ability to apply to service interoperability	X	Interoperability relates to the production of and the availability of Government-Furnished Property
		Conduct affordability assessments/analysis.	59	Be able to do parametric analyses	X	Property costs need to be considered
			60	Understand the Cost as an Independent Variable (CAI)/policy concerning the authority of the program manager to make cost and performance tradeoffs	X	Ensure Government property ownership, storage, and disposal ramifications are specifically addressed in the trade off process
			61	Know and understand affordability assessment techniques and tools	X	Availability of Government Property may have an effect on affordability
			62	Understand theory and application of Integrated Product and Process Development (IPPD) for S&T programs that are expected to transition to the next phase of acquisition. Understand how to manage, conduct and participate in Integrated Product Teams (IPTs).	X	Basic understanding of IPPD to ensure property, when applicable, is available to move to next phase
		Assess cost/schedule risk and influence on design.	63	Know, understand and be able to perform/evaluate cost/schedule risk assessments	X	Availability of Government Property may impact cost and/or schedule risk

Environment	Trend	Intention	Competency			Comments
RDT&E	Separation of Tech Maturation From Product Development	Assess supportability techniques for assessing systems requirements.	69	Use systems engineering processes to reduce risk of operational and support problems.	X	Availability of Government Property can effect O&S capabilities
			72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X	Impacts of govt. property ownership, use, maintenance and disposal should be identified
		Identify sources and methodologies for technology insertions.	74	Know and understand open architecture discipline, tools, methods to improve aging systems/platforms O&S (specifically for tech insertions)	X	Availability of Government Property may affect the ability to insert new technology
			75	Know methodologies for inserting technology upgrades and maintaining technical currency	X	Availability of Government Property may affect the ability to insert new technology
	Increased Emphasis On Interoperability As A KPP	Develop systems using International Interoperability Standards.	79	Identify and describe basic principles of technical standards as they relate to system development and interoperability	X	Interoperability will drive Government property requirements
		Comply with Joint Technical Architecture requirements.	80	Knowledge and understanding and ability to comply with Defense Information Infrastructure Common Operating Environment (DII COE)	X	Interoperability will drive Government property requirements
			81	Understand and apply Joint Technical Architecture (JTA) requirements and standards	X	Interoperability will drive Government property requirements
		Perform an Interoperability Performance Analysis.	82	Perform analysis to identify linkages connections, processes and delay time that effect interoperability .	X	Interoperability will drive Government property requirements
			83	Understand framework to look at interoperability through layers such as process ,software, information and influences	X	Interoperability will drive Government property requirements
		Perform a Cost as an Independent Variable (CAIV) analysis.	84	Understand the purpose and general method of execution of Cost as an Independent Variable (CAIV)	X	Ensure Government property ownership, storage, and disposal ramifications are specifically addressed
			85	Prepare and defend a Cost as an Independent Variable (CAIV)analysis. Discuss the relationship of CAIV analysis to other cost analyses	X	Ensure Government property ownership, storage, and disposal ramifications are specifically addressed
			86	Understand the Cost as an Independent Variable (CAIV)policy concerning the authority of the program manager to make cost and performance tradeoffs	X	Ensure Government property ownership, storage, and disposal ramifications are specifically addressed in the trade off process

Environment	Trend	Action	Competency ID		Comments
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	102 Know and understand environmental rules/regulations	X	Basic knowledge of environmental rules, regulations and penalties as they relate to govt. property packaging, transportation, storage and disposal
			103 Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X	Basic knowledge of environmental rules, regulations and penalties as they relate to govt. property packaging, transportation, storage and disposal
			104 Know and understand commercial best practices	X	Know commercial practices related to property management and disposal
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105 Know and understand risk assessment methods and measurement tools	X	Ensure Government property ownership, storage, control, and disposal ramifications are specifically addressed in risk assessment and measurement tools
			106 Know and understand Business Case Analysis (BCA) process/rules and tools.	X	Basic understanding of business case analysis is desired
		Develop streamlining and implementation planning for consolidation.	107 Know and understand strategic planning	X	Government property is an element of strategic planning
			108 Know and understand organizational management and structures to include existing and options	X	Organizational structures can impact a Government property control system
			109 Know and understand organizational processes and measurement	X	Quantification of Government property contribution/impact on the organization processes (if any) is desired
			110 Know and understand personnel policies/procedures to include labor relations/union coordination	X	Basic understanding required
		Ensure highest quality staff infrastructure is maintained.	112 Know and understand available training/education resources to include funding/opportunity	X	Required for DAWIA certification and appointment.
	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	113 Understand techniques to determine best practices	X	Best practices regarding property management and disposal should be addressed
			114 Know and understand commercial best practices	X	Know commercial practices related to property management and disposal
			115 Analyze government and industry to identify, adopt, and tailor best practices.	X	Know commercial practices related to property management and disposal

Environment	Trend	Intention	Opteny	D	D	Comments	Notes
O&S	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	116	Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X	Knowledge of applications of lessons learned and reengineering efforts concerning property management is required	
			117	Know and understand benchmarking	X	Basic understanding of benchmarking is desired	
			118	Know and understand research methods literature, internet, corporate assets	X	Basic understanding of research methods is essential for paperless environment	
		Perform business case analysis.	120	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	Basic understanding of business case analysis is desired	
			121	Understand how to perform Business Case Analysis (BCA)	X	Basic understanding of business case analysis is desired	
		Involve customers early in the acquisition strategy process.	122	Be able to identify and correct potential imbalances in level playing field involved in public-private competitions.	X	Ensure Government property ownership, storage, and disposal ramifications are specifically addressed	
			123	Know and understand strategic planning	X	Government property is an element of strategic planning	
			125	Know and understand acquisition process	X	Basic understanding of the acquisition process is desired	
			126	Know and understand the Planning, Programming and Budgeting System (PPBS)	X	Basic understanding of the PPBS process is desired	
			127	Know and understand requirements forecasting techniques & process	X	Program requirements drive Government property requirements	
			128	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers.	X	Basic understanding of system operation and awareness of govt. property ramifications are desired	
		Employ/Develop sourcing strategies that emphasize best value.	129	Know and understand customer requirements	X	Know customer intentions with regard to providing Government property	
			130	Know and understand contracting options available	X	Options can effect Government property requirements and control	
			132	Understand and use A-76 techniques for competitive sourcing using best value (Assume A-76 revised to permit best value selection)	X	Government property is a consideration in best value	

Environment	Trend	Intention	Opteny	D		Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Employ/Develop sourcing strategies that emphasize best value.	133	Know and understand negotiations/plans and execution	X	Government property is a consideration in negotiations/plans and execution
			134	Select and apply selected contracting vehicle	X	Government property is a consideration in selecting and applying selected contracting vehicle
			136	Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault-tree methods for describing and making decisions.	X	Ensure Government property ownership, storage, and disposal ramifications are specifically addressed in risk assessments, trade offs and measurement tools
			137	Know and understand current product support processes and interrelationships	X	Processes drive Government property requirements
			138	Know and understand commercial best practices	X	Know commercial practices related to property management and disposal
			139	Know and understand partnering/alliance opportunities/execution	X	Can affect Government property control systems and liability
			140	Know and understand data analysis to include cost/price/performance tradeoffs In order to achieve affordable readiness.	X	Ensure Government property ownership, storage, and disposal ramifications are specifically addressed in the trade off process
		Develop performance-based work statements or statements of objectives.	141	Know and understand product/service to be supported	X	Ensure visibility of govt. property which provides for unique capabilities/competencies
			142	Know and understand performance-based work statements or statement of objectives development/environment	X	Recognize that accountability and classification of property will be dependant on agreement method/vehicle
			143	Be able to develop performance metrics to describe customer/acquisition needs and evaluate outcomes.	X	Property management is part of the metrics system
		Apply technology to enable implementation of reengineered and integrated business processes.	145	Know and understand technology use in commercial /government operations	X	Basic understanding of identifying best commercial practices is required
			146	Evaluate/Analyze potential technology solutions to determine best approach/solution	X	Availability of Government property can impact the best approach/solution

Environment	Trend	Intention	Capacity	Description	Comments	Notes
O&S	Reengineer the Product Support Process to Use Best Practices	Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	147	Be able to conduct tradeoff studies in support of decisions to reduce Total Ownership Cost (TOC).	X	Government property is an integral part of total ownership costs
			149	Know and understand environmental barriers (regulatory/statutory)	X	Basic understanding required for plant clearance
			150	Know and understand possible incentives available	X	Government property can be an incentive
			152	Know and understand process change enablers	X	Understand the impact of changes on property mgmt
			153	Know and understand life-cycle management processes and phases	X	Government property is part of the life cycle management process
			154	Know how to identify and incorporate appropriate contractual requirements and incentives.	X	Basic understanding of contract incentives is required
			155	Know and understand components of Total Ownership Cost (TOC).	X	Impacts of govt. property ownership, control, use, maintenance and disposal should be identified
		Apply integrated supply chain practices.	156	Seek integrated Supply Chain Management (SCM) solutions	X	Costs and availability impacts should be identified relative to govt. property ownership, use, maintenance and disposal
			157	Know and understand ways to apply Single Process Initiative (SPI) to optimize logistics operations.	X	Cost impacts/savings regarding commercial vs. govt. property ownership should be identified
			161	Know and understand Supply Chain Management (SCM) purposes and processes - components and total	X	A basic understanding of Government property impact on SC management processes is desired
			162	Apply Supply Chain Management (SCM) processes/methods to business opportunity/situation	X	A basic understanding of Government property impact on SC management processes is desired
	Expansion of Prime Vendor/Virtual Prime Vendor/PVP-like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	163	Know and understand applicable markets and market interrelationships, including markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies	X	A basic understanding of market research is required
			164	Know how to develop appropriate contractual vehicles to implement Prime Vendor/Virtual Prime Vendor arrangements	X	A basic understanding of how to develop appropriate contractual vehicles is required.

Environment	Trend	Intention	Competency	D		Comments
O&S	Expansion of Prime Vendor/Virtual Prime Vendor/PVP-Like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	165	Understand the Prime Vendor concept in the DoD acquisition of supplies and services	X	A basic understanding is required.
			166	Know and understand commercial practices, including best practices of specific market sector	X	Know commercial practices related to property management and disposal
			167	Know and understand market research methods	X	Basic understanding of market research is required
		Tailor the application of best practices to the specific market sector and develop appropriate contractual vehicles.	168	Know and understand negotiations/plans and execution	X	Government property is an element of negotiations/plans and execution
			169	Know and understand commercial best practices	X	Know commercial practices related to property management and disposal
			170	Know and understand current product support processes and interrelationships	X	Product support processes drive property requirements
			171	Know and understand partnering/alliance opportunities/execution	X	Property control system and liability can be effected.
			172	Know and understand data analysis to include cost/price/performance tradeoffs	X	Government property is an element
			173	Know and understand customer requirements	X	Government property is an element
	Increased Contractor Logistics Support	Develop integrated support strategies.	174	Know and understand common support requirements and tools and ability to leverage those opportunities consolidated design and buying opportunities	X	Costs and availability impacts should be identified relative to govt. property ownership, use, maintenance and disposal
			175	Know and understand selected contract to apply oversight tools	X	Maintain working knowledge of Government property management functions
			176	Know and understand organic and commercial options available	X	Recognize cost and availability impacts of commercial vs. Government owned property
			177	Know and understand contract oversight techniques and tools	X	Maintain working knowledge of Government property management functions

Environment	Trend	Tention	Opteny	D		Comments
O&S	Increased Contractor Logistics Support	Develop integrated support strategies.	178	Know and understand mission application and operating environment	X	Recognize cost and availability impacts of commercial vs. Government owned property
			179	Know and understand sustainment/war reserve requirements	X	Maintain working knowledge of Government property management functions and requirements
			180	Know and understand commercial inventory management processes/techniques	X	Basic understanding of commercial techniques is required
			181	Analyze market research/customer requirements/sourcing strategies to synthesize best value Contractor Logistics Support (CLS) solutions	X	Government property is an element
			182	Know and understand alternative logistic support risks, costs, and performance in development of integrated support strategies and tools.	X	Government property is an element of cost
			183	Know and understand sustainment processes/techniques and process interrelationships (specific emphasis on inventory management with a configuration management subset)	X	Recognize cost and availability impacts of commercial vs. Government owned property
		Develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	184	Know how to develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	X	Basic understanding of is desired
			185	Create performance-based statements of objectives and incentives for logistics support.	X	Basic understanding of is desired
			186	Know flexible sustainment contracts and how to develop performance events to measure contractor progress.	X	Basic understanding of is desired
	Outsource Equipment Disposal Activities	Conduct capability/environmental assessment.	187	Know and understand commercial marketplace capabilities	X	Basic understanding of is desired
			188	Know and understand A-76 policies and processes	X	Basic knowledge required for disposition of Government property
			189	Know and understand selling and marketing techniques to maximize sales return	X	Basic knowledge required for disposition of Government property

Environment	Trend	Function	Competency	Description	Comments	Notes
O&S	Outsource Equipment Disposal Activities	Conduct capability/environmental assessment.	190	Know how to identify hazardous property and recognize the existence of federal, state and local requirements that may impact on its disposal in accordance with NPA, RCRA, TSDA, FAR AND DFARS.	X	Basic knowledge required for disposition of Government property
			192	Know and understand government disposal policy and procedures	X	Through knowledge of Government disposal policy and procedures are required
		Assess contractor's security processes and procedures.	193	Know demilitarization requirements to assure resale of surplus material eliminates potential of hazardous/safety incidents.	X	Through knowledge of Government disposal policy and procedures are required
			194	Know and understand statutory/regulatory security policy/procedures	X	Basic knowledge of statutory/regulatory security policy/procedures is required
			195	Know and understand resources to identify and conduct assessments	X	Through knowledge of assessment techniques is required
	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.	196	Know and understand selected contract in order to apply oversight tools	X	Basic knowledge of commercial capabilities and practices is required
			197	Know and understand contract oversight techniques and tools	X	Basic knowledge of commercial capabilities and practices is required
			198	Analyze market research/customer requirements/sourcing strategies to synthesize best value Vendor Managed Inventories/Direct Vendor Delivery solutions	X	Basic knowledge of commercial capabilities and practices is required
			199	Understand and apply past performance in structuring of a solicitation.	X	Thorough knowledge of risk assessment processes and evaluation of past performance is required
			200	Know and understand current, market-ready commercial practices with end-to-end visibility of inventory.	X	Basic understanding of commercial capabilities and practices is required
			201	Know and understand market research methods and tools	X	Basic understanding of market research is required
			202	Know and understand total asset visibility techniques	X	Government property is an element

Environment	Trend	Intention	Competency	Description	Comments	Notes
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	207	Know and understand life-cycle management processes and phases	X	Government property is an element of life cycle cost
			208	Understand Cost as an Independent Variable (CAIV)	X	Government property is an element of life cycle cost
			209	Know and understand negotiations strategy/methods/tools	X	Government property is an element of negotiations strategy/methods/tools
			210	Know and understand contracting options available	X	Government property is an element of contracting options
			211	Know and understand formal and informal organizational structure to generate best value solutions to reduce Total Ownership Cost (TOC)	X	Effects design and operation of a Government property control system
			212	Know and understand weapon system/platform mission/operating environment	X	Government property is an element
			213	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	Government property is an element
			214	Know and understand data analysis to include cost/price/performance tradeoffs	X	Government property is an element
			215	Know and understand risk assessment techniques and measurement tools	X	Government property is an element
			216	Know and understand Supply Chain Management (SCM) processes and tools	X	Government property is an element
			217	Know and understand partnering/alliance opportunities/execution	X	Government property is an element
			218	Know and understand commercial Total Ownership Cost (TOC) and life-cycle practices and tools	X	Government property is an element
			219	Know and understand the Planning, Programming and Budgeting System (PPBS) and defense fiscal management policies and practices	X	Government property is an element
			220	Select and apply selected contracting vehicle	X	Government property is an element

Environment	Trend	Intention	Opteny	D	D	Contents	Notes
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	221	Know and understand Total Ownership Cost (TOC) variables and impacted areas, to include how to perform tradeoff analyses of capability performance, and life-cycle cost drivers and evaluation.		X	Ensure Government property ownership, storage, and disposal costs are specifically addressed in risk assessments, trade offs and measurement tools
		Develop or modify oversight processes and analysis tools.	222	Know cost estimating methods.		X	Government property is an element
			223	Know which funding accounts the Program Manager must influence to reduce Total Ownership Cost (TOC).		X	Government property is an element
			224	Know and understand commercial industry analysis tools and oversight processes		X	Government property is an element
			225	Know cost models, contractor systems and process risks.		X	Government property is an element
			226	Understand operating and support cost data and data sources (e.g., Service XMOSC Systems) and their differences; cost estimating tools/models and their limitations.		X	Government property is an element
			227	Know and understand existing oversight processes and analysis tools		X	Government property is an element
			228	Understand Total Ownership Cost (TOC) from several O&S perspectives (e.g. weapon systems, units and organizations).		X	Government property is an element
		Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	229	Know and understand data analysis to include cost/price/performance tradeoffs and cost drivers.		X	Government property is an element
			230	Know and understand life-cycle management processes and phases		X	Ensure Government property ownership, storage, management, and disposal costs are specifically addressed in life cycle management processes and phases
			231	Know and understand contingency planning through plan development and implementation		X	Impacts of govt. property ownership, use and modification should be addressed in contingency planning
			232	Know and understand analysis techniques and tools		X	Ensure Government property ownership, storage, and disposal ramifications are specifically addressed in risk assessments, trade offs and measurement tools

Environment	Trend	Action	Competency ID			Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	233	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	Ensure Government property ownership, storage, and disposal ramifications are specifically addressed in best value solutions
			234	Know and understand contract incentives/disincentives through contract completion	X	Ensure Government property ownership, storage, and disposal ramifications are addressed in contract incentives/disincentives through contract termination
	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	235	Know how to access web-based acquisition and work-flow systems.	X	Essential for paperless environment
			236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X	Essential for paperless environment
			238	Apply web-based acquisition systems	X	With regard to property management (commercial and Government), a working knowledge and ability to apply web-based acquisition systems is required
			239	Know and understand enterprise resource planning concepts and solutions	X	A thorough understanding of how Government property is part of ERP planning
			240	Know web-based acquisition systems	X	With regard to property management (commercial and Government), a working knowledge and ability to apply web-based acquisition systems is desired
			241	Know and understand marketing/selling methods and strategies	X	Basic understanding required for plant clearance
		Require business partners to apply electronic commerce techniques and tools.	255	Understand DoD electronic commerce policy	X	Thorough understanding of how policy effects property management
			256	Know and understand incentives available to entice partners	X	Government property systems are applicable
			257	Know and understand contingency planning through plan development and implementation	X	Government property systems are applicable to contingency planning
			258	Know how to explain electronic commercial techniques to business partners.	X	Government property systems are applicable

Environment	Trend	Action	Competency ID			Guidelines
O&S	Use of Electronic commerce and Other Information Technology	Require business partners to apply electronic commerce techniques and tools.	259	Know and understand marketing/selling methods and strategies	X	Thorough knowledge of marketing/selling methods and strategies is required
			260	Require business partners to apply electronic commercial techniques relating to government property.	X	Government property systems are applicable
	Increase Competitive Sourcing of Services	Determine appropriateness of competitive sourcing (inherently governmental).	262	Understand the characteristics of inherently governmental functions.	X	Management of Government property is inherently Government
		Determine acquisition strategy (e.g. regional, omnibus).	263	Know and understand contract oversight techniques and tools	X	Government property is an element
			264	Know and understand selected contract to apply oversight tools	X	Government property is an element
			265	Know and understand regional/national statutory/regulatory/environmental impediments	X	Basic understanding of for disposition of Government property is required
			267	Know and understand strategic planning. Know how to develop acquisition strategy.	X	A basic knowledge of strategic planning and acquisition strategy development is desired
		Perform a support service capability assessment (including government capability).	269	Know and understand support service capability assessment	X	Government property is an element
		Conduct Best Value Analysis on services/cost.	271	Know and understand Best Value Analysis and understand how to apply in source selections.	X	A working knowledge of how Government property is considered in best value analysis is desired.
		Establish Inter-Service Agreements.	272	Know and understand Inter-Service Agreements	X	Basic understanding of ISA is desired
			274	Know and understand the MOA/MOU preparation and execution	X	Basic understanding of MOU/MOA preparation is required
		Perform A-76 Study.	275	Know and understand A-76 policies and procedures	X	Basic understanding of A-76 policies and procedures is desired
		Select method and compute performance status indicators.	277	Know and understand risk assessment techniques and measurement tools	X	Thorough knowledge of risk assessment techniques and measurement tools is required
		Consider Small Business Issues.	278	Know and understand FAR and Small Business policies and issues	X	Government property may be an element

Environment	Trend	Function	Competency	D		Comments
O&S	Increase Competitive Sourcing of Services	Consider Small Business Issues.	279	Understand potential bundling issues and alert program manager.	X	Government property may be an element
PBA	Revision of Government Cost accounting Standards	Operate in an environment where commercial accounting standards apply.	280	Understand generally accepted accounting principles as they apply to Government property	X	
			281	Understand commercial cost accounting standards.	X	Required for performance of Government property control system analysis
			282	Understand commercial cost accounting standards as it applies to Government property	X	Required for performance of Government property control system analysis
			283	Apply commercial accounting standards where appropriate and possible	X	Basic understanding required for performance of a Government property control system analysis
	Longer Term Contractual Relationships	Perform analysis and determine the value of longer term contractual relationships.	284	Develop appropriate contracts for long term relationships where appropriate and possible	X	Government property may be an element
			285	Analyze and determine the value of longer term contractual relationships [but just repeats function]	X	Government property may be an element
			286	Acquire detailed knowledge of the business sector(s). See market research.	X	Basic understanding of market research techniques is required
	Increased Reliance on Price Analysis Versus Cost Analysis	Perform basic and advanced price-based and technology-based market analysis and research.	288	Apply basic and advanced price comparative techniques including parametric analysis	X	Government property is an element of cost
			289	Understand and employ price-based analytical techniques.	X	Government property is an element of cost
		Use basic and advanced price comparative techniques including parametric analysis.	290	Apply basic and advanced price comparative techniques including parametric analysis	X	Government property is an element of cost
	Introduction of Value Analysis	Establish a value for a set of activities to achieve some goal or product.	296	Apply value analysis to determine the anticipated results from varying levels of investment	X	Government property is an element of cost
			297	Apply value analysis with other price analysis techniques to evaluate the usefulness of this analysis	X	Government property is an element of cost

Environment	Trend	Intention	Opteny	D	D	Comments	Notes
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).		300	Know and understand hardware, software, and network requirements and applications and interoperability	X	Interoperability will drive Government property requirements
				301	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	Essential in a paperless environment
				302	Know and understand electronic commerce system relationship to existing business process and their interrelationships	X	A basic understanding is required for plant clearance
				303	Know, understand and be able to apply business process reengineering	X	Basic knowledge of business process reengineering is desired
				304	Know and understand statutory/regulatory environment	X	Basic knowledge of statutory/regulatory environment is desired
				305	Know and understand marketing/selling methods and strategies	X	Basic understanding required for plant clearance
				306	Know and understand performance metrics	X	Performance metrics are essential to property management
				307	Know and understand enterprise resource planning concepts and solutions	X	A thorough understanding of how Government property is part of ERP planing is required
				308	Know and understand commercial electronic commerce processes	X	A basic understanding is required for plant clearance
				309	Develop affordable requirements document for establishing software/hardware architecture for Integrated Digital Environment (IDE)	X	Government property is an element of cost
		Use commercial standard reference identification number system to simplify with private and federal sectors (e.g. Central Contractor registration).		310	Know and understand unique software requirements and applications	X	Government property is an element of cost
				311	Know, understand and be able to incorporate standards into paperless operating systems of commercial standard reference identification number system	X	

Environment	Trend	Intention	Competency ID			Comments
PLA	Integrated Digital Environment	Apply existing national and international standards, practices and technologies to automate the management and exchange of information.	313	Know and understand national and international standards, practices and technologies used to automate and manage and exchange information.	X	Essential in a paperless environment
	Achieve Paperless Contracting	Use electronic mediums to create, store, display, retrieve and modify contractual material.	314	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	Essential in a paperless environment
			315	Know and understand commercial electronic commerce processes	X	A basic understanding is required for plant clearance
			316	Know and understand marketing/selling methods and strategies	X	A basic understanding is required for plant clearance
			317	Apply the use of electronic media within the career field	X	A thorough working knowledge of electronic media applications and use with respect to Government property is required
			318	Understand how to use electronic media	X	A thorough working knowledge of electronic media applications and use with respect to Government property is required
			319	Understand the latest version of the Standard Procurement System	X	A basic understanding of SPS is required to administer contracts with Government property
			320	Validate information contained in electronic media	X	Accuracy of electronic media data with respect to Government property is paramount
		Use electronic mediums for electronic payments.	321	Understand the electronic payments process as it applies to the plant clearance process	X	A thorough knowledge is required for plant clearance
		Use purchase cards, electronic catalogs, electronic commerce and imaging.	325	Recognize statutes, rules, policies, and procedures.	X	A basic knowledge of statues, rules, policies, and procedures is desired.
			326	Recognize when to apply electronic commerce	X	A thorough knowledge is required for plant clearance
	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	327	Know, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	X	A basic understanding of the data management tools and techniques is desired.

Environment	Trend	Intention	Opteny D	D		Comments
PLA	Introduction and Maturation of Kowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	328	Recognize data management sources	X	A basic understanding of the data management sources is desired.
			329	Integrate data management systems such as PCARSS and CPMS	X	A thorough knowledge of property systems is required.
	Security/Proprietary Information	Use adequate security measures (to include protocols) to protect electronic information, as appropriate, and to provide ready access.	330	Kow and understand security statutory/regulatory environment	X	A basic understanding of the security statutory/regulatory environment is desired
			331	Kow and understand adequate security measures	X	A basic understanding security measures is desired
CMI	Increased Commercial Military Integration	Promote use of commercial items	332	Kow, comprehend and apply commercial accounting principles as they relate to Government property	X	A thorough knowledge of commercial accounting principles as they relate to Government property is required
			336	Kow Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X	Recognize benefits/impacts of commercial vs. govt. property ownership, use, maintenance and disposal
			340	Develop and maintain knowledge of the commercial/industrial/academic sectors.	X	A basic knowledge for plant clearance is desired
		Participate in sector activities (e.g. professional associations)	343	Kow relevant professional associations	X	Basic knowledge of professional associations relative to property management and disposition of Government property is desired
	Increased Use of Common Business Practices	Promote use of common business practices	344	Kow and understand benchmarking methods and tools	X	Basic understanding of benchmarking is desired
			345	Understand commercial auditing techniques	X	Recognize the benefits and cost savings of joint Government and contractor auditing of contractor processes
			347	Identify and adapt common and/or better practices.	X	Kow commercial practices related to property management and disposal
			348	Kow and understand warranties/guarantees and ability to synthesize into Government system	X	Government property is returned under warranty provisions

Environment	Trend	Intention	Capacity	Description		Comments
CMI	Increased Use of Common Business Practices	Promote use of common business practices	349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X	Recognize the benefits and cost savings of joint Government and contractor auditing of contractor processes
			350	Perform advanced market research of commercial and military products.	X	Basic knowledge of market research is desired
			351	Apply commercial auditing techniques to government property control processes	X	A through knowledge of auditing techniques to government property control processes is required
	Employ Common Technology Bases	Participate in technology sector activities.	355	Know and understand dual-use application of program/item needs and ability to incentivize dual-use focus	X	Knowledge of the provisions for the dual use of Government property is required
	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Employ flexible manufacturing	356	Know and understand flexible manufacturing techniques and tools (e.g. CAD/CAM)	X	Knowledge of CAD/CAM techniques is required to determine if Government property is being properly utilized
			362	Know and understand and ability to evaluate adequacy of government/contractor manufacturing capabilities/flexible manufacturing tools	X	A basic knowledge is desired for plant clearance
		Coordinate supply chain requirements (consider and integrate all phases in manufacturing flow).	364	Be able to develop and evaluate Supply Chain Management (SCM) options for CMI	X	Recognize cost and availability impacts of commercial vs. Government owned property
	Extend MILSPEC/MILSTANDARD Reform to Re-procurements	Reduce MILSPEC/MILSTANDARDS in reprocurements	369	Know and understand customer requirements	X	Government property may be an element
			370	Perform market analyses.	X	Government property may be an element
			376	Know and understand inventory management methods and practices and interrelationships to inventory reprocurements.	X	Government property may be an element
N	Life Cycle/Reduced Total Ownership Cost Emphasis	Reduce Life Cycle Cost/Total Ownership Cost	377	Understand role of program manager	X	Ensure Government property ownership, storage, and disposal ramifications are specifically addressed in risk assessments, trade offs and measurement tools
			378	Apply Cost as an Independent Variable (CAIV) and reduced Total Ownership Cost (TOC)	X	Government property may be an element

Environment	Trend	Intention	Opt	Key	Description	Comments	Comments
A	Life Cycle/Reduced Total Ownership Cost Emphasis	Reduce Life Cycle Cost/Total Ownership Cost	379		Apply program management requirements	X	A thorough knowledge of program management requirements, as they relate to Government property, is desired
			380		Know, understand and be able to adapt activity based costing to life cycle process.	X	Government property may be an element
			381		Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X	Government property may be an element
			382		Know and understand cost analysis and life-cycle management	X	Government property may be an element
		Establish activity based costing for the life cycle process.	383		Comprehend DoD's corporate implementation of activity based costing and management	X	Government property may be an element
	Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate	384		Perform risk analysis.	X	Government property may be an element
			385		Know and understand spiral development on resourcing and supportability (funding, sustainment)	X	Government property may be an element
			386		Know, understand and be able to assess, evaluate, and synthesize evolutionary/incremental enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution.	X	Government property may be an element
			387		Assess and forecast technology maturation for system insertion	X	Government property may be an element
			388		Analyze and evaluate requirements for validity of evolutionary and incremental acquisitions	X	Government property may be an element
		Minimize cycle time	389		Evaluate technology maturation to support short cycle time in product development	X	Government property may be an element
			390		Know and understand benchmarking/metrics analysis and ability to apply and evaluate in acquisition process to baseline and reduce cycle time	X	Government property may be an element
			391		Understand technology maturation vs. product application	X	Government property may be an element
	Flexible User Requirements	Participate in development of user requirements.	392		Perform risk analysis.	X	A thorough understanding or risk analysis principles and techniques is required

Environment	Trend	Intention	Competency ID			Comments
N	Flexible User Requirements	Participate in development of user requirements.	394	Comprehend and apply risk management methods and techniques as they relate to Government property	X	A thorough understanding or risk analysis principles and techniques is required
			395	Comprehend and apply alternative risk techniques	X	A thorough understanding or risk analysis principles and techniques is required
			397	Know and understand user and joint operating requirements	X	Government property may be an element
			398	Define and analyze alternatives.	X	Government property may be an element
			399	Know, understand and be able to operate in Integrated Product Team (IPT) environment	X	A broad understanding of acquisition functions performed by persons in other career fields is desired
	Technology Refreshment of Systems (Modernization through Spares)	Promote technology refreshment of systems	401	Know, understand and be able to assess, evaluate, and synthesize technology refreshment enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution)	X	A thorough knowledge of inventory management methods and techniques is required
			402	Assess and forecast technology maturation.	X	Government property may be an element
			403	Apply open systems architectures.	X	Government property may be an element
			404	Know and understand interchangeability/interoperability and substitution	X	Government property may be an element
			405	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X	Government property may be an element
		Develop performance based specifications	406	Know, understand and be able to use engineering change process methods and tools	X	Government property may be an element
			407	Know, understand and be able to use value engineering methods and tools	X	Government property may be an element
			408	Know and understand motivation techniques to incentivize industry to develop product improvements	X	Government property may be an element
		Obtain and execute funding for modernization	410	Synthesize the functions of the Planning, Programming and Budgeting System (PPBS)	X	Government property may be an element
	Increased Scope of Other Transactions	Expand use and scope of other transactions	411	Apply appropriate post-award oversight techniques.	X	Thorough knowledge of post-award oversight techniques as they apply to OT is required

Environment Trend	Intention	Competency D	D		Comments
Increased Scope of Other Transactions	Expand use and scope of other transactions	412	Know OT unique characteristics.	X	Basic knowledge of OT unique characteristics is required as they relate to Government property
		413	Recognize differences between other transactions and contracts as they relate to Government property	X	Thorough knowledge of the differences between other transactions and contracts as they relate to Government property is required
		414	Manage/oversee other transactions	X	Other Transactions are subject to review during the performance of a Government property control system analysis
		417	Comprehend and apply requirements of other transactions	X	A basic understanding of how to apply the requirements of Other Transactions is required
		419	Know the components of an 'Other Transaction'	X	A basic knowledge of components of Other Transactions is required
		420	Perform advanced market research.	X	A basic knowledge of market research is required for plant clearance
Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	423	Develop performance based solicitation.	X	Government property may be an element
		425	Apply modeling and simulation techniques.	X	Desire a basic understanding of how property costs and availability tradeoffs are addressed in M&S
		428	Analyze user requirements.	X	Government property may be an element
Increased Use of Performance Based Contracting	Capitalize on opportunities to develop performance based solicitations for products and services.	429	Apply performance based contracting methodologies	X	Government property may be an element
		430	Develop performance expectations incentives and metrics to describe acquisition needs and evaluate outcomes	X	Government property may be an element
		432	Know and understand common business practices	X	Know common business practices as they relate to property management
		433	Know and understand world-class sector practices processes and technologies (e.g. Single Process Initiative (SPI)).	X	Recognize the benefits and cost savings of joint government and contractor auditing of contractor processes

Environment	Trend	Intention	Competency	D	D	Comments	Notes
A	Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	435	Know and understand the Integrated Product Team (IPT) environment	X	Basic understanding of the roles and responsibilities of the acquisition career fields	
			436	Engage in analysis and tradeoff decisions on requirements to contract for the right product at the right time.	X	Government property may be an element	
			439	Understand roles and functions of a logistician	X	Specifically, understand the roles and functions of logisticians as they relate to and impact Government property	
			440	Understand roles and functions of a program manager	X	Specifically, understand the roles and functions of a program manager as they relate to and impact Government property	
			443	Maintain open communications through all phases of the life cycle.	X		

Total Number of Competencies: 8

Appendix K9Sustainment Function Narrative

INTRODUCTION

This section focuses on the future of sustainment logistics functions and series/specialties in the context of the future acquisition and technology environment. This is a different functional area than Acquisition Logistics, which primarily supports acquisition program office activities as defined in DoDD 5000.1 and DoD 5000.2-R. Sustainment, as intended in this study, includes individuals, regardless of civil service series or military occupation specialty, who are involved with initial supportability of fielded systems and their subsequent life cycle supportfrom initial procurement to supply chain management (including maintenance) to reutilization and marketing. It includes such traditional sustainment functions as initial provisioning, cataloging, inventory management and warehousing, and depot and field level maintenance. This function consists of what traditionally is described as the National Wholesale Level at the Materiel Commands (or equivalents) and Maintenance Depots of the military services and the Defense Logistics Agency (DLA), and the retail or field level of the support structures of the Services.

A significant transformation of Defense Logistics is underway and projected to continue through 2005 and beyond. There are many drivers and influences of this transformation. Some of the key drivers and influences are:

- the trend to adopt more commercial-style support practices via civil-military integration;
- the nature of future military operations and the impact on concepts of operations;
- new developments in science and technology;
- the need for more joint and interoperable solutions;
- continued expectations for a smaller and more agile organic operations and support (O&S) workforce and infrastructure; and
- greater attention to the reduction of total ownership costs (TOCs) (especially O&S over the life cycle of weapon systems).

Sustainment is going from predominately governmental functions to a mix of governmental functions and contractor operations. This transformation is being enabled by:

- a variety of Defense Reform Initiatives in acquisition and logistics which emphasize benchmarking, competitive and best value sourcing, performance-based business, strategic supplier alliances, and the shift to commercial best practices;
- an increase in joint and more common and corporate DoD approaches to O&S;

- a shift in focus from the management of supplies/equipment to the management and integration of supply chains and relationships;
- business process reengineering and the integration of functional stovepipe processes;
- the core competencies, capabilities and technology of the commercial sector; and
- the rapid development in information technology and electronic business capabilities.

It can be further enabled by the innovation and leadership of a better trained, more multi-skilled and empowered workforce.

While the trends and many of the enabling initiatives are promising, the DoD logistics system is large and complex. Cultural change often takes the longest to implement. More creative, comprehensive, and enlightened approaches to education and training will help facilitate and accelerate the transformation. Timing, flexibility, and multiple approach areas are all critical.

The current sustainment environment is still heavily U.S. Military Service, functional, and weapon system unique with only limited interoperability among processes, systems, and materiel. This situation has presented both challenges and opportunities in the transformation process. While this orientation is changing, future education and training must focus on thinking more holistically, and on knowing and understanding the implications of interrelationships ~~of~~ functions, processes, and systems.

The greater use of contractors for varying degrees of contractor logistics support (CLS), contractor assistance and advisory services (CAAS), and competitive sourcing of other O&S functions, creates even more challenges and opportunities. Logisticians must become more business savvy, more knowledgeable of defense market sectors, more sensitive to issues of interoperability and the implications of greater contractor support in life cycle support processes, and oriented toward more corporate, common, and integrated solutions. Weapon systems acquisition leadership, especially program managers, with the help of acquisition logisticians and sustainment logisticians, must emphasize TOCs over the life cycle of weapon systems, integrate acquisition and logistics with special attention to product support, and look for long-term solutions to achieve greater reliability and maintainability, improved performance, and more affordability and best value.

SUMMARY OF VITAL COMPETENCIES

This section discusses the competencies determined to be critical because of their importance to the future, all-encompassing nature, or "newness" to the Sustainment function.

- **Knowledge and understanding of best commercial practices.** Best practices will be one of the key enablers of acquisition and logistics reform.

- **Knowledge and understanding of Business Case Analysis (BCA) process, rules, and tools** . In an environment of more competitive sourcing, more innovative approaches to product support, and greater reliance on contractors, BCA will help us select and achieve best value.

- **Knowledge, understanding, and certification/experience in multiple DAWIA series skill areas**. Fewer people, more generalists, and the greater need for integration requires fewer pure functional experts and necessitates a greater knowledge of total processes and interrelationships.

- **Knowledge and understanding of market research and research methods** . Whether benchmarking best practices or preparing to do a BCA of various approaches to requirements, market research and analysis becomes a more important prerequisite.

- **Knowledge and understanding of supply chain management concepts** . Supply chain integration and management enables logisticians to succeed in the future as they do the following: shed non-inherent government functions and associated overhead/infrastructure, adopt commercial best practices, and change focus from management of supplies to management of relationships and services in a performance-based business environment with attention to best value.

- **Knowledge and understanding of performance metrics and how to develop and apply them**. Customer-focused, performance-based, output and outcome-oriented measures are a common denominator and the most important barometer in a performance-based business environment.

- **Knowledge and understanding of partnering/alliance opportunities/execution** . Partnering and alliances allow us to leverage core competencies, best practices, and technology, and pursue win-win solutions for both the government and industry.

- **Knowledge and understanding of current product support processes and interrelationships**. The ability to think holistically and understand cause and effect of product support processes and interrelationships is key to more joint, corporate, common, and more integrated solutions.

- **Knowledge and understanding of the electronic business environment** . Doing business electronically will be the standard.

IMPACT OF GLOBAL TRENDS/FUNCTIONAL TRENDS

This section discusses trends which will critically impact what Sustainment functional personnel will have to know or how they will have to operate in the future.

- **Smaller, more joint workforce** . A greater percentage of people will need to understand, think, problem-solve, and operate in the joint environment. In the performance of more inherently governmental jobs, a greater percentage of people will oversee contractor and public-private performance. They will need to understand and apply how to better define requirements in that context, how to

facilitate integration, and how to measure, track, and hold product and service providers accountable for outputs and outcomes. More change, more multi-skill expectations, more information, and greater responsibilities must be balanced against the need for greater training of fewer people.

- **Older Workforce**. An increasing smaller workforce and greater reliance on contractors makes the issues of an aging workforce more immediate and complex. As workers leave, the remaining workforce will be expected to know more especially about best practices, integrated operations, and lessons learned. This will make knowledge management more critical. It also makes cross-training, multi-skilling, and on-the-job training (OJT) more imperative before the experienced workers leave. As DoD attracts and infuses new employees in non-entry level positionsespecially mid-level grades and abovethe workforce must learn to integrate these personnel, help them adapt, and leverage their skills and ideas from the commercial sector. At the same time, we will need to educate new managers about the DoD environment. The demographics of the workforce will change in other ways as well. The diversity of the hiring pool continues to change. This will change our personnel sourcing strategies.

- **Business skills**. Sustainment logisticians and other multi-skilled acquisition professionals will need a greater knowledge of the DoD financial management system and processes (e.g., planning, programming, budgeting, and execution, differences among colors of money, and Defense Working Capital Fund (DWCF) and Single Stock Fund operations). An increasing number of people will require quantitative and qualitative business analysis skills and COTR skills. They need to be Web-savvy and electronic commerce savvy. At the supervisory levels, they will need to think more corporately, to leverage DoD buying power, and with more integrated solutions to improve efficiency and effectiveness. At the retail level, they will be expected to be more aware of alternative support solutions and concepts and possess the ability to flexibly employ them.

- **Generalists**. The changes to the size, demographics, and roles/responsibilities of the remaining workforce and the focus on more joint, corporate and integrated approaches drive a growing requirement for multi-skilled generalists. The requirements for functional and technical specialists in other than oversight roles will decrease. Generalists will require a holistic view of operational, business, and technical environments and interrelationships. Also, they will need knowledge and understanding of the acquisition, logistics, and other O&S processes, the interrelationships of these processes, and associated causes and effects on one another. They will need to focus on what drives performance, regardless of function or process.

- **Information technology (T)** . As DoD significantly divorces from legacy systems and moves into commercial off-the-shelf (COTS) solutions that enable many of the changing trends, logisticians will need to know and understand where and how to best leverage these capabilities. They will need to know and understand the integrated digital environment (IDE) and the potential acquisition, logistics, and technical applications and implications to their system(s) and processes. They will need to know, understand and apply IT capabilities to product support requirementsas part of the weapon systems and as part of support systems.

Also, as mentioned in business skills above, they need to know and apply electronic ways of doing business and be Web-savvy.

- **Learning organization** . In a culture of continuous process improvement and innovative product support, greater teaming, and virtual enterprise operations, the future workforce must avoid a "not invented here" mentality and rely more on benchmarking and best practices mechanisms. They will need a structured process for communicating what they learn from benchmarking and introducing these ideas into DoD acquisition and logistics processes. They must know and understand the core competencies of business partners in government and industry, leverage, and learn from those organizations who are the best at what they do.

- **Crossfunctional teaming** . The use of integrated product teams (IPTs) will continue to be a standard practice, with the potential of greater application. To take full advantage of IPTs (e.g., exchange issues/ideas, educate, study and evaluate, solve problems, plan) more of the future workforce will need to know and understand how to do work in the IPT environment and manage priorities effectively. Teaming among the traditional stovepiped sustainment support functions at both the wholesale and retail level will lead to more efficient logisticians capable of integrating flexible support strategies and processes.

- **Partnering with industry** . Partnering with industry will not just increase, but it will take on a variety of new forms and approaches from contractor support for non-inherently government functions to varying degrees of contractor logistics support for individual weapon systems to public-private partnerships for supply chain management or depot maintenance support. Likewise, greater application of commercial best practices, single processes, and dual use technology will foster civil military integration and partnering in other ways. Both government and industry will need to learn more about how to operate in each other's environments. On the government side, wholesale logisticians will need to know how to: address a number of new issues that will arise, e.g., the limitations on contractor roles and responsibilities and legal implications; evaluate contractor capabilities in a competitive sourcing and best value scenario; integrate private and public sector processes and IT systems; and address the operational readiness, surge, and sustainment implications of greater contractor involvement. They need to know and understand what can and cannot be done throughout the entire acquisition and logistics process.

VISION

The Sustainment functional workforce of 2005 will be smaller, more agile, more multidisciplined, more knowledgeable of the market sector, more customer (i.e., warfighter)-focused, more business savvy, more joint and holistic thinking, and life cycle cost and performance-oriented. They will operate in a future logistics environment that features:

- greater attention to O&S considerations up front in the early stages of the acquisition process;

- a performance-based business environment (PBBE) that encourages flexible sustainment, open systems, and form, fit, function, and interface (F3I);

- a more comprehensive acquisition strategy and an integrated business, technical, and support strategy that defines the desired PBBE outcomes and the key system and process interfaces; incorporates spiral development and modularity; and facilitates competitive sourcing;

- innovative support concepts and tailored solutions that may incorporate prime vendor and virtual prime vendor-like arrangements, joint and consolidated corporate contracts~~es~~pecially for horizontal or common support across weapon systems, modernization through spares, performance-based direct vendor delivery (DV), industry and depot teaming;

- increased competition, with greater BCA of cost and performance trade-offs;

- Supply Chain Integration and Management~~tte~~ include the integration of organic and commercial processes and the focus on problem solving in that context;

- emphasis on buying performance vice just products or parts;

- attention to principles of "lean" production and support, and process efficiency while targeting reliability, maintainability, and supportability and the reduction of leadtime and customer wait time;

- Civil-Military Integration as a result of competitively sourced functions, innovative support concepts, and common approaches to operations like Single Process Initiatives;

- the possibility of "contractors on the battlefield";

- emphasis on jointness and interoperability of systems, processes, standards—between the U.S. and allies, and among military services;

- blending of functional stovepipes;

- knowledge management as a key enabler of job performance, e.g., desktop access to expertise/lessons learned/corporate management of best practices; and

- metrics that are customer-focused, performance-based, and output and outcome-oriented.

IMPROVEMENTS RECOMMENDATIONS

To achieve the above vision, the following actions need to be taken.

- **Organize for the future** . Break down organization barriers and process barriers that separate many of the functional stovepipes, better enable the future trends, and better support the warfighter~~with~~ more joint, interoperable, and integrated approaches.

- **Provide more flexibility in fulltime equivalent (FTE)management** . Eliminate higher grade constraints, supervisory-to-employee ratio, and FTE ceiling. Manage to budget and use more of the profit and loss approach of industry.

- **Create reciprocal arrangements for exchange of government and industry personnel**. Create incentives for industry to want to come to government for a rotational assignment and as mid-level managers.

- **Modernize business systems** to facilitate integration, a performance-based business environment, electronic ways of doing business, knowledge management, and other important parts of the operational and business environments.

- **Seek financial reform**. Pursue business processing reengineering of the financial processes and their links/interfaces to the acquisition and logistics processes; competitively source financial services; address high costs of financial transactions; reengineer the Defense Working Capital Fund (DWCF); simplify the rules; and provide more flexibility among colors of money.

BARRIERS

The only known legislative barriers to pursuing more competitive sourcing for supportability is 10 USC 2464 and 2466 which deals with limiting the amount the Department can spend for inorganic depot maintenance programs. Culturally, there exists somewhat Service-unique approaches to sustainment support, both within Service structures and across the Services. These include funding and organizational issues around which the Materiel Support Commands and Hardware Commands are organized. Also, there are separate and distinct logistics career fields such as supply specialists, equipment specialists, maintenance management specialists, item managers, catalogers, transportation specialists, and more that will have a more difficult time adjusting to more generalist career paths.

INTERPLAY WITH OTHER CAREER FIELDS

There needs to be a closer relationship between program management, acquisition logistics, and sustainment. Given the trends of more corporate, common, and integrated approaches and the need to focus on and reduce TOCs and life cycle costs, program managers and acquisition logisticians need to know and understand more about product support issues and implications. Conversely, sustainment logisticians need to play earlier in the acquisition process and in more of the program managers problem-solving and decision-making processes.

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Environmtl	Tend	Intion	Cpteny D	Z	Cmt Nes
RDT&E	Consolidation (Centers of Excellence)	Perform Business Case Analysis (BCA) (mission, capabilities, costs, trends, future, cross-Service opportunities to include technical capabilities).	1	Analyze and evaluate different categories of data such as cost and technical capabilities. Analyze business data to determine its adequacy and impact on consolidation of RDT&E organizations.	X
			2	Use tradeoff analyses to assess most appropriate consolidation recommendations.	X
			3	Know and understand service capabilities/core competencies	X
			4	Know critical elements contained in a Business Case Analysis (BCA) in order to justify sound business outcomes.	X
		Develop streamlining and implementation planning for consolidation.	5	Use Business Case Analysis (BCA) to assess effectiveness of the economies of budgeting inherent government functions or centers of excellence and service contracting in the business sector.	X
			6	Know and understand joint and service strategic planning and requirements process; assess impact of consolidation options	X
			8	Know and understand the Planning, Programming and Budgeting System (PPBS) and DoD monetary policies and procedures; Assess fiscal impacts and synthesize consolidation options	X
		Operate in a Multi-Service Environment.	10	Know and understand RDT&E process; evaluate consolidation/process change options; synthesize win-win solutions	X Basic understanding only
			11	Know and understand virtual RDT&E resources/network applications; ability to assess applicability and determine best consolidation applications	X Basic understanding only
			12	Identify, select, and follow relevant procurement rules of multi-service participants	X Basic understanding only

Environment	Trend	Action	Competency		Z	Comments
RDT&E	Consolidation (Centers of Excellence)	Operate in a Multi-Service Environment.	13	Know and understand how to function in a Multi-Service environment.	X	
			14	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	X	Emphasis on supply chain
	Increased Reliance on Non-DoD Organizations	Conduct market research/analysis of the national base of technology.	17	Understand basic market research techniques	X	
			18	Know technology for a specific business sector. Understand and evaluate unique conditions.	X	
			19	Understand sector pricing practices	X	
		Assess and match DoD/Non-DoD technical and facility capabilities (retain Smart Buyer Expertise in DoD-unique areas.)	20	Know and understand technology insertion strategies and ability to apply to DoD needs.	X	Basic understanding only
			21	Know DoD's unique technical and facilitation requirements.	X	
			22	Assess the alternative sources and methods most appropriate to handle the requirements not unique to DoD.	X	Basic understanding only
			23	Know, understand and be able to benchmark and evaluate all RDT&E options/practices	X	Basic understanding only
		Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	24	Evaluate the individual situation and select the appropriate contracting or assistance vehicle	X	
			25	Understand the applicability and advantages of the various contracting or assistance vehicles.	X	
			26	Know and understand dual use application of program/item needs and ability to incentivize dual-use focus	X	
			27	Determine the most appropriate agreement, as well as pricing and facility arrangements that will mitigate risk in accordance with regulations, statutes and sound business judgement.	X	

Environment	Trend	Action	Opt	Key Dimension	Z	Comments
RDT&E	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	30	Know, understand and be able to operate in an Integrated Product Team (IPT) environment	X	
		Perform design tradeoffs earlier in the acquisition process.	33	Evaluate use of the systems engineering process to reduce risk of operational / support problems	X	
		Develop strategy to minimize operation/support problems, risks and fielding issues.	34	Understand the impact of design on the operations and test environment	X	
		Plan appropriate T&E of commercial and NDI items.	35	Know proposed use of Commercial & Non-Developmental Items (NDI) be able to evaluate such items.	X	
		Apply integrated product and process development.	36	Understand the use of Integrated Product and Process Development (IPPD) in successful acquisition management	X	Basic understanding only
		Develop verification/conformance metrics.	38	Know and understand metric development and linkage to mission/operations and cost implications	X	
	Increased Use of Simulation Based Acquisition (SBA)	Perform analysis on most appropriate SBA program application, select pilot programs.	40	Know and understand potential DoD/Service growth areas for application of Simulation Based Acquisition (SBA) and Modeling (specifically O&S)	X	
			41	Understand the use of Modeling and Simulation (M&S) across the total life cycle of a system.	X	
		Use SBA to identify and simulate design issues and risks.	43	Understand the factors that make up the simulation model and verify that logical and statistical relationships exist.	X	
		Apply simulation and modeling techniques.	45	Be capable of using and understanding the basic tenets of modeling and simulation	X	
			46	Know and understand the types of models (physical, mathematical, logical) and the common pitfalls and limitations.	X	
			47	Understand the models and simulations associated with the processes of requirements generation, program management, design and engineering, manufacturing, T&E, logistics support and training.	X	

Environment	Trend	Intention	Competency	Description	Z	Comments
RDT&E	Separation of Tech Maturation From Product Development	Perform S&T strategic planning.	48	Know and understand future technological advances that can be incorporated into system development programs.	X	
			49	Know and understand strategic planning tools and techniques. Coordinate with Joint Warfighting requirements.	X	
		Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50	Know and understand contingency planning and execution	X	
		Design Systems with open architectures.	58	Know and understand open architecture discipline, tools, and methods and ability to apply to service interoperability	X	Basic understanding only
		Conduct affordability assessments/analysis.	59	Be able to do parametric analyses	X	Basic understanding only
			60	Understand the Cost as an Independent Variable (CAI)/policy concerning the authority of the program manager to make cost and performance tradeoffs	X	
			61	Know and understand affordability assessment techniques and tools	X	Basic understanding only
		Assess supportability techniques for assessing systems requirements.	69	Use systems engineering processes to reduce risk of operational and support problems.	X	
			71	Know and understand supportability analysis tools and techniques	X	
			72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X	
		Identify sources and methodologies for technology insertions.	74	Know and understand open architecture discipline, tools, methods to improve aging systems/platforms O&S (specifically for tech insertions)	X	
		Apply Advanced Concept and Technological Demonstrations (ACTDs) as appropriate during product development.	76	Know and understand the Advanced Concept and Technological Demonstration (ACTD) process and their impact on Life Cycle Cost (LCC).	X	Basic understanding only

Environment	Trend	Action	Competency		Z	Comments
RDT&E	Increased Emphasis On Interoperability As A RP	Develop systems using International Interoperability Standards.	79	Identify and describe basic principles of technical standards as they relate to system development and interoperability	X	Basic understanding only
		Comply with Joint Technical Architecture requirements.	80	Knowledge and understanding and ability to comply with Defense Information Infrastructure Common Operating Environment (DII COE)	X	
			81	Understand and apply Joint Technical Architecture (JTA) requirements and standards	X	
		Perform a Cost as an Independent Variable (CAIV) analysis.	84	Understand the purpose and general method of execution of Cost as an Independent Variable (CAIV)	X	
			85	Prepare and defend a Cost as an Independent Variable (CAIV)analysis. Discuss the relationship of CAIV analysis to other cost analyses	X	
			86	Understand the Cost as an Independent Variable (CAIV)policy concerning the authority of the program manager to make cost and performance tradeoffs	X	
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	101	Know and understand DoD operations & requirements	X	Emphasis on joint and Military Service sustainment processes
			102	Know and understand environmental rules/regulations	X	
			103	Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X	
			104	Know and understand commercial best practices	X	Emphasis on best practices
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105	Know and understand risk assessment methods and measurement tools	X	
			106	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	
		Develop streamlining and implementation planning for consolidation.	107	Know and understand strategic planning	X	Emphasis on planning with focus on tenets of Government Performance and Results Act (e.g. outcome-oriented, performance-based)

Environment	Trend	Intention	Opteny	D	Z	Comments	Notes
O&S	Consolidation	Develop streamlining and implementation planning for consolidation.		108	Know and understand organizational management and structures to include existing and options	X	
				109	Know and understand organizational processes and measurement	X	
				110	Know and understand personnel policies/procedures to include labor relations/union coordination	X	
		Ensure highest quality staff infrastructure is maintained.		112	Know and understand available training/education resources to include funding/opportunity	X	
	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.		113	Understand techniques to determine best practices	X	
				114	Know and understand commercial best practices	X	Emphasis on leveraging commercial core competencies and technology
				115	Analyze government and industry to identify, adopt, and tailor best practices.	X	
				116	Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X	Attention to readiness and sustainment considerations and implications
				117	Know and understand benchmarking	X	Focus on best practices of world-class providers
				118	Know and understand research methods literature, internet, corporate assets	X	
				119	Ability to analyze new experiment proposals and develop models for new business and technical processes.	X	
		Perform business case analysis.		120	Know and understand Business Case Analysis (BCA) process/rules and tools.	X	
				121	Understand how to perform Business Case Analysis (BCA)	X	Focus on best value
		Involve customers early in the acquisition strategy process.		122	Be able to identify and correct potential imbalances in level playing field involved in public-private competitions.	X	
				123	Know and understand strategic planning	X	

Environment	Trend	Intention	Competency		Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Involve customers early in the acquisition strategy process.	124 Know how to apply technology to implement reengineered and integrated business processes.	X	
			125 Know and understand acquisition process	X	
			126 Know and understand the Planning, Programming and Budgeting System (PPBS)	X	
			127 Know and understand requirements forecasting techniques & process	X	
			128 Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers.	X	
		Employ/Develop sourcing strategies that emphasize best value.	129 Know and understand customer requirements	X	
			130 Know and understand contracting options available	X	
			131 Ability to develop performance-based work statements or statements of objectives.	X	
			132 Understand and use A-76 techniques for competitive sourcing using best value (Assume A-76 revised to permit best value selection)	X	
			133 Know and understand negotiations/plans and execution	X	Strong emphasis area -- need detailed understanding
			134 Select and apply selected contracting vehicle	X	
			135 Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	Focus on role changes to be more of a supply chain integrator, broker, and manager of relationships
			136 Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault-tree methods for describing and making decisions.	X	Emphasis on tenets of GPRA (e.g. outcome-oriented, performance-based, customer-focused)
			137 Know and understand current product support processes and interrelationships	X	
			138 Know and understand commercial best practices	X	

Environment	Trend	Intention	Competency ID	Z	Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Employ/Develop sourcing strategies that emphasize best value.	139 Know and understand partnering/alliance opportunities/execution	X	
			140 Know and understand data analysis to include cost/price/performance tradeoffs In order to achieve affordable readiness.	X	
		Develop performance-based work statements or statements of objectives.	141 Know and understand product/service to be supported	X	
			142 Know and understand performance-based work statements or statement of objectives development/environment	X	
			143 Be able to develop performance metrics to describe customer/acquisition needs and evaluate outcomes.	X	
		Apply technology to enable implementation of reengineered and integrated business processes.	144 Know how to develop strategies for optimizing development over time and resolve uncertainties.	X	
			145 Know and understand technology use in commercial /government operations	X	
			146 Evaluate/Analyze potential technology solutions to determine best approach/solution	X	
		Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	147 Be able to conduct tradeoff studies in support of decisions to reduce Total Ownership Cost (TOC).	X	
			148 Know and understand financial constraints	X	
			149 Know and understand environmental barriers (regulatory/statutory)	X	
			150 Know and understand possible incentives available	X	
			151 Know and understand industry motivators	X	
			152 Know and understand process change enablers	X	

Environment	Trend	Intention	Criteria ID		Comments
O&S	Reengineer the Product Support Process to Use Best Practices	Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	153 Know and understand life-cycle management processes and phases	X	
			154 Know how to identify and incorporate appropriate contractual requirements and incentives.	X	
			155 Know and understand components of Total Ownership Cost (TOC).	X	
		Apply integrated supply chain practices.	156 Seek integrated Supply Chain Management (SCM) solutions	X	
			157 Know and understand ways to apply Single Process Initiative (SPI) to optimize logistics operations.	X	
			158 Know and understand quality requirements	X	
			159 Know and understand alternative sourcing options	X	
			160 Know and understand Supply Chain Management (SCM) evaluation/measurement models	X	
			161 Know and understand Supply Chain Management (SCM) purposes and processes - components and total	X	
			162 Apply Supply Chain Management (SCM) processes/methods to business opportunity/situation	X	
	Expansion of Prime Vendor/Virtual Prime Vendor/PVP like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	163 Know and understand applicable markets and market interrelationships, including markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies	X	Emphasis on ability to perform market research in detail
			164 Know how to develop appropriate contractual vehicles to implement Prime Vendor/Virtual Prime Vendor arrangements	X	
			165 Understand the Prime Vendor concept in the DoD acquisition of supplies and services	X	Focus on commercial supply chain solutions -- Attention to reduction of customer wait time, improvement in product quality and best value
			166 Know and understand commercial practices, including best practices of specific market sector	X	

Environment	Trend	Action	Competency		Z	Comments
O&S	Expansion of Prime Vendor/Mutual Prime Vendor/P\P\like arrangements	Analyze markets not currently covered by prime vendor-type arrangements, and develop acquisition strategies.	167	Know and understand market research methods	X	
		Tailor the application of best practices to the specific market sector and develop appropriate contractual vehicles.	168	Know and understand negotiations/plans and execution	X	
			169	Know and understand commercial best practices	X	
			170	Know and understand current product support processes and interrelationships	X	
			171	Know and understand partnering/alliance opportunities/execution	X	
			172	Know and understand data analysis to include cost/price/performance tradeoffs	X	
			173	Know and understand customer requirements	X	Emphasis on knowing and understanding the customer requirements and survey process and techniques, interpreting, and taoloring solutions
	Increased Contractor Logistics Support	Develop integrated support strategies.	174	Know and understand common support requirements and tools and ability to leverage those opportunitiesconsolidated design and buying opportunities	X	
			175	Know and understand selected contract to apply oversight tools	X	
			176	Know and understand organic and commercial options available	X	
			177	Know and understand contract oversight techniques and tools	X	
			178	Know and understand mission application and operating environment	X	
			179	Know and understand sustainment/war reserve requirements	X	
			180	Know and understand commercial inventory management processes/techniques	X	

Environment	Trend	Action	Competency ID		Core
O&S	Increased Contractor Logistics Support	Develop integrated support strategies.	181	Analyze market research/customer requirements/sourcing strategies to synthesize best value Contractor Logistics Support (CLS) solutions	X
			182	Know and understand alternative logistic support risks, costs, and performance in development of integrated support strategies and tools.	X
			183	Know and understand sustainment processes/techniques and process interrelationships (specific emphasis on inventory management with a configuration management subset)	X
		Develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	184	Know how to develop and apply rules and tools to help determine the best application of contractor support and best use of innovative contracting techniques for common support requirements.	X
			185	Create performance-based statements of objectives and incentives for logistics support.	X
			186	Know flexible sustainment contracts and how to develop performance events to measure contractor progress.	X
	Outsource Equipment Disposal Activities	Conduct capability/environmental assessment.	187	Know and understand commercial marketplace capabilities	X
			188	Know and understand A-76 policies and processes	X
			189	Know and understand selling and marketing techniques to maximize sales return	X
			190	Know how to identify hazardous property and recognize the existence of federal, state and local requirements that may impact on its disposal in accordance with EPA, RCRA, TSDA, FAR AND DFARS.	X
			191	Know and understand environmental regulations and cost assessments.	X
			192	Know and understand government disposal policy and procedures	X

Environment	Trend	Intention	Competency ID	Z	Comments
O&S	Outsource Equipment Disposal Activities	Assess contractor's security processes and procedures.	193 Know demilitarization requirements to assure resale of surplus material eliminates potential of hazardous/safety incidents.	X	
			194 Know and understand statutory/regulatory security policy/procedures	X	Attention to FMS and other international sales implications
			195 Know and understand resources to identify and conduct assessments	X	
	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.	196 Know and understand selected contract in order to apply oversight tools	X	
			197 Know and understand contract oversight techniques and tools	X	Focus on management of suppliers, relationships and performance
			198 Analyze market research/customer requirements/sourcing strategies to synthesize best value Vendor Managed Inventories/Direct Vendor Delivery solutions	X	
			199 Understand and apply past performance in structuring of a solicitation.	X	
			200 Know and understand current, market-ready commercial practices with end-to-end visibility of inventory.	X	
			201 Know and understand market research methods and tools	X	
			202 Know and understand total asset visibility techniques	X	
		Monitor and track business volume information outside of DoD ownership.	203 Know and understand shift to commercial practices reporting methodology/metrics	X	
			204 Understand production, planning and control systems that meet time-definite delivery requirements.	X	
			205 Analyze and interpret business volume information to evaluate organic and industry total system performance	X	
			206 Know and understand shift to commercial practices business processes	X	

Environment	Trend	Intention	Criteria	Z	Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	207	Know and understand life-cycle management processes and phases	X
			208	Understand Cost as an Independent Variable (CAIV)	X
			209	Know and understand negotiations strategy/methods/tools	X
			210	Know and understand contracting options available	X
			211	Know and understand formal and informal organizational structure to generate best value solutions to reduce Total Ownership Cost (TOC)	X
			212	Know and understand weapon system/platform mission/operating environment	X
			213	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X
			214	Know and understand data analysis to include cost/price/performance tradeoffs	X
			215	Know and understand risk assessment techniques and measurement tools	X
			216	Know and understand Supply Chain Management (SCM) processes and tools	X
			217	Know and understand partnering/alliance opportunities/execution	X
			218	Know and understand commercial Total Ownership Cost (TOC) and life-cycle practices and tools	X
			219	Know and understand the Planning, Programming and Budgeting System (PPBS) and defense fiscal management policies and practices	X
			220	Select and apply selected contracting vehicle	X
			221	Know and understand Total Ownership Cost (TOC) variables and impacted areas, to include how to perform tradeoff analyses of capability performance, and life-cycle cost drivers and evaluation.	X

Environment	Trend	Intention	Capacity	Z	Comments
O&S	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Develop or modify oversight processes and analysis tools.	222	Know cost estimating methods.	X
			223	Know which funding accounts the Program Manager must influence to reduce Total Ownership Cost (TOC).	X
			224	Know and understand commercial industry analysis tools and oversight processes	X
			225	Know cost models, contractor systems and process risks.	X
			226	Understand operating and support cost data and data sources (e.g., Service XMOSC Systems) and their differences; cost estimating tools/models and their limitations.	X
			227	Know and understand existing oversight processes and analysis tools	X
			228	Understand Total Ownership Cost (TOC) from several O&S perspectives (e.g. weapon systems, units and organizations).	X
		Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	229	Know and understand data analysis to include cost/price/performance tradeoffs and cost drivers.	X
			230	Know and understand life-cycle management processes and phases	X
			231	Know and understand contingency planning through plan development and implementation	X
			232	Know and understand analysis techniques and tools	X
			233	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X
			234	Know and understand contract incentives/disincentives through contract completion	X
	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	235	Know how to access web-based acquisition and work-flow systems.	X

Environment	Trend	Intention	Capacity	Z	Comments
O&S	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X
			237	Know and understand unique software requirements	X
			238	Apply web-based acquisition systems	X
			239	Know and understand enterprise resource planning concepts and solutions	X
			240	Know web-based acquisition systems	X
			241	Know and understand marketing/selling methods and strategies	X
		Use purchase card as method of payment where appropriate.	242	Know and understand audit/reconciliation process	X
			243	Know and understand marketing/selling methods and strategies	X
			244	Know and understand impediments of further application (e.g. security, financial)	X
			245	Know and understand purchase card regulations and procedures	X
			246	Know the appropriate use of purchase cards	X
		Perform electronic commerce in an integrated, closed looped process, transparent to the user.	247	Know and understand statutory/regulatory environment	X
			248	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X
			249	Know and understand commercial electronic commerce processes	X
			250	Know and understand electronic commerce system relationship to existing business process and their interrelationships	X
			251	Know and understand performance metrics	X
			252	Know and understand unique software requirements	X

Environment	Tend	Ention	Opteny	D	Z	Cent	Nes
O&S	Use of Electronic commerce and Other Information Technology	Perform electronic commerce in an integrated, closed looped process, transparent to the user.	253	Know and understand marketing/selling methods and strategies	X		
		Require business partners to apply electronic commerce techniques and tools.	254	Know and understand contract incentives/disincentives through contract termination	X		
			255	Understand DoD electronic commerce policy	X		
			256	Know and understand incentives available to entice partners	X		
			257	Know and understand contingency planning through plan development and implementation	X		
			258	Know how to explain electronic commercial techniques to business partners.	X		
			259	Know and understand marketing/selling methods and strategies	X		
			260	Require business partners to apply electronic commercial techniques relating to government property.	X	Emphasize use for all business applications (e.g. ordering, shipping, billing, payment)	
	Increase Competitive Sourcing of Services	Determine appropriateness of competitive sourcing (inherently governmental).	261	Know and understand competitive sourcing processes and procedures, including A-76 process and procedures	X		
			262	Understand the characteristics of inherently governmental functions.	X		
		Determine acquisition strategy (e.g. regional, omnibus).	263	Know and understand contract oversight techniques and tools	X		
			264	Know and understand selected contract to apply oversight tools	X		
			265	Know and understand regional/national statutory/regulatory/environmental impediments	X		
			266	Know and understand unit mission/operating environment and ability to define to requirements to task level	X		
			267	Know and understand strategic planning. Know how to develop acquisition strategy.	X		

Environment	Trend	Intention	Competency	ID	Z	Continues
O&S	Increase Competitive Sourcing of Services	Determine acquisition strategy (e.g. regional, omnibus).		268	Know and understand resources available to support any stage of acquisition	X
		Perform a support service capability assessment (including government capability).		269	Know and understand support service capability assessment	X
		Conduct Best Value Analysis on services/cost.		270	Know how to perform cost estimating methods.	X
				271	Know and understand Best Value Analysis and understand how to apply in source selections.	X
		Establish Inter-Service Agreements.		272	Know and understand Inter-Service Agreements	X
				273	Know and understand personnel policies/procedures to include labor relations/union coordination	X
				274	Know and understand the MOA/MOU preparation and execution	X
		Perform A-76 Study.		275	Know and understand A-76 policies and procedures	X
				276	Know and understand business processes (unit specific is preferred)	X
		Select method and compute performance status indicators.		277	Know and understand risk assessment techniques and measurement tools	X
		Consider Small Business Issues.		278	Know and understand FAR and Small Business policies and issues	X
				279	Understand potential bundling issues and alert program manager.	X
PBA	Revision of Government Cost accounting Standards	Operate in an environment where commercial accounting standards apply.		280	Understand generally accepted accounting principles as they apply to Government property	X
				281	Understand commercial cost accounting standards.	X
				282	Understand commercial cost accounting standards as it applies to Government property	X
	Longer Term Contractual Relationships	Perform analysis and determine the value of longer term contractual relationships.		284	Develop appropriate contracts for long term relationships where appropriate and possible	X

Environment	Trend	Tention	Opteny	D	Z	Comments
PBA	Longer Term Contractual Relationships	Perform analysis and determine the value of longer term contractual relationships.	285	Analyze and determine the value of longer term contractual relationships [but just repeats function]	X	
			286	Acquire detailed knowledge of the business sector(s). See market research.	X	
		Establish long term contractual relationships (not limited to multi-year contracts for individual items/systems) where appropriate (e.g. CICA).	287	Understand the limitations imposed by the Competition in Contracting Act (CICA).	X	
	Increased Reliance on Price Analysis versus Cost Analysis	Perform basic and advanced price-based and technology-based market analysis and research.	288	Apply basic and advanced price comparative techniques including parametric analysis	X	
			289	Understand and employ price-based analytical techniques.	X	
		Use basic and advanced price comparative techniques including parametric analysis.	290	Apply basic and advanced price comparative techniques including parametric analysis	X	
	Maximize FAR Part 12 Acquisition	Recognize items as commercial under expanded definition.	291	Properly identify potential procurements under FAR Part 2.	X	
		Use FAR Part 12 procedures for procuring commercial items/services.	292	Know and understand customer requirements	X	
			293	Understand and employ FAR Part 12 and Part 13.	X	
		Manage/oversee contracts for commercial services.	294	Know and understand existing oversight processes and analysis tools	X	
		Analyze and challenge requirements to promote use of commercial items.	295	Apply basic and advanced price comparative techniques including parametric analysis	X	
	Introduction of Value Analysis	Establish a value for a set of activities to achieve some goal or product.	296	Apply value analysis to determine the anticipated results from varying levels of investment	X	Focus on best value supply chain solutions
			297	Apply value analysis with other price analysis techniques to evaluate the usefulness of this analysis	X	

Environment	Trend	Intention	Criteria	Z	Comments
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	300	Know and understand hardware, software, and network requirements and applications and interoperability	X
			301	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X
			302	Know and understand electronic commerce system relationship to existing business process and their interrelationships	X
			303	Know, understand and be able to apply business process reengineering	X
			304	Know and understand statutory/regulatory environment	X
			305	Know and understand marketing/selling methods and strategies	X
			306	Know and understand performance metrics	X
			307	Know and understand enterprise resource planning concepts and solutions	X
			308	Know and understand commercial electronic commerce processes	X
			309	Develop affordable requirements document for establishing software/hardware architecture for Integrated Digital Environment (IDE)	X
		Use commercial standard reference identification number system to simplify with private and federal sectors (e.g. Central Contractor registration).	310	Know and understand unique software requirements and applications	X
			311	Know, understand and be able to incorporate standards into paperless operating systems of commercial standard reference identification number system	X
		Apply existing national and international standards, practices and technologies to automate the management and exchange of information.	312	Know and understand Defense Information Infrastructure Common Operating Environment (DII COE) and ability to synthesize	X

Environment	Trend	Intention	Competency	D	Z	Comments
PLA	Integrated Digital Environment	Apply existing national and international standards, practices and technologies to automate the management and exchange of information.	313	Know and understand national and international standards, practices and technologies used to automate and manage and exchange information.	X	
	Achieve Paperless Contracting	Use electronic mediums to create, store, display, retrieve and modify contractual material.	314	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	
			315	Know and understand commercial electronic commerce processes	X	
			316	Know and understand marketing/selling methods and strategies	X	
			317	Apply the use of electronic media within the career field	X	
			318	Understand how to use electronic media	X	
			319	Understand the latest version of the Standard Procurement System	X	
			320	Validate information contained in electronic media	X	
		Use electronic mediums for electronic payments.	321	Understand the electronic payments process as it applies to the plant clearance process	X	
			322	Know and understand electronic mediums for electronic payment.	X	
			323	Know and understand strengths and weaknesses of integration	X	Emphasis on integration of business processes
			324	Recognize Government and commercial cultures to effectively educate/market/encourage commercial participation	X	
		Use purchase cards, electronic catalogs, electronic commerce and imaging.	325	Recognize statutes, rules, policies, and procedures.	X	
			326	Recognize when to apply electronic commerce	X	
	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	327	Know, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	X	

Environment	Trend	Intention	Criteria	Description	Z	Comments
PLA	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	328	Recognize data management sources	X	
	Security/Proprietary Information	Use adequate security measures (to include protocols) to protect electronic information, as appropriate, and to provide ready access.	330	Know and understand security statutory/regulatory environment	X	
			331	Know and understand adequate security measures	X	
CMI	Increased Commercial Military Integration	Promote use of commercial items	332	Know, comprehend and apply commercial accounting principles as they relate to Government property	X	
			333	Perform advanced market research of commercial and military products	X	
			334	Know, understand and be able to understand benefits of opportunities of using/transitioning to commercial items where available.	X	
			335	Know and understand commercial and MILSPEC systems and specific sector practices; ability to develop solutions and deconflict to eliminate military specifications where commercial products and practices fulfill the requirement	X	
			336	Know Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X	
			337	Know operational organizations, concepts and data sources.	X	
			338	Perform an analysis of alternatives.	X	
			339	Analyze/challenge requirement in order to accept commercial items.	X	
			340	Develop and maintain knowledge of the commercial/industrial/academic sectors.	X	
		Participate in sector activities (e.g. professional associations)	341	Know and understand sector resources, activities, world-class practices, processes, technologies, and integration impediments.	X	

Environment	Trend	Intention	Opteny	D	Z	Comments
CMI	Increased Commercial Military Integration	Participate in sector activities (e.g. professional associations)	342	Be able to synthesize Government and commercial cultures to effectively educate/market/encourage commercial participation in CMI	X	
			343	Know relevant professional associations	X	
	Increased Use of Common Business Practices	Promote use of common business practices	344	Know and understand benchmarking methods and tools	X	
			345	Understand commercial auditing techniques	X	
			346	Know and understand industry data exchange programs	X	
			347	Identify and adapt common and/or better practices.	X	
			348	Know and understand warranties/guarantees and ability to synthesize into Government system	X	
			349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X	
			350	Perform advanced market research of commercial and military products.	X	
			351	Apply commercial auditing techniques to government property control processes	X	
	Employ Common Technology Bases	Promote knowledge of world-class technology bases	352	Know and understand potential DoD/Service growth areas for application of CMI/technology bases (specifically O&S)	X	
			353	Develop knowledge of relevant technology bases, resources, and capabilities.	X	
		Participate in technology sector activities.	354	Know and understand sector resources, activities, world-class practices, processes, technologies, and integration impediments.	X	
	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Employ flexible manufacturing	356	Know and understand flexible manufacturing techniques and tools (e.g. CAD/CAM)	X	
			357	Evaluate adequacy of workload planning	X	Focus on industrial base planning and processes, sustainment and surge capabilities

Environment	Trend	Intention	Capability			Constraints
CMI	Employ Flexible manufacturing (Economic manufacture of Varying Size and Types)	Employ flexible manufacturing	358	Evaluate adequacy of contractor manufacturing capabilities	X	Focus on industrial base planning and processes, sustainment and surge capabilities
			359	Know and understand agile manufacturing	X	Focus on industrial base planning and processes, sustainment and surge capabilities
			360	Know and understand surge manufacturing and ability to develop best solution for CMI when factoring in surge requirements	X	Focus on industrial base planning and processes, sustainment and surge capabilities
			361	Know and understand Diminishing Manufacturing Sources (DMS) commodities	X	Focus on industrial base planning and processes, sustainment and surge capabilities
			362	Know and understand and ability to evaluate adequacy of government/contractor manufacturing capabilities/flexible manufacturing tools	X	Focus on industrial base planning and processes, sustainment and surge capabilities
		Coordinate supply chain requirements (consider and integrate all phases in manufacturing flow).	363	Know and understand Supply Chain Management (SCM) practices and tools	X	Strong emphasis area -- Focus on supply chain solutions.
			364	Be able to develop and evaluate Supply Chain Management (SCM) options for CMI	X	
	Extend MILSPEC/MILSTANDARD Reform to Re-procurements	Reduce MILSPEC/MILSTANDARDS in reprocurements	365	Develop performance-based specifications.	X	
			366	Know, understand and be able to determine if CMI or military spec is applicablesafety/health/mission needs	X	
			367	Develop sources as required.	X	
			368	Know and understand quality and testing needs/requirements	X	
			369	Know and understand customer requirements	X	
			370	Perform market analyses.	X	
			371	Analyze impact on logistics system (supply and maintenance).	X	

Environment	Trend	Intention	Optency	D	Z	Comments	Notes
CMI	Extend MILSPEC/MILSTANDARD Reform to Re-procurements	Reduce MILSPEC/MILSTANDARDS in reprocurements		372	Manage multiple configurations.	X	Basic understanding only
				373	Develop and maintain a flexible supply and delivery system.	X	
				374	Know and understand commercial and MILSPEC systems and specific sector practices; ability to develop solutions and deconflict to eliminate military specifications where commercial products and practices fulfill the requirement	X	
				375	Understand operating systems that effectively connect operations with customers, distribution channels, and suppliers	X	
				376	Know and understand inventory management methods and practices and interrelationships to inventory reprocurements.	X	
A	Life Cycle/Reduced Total Ownership Cost Emphasis	Reduce Life Cycle Cost/Total Ownership Cost		377	Understand role of program manager	X	
				378	Apply Cost as an Independent Variable (CAIV) and reduced Total Ownership Cost (TOC)	X	
				379	Apply program management requirements	X	
				380	Know, understand and be able to adapt activity based costing to life cycle process.	X	
				381	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X	
				382	Know and understand cost analysis and life-cycle management	X	
		Establish activity based costing for the life cycle process.		383	Comprehend DoD's corporate implementation of activity based costing and management	X	
	Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate		385	Know and understand spiral development on resourcing and supportability (funding, sustainment)	X	

Environment	Trend	Intention	Capacity	Z	Comments
N	Evolutionary Acquisition/Reduced Cycle Time	Promote evolutionary and incremental acquisition as appropriate	386	Know, understand and be able to assess, evaluate, and synthesize evolutionary/incremental enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution.	X
			388	Analyze and evaluate requirements for validity of evolutionary and incremental acquisitions	X
		Minimize cycle time	390	Know and understand benchmarking/metrics analysis and ability to apply and evaluate in acquisition process to baseline and reduce cycle time	X
			391	Understand technology maturation vs. product application	X
	Flexible User Requirements	Participate in development of user requirements.	392	Perform risk analysis.	X
			393	Know operational organizations, concepts and data sources.	X
			394	Comprehend and apply risk management methods and techniques as they relate to Government property	X
			395	Comprehend and apply alternative risk techniques	X
			397	Know and understand user and joint operating requirements	X
			398	Define and analyze alternatives.	X
			399	Know, understand and be able to operate in Integrated Product Team (IPT) environment	X
	Technology Refreshment of Systems (Modernization through Spares)	Promote technology refreshment of systems	400	Know and understand inventory management methods and practices and interrelationships to inventory reprocurements.	X
			401	Know, understand and be able to assess, evaluate, and synthesize technology refreshment enablers (e.g. open architecture, interoperability, CMI, ACTD, technology insertion into comprehensive, cost-effective solution)	X
			404	Know and understand interchangeability/interoperability and substitution	X

N	Technology Refreshment of Systems (Modernization through Spares)	Promote technology refreshment of systems	405	Identify, analyze and manage Life Cycle Cost (LCC) drivers.	X
		Develop performance based specifications	406	Kow, understand and be able to use engineering change process methods and tools	X
			407	Kow, understand and be able to use value engineering methods and tools	X
			408	Kow and understand motivation techniques to incentivize industry to develop product improvements	X
			409	Evaluate performance-based work statements and advise program office as appropriate	X
		Obtain and execute funding for modernization	410	Synthesize the functions of the Planning, Programming and Budgeting System (PPBS)	X
	Increased Scope of Other Transactions	Expand use and scope of other transactions	411	Apply appropriate post-award oversight techniques.	X
			412	Kow OT unique characteristics.	X
			413	Recognize differences between other transactions and contracts as they relate to Government property	X
			414	Manage/oversee other transactions	X
			415	Kow and understand potential DoD/Service growth areas for application of other transactions (specifically O&S)	X
			416	Understand, evaluate and recommend the appropriate Other Transaction'.	X
			417	Comprehend and apply requirements of other transactions	X
			418	Define, select and adapt terms to the specific agreement.	X
			419	Kow the components of an 'Other Transaction'.	X
			420	Perform advanced market research.	X

Environment	Trend	Intention	Competency	D	Z	Comments
A	Increased Scope of Other Transactions	Expand use and scope of other transactions	421	Know, understand and be able to access/evaluate and synthesize data of Other Transaction Authority (OTA) low/policy/resources	X	
	Increased use of Best value-Dissimilar Competition	Expand use of best value and dissimilar competitions including capabilities tradeoff vs. mission	422	Know and understand best value methods and tools to synthesize best value options based on tradeoff	X	
			423	Develop performance based solicitation.	X	
			425	Apply modeling and simulation techniques.	X	
			427	Analyze expected system performance outcomes for best value.	X	
			428	Analyze user requirements.	X	
	Increased Use of Performance Based Contracting	Capitalize on opportunities to develop performance based solicitations for products and services.	429	Apply performance based contracting methodologies	X	
			430	Develop performance expectations incentives and metrics to describe acquisition needs and evaluate outcomes	X	
			431	Know and understand sector resources and activities	X	
			432	Know and understand common business practices	X	
			433	Know and understand world-class sector practices processes and technologies (e.g. Single Process Initiative (SPI)).	X	
	Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	435	Know and understand the Integrated Product Team (IPT) environment	X	
			436	Engage in analysis and tradeoff decisions on requirements to contract for the right product at the right time.	X	
			437	Be able to synthesize Government and commercial cultures to effectively educate/market/encourage collaboration between user and acquisition communities	X	

N	Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	438	Know and understand collaboration impediments	X
			439	Understand roles and functions of a logistician	X
			440	Understand roles and functions of a program manager	X
			441	Develop mutual understanding of user roles and functions and the acquisition system capabilities.	X
			443	Maintain open communications through all phases of the life cycle.	X

Concepts Entioned

Concepts Entioned

Concepts Entioned	# of Concepts
Focus on Customer	15
Commercial and Best Demonstrated Practice	15
Life Cycle	15
Electronic Commerce	14
Tradeoffs / Tradeoff Analysis	14
Metrics	13
Business Analysis Techniques	12
Market Research	10
Cost as an Independent Variable	10
Total Ownership Cost	8
Incentives	8
Software	8
Oversight Processes and Techniques	7
Integrated Product Process and Teams	7
Commercial Military Integration	7
Other Transaction Authority	7
Risk Management	7
Simulation Based Acquisition (M&S)	7
Statutory Regulatory Environment	7
Supply Chain Management	7
Strategic Planning	6
Open Architecture	5
Planning Programming and Budgeting System	5
Environmental Issues	5
Testing	5
Performance Based Acquisition	5
Commercial and Non-Development Items	4
Commericial Accounting Standards	4
Competitive Sourcing	4
Mission Operating Environment	4
Price Comparative Techniques (PBA)	4
Marketing	4
Advanced Concept and Technological Demonstration	3
Single Process Initiatives	3
Capability Maturity Models	2
Spiral Development	2

Common Intention Competencies

Environment	Trend	Intention	Competency	D	ARKCS	TGHLDZ										
RDT&E	Increased Reliance on Non-DoD Organizations	Identify appropriate agreement method/vehicle (CRDA, MOA, etc.) to ensure DoD's interests are protected.	26	Know and understand dual use application of program/item needs and ability to incentivize dual-use focus	X	X	X	X	X	X	X	X	X	X	X
	Early Involvement of Operational Test and Evaluation	Develop Test and Evaluation Master Plan (TEMP) to allow for early involvement of T&E.	30	Know, understand and be able to operate in an Integrated Product Team (IPT) environment	X	X	X	X	X	X	X	X	X	X	X
	Separation of Tech Maturation From Product Development	Conduct risk assessment, risk reduction and mitigation techniques at the earliest possible stage	50	Know and understand contingency planning and execution	X	X	X	X	X	X	X	X	X	X	X
		Conduct affordability assessments/analysis.	60	Understand the Cost as an Independent Variable (CAIV) policy concerning the authority of the program manager to make cost and performance tradeoffs	X	X	X	X	X	X	X	X	X	X	X
		Assess supportability techniques for assessing systems requirements.	72	Identify the impact of reliability, availability, maintainability on system support and ownership costs.	X	X	X	X	X	X	X	X	X	X	X
O&S	Consolidation	Take joint or corporate approaches to DoD sustainment issues (corporate contracts, standard corporate information systems).	102	Know and understand environmental rules/regulations	X	X	X	X	X	X	X	X	X	X	X
			103	Know and understand environment assessment to law, policy, regulations, community impact and issues/impediments to	X	X	X	X	X	X	X	X	X	X	X
			104	Know and understand commercial best practices	X	X	X	X	X	X	X	X	X	X	X
		Perform/Assess business case analysis (mission, capabilities, costs, trends, opportunities).	105	Know and understand risk assessment methods and measurement tools	X	X	X	X	X	X	X	X	X	X	X
		Develop streamlining and implementation planning for consolidation.	110	Know and understand personnel policies/procedures to include labor relations/union coordination	X	X	X	X	X	X	X	X	X	X	X

Environment	Trend	Intention	Competency	D	ARKCS	TGHLDZ
O&S	Reengineer the Product Support Process to Use Best Practices	Benchmark government and industry to identify, adopt, and tailor best practices.	114	Know and understand commercial best practices	X	X X X X X X X X X X
			116	Know and understand analyzing lessons learned, particularly from recent reengineering efforts.	X	X X X X X X X X X X
			117	Know and understand benchmarking	X	X X X X X X X X X X
			118	Know and understand research methods literature, internet, corporate assets	X	X X X X X X X X X X
		Involve customers early in the acquisition strategy process.	125	Know and understand acquisition process	X	X X X X X X X X X X
			126	Know and understand the Planning, Programming and Budgeting System (PPBS)	X	X X X X X X X X X X
		Employ/Develop sourcing strategies that emphasize best value.	129	Know and understand customer requirements	X	X X X X X X X X X X
			136	Know and understand risk assessment techniques, measurement tools, cost benefit analysis, and fault- tree methods for describing and making decisions.	X	X X X X X X X X X X
			137	Know and understand current product support processes and interrelationships	X	X X X X X X X X X X
			140	Know and understand data analysis to include cost/price/performance tradeoffs In order to achieve affordable readiness.	X	X X X X X X X X X X
		Develop performance-based work statements or statements of objectives.	141	Know and understand product/service to be supported	X	X X X X X X X X X X
			142	Know and understand performance-based work statements or statement of objectives development/environment	X	X X X X X X X X X X
		Develop incentives for public and private sources to provide sustainment support in a timely and efficient manner while reducing TOC.	155	Know and understand components of Total Ownership Cost (TOC).	X	X X X X X X X X X X

Environment	Trend	Intention	Capability	D	ARKCS TGHLDZ											
O&S	Increased Use of Vendor-Managed Inventory, Direct Vendor Delivery, and Time-Definite Delivery	Use mature, robust, market-ready commercial capabilities with end-to-end visibility of inventory.	199	Understand and apply past performance in structuring of a solicitation.	X	X	X	X	X	X	X	X	X	X	X
	Increased PM Influence to Reduce TOC (with specific emphasis on funding issues)	Emphasize life-cycle cost implications in all program management phases and decisions.	215	Know and understand risk assessment techniques and measurement tools	X	X	X	X	X	X	X	X	X	X	X
		Perform trade-off analysis of capability, performance, and life-cycle cost considerations.	230	Know and understand life-cycle management processes and phases	X	X	X	X	X	X	X	X	X	X	X
			231	Know and understand contingency planning through plan development and implementation	X	X	X	X	X	X	X	X	X	X	X
			232	Know and understand analysis techniques and tools	X	X	X	X	X	X	X	X	X	X	X
			233	Analyze market research/customer requirements/sourcing strategies to synthesize best value solutions	X	X	X	X	X	X	X	X	X	X	X
			234	Know and understand contract incentives/disincentives through contract completion	X	X	X	X	X	X	X	X	X	X	X
	Use of Electronic commerce and Other Information Technology	Use web-based acquisition systems (e.g. electronic catalogs, DoD E-Mall)	236	Know and understand electronic business environment (e.g. Internet, World Wide Web and Intranet Tools and Applications)	X	X	X	X	X	X	X	X	X	X	X
		Require business partners to apply electronic commerce techniques and tools.	255	Understand DoD electronic commerce policy	X	X	X	X	X	X	X	X	X	X	X
PLA	Integrated Digital Environment	Leverage commercial technology to support modern business operations (e.g. virtual office).	301	Know and understand Internet, World Wide Web and Intranet Tools and Applications	X	X	X	X	X	X	X	X	X	X	X
			303	Know, understand and be able to apply business process reengineering	X	X	X	X	X	X	X	X	X	X	X
			304	Know and understand statutory/regulatory environment	X	X	X	X	X	X	X	X	X	X	X
			308	Know and understand commercial electronic commerce processes	X	X	X	X	X	X	X	X	X	X	X

Environment	Trend	Intention	Opteny D	ARKCS TGHLDZ	
PLA	Introduction and Maturation of Knowledge Management Techniques and Practices	Improve data management and availability (within government and between government and industry).	327	Know, understand and be able to evaluate and apply knowledge and data management tools and techniques to paperless acquisition	X X X X X X X X X X X
CMI	Increased Commercial Military Integration	Promote use of commercial items	336	Know Part 12 and the direct impact on insight and business/technical processes relationship with defense contractors	X X X X X X X X X X X
	Increased Use of Common Business Practices	Promote use of common business practices	344	Know and understand benchmarking methods and tools	X X X X X X X X X X X
			348	Know and understand warranties/guarantees and ability to synthesize into Government system	X X X X X X X X X X X
			349	Apply and/or tailor commercial business sector practices (e.g. Single Process Initiative (SPI)).	X X X X X X X X X X X
N	Flexible User Requirements	Participate in development of user requirements.	392	Perform risk analysis.	X X X X X X X X X X X
			399	Know, understand and be able to operate in Integrated Product Team (IPT) environment	X X X X X X X X X X X
	Increase Collaboration Between User and Acquisition Communities	Promote collaboration between user and acquisition communities	443	Maintain open communications through all phases of the life cycle.	X X X X X X X X X X X

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Appendix N.Barriers to Achieving Future Workforce Competencies

INTRODUCTION

This appendix discusses legislative, regulatory, and policy barriers that sometimes stand in the way of achieving the required competencies for the future workforce. It also suggests actions that could be taken to overcome these barriers. It amplifies on the reference to these barriers in Section 7 of the basic report.

Some of the problems described in this appendix can be solved only with the approval of external agencies, such as the Office of Personnel Management (OPM), the Office of Management and Budget (OMB), and/or Congress. When this is the case, two considerations must be kept in mind. First, obtaining approval of these external agencies can be a difficult task, one that can require considerable time and energy. The Department must be judicious in determining which issues it will surface. Second, once it is decided to take an issue or legislative initiative to OPM, OMB, or Congress, DoD should strengthen its case by enlisting the agreement and support of other Executive Branch agencies. A combined position can greatly increase the likelihood of success.

LEGISLATIVE, REGULATORY AND POLICY BARRIERS

The most significant legislative, regulatory, and policy barriers are shown on the following chart.

Statutory and Policy Barriers

- The lack of a "training pipeline" for the civilian workforce
- Difficulty in modifying civilian occupational series
- External resistance to setting minimum educational requirements
- Difficulty in bringing new employees aboard

Lack of a Training Pipeline

Training and education are essential requirements of career progression for the military members of the Department's workforce and are recognized and funded by the personnel management systems in all Services. This means that a military member of the acquisition workforce who has qualified for attendance at a long-term training or education course is sent to that school by the "system." The officer's supervisor is not asked whether the individual can be spared from the organization for the duration of the schooling. Each Service recognizes that a certain number of its members will always be in the training and education pipeline, often attending training and professional development courses between assignments. In the military personnel system, the vehicle that supports this approach is called the "individuals account." This is a separate manpower account that identifies uniformed personnel who are not assigned to units but are assigned to training, education, and similar functions.

For the civilian members of the workforce, such is not the case. Rather, decisions to send civilians to education or training courses are largely controlled at the local level. In addition, the supervisor that releases a civilian for training often has to work shorthanded for the duration of the training. This puts a burden on the supervisor to sacrifice the short-term effectiveness of his organization for the long-term benefits that will accrue from education and training courses. This is an environment where two barriers are at play: the lack of a training pipeline and the supervisor's focus on current operations.

There are two actions that can be taken to overcome this barrier. First, DoD could establish a civilian counterpart to the military "individuals" account. The Working Group recognized that this might be difficult to achieve in the current environment of shrinking manpower resources. The second solution deals with management expectations. Executives and managers at all levels could take the view that sending workers to training and education courses, and working short-handed in the interim, is part of the cost of doing business. Senior managers should make certain that subordinate managers understand and support this policy, and recognize and reward managers who act accordingly by sending their people to appropriate courses.

Difficulty in Modifying Civilian Occupational Series

In some cases, the new or revised competencies required for a civilian occupational series represent such a significant change it becomes appropriate to restructure the series. Because this requires the approval of OPM, the benefits to be derived should be weighed against the difficulties associated with the approval process. This is clearly a case in which the support of other Executive Branch agencies would improve DoD's position with OPM.

Internal Resistance to Establishing Minimal Educational Requirements

In implementing DAWIA, DoD has frequently raised the issue of establishing a baccalaureate degree as a requirement for entry into, or promotion within, selected career fields. But, for reasons similar to those that make it difficult to modify a civilian occupational series, getting this requirement approved has proven to be a challenging

task. This is another instance where DoD must petition an external agency, OPM, to effect the required policy change.

Difficulty in Bringing New Employees Aboard

As discussed in Section 7, in some situations the best way for DoD to obtain essential competencies—particularly in an era of rapid technological advancement—is to hire experienced individuals from the private sector. Depending on the particular requirement, the best approach might be to hire new permanent or term employees at mid-grade levels or to expand the use of term employees within the department. Unfortunately, various sections of the U.S. Code make it difficult to do this.

To improve DoD's ability to hire people with the required competencies, a number of legislative proposals should be considered. These include the following:

- Amending various sections of Title 5 that would allow the Department to make greater use of term employees. Legislative proposals to enable DoD to attract term employees by allowing them to shift more easily, without pension penalties, across jobs in government, industry, and academia.

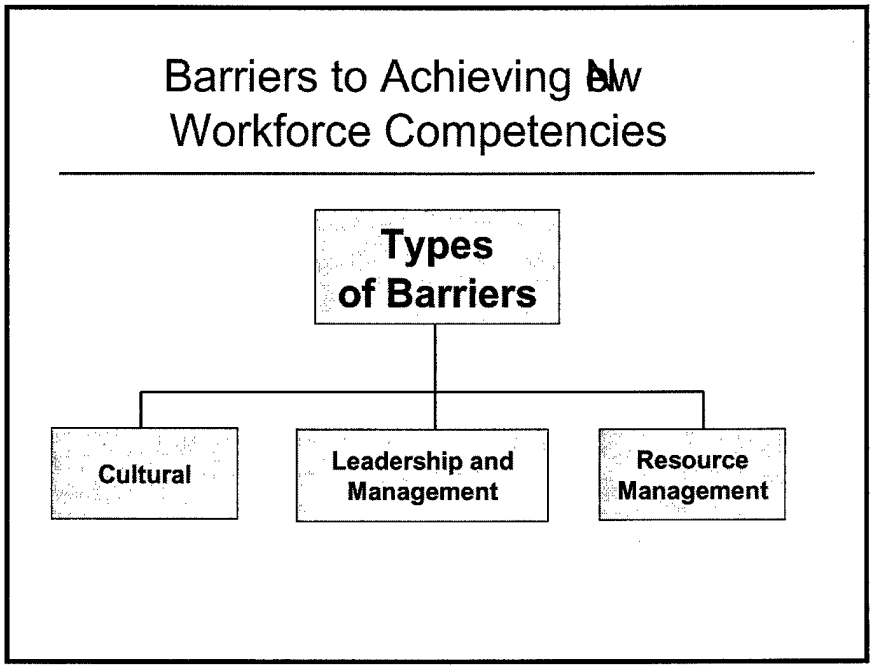
- Amending the Intergovernmental Personnel Act (5 U. S. Code Sections 3371-3376) to allow participation by members from industry.

- Repealing 18 U.S. Code Section 297, which would make it easier for individuals to move between DoD and the private sector. Legitimate concerns about safeguarding DoD against improper conduct by these individuals should be addressed by placing greater reliance on the Procurement Integrity Act.

These initiatives have been included in the recommendations contained in Section 8 of the basic report.

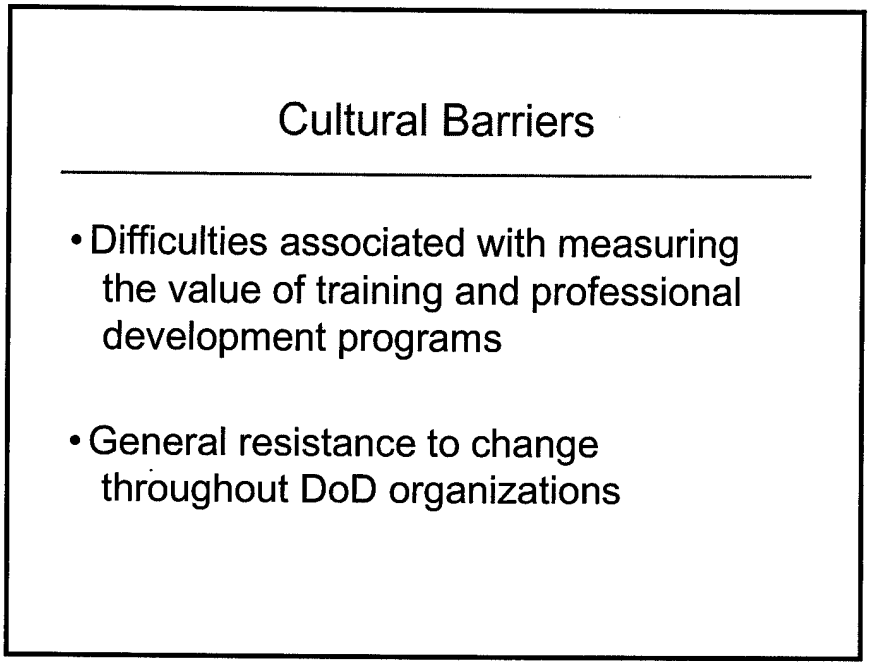
OTHER BARRIERS

In addition to the legislative, regulatory, and policy barriers, the Working Group identified other barriers that can stand in the way of achieving the required competencies for the future workforce. These barriers are in three broad categories, summarized in the following chart.



Cultural Barriers

Cultural features derive from the nature or essence of our organizations and missions, and are often the result of decades of shared experiences and values. In many cases, cultural features are sources of organizational strength. For example, military units and individuals pride themselves on having a mission-oriented "can-do" attitude that forms an essential part of their culture. Similarly, most DoD personnel, both military and civilian, are motivated on the job by factors that go beyond compensation and other tangible rewards; this, too, is an essential cultural element that helps to make DoD the effective organization that it is.



At the other end of the spectrum are aspects of organizational culture that can act as impediments to change, particularly in bringing change to the members of the workforce. These include the barriers shown on the slide above.

Performance Measurement of Training

The issue of performance measurement has taken on increasing importance in recent years, driven in large part by the Government Performance and Results Act (GPRA), which calls for government agencies to identify measurable outcomes or outputs for each of their programs and initiatives. It can be difficult to establish meaningful performance measures for training and education programs, largely because the benefits of many such programs cannot be easily quantified. This becomes increasingly difficult as we move along the spectrum from training in "hard" skills to education in "soft" competencies. For example, we can objectively evaluate and grade an individual's knowledge of the Federal Acquisition Regulation (FAR), but it is much tougher to

measure that same individual's ability to apply judgment and foresight in his use of the FAR.

When it is difficult to quantify and measure the outputs or outcomes of a program, which is often the case with training and education courses, process modeling techniques can sometimes be helpful. Tools and techniques exist, such as process flow models and IDEF models, that can be used to identify key elements of a process or program, to include inputs, outputs, processes, participants, customers, and so forth. Organizations that want to do a better job of measuring the results or effectiveness of training and education programs should consider using these tools.

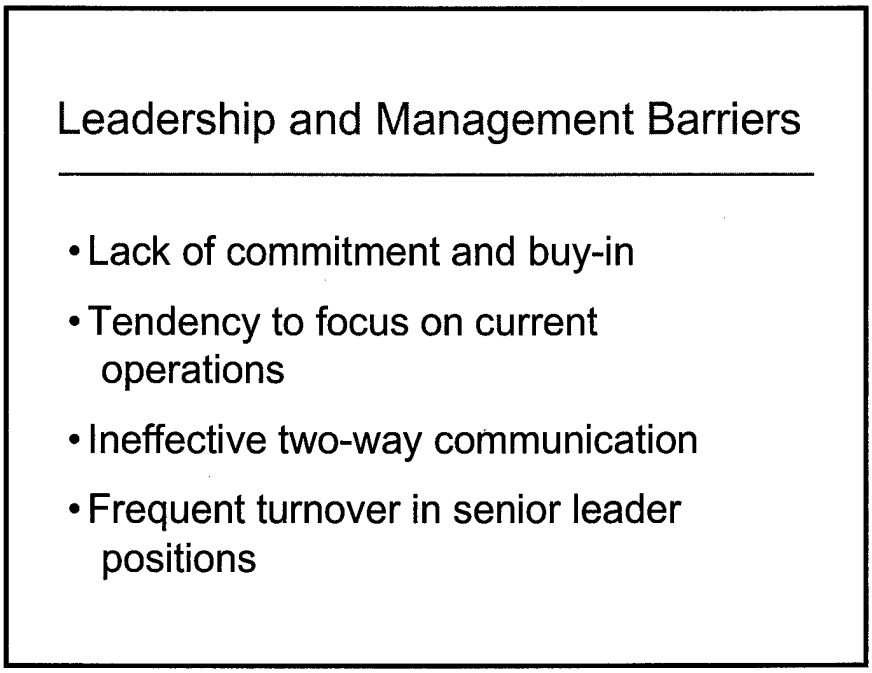
Once performance metrics have been determined, it is important to establish feedback mechanisms that assess actual performance, and also help identify reasons for shortfalls if performance targets are not achieved.

RESISTANCE TO CHANGE

While most observers agree that DoD's hierarchical structure is well suited to its mission, at the same time they recognize that such a structure does not always support change. It is not surprising that people who work in highly structured organizations sometimes tend to be protective of their organization and the prescribed rules they have been given for doing their jobs. These are the mechanisms they depend upon to function on a day-to-day basis. Challenges to the status quo are often met with the statement "That's the way we do it here." given by well-intentioned individuals who believe that change will unnecessarily disrupt their ability to do their jobs.

The most important factor in overcoming this barrier is that members of an organization will almost always try to accomplish the things the boss is serious about. Therefore, bosses must demonstrate that they are serious about acquiring essential competencies for the workforce. They can do this by making workforce competencies a key element of all their management tools. This includes incorporating the attainment of competencies into strategic and performance plans, establishing achievable goals and objectives for mid-level managers and subordinates, and ensuring that these individuals are recognized and rewarded for doing their part to bring required competencies into the organization.

Leadership and Management Barriers



Because of the key role they play, it is not surprising that managers can, either intentionally or unintentionally, act as barriers to change. The factors shown on the above chart are some of the key managerial barriers.

LACK OF COMMITMENT AND BUY-IN

Commitment and buy-in are needed at all levels, but particularly at the managerial level. Leaders and managers play a critical role in implementing any change because they set the direction for their organizations. The goals, objectives, and priorities established by managers are, in effect, the organization's agenda for change. If key managers are not truly committed to new competencies and new ways of doing business, but merely pay lip service to them, then it is likely that their organizations and subordinates will adapt slowly and ineffectively. Real managerial commitment and buy-in require understanding, supporting, and implementing change become part of the manager's day-to-day business.

EXCESSIVE FOCUS ON CURRENT OPERATIONS

The second factor citedthe over-attention paid to current operations at the expense of planning for the futurestems from the unavoidable fact that many DoD organizations and managers must deal with significant responsibilities and missions every day. When time and other resources are limited, it is understandable that a manager might, for example, give more attention to addressing supply and maintenance problems for deployed forces than to developing competencies for the workforce in the year 2005.

Striking a balance between current operations and future requirements has always been one of DoD's toughest management challenges.

INEFFECTIVE TWO-WAY COMMUNICATION

Implementing change becomes more difficult when there is not effective two-way communication between managers and subordinates. When downward communication is ineffective, workers might not understand management's intent and could therefore find it difficult to play their part in change implementation; and when upward communication is not effective, managers can make policy decisions that do not adequately reflect working level concerns or incorporate good ideas that would contribute to better decisions.

SENIOR LEADER TURNOVER

Often senior DoD leaders and managers occupy their positions for relatively brief periods of time, making it harder for true change to take hold within the organization. This becomes a particular problem when the desired changes are significant and implementation will extend over several years. When executive tenure is shorter than the implementation timeline, either of two phenomena can occur. First, subordinates who do not fully support the mandated change can drag their feet until a new boss takes over and cancels the initiative. Second, subordinates who take a somewhat cynical view of the world might feel that attempting to implement change is pointless because the initiative will go by the wayside when new leaders take over. Either way, the result is that implementation can proceed with at best the lukewarm participation of key subordinates.

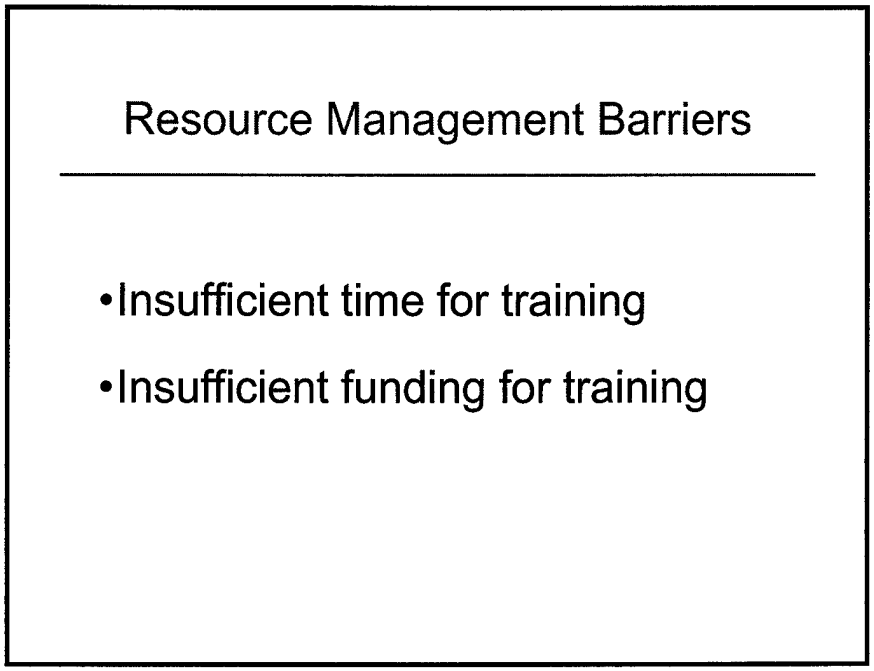
STRATEGIES TO OVERCOME LEADERSHIP AND MANAGEMENT BARRIERS

This category of barriers can be the most difficult for a manager to deal with. The challenge is simple and straightforward: to overcome these barriers, the manager must demonstrate to his subordinates that he is genuinely committed to bringing the required competencies to the workforce. His statements of support cannot be viewed as mere "lip service," but must be convincing to the people that work for him. The following are some of the techniques that can be used:

- Conduct and sustain a top-down information campaign to explain the required change to subordinates.
- Maintain two-way communication with subordinates to ensure that their concerns are addressed and their ideas are allowed to help shape the organization's plans.
- On a regular basis, visibly devote a meaningful amount of time and energy to issues that go beyond current operations and look to the future.

These approaches are not cure-alls, but they are considered to be essential actions in an attempt to overcome the leadership and management barriers identified here.

Resource Management Barriers



Aside from its people, the two most important resources in DoD are arguably time and money. Shortages of either can stand in the way of obtaining needed competencies for the workforce.

INSUFFICIENT TIME

Even managers who recognize the need for training and education programs might hesitate to send their subordinates to appropriate courses because of the perception that the time people spend away from the job does not justify the benefits to be derived from the training event. This barrier is similar to the issue of focusing on current operations at the expense of the future, but there is a different perspective here. In this situation, the manager is committed to getting his people the training they need, and is willing to work short-handed for a period of time, but simply wants to satisfy himself that the time spent in training justifies the time lost from the job. When training and education courses are perceived as being an inefficient use of limited time, managers might hesitate to take advantage of the training opportunities.

If managers believe that some training courses represent a poor use of time because unnecessary material is being covered, they should work with training developers to resolve the issue. In doing so, they must be careful to differentiate between education and training. Training courses, which by their nature are more likely to be focused on "hard" skills, are perhaps worth such an analysis. But education courses, because they are usually aimed at developing "soft" competencies, might very well devote a significant amount of time to skills that are not directly job-related.

INSUFFICIENT FUNDING

In almost all cases, an organization must pay travel and per diem costs to send workers to education and training courses. In cases where training is not centrally funded, the benefiting organization might also have to pay some form of tuition costs. These costs can be significant, particularly for small organizations that have limited travel budgets and want to send their people to courses that cannot be conducted locally.

Overcoming the recurring problem of insufficient funding for training and education entails a long-term approach. A manager who has little or no money in his budget for training must start by demonstrating to his boss that some amount of training is essential to the organization's success. If this approach works, the manager might see the influx of a small amount of money as funding becomes available during the year. At the same time he is trying to secure funds for the current year, the manager must participate in the budget building process for succeeding years, continuing to present his requirements at each step in the process. His case will, of course, be strengthened if he has the support of his boss and if he has been able to identify and measure the benefits of acquiring the desired competencies. In this way, over time the manager stands the best chance of having his training requirements become an established part of his organization's budget. Even if this occurs, he then must recognize that budgeting in DoD is a never-ending process, and be prepared to defend his requirements against the inevitable budget cuts that arise during the year.

Appendix O.Glossary

ABC	Activity Based Costing
ACO	Administrative Contracting Officer
ACAT	Acquisition Category
ACTD	Advanced Concept Technology Demonstration
ADP	Automatic Data Processing
AET& CD	Acquisition Education, Training and Career Development
AFIT	Air Force Institute of Technology
AIS	Automated Information Systems
ALEI	Acquisition Leadership Effectiveness Inventory
APMC	Advanced Program Management Course
AR	Acquisition Reform
ASD	Assistant Secretary of Defense
AT&L	Acquisition, Technology, & Logistics
ATWF	Acquisition & Technology Work Force
BCA	Business Case Analysis
BCEFM	Business, Cost Estimating, Financial Management
C3I	Command, Control, Communications, & Intelligence
CAAS	Contractor Assistance & Advisory Services
CAE	Component Acquisition Executive
CAIV	Cost as an Independent Variable
CAP	Critical Acquisition Position
CFO	Chief Financial Officer
CIO	Chief Information Officer
CL	Continuous Learning
CLS	Contractor Logistics Support
CONS	Continental United States
COTR	Contracting Officer Technical Representative
COTS	Commercial Off the Shelf
CPP	Civilian Personnel Policy
CSO	Contractor Self Oversight
CT	Contractor Testing
DACM	Defense Acquisition Career Management
DASD	Deputy Assistant Secretary of Defense
DAU	Defense Acquisition University
DAWIA	Defense Acquisition Workforce Improvement Act
DCMC	Defense Contract Management Command
DDR&E	Director, Defense Research and Engineering
DFAS	Defense Finance and Accounting Service
DLA	Defense Logistics Agency
DLAMP	Defense Leadership & Management Program
DOD	Department of Defense
DOT	Department of Transportation
DT	Developmental Testing
DTSE	Director, Test, Systems Engineering

DUSD	Deputy Undersecretary of Defense
DVD	Direct Vendor Delivery
DWCF	Defense Working Capital Fund
EC	Electronic Commerce
ECQ	Executive Core Qualification
EDI	Electronic Data Interchange
EMD	Engineering & Manufacturing Development
F3I	Form, Fit, Function, & Interface
FAR	Federal Acquisition Regulation
FFRDC	Federally Funded Research & Development Center
FIPT	Functional Integrated Process Team
FTE	Full-Time Equivalent
FY	Fiscal Year
GAO	Government Accounting Office
GE	General Electric
GFE	Government-Furnished Equipment
GFM	Government-Furnished Materiel
GOs	General Officers
GPRA	Government Performance & Results Act
GS	Government Service
IDE	Integrated Digital Environment
IDPs	Individual Development Plans
IOT&E	Independent Operational Test & Evaluation
IPA	Intergovernmental Personnel Act
IPPD	Integrated Product and Process Development
IPT	Integrated Process Team
IT	Information Technology
JTAV	Joint Total Asset Visibility
JWEs	Joint Warfighting Experiments
LEI	Leadership Effectiveness Inventory
LMI	Logistics Management Institute
M&S	Modeling & Simulation
MILSPEC	Military Specification
MILSTANDARD	Military Standard
MRM	Management Reform Memorandum
MRTFB	Major Range & Test Facility Base
MS	Milestone
NDI	Non-developmental Items
NPS	Naval Post Graduate School
O&M	Operations & Maintenance
O&S	Operations & Support
OAIPT	Overarching Acquisition Integrated Process Team
OJT	On-the-Job Training
OPEVALs	Operational Evaluations
OPM	Office of Personnel Management
OSD	Office of Secretary of Defense
OT	Operational Testing
OUSD	Office of the Undersecretary of Defense

P&R	Personnel & Readiness
PA&E	Program Analysis and Evaluation
PBBE	Performance Based Business Environment
PCO	Procuring Contracting Officer
PDRR	Program Definition & Risk Reduction
PEO	Program Executive Officer
PM	Program Manager
PME	Professional Military Education
PMO	Program Management Office
PPBES	Planning, Programming, Budgeting, and Estimating System
PPBS	Planning, Programming, and Budgeting System
RDT&E	Research, Development, Test & Evaluation
RTOC	Reduced Total Ownership Cost
S&T	Science & Technology
SAE	Service Acquisition Executive
SBA	Simulation Based Acquisition
SEI	Software Engineering Institute
SES	Senior Executive Service
SPI	Single Process Initiative
SPRD&E	Systems Planning, Research, Development, & Engineering
SSG	Senior Steering Group
STEP	System Test and Evaluation Process
T&E	Test & Evaluation
TEMP	Test & Evaluation Master Plan
TOC	Total Ownership Cost
UC	Universal Competency
USD	Undersecretary of Defense
V&A	Validation, Verification, & Accreditation