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REPORT

# Final Report of the Panel on the Department of Defense Human Capital Strategy

Lawrence M. Hanser, John Campbell,
Kenneth Pearlman, Frank Petho,
Tom Plewes, Ken Spenner

Prepared for the Office of the Secretary of Defense

Approved for public release; distribution unlimited

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# Preface

In February 2006, the Department of Defense (DoD) published its Quadrennial Defense Review (QDR). As part of the process of producing the QDR, the Department internally published a human capital strategy (HCS), which focused on developing the right mix of people and skills to help DoD and the military services carry out the missions necessary for the security of the United States. Although the HCS has been distributed, it would be inappropriate to view it as static. Almost from the time it was initially published and disseminated, the strategy has been shifting as DoD and the military services incorporate its spirit into their day-to-day development and management of human capital. Thus, the HCS is best seen as a living document.

The Under Secretary of Defense for Personnel and Readiness asked the RAND Corporation's National Defense Research Institute (NDRI) to provide an independent review of the HCS and to help refine its implementation. To carry out that review, NDRI convened a panel of experts in military personnel and organizational analysis. In addition to commentary on the original version of the strategy, the review and the material in this report constitute a blueprint for developing a DoD HCS suited to the 21st century. We believe that the insights in this report will be useful to DoD and the military services as they move forward in developing their human capital policies and systems.

This research was sponsored by the Under Secretary of Defense for Personnel and Readiness and conducted within the Forces and Resources Policy Center of the RAND National Defense Research Institute, a federally funded research and development center (FFRDC) sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Department of the Navy, the Marine Corps, the defense agencies, and the defense intelligence community. For further information about this document, please contact the panel chairman, Lawrence M. Hanser, at Lawrence_Hanser@rand.org.

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# Summary

## Background and Purpose

The 2006 Quadrennial Defense Review (QDR) called for sweeping reform in how the Department of Defense (DoD) manages its human resources—military, civilian, and contractors. The vision of the QDR rested on the perception that the new national security environment calls for more flexibility in accessing the right skills at the right place more quickly than was possible with the personnel management and sourcing systems at that time. In response to this call, DoD published a human capital strategy (HCS) in the summer of 2006. DoD envisioned that the HCS, in combination with the National Security Personnel System (NSPS) and similar reforms, would contribute to the transformation of the Total Force by providing a foundation for a coherent personnel management and manpower system. According to the HCS, achievement of these goals would hinge on three initiatives: competency-based occupational planning, performance-based management, and enhanced opportunities for personal and professional growth. Furthermore, the HSC was intended to be all-encompassing, pertaining to recruiting, assignment, training, education, and career progression.

The Under Secretary of Defense for Personnel and Readiness asked RAND's National Defense Research Institute (NDRI) to form a panel of experts to perform an objective and independent review of the HCS and to help refine its implementation.

In addition to literature reviews and other data-gathering activities, the panel carried out most of its work in three daylong meetings at the RAND Corporation's Washington office on May 31, August 2, and September 7, 2006. The meetings consisted of working sessions and presentations from members of DoD, including the military services and contractors familiar with or working in DoD personnel management. This report presents the results of the panel's independent review. It includes commentary on the initial version of the HCS and a blueprint for the future.

## Commentary on the Initial Version of the DoD Human Capital Strategy

The HCS proposed three initiatives: a competency-based occupational planning system, a performance-based management system, and enhanced opportunities for personal and professional growth. The panel's efforts focused almost entirely on the first of these initiatives, what the HCS refers to as its "cornerstone," because the occupational planning system forms the framework on which the entire strategy rests.

### A Proposed Major Shift in DoD Occupational Analysis

According to the HCS, "The cornerstone of this human capital strategy is the development and implementation of a competency-based occupational system" (Appendix C, p. 35). Thus, the central initiative of the HCS would appear to be intended to supplant DoD's current and well-established methods of occupational analysis and personnel management, which have traditionally been work-oriented (i.e., descriptive of the work to be done rather than of the characteristics of the people doing it), occupationally focused (i.e., identifying both jobs and people by occupation), and specific (i.e., work is described in terms of the detailed tasks to be performed). The military services' occupational analysis systems provide the basic framework for recruiting, selecting, training, and managing personnel.

DoD uses ongoing occupational analyses for several purposes, including adjusting its occupational structures and definitions in response to procurement of new weapons systems, equipment, or complex materiel systems; making adjustments in response to substantive changes in operations or procedures; merging two or more occupations to create a new one; or splitting an occupation into two or more occupations.

The HCS called for DoD to implement a competency-based occupational planning system and to create a common cross-service framework or set of descriptors to define the work, the worker, and the workplace. To develop options or recommendations regarding this call for a competency-based framework for occupational analysis, the panel had to focus on the details of each of its key elements—occupational analysis, competency, and a common framework.

### What Is "Occupational Analysis"?

"Occupational analysis" refers to any of several methods or systems used to describe work, jobs, or occupations. Many such methods or systems exist. They are commonly categorized by whether they are inductive or deductive in their approach and by whether they employ worker-oriented or work-oriented job descriptors. No one approach is inherently "right" or "wrong." Different approaches, job descriptors, and levels of descriptive detail are useful for different applications. Because the choice of an occupational analysis system depends on the specific requirements of the user, the needs that the occupational analysis system is designed to address must be specified in some detail before a reasoned choice among methods or systems is possible.

### What Does "Competency" Mean?

There are almost as many definitions of "competency" as there are practitioners of "competency modeling" and "competency-based" human resource planning systems. The HCS defines competency as "sets of integrated behaviors and underlying knowledge, skills, abilities, and other characteristics that define superior job performance." This definition allows a wide variety of legitimate interpretations that could range from competency being a component of performance, to it being a direct determinant of individual performance differences, to it being an indirect determinant of performance differences. Because the definition in the initial version of the HCS encompasses so much, it conveys little specific meaning to guide the development of a competency-based system. As a result, the competency-based system the HCS refers to could be performance-based, knowledge-based, skill-based, ability-based, or some combination of these or some other attributes.

### What Does "Common Framework" Mean?

Much like "competency," the term "common framework" also does not have a single, widely agreed-upon or well-understood meaning. The panel's analysis suggests that in the HCS, it refers to the development of a single library of descriptors that the services would use when describing occupations. Further, the panel inferred that the "common framework" refers to an occupational analysis system that uses common definitions across military and civilian components, describes both jobs and people, and employs a consistent level of analysis and description. These goals struck the panel as reasonable and might be shown to be preferable to having separate occupational analysis systems within each service; however, this remains an open question.

That said, two considerations stand in the way of implementing a common framework. First, the characteristics of what is meant by a common framework would need to be more clearly defined to guide its development. If the common framework were to be based on competencies, as the HCS directs, this would require that competencies also would need clear definition. Second, replacing the current large, complex, service-specific systems would require considerable due diligence to ensure that the likely very high cost of the endeavor would yield comparable benefits. In the end, a common occupational analysis framework can be designed in many ways, and the specifics of it can be decided upon only in the context of the applications and objectives required by the system stakeholders and users.

Since the publication of the HCS, the Office of the Secretary of Defense (OSD) has not pressed the services to develop a common framework for occupational analysis, and each service has instead pursued the evolution of its own human capital system. In fact, clearly embedded in the HCS was the recognition that it would be important for each of the services to maintain its own cultural context, and this has simply continued to be the reality. Conceivably, a case might be made that service-specific information makes each service's own occupational analysis framework better suited to supporting the overall goals of an HCS than would a single common framework whose construction and implementation might require unacceptable cross-service compromises.

### Choosing an Occupational Analysis System

A major requirement for choosing among occupational analysis system options is understanding, in fairly specific terms, the objectives or purposes to be served by the system. Indeed, this understanding is needed before any truly meaningful discussion of key underlying system concepts and issues can occur. For example, in the panel's judgment, the underlying rationales given in the HCS for a competency-based system (e.g., a force capable of decisive effects) are too broad to guide the choice of an occupational analysis system.

The panel considered a number of occupational analysis systems, both generically and on the basis of assumptions about DoD's needs. The panel members concluded that O*NET (Peterson et al., 1999), despite some limitations, has the potential to provide a framework for developing much of the common language and functionality desired in a new DoD system.

The panel's view is that, on balance, no single existing off-the-shelf occupational analysis system is likely to serve DoD's needs fully. It appears likely that both the performance capabilities of individuals and the performance requirements of a position will need to be described in substantive and concrete terms that convey a great deal of meaningful information to DoD planners, managers, and decisionmakers. Given the cost and uncertainty of developing a common occupational analysis framework, continuing service-specific systems of describing occupations would not be inconsistent with the panel's overall perspective. All of the existing systems from the non-military sectors, including O*NET, provide information that is probably too general for the services' purposes. Thus, if it were to be decided that DoD needs a common occupational framework, the need to build a new occupational analysis system in-house seems inescapable. This is the only way the system would be substantively meaningful to its users and stakeholders. However, this does not imply starting from scratch. The extent to which this path is pursued would depend on the accumulation of evidence showing that a more general taxonomy (i.e., a movement toward a common framework) would result in greater capability, flexibility, and productivity or other objectives the services seek.

## Blueprint for the Future: Creating and Implementing a Human Capital Strategy for DoD

### Establish an Oversight Organization

The panel recommends that DoD establish a permanent Human Capital Strategy Working Group, with perhaps a small number of subpanels to tackle particular aspects of the strategy, such as occupational analysis, pay and benefits, and performance management. As envisioned in the initial version of the HCS, a comprehensive human capital strategy touches every aspect of personnel management, from recruitment and selection to training and development, to performance management, to compensation and benefits, and it touches every component of DoD, both military and civilian. Developing and implementing a strategy with this breadth of vertical and horizontal reach requires the efforts of technical and policy experts and the cooperation of senior DoD leaders with the authority to bring it about. The panel believes that without the commitment of experts and senior decisionmakers from all components of DoD, a comprehensive strategy cannot be developed or implemented.

The Human Capital Strategy Working Group should include technical representatives from the military services and DoD. Inherent in this recommendation is the formation of a general-officer/SES-level steering group to oversee the activities of the working group and, in addition, the establishment of a committee of external technical experts to provide insight and to inform the oversight of the steering group. The executive agent for this organization would be the Program Executive Officer (PEO) for the HCS.

### Develop a Clear and Specific Statement of Objectives

Every facet of an HCS depends on a clear and specific statement of the objectives the system is designed to serve. Specific objectives play an important role in focusing the efforts of the organization and in providing a means for measuring progress. For example, conducting a systematic review of DoD occupational analysis systems and the needs of the services and DoD that current systems fail to address is an absolute prerequisite for further progress on an HCS in general and on the occupational aspects of one in particular.

### Develop a Range of Options to Meet Determined Objectives

Once the objectives are determined and prioritized, it is possible to develop a range of plausible options. For example, one option might be a single cross-component occupational analysis system that describes each occupation in broad terms of worker abilities required for success in the occupation. Another option might be a system that describes positions (billets) in detailed terms of the component-specific tasks to be performed. Or another option might be to allow each component to develop and use its own occupational analysis system but to subscribe to a detailed crosswalk of information among the components. These options would be designed to emphasize different objectives or approaches to system operation. The aim of developing options would be to obtain evaluative feedback, such as from later pilot-testing, on the relative strengths and weaknesses of different approaches.

Options could also include actions other than developing occupational-analysis-based strategies for achieving these objectives, such as changes in organizational structures or policies. As indicated in the initial version of the HCS, occupational requirements may change rapidly, so the occupational analysis system needs to be flexible enough to respond to the changes. Similarly, the priorities assigned to objectives can change.

#### Conduct a Cost-Benefit Analysis of Options

Even after constructing satisfactory sets of specifications for various options or alternative versions of a system, the question still remains as to which options merit further investments of time and resources and could reasonably be considered candidates for eventual full-scale implementation. This points to the need for some form of cost-benefit analysis of both the options developed and any other-than-occupational-analysis-based strategies developed. The evaluation should also include the opportunity costs of maintaining the status quo.

#### Pilot-Test Selected Options

Pilot-testing or demonstration efforts are imperative. It might also make sense to consider something like a “pre-demonstration project” for the various options, the goal of which would be to gather input and feedback on them to assist in determining the best candidates for actual pilot-testing.

#### Regularly Revisit the Human Capital Strategy

Finally, the panel recommends an explicit plan for regularly revisiting the HCS. All strategic plans have either an implicit or an explicit lifetime, and the HCS is no exception. Because of its connection with the QDR, the HCS has a natural lifetime of four years, suggesting that a major review of it would occur every four years. The panel recommends that whatever human capital strategy is adopted, it should be reviewed biennially for progress and midcourse corrections.

# Acknowledgments

The panel would like to express its appreciation for the superb administrative support provided by Julie Ann Tajiri, who took care of all the travel and meeting arrangements and ensured that the conference materials were distributed on time. The panel would also like to acknowledge the indispensable contributions of Jerry Sollinger both in his duties as a rapporteur and in assembling the final report.

## Acronyms

| | |
|---|---|
| ARI | U.S. Army Research Institute for the Behavioral and Social Sciences |
| ASI | additional skill indicator |
| ASVAB | Armed Services Vocational Aptitude Battery |
| CODAP | Comprehensive Occupational Data Analysis Programs |
| DHRB | Defense Human Resources Board |
| DIMHRS | Defense Integrated Military Human Resources System |
| DoD | Department of Defense |
| HCS | human capital strategy |
| MAGTF | Marine Air-Ground Task Force |
| MOS | military occupational specialty |
| NDRI | National Defense Research Institute |
| NMITC | Navy and Marine Intelligence Training Center |
| NMS | National Military Strategy |
| NSPS | National Security Personnel System |
| OA | occupational analysis |
| ODARS | Occupational Data Analysis, Requirements, and Structure |
| OUSD(P&R) | Office of the Under Secretary of Defense for Personnel and Readiness |
| PEO | Program Executive Officer |
| QDR | Quadrennial Defense Review |
| SES | Senior Executive Service |
| SOC | Standard Occupational Classification |
| WMD | weapons of mass destruction |

CHAPTER ONE
# Introduction

## Background

The 2006 Quadrennial Defense Review (QDR) called for sweeping changes in how the U.S. Department of Defense (DoD) manages its Total Force—active and reserve military, civilian personnel, and contractors. The vision of the future force reflected in the QDR called for increasing agility, readiness, and adaptability, among other changes, all of which were envisioned to require a new balance of skills coupled with greater accessibility of those skills by military commanders. In response to this call, DoD published a human capital strategy (HCS) in the summer of 2006. The QDR described the HCS as "competency-focused and performance-based" (U.S. Department of Defense, 2006, p. 80). A more detailed HCS[1] stated that the "cornerstone of this human capital strategy is the development and implementation of a competency-based occupational system" (see Appendix C, p. 35). The envisioned HCS rests on the perception that the new threat environment calls for flexibility in accessing the right skills at the right place more quickly than is possible with the current personnel management and sourcing systems.

## Defense Transformation

The U.S. workplace is changing rapidly, and it has been in this spiral of change for some time (National Research Council, 1999). Changes in occupational structures, workforce demographics, and technology have had a significant effect on all kinds of workplaces, and DoD is not immune to these effects. Organizational restructuring, evidenced in downsizing, flattening organizational hierarchies, increased use of teams, and changing employment practices and employee relations have also occurred in the DoD workplace.

Although these workforce trends broadly apply across the U.S. economy, they pose unique challenges for DoD. America is fighting a long war, and the requirement to field a decisively effective Total Force to simultaneously defeat a dedicated enemy in many corners of the world calls for individual and institutional agility. The QDR priorities of defeating terrorist networks, defending the homeland in depth, shaping the choices of countries at strategic crossroads, and preventing hostile states and non-state actors from acquiring or using weapons of mass destruction (WMD) cannot, according to the QDR, be achieved with yesterday's strategies, weap-

[1] The version of the DoD HCS that was provided by OSD to the panel for review is reproduced in Appendix C.

ons, and tactics, nor can the nation succeed with yesterday's manpower and organizational policies.

DoD is attempting to transform itself on many fronts simultaneously. Technology infusion, globalization, joint operations, coalition operations, and new approaches to fighting terror and defending the homeland are seen as integral to its transformation strategy. The HCS is believed to be critical to transformation in linking manpower and organizational strategies to the operational strategies supporting DoD's mission.

## Human Capital Strategy

The QDR envisioned two key enablers for the DoD transformation: the new HCS and the new National Security Personnel System (NSPS). Insofar as it relates to the HCS, the intent of the QDR carried over to the statement of the rationale and goals for the HCS, published in *DoD Human Capital Strategy,*[2] which states:

> The objectives of this Human Capital Strategy reflect the principles of the National Military Strategy: maintaining a force capable of decisive effects; integrating the Joint Total Force; and enhancing individual and institutional agility to contend with uncertainty. Three initiatives will advance these objectives: *competency-based occupational planning, performance-based management,* and *enhanced opportunities for personal and professional growth.* (see Appendix C, p. 31; emphasis added)

DoD believed that the HCS, in combination with the NSPS and similar reforms, would contribute to the transformation of the Total Force by providing a foundation for a coherent, analytically sound, integrated, forward-looking personnel management and manpower system supported by appropriate technology. It was intended to be all-encompassing, pertaining to recruiting, assignment, training, education, and career progression. The HCS was meant to be an integral element of an overarching organizational strategy, not an isolated, one-time activity. Thus, the HCS published in 2006 is only the initial version of an ongoing, developing, and unfolding strategy.

## The Human Capital Strategy Review Panel

As DoD began to refine and implement the HCS, the Under Secretary of Defense for Personnel and Readiness asked RAND's National Defense Research Institute (NDRI) to form a panel of experts to perform an objective and independent review of the strategy and to help refine the way forward for it.

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[2] As of the writing of this report, this document was available only internally in DoD. It was distributed to the military services in June 2006 under a memorandum from the Under Secretary of Defense for Personnel and Readiness as a basis for formulating a DoD-wide approach to human capital management.

The NDRI panel comprised the following six experts in military personnel occupational classification systems and organizational analysis:

- Lawrence Hanser, panel chairman, RAND
- John Campbell, University of Minnesota
- Kenneth Pearlman, independent consultant
- Frank Petho, Deputy Chief of Naval Operations for Manpower, Personnel, Training, and Education
- Tom Plewes, National Academy of Sciences
- Ken Spenner, Duke University

Short biographies of the panel members appear in Appendix A.

In addition to literature reviews and other data-gathering activities, the panel carried out most of its work in three daylong meetings that took place at the RAND Corporation's Washington office on May 31, August 2, and September 7, 2006. The meetings consisted of working sessions and presentations by members of DoD, including the military services and contractors familiar with or working in personnel management. The individuals and organizations represented in these meetings are listed in Appendix B.

## Organization of This Report

This report contains five chapters and three appendices. Chapter Two outlines the key elements of the DoD HCS. Chapter Three presents commentary by the panel on the initial version of the HCS and a brief assessment of the state of occupational analysis systems in DoD. Chapter Four evaluates alternative approaches to occupational analysis. Chapter Five presents the panel's conclusions and recommendations for moving forward. Short biographies of the panel members are given in Appendix A. Appendix B lists the various sources consulted. Finally, Appendix C contains the version of the HCS that was provided by OSD to the panel for review.

CHAPTER TWO

# Key Elements of the Deparment of Defense Human Capital Strategy

This chapter summarizes the highlights of the initial version of the DoD HCS that was published in conjunction with the QDR. That version was appended to a June 6, 2006, memorandum from the Under Secretary of Defense for Personnel and Readiness to the secretaries of the Army, the Navy, and the Air Force and the Chairman of the Joint Chiefs of Staff (OUSD(P&R), 2006). The HCS identified three strategic objectives and then proposed three human capital initiatives to meet those objectives.

## Objectives

The HCS was created in response to the requirement of the 2006 QDR (U.S. Department of Defense, 2006) to provide "broad strategic guidance for the development of human capital more consistent with the needs of the 21st century" (p. 29). The HCS adopted as strategic objectives three principles that were articulated in the most recent statement of the National Military Strategy: decisiveness, integration, and agility (U. S. Department of Defense, 2005).

The discussion of "decisiveness" in the HCS includes references to maintaining a force capable of "decisive effects" and commanders focusing on "decisive outcomes." The discussion further references the need to tailor forces for specific actions and notes that technological change requires a changed defense workforce and that it is important for the defense workforce to be able to adapt, transferring "learning from one system or scenario to another without formal retraining" (p. 31). A high demand for other "competencies," such as leadership, cultural awareness, and foreign-language abilities, is also noted.

The HCS discussion of "integration" states that defense forces must fight as an integrated whole. The components to be integrated are the services (Army, Navy, Air Force, and Marine Corps), the National Guard, the Reserves, civilian employees, and contractors. The HCS notes that the "components will remain responsible for their unique strengths and cultures" but also recognizes the importance of DoD-wide integration (p. 32). The HCS describes obstacles to integration, including the "stovepipe" organization and management of DoD workforces and the DoD use of more than 15 different occupational systems, with more than 6,000 occupational definitions. The HCS notes that the NSPS for civilian employees aims to improve hiring, assignment, compensation, and reward.

The discussion of "agility" is brief, noting the role of globalization, technological change, the changing nature of warfare, and the national security environment, which demands quicker response to changing, unforeseen, and unforeseeable demands.

## Strategic Initiatives

The HCS states that the objectives "are best realized through three human capital initiatives that should be implemented immediately" (p. 34). These initiatives are (1) a competency-based occupational planning system; (2) an enhanced performance-based management system; and (3) new and enhanced opportunities for personal and professional growth.

The HCS defines competencies as "sets of integrated behaviors and underlying knowledge, skills, abilities, and other characteristics that define superior job performance" (p. 34). Further, it notes that in the envisioned competency-based occupational planning system, "all aspects of defense capability, from firing weapons to landing aircraft, from leading troops to providing security, from manning a tank to delivering supplies will be defined by competencies and these definitions must be common across services and components" (p. 34). The focus on competencies would be in contrast to training for specific, equipment-centric tasks.

The HCS discussion of performance-based management centers on customized assessments and incentive structures (monetary and non-monetary) that would reflect individual preferences and institutional retention preferences. It speaks of evaluation protocols based on "objective, measurable criteria that hold individuals accountable" and "quantitative ratings [that] will help identify high-performing individuals and organizations" (p. 38).

The HCS casts the initiative on opportunities for personal and professional growth primarily in terms of enhanced education and training programs, which would be a "fundamental element of the transformation to a competency-based occupational system" and which would develop the basic competencies that permit "transformational learning over the entire length of a career" (p. 40).

CHAPTER THREE

# Commentary on the Department of Defense Human Capital Strategy

The panel believes that some of the initiatives proposed in the HCS merit serious further consideration or action. For example, developing a common language for occupational classification and analysis warrants serious further consideration, regardless of whether or not a "competency-based occupational planning system" is the best method to achieve it. We comment at length on these initiatives in a later section of this report. We note in passing that the NSPS, in the first stage of implementation, may well enhance performance-based management and compensation in the civilian sector of DoD. However, performance-based management for military personnel—for example, pay for performance—may be a quite different matter.

However, after carefully reading and analyzing the HCS, the panel concluded that an alternative course of action should be considered, rather than moving to full implementation of the initial version.

The panel's major concern with that version was the call for implementation of a new competency-based occupational planning system that appears to be intended to supplant the current systems. In the judgment of the panel, the arguments that would be required to support such a sweeping change, based on either data or logic, are missing from the HCS. However, rather than questioning the need or desire on the part of DoD for this change, the panel focused on laying out and commenting on the details of each of the key elements in this cornerstone initiative: (1) the different underlying strategies that exist for occupational analysis and how one might choose among them; (2) the definition of "competency" and current-day issues associated with the use of competencies as the basis for an occupational analysis system; and (3) the meaning and implications of developing a DoD occupational analysis system based on a "common framework."

The remainder of this chapter identifies and discusses the principal criticisms leveled by the HCS at the current military systems. It then briefly touches on the highlights of the current occupational analysis and classification systems in DoD, with a discussion of how they are used and how they compare with those in the system envisioned by the HCS.[1] We argue that, in reality, the military services' current occupational analysis and classification systems are already competency-based systems according to the HCS definition of competencies as "sets of

[1] This chapter is not intended as a detailed review of current military occupational analysis and classification systems, for either military or civilian personnel; that information is readily available elsewhere. For example, information on the military services' systems of occupational classification are available at http://en.wikipedia.org/wiki/Military_Occupational_Specialty. For information on civilian occupational classification for the federal government, which includes DoD, see http://www.opm.gov/fedclass/. Note, however, that DoD is converting to the NSPS, information on which can be found at http://www.cpms.osd.mil/nsps/index.html (these sites accessed on July 24, 2008).

integrated behaviors and underlying knowledge, skills, abilities, and other characteristics that define superior job performance" (p. 34).

## HCS Criticisms of the Current Military Systems

The HCS offers a "competency-based occupational planning system" as the cornerstone of the solution to the problems it finds in the current systems. As noted in Chapter Four, the essential distinction between the current occupational analysis (OA) approaches used by the services and a competency-based system is that the current systems are "work-oriented," while competency-based systems are "worker-oriented." That is, the descriptors in the current system concentrate on the tasks an individual is trained to perform, such as "engage targets with M240B machine gun," whereas a competency-based system focuses on descriptions of the characteristics of people in terms of knowledge (e.g., mechanical training), skill (e.g., troubleshooting), and ability (e.g., manual dexterity). The HCS definition of competencies as "sets of integrated behaviors and underlying knowledge, skills, abilities, and other characteristics that define superior job performance" (p. 34) begs the question of whether "sets of integrated behaviors" is meant to include "tasks" in the definition. The mapping of knowledge, skills, and abilities to tasks, which is called for in military task analysis systems (e.g., TRADOC Regulation 350-70), further blurs the distinction between work- and worker-oriented systems.

It is not accurate to say that current military occupational analysis systems are disconnected from competencies. All reasonable people in the personnel research business seem to agree that competency modeling is just another name for job analysis (e.g., Sackett and Laczo, 2003; Schippmann et al., 2000). Given this correspondence, we think all the services would probably say that they have been doing job analysis, performance-based management, and training and development for decades and that they continuously try to improve their occupational analysis systems, performance measurement, and training opportunities, as much as resources will allow.

## Current Occupational Analysis Systems Are Already Competency-Based

The military services have a long history of occupational analysis and classification (see, e.g., Zeidner and Drucker, 1988). The approaches in current use were derived principally from work begun by the Air Force more than 40 years ago (Snyder, 1960; Morsh and Archer, 1967; Christal, 1960). As noted in Chapter Four, the services' approaches to occupational analysis begin with specific work-oriented data but include a mapping of worker-oriented knowledge, skills, and abilities to the work-oriented data. McCormick (1976) refers to them as based on job inventories—questionnaires composed of lists of tasks that are rated by incumbents or subject-matter experts (e.g., supervisors) on such characteristics as time spent or importance.

The Air Force implemented formal occupational analysis in 1967 (Mitchell and Driskill, 1993) with the use of Comprehensive Occupational Data Analysis Programs (CODAP) for systematically collecting and analyzing job-inventory data.[2] All of the military services' occu-

[2] A CODAP survey is not a "common" instrument. That is, the same items are not used for every position. For example, in the Army, the survey instruments for 11B (infantryman) and 88M (vehicle operator) would not contain the same task statements.

pational analysis systems at one time or another have been based on the CODAP system. Chief of Naval Education and Training Instruction 1540.7J requires the Navy Manpower Analysis Center to use CODAP to collect and process Navy Occupational Task Analysis Program data, and Marine Corps Order 1200.13F similarly requires the use of CODAP. The Army adopted CODAP in 1972 (Brady, 2004). In 1994, responsibility for occupational analysis within the Army was transferred to the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI). ARI has developed a computer-based survey system called Occupational Data Analysis, Requirements, and Structure (ODARS) to supplant CODAP for Army occupational analysis.

The military services use occupational analysis to (1) adjust their occupational structures, tasks, and training in response to procurement of new weapon systems, equipment, or complex materiel systems; (2) adjust their occupational structures, tasks, and training in response to substantive changes in operations or procedures; and (3) merge two or more occupations to create a new occupation or sub-occupation (Brady, 2004). Thew and Weissmuller (1979) describe CODAP as being used to "revise classification structures, assess job related skills, verify the relevance of training courses, and a host of other applications in which an accurate knowledge of job content at the task level is desirable."

The services' training centers use the task-level information that comes from occupational analysis as the basis for developing training programs that are knowledge-, skill-, and task-based. Each service uses a form of Instructional Systems Development/Systems Approach to Training[3] in developing training courses. One of the early steps in the Instructional Systems Development/Systems Approach to Training process is identifying the tasks an individual must be able to perform. The task analysis is followed by a learning analysis that identifies the prerequisite and supporting knowledge and skills required to perform each task. Training programs are then designed to instill the requisite knowledge and skills.

The current U.S. military systems of training and managing personnel are based on occupational structures. Occupational analysis identifies the tasks that are performed by members of an occupation, and training is designed to provide them with the knowledge and skill required to successfully perform the tasks. Are the current systems not systems that manage "sets of integrated behaviors and underlying knowledge, skills, abilities, and other characteristics that define superior job performance"? The panel members believe they are.

## Current Systems Respond to Changes in the Structure of Work

Changes in occupations and occupational structures occur organically. For example, as air warfare has become more complex, the Air Force has developed the concept of Air Operations Centers to plan and coordinate air campaigns, and it operates those centers with individuals drawn from its current occupational structure. Infantrymen have evolved from foot soldiers to mechanized troops, first in personnel carriers, then in armored personnel carriers, now in fighting vehicles. Over the course of time, new military occupational specialties (MOS) and additional skill indicators (ASI) have been developed to identify these changes in occupations.

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[3] See, for example, AF Manual 36-2234, *Instructional System Development*, November 1993. See also, MIL-HDBK-29612-2A, *Instructional Systems Development/Systems Approach to Training and Education (Part 2 of 5 Parts),* August 2001.

The occupational analysis organizations in the services use regular surveys of incumbents and other subject-matter experts to track and respond to the organic changes that are constantly occurring in the tasks that military personnel are performing in the field. Occupational surveys use standard task lists that are specific to each occupational specialty. Incumbents identify the tasks they perform and the relative amount of time they spend on each task. Supervisors provide information on the priority of tasks, the consequences of inadequate task performance, and the criticality of immediate performance.

Standardized task lists, if aggregated across occupational specialties, could provide one basis for a common framework for describing occupations. Such task lists lend themselves to standard statistical and psychometric analyses, such as examinations of the reliability and validity of the task ratings. Furthermore, the connection between occupational analysis and the services' training establishments ensures that training curricula are closely connected to what job incumbents are doing in the field. Most of the problems with occupational analysis systems, CODAP or other, result from data not being kept current and not from inherent technical weaknesses in the systems.[4]

## Two Faces of Occupational Classification

### Positions

DoD is a system of positions or billets that are aggregated hierarchically into larger and larger organizational units. For example, the Army is organized as teams, squads, platoons, companies, battalions, brigades, divisions, corps, and armies. Other, more ad hoc organizational entities such as task forces provide flexibility in employment. Each of the services could be described in terms of similar hierarchical structures, with differences unique to the particular service. For example, the Marine Corps has aggregated units called battalions and Marine Air-Ground Task Forces (MAGTF); the Navy has ships and battle groups; the Air Force has flights, squadrons, and wings.

The process used to define what these units will look like, in terms of human resources, is the manpower-requirements process, which determines the kinds of positions needed in each unit. For DoD writ large, the process is incremental. That is, not every position or billet in every organization is reviewed[5] every year. In many cases, new or different manpower requirements are developed in conjunction with new or redesigned equipment. One example of such development can be found in a report on the manpower requirements for the Navy's planned littoral combat ship (Douangaphaivong, 2004).

The result of these ongoing analyses is an evolving manpower-requirements document that identifies the numbers and kinds of human resources that are needed. For the military services, the required human resources are identified by occupational codes and rank. For example, a position in a Marine Corps rifle squad may be identified as MOS 0311 and Pvt,

[4] The desire of DoD to revamp its occupational analysis systems may be the indirect result of the services' closing or downsizing their personnel research laboratories over the past decade, which has resulted in less emphasis on maintaining occupational data systems.

[5] In this instance, the term "reviewed" is used to mean something akin to the application of rational judgment rather than in a statistical sense.

signifying a rifleman with rank of private and pay grade E-2.[6] For civilians, human resources are identified by occupational series and pay grade. For example, a position may be identified as GS-0140-12, signifying a manpower research and analysis position at pay grade 12.[7]

### People

Classifying positions is only half of the equation; the other half is the classification of individuals into occupations. Except for some professional occupations such as medical and legal, individuals obtain an occupational designation in the military services as the result of a minimum amount of initial training and/or experience. Individuals are literally "awarded" an occupational specialty code upon successful completion of training and may advance in the occupation by successfully completing additional formal or on-the-job training. For example, to be awarded U.S. Marine Corps MOS 202, Marine Air-Ground Task Force (MAGTF) Intelligence Officer (I), an individual must be a commissioned officer in the Marine Corps, be eligible for specific security clearances, and have completed the MAGTF Intelligence Officer Course at the Navy and Marine Intelligence Training Center (NMITC), Dam Neck, VA.[8]

Civilians are classified into occupational series on the basis of their prior education and training. Individuals may enter some occupational series, such as GS-0302 – Messenger, at lower pay grades, with minimal training or education. Other civilian occupational series, such as GS-0660 – Pharmacist, require substantial prior education for entry.

Although it is obvious that differences in performance will exist across all the people in a particular occupational specialty who are at the same pay grade or rank—for example, the U.S. Marine Corps MOS 202, Marine Air-Ground Task Force (MAGTF) Intelligence Officer (I)—the military assignment system is largely blind to them. Assignments, especially at lower ranks, are filled primarily on the basis of occupational classification and pay grade for both military and civilian positions. This assumes that all individuals with the same occupational classification and pay grade are randomly equal, even though we know that there will be individual differences in performance. It seems clear that the competency-based occupational planning system envisioned in the HCS would change the basis of the assignment systems. However, it is not clear whether that system would require greater or less detail for the assignment process.

## Combatant Commanders at the Nexus

Title 10 of the U.S. Code specifies that it is the responsibility of the military services to organize, train, and equip, but not to employ, military forces. The responsibility for "performance of missions" lies with the combatant commanders.[9] In performing those missions, the combatant commanders rely on and, in a sense, requisition the capabilities they need from the military services to execute their missions.

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[6] See http://www.tecom.usmc.mil/gtb/tds/MCBUL_1200.pdf for the a complete guide to U.S. Marine Corps military occupational specialties (accessed September 21, 2006).

[7] See http://www.opm.gov/fedclass/gshbkocc.pdf for a complete list of federal government civilian occupational groups and families (accessed July 24, 2008).

[8] See http://www.tecom.usmc.mil/gtb/tds/MCBUL_1200.pdf.

[9] United States Code, Title 10, Armed Forces Subtitle A, Part I, Chapter 6, § 164.

The occupational classification systems described above serve the needs of the individual services' recruitment, training, assignment, and operational systems, but they are service-specific and could make it more difficult for the combatant commanders to identify and requisition substitutable capabilities across the military services. The fact that each service uses its own system of classification creates coding challenges. What to the untrained eye might look like the same occupation—for example, Army infantryman and Marine Corps rifleman—will have a different code in the Army system than it has in the Marine Corps system. These coding difficulties may be relatively easy to overcome, but a greater difficulty results when the equipment that individuals are trained on and expected to operate and the tasks they are trained in and expected to do in seemingly similar occupational classifications, such as a Marine Corps Military Occupational Specialty (MOS) 3531, Motor Vehicle Operator, and Air Force Specialty Code (AFSC) 2T111, Vehicle Operator Helper, differ in some ways.[10] However, DoD has developed and maintains a hierarchical crosswalk of the different services' occupational codes[11] that assists in identifying individuals in similar occupational classifications from one service to another.

The Joint Capabilities process is used by DoD to manage the provision of units and individuals to the combatant commanders, a process that is currently managed by the Joint Staff (J-1). In most cases, the individual requisitions are identified by service, specialty, and individual experience required.[12] The difficulty comes when the services are unable to fill a requirement. In that case, the solution involves crosswalking the service coding structures. The panel believes that the new HCS should be designed to accommodate and improve the efficiency of this process.

Having provided this background on both the HCS and occupational analysis in the military departments, we next present a more detailed consideration of key elements of the HCS.

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[10] See the Air Force enlisted occupational classification manual (AFMAN 36-2108) at http://www.e-publishing.af.mil/pubfiles/af/36/afman36-2108/afman36-2108.pdf#search=%22afsc%20manual%20enlisted%22 (accessed September 21, 2006).

[11] See DoD 1312.1-I, "DoD Occupational Conversion Index," for a complete listing of the crosswalked occupational codes.

[12] This process is specified in Chairman, Joint Chiefs of Staff Instruction 1301.01C, 1 May 2006.

CHAPTER FOUR

# Occupational Analysis and Key Elements of the Human Capital Strategy

## Background

As pointed out earlier, the HCS calls for DoD to "develop and implement a competency-based occupational planning system to describe work and workers," where "competencies may be defined as sets of integrated behaviors and underlying knowledge, skills, abilities, and other characteristics that define superior job performance" and where the competency definitions "must be common across Services and components." The document also states that DoD "must create a common framework or set of descriptors to define with precision the work, the worker, and the workplace across components. That is, the framework must be consistent across workforces, Services, and Service components." It is also noted that the "efficiency and productivity" benefits of such a system derive from the fact of both work demands and workforce characteristics or traits being "described in terms of knowledge, skills, and abilities."

In order to ensure (or at least aspire toward) an understanding of these elements and to provide a coherent basis or frame of reference for its conclusions and recommendations, the panel found it necessary to understand in greater detail each of the key elements—occupational analysis, competency, and common framework (or common language)—embedded in the "competency-based" concept. Accordingly, we briefly discuss each of these elements, along with associated issues and questions that they tend to evoke. We then discuss possible options for a new DoD occupational analysis system. Finally, we draw a number of conclusions based on the material we have reviewed, which in turn form the basis for recommendations made in Chapter Five.

## What Is Occupational Analysis?

Occupational analysis (OA) refers to any method or system used to describe work, jobs, or occupations. Many such methods and systems are available. They are commonly differentiated in terms of (1) whether they are primarily inductive or deductive (which speaks to OA *process*) and (2) the types of job descriptors (job characteristics or units of analysis) they use (which speaks to OA *content*). Inductive approaches tend to be oriented to the production of detailed information about individual jobs; they provide limited generalizability of results, and they are usually more costly and time-consuming. Deductive approaches allow many different jobs to be analyzed in terms of the same characteristics, using the same metrics, thereby creating a common language of occupational description and analysis that promotes generalizability of results and facilitates across-job comparisons. Thus, deductive approaches tend to be more efficient, more cost-effective, and easier to update and maintain; however, they also tend to preclude the collection of highly customized or job-specific information.

Approaches to OA can also be differentiated in terms of two broad types of job descriptors: (1) work-oriented descriptors, whose frame of reference is the work to be done (e.g., tasks, work processes, and work outputs); and (2) worker-oriented descriptors, whose frame of reference is the attributes needed by a worker to do the specified work (e.g., skills, knowledge, and abilities). Each of these categories can be further differentiated in terms of the level of analysis or description represented by a particular descriptor. Work-oriented descriptors can range from very specific items (tasks performed) to quite broad functions (general work functions or responsibilities). Worker-oriented descriptors can similarly range from narrowly defined characteristics (specialized knowledge) to broadly defined human attributes (aptitudes and abilities or personality traits). More-specific levels of analysis tend to produce a large number of descriptor elements (specific descriptors), while more-general levels of analysis tend to produce a smaller number of elements.

Table 1 illustrates how these two types of job descriptors interact and play out. It provides examples of descriptors from each broad job descriptor category within each of three levels of analysis—broad, moderate, and specific.

When considering alternative OA systems in terms of any of these differentiating factors, there are no unequivocally “right” or “wrong,” or “better” or “worse,” choices in the absence of specification of the system’s intended purposes and applications. Each type of process, job descriptor category, and level of analysis has utility for different purposes and is therefore relatively more or less suitable for different applications. Specification of such purposes is in turn a function of the particular needs of potential users. Consequently, such needs must also be specified in some detail, or an OA system may not meet the needs for which it was developed.

In practice, a functional, operational OA system would populate an occupational database with one or more types of the information shown in Table 1 for each occupation. It might additionally include such other items of work-related information as the education and training requirements for occupation entry; the tools, machinery, and equipment used to perform the specified work tasks; and the typical or relevant conditions under which the work is

**Table 4.1**
**Examples of Job Descriptor Types Representative of Different Job Descriptor Categories and Levels of Analysis**

| | Level of Analysis or Description | | |
|---|---|---|---|
| **Job Descriptor Category** | **Broad** *(relatively small numbers of elements)* | **Moderate** | **Specific** *(relatively larger numbers of elements)* |
| Work-oriented | Duties, general responsibilities | General work activities, work functions | Tasks, detailed work activities, performance standards |
| Worker-oriented | Personality traits, aptitudes, and abilities; basic skills *(most stable/enduring; least trainable; minimally dependent on practice or experience)* | Cross-functional skills, worker functions | Specialized/technical skills, specialized/technical knowledge *(least stable/enduring; most trainable; heavily dependent on practice or experience)* |

performed. The characteristics, data quality and currency, and functionality of this database directly determine its value in fulfilling its intended purposes.

## What Does "Competency" Mean?

As detailed in the report of an industrial-organizational psychology task force on job analysis and competency modeling (Schippmann et al., 2000), the definition of "competency" is ambiguous. There are almost as many definitions as there are practitioners of "competency modeling" and developers of "competency-based" human resource systems. Compounding this problem is the fact that most of the definitions that have been developed describe a complex and multifaceted concept, as can be seen in the samples provided by Schippmann et al. (2000):

- A mixture of knowledge, skills, abilities, motivation, beliefs, values, and interests (Fleishman et al., 1995).
- A knowledge, skill, ability, or characteristic associated with high performance on a job (Mirabile, 1997).
- A combination of motives, traits, self-concepts, attitudes or values, content knowledge or cognitive behavior skills; any individual characteristic that can be reliably measured or counted and that can be shown to differentiate superior from average performers (Spencer, McLelland, and Spencer, 1994).

As noted earlier, the HCS defines competency as "sets of integrated behaviors and underlying knowledge, skills, abilities, and other characteristics that define superior job performance."

From these definitions, one could legitimately interpret the term as referring to (1) a component of performance itself (for example, repairing helicopter engines), (2) the *direct* determinants of individual differences in performance (that is, knowledge, skill, effort), or (3) the *indirect* determinants of individual differences in performance (for example, cognitive abilities, physical size), which are more stable traits. One could use the term "competency" to refer to any one of the three, but *not all of them at the same time*.

The problem with all of the above definitions is that because they encompass so much, they do not convey distinctive meaning. More specifically, because they do not distinguish among attributes representing vastly different domains, dynamics, characteristics, and levels of analysis, they describe a construct or concept that has little value, either conceptually or practically, as a unit of analysis in an OA system, much less as the core of such a system. Yet that is exactly what appears to be proposed in the HCS concept of a "competency-based" OA system. As a result, it is unclear whether this means a knowledge-based, skill-based, ability-based, or attitudes- and values-based system, or some (unspecified) combination of these or additional attributes.

In addition to a lack of specificity (and hence a lack of clarity of meaning), the various HCS descriptions of competency have some logical inconsistencies. This is the case in the passages quoted in this chapter's introductory paragraph, which state that DoD "must create a common framework or set of descriptors to define with precision the work, the worker, and the workplace across components" and that both work demands and workforce characteristics or traits are to be "described in terms of knowledge, skills, and abilities." If a competency-based framework is defined as one in which both work and worker characteristics are described in terms of knowledge, skills, and abilities, this would not appear to be readily compatible with a system requirement that work (and the workplace) be defined "with precision," since knowledge, skills, and abilities are worker-oriented descriptors that do not describe work (or the workplace) at all, much less with precision. That requires different sorts of descriptor elements, such as tasks, responsibilities, or machines, tools, and equipment.

Compounding the above problems, the HCS is not specific about the objectives to be addressed by such a system (discussed further below) or how a competency-based OA system will help accomplish them. For example, the HCS states, "The competency-based occupational system allows for flexibility and transfer of knowledge *thus* enabling more efficient and effective re-orientation of the force in response to deployment needs" (p. 35, emphasis added), but it is not clear precisely how this will occur.

## What Does "Common Framework" Mean?

Much like "competency," the term "common framework" (or, as it is often called, "common language"), in the context of occupational description and analysis, does not have a single, widely agreed-upon or well-understood meaning. This is a critically important issue, as it goes to the heart of both the meaning and potential value of having some sort of common OA system across services and components. The HCS provides some clues as to what this might represent in a new DoD OA system, when it states that the competency definitions "must be common across Services and components." This implies the development of a single library of descriptors that the services must use when describing their occupations, a concept that could be seen as entirely sensible, or at least understandable, except for the problem of what competency might mean and how much work- or worker-oriented descriptor territory it might or might not cover. Elsewhere, and commendably in the panel's view, the HCS recognizes the importance of determining an appropriate level of analysis and description in the OA system when it calls attention to the "delicate hand" involved in developing competencies, noting that "too much granularity in specifying those competencies will reduce responsiveness by creating over-specialization; if competencies are defined so specifically that each is held by only one individual, the entire system depends on the availability of that one individual" (p. 37). Further, it discusses the benefits of using competencies in the matching of work demands and worker characteristics because "both are described in terms of knowledge, skills, and abilities."

From the above, we can infer that the HCS, in its call for a "common framework," is referring to an OA system whose descriptor ("competency") basis (1) uses definitions that are common across services and components (that is, including both military and civilian DoD), (2) is used to describe (i.e., is common to) both jobs and people, and (3) employs a consistent level of analysis and description. In and of themselves, these goals (again setting aside the "competency" definition problem) appear entirely reasonable to the panel and embody many of the ideals of large-scale, cross-job, multipurpose OA systems (Peterson et al., 1999). The goal of all such systems is to provide an underpinning of structure (logical interrelationships among categories and elements within categories) and standardization (common definitions, rules, and metrics) that promotes common understanding and usage among all users and stakeholders. Such a structure can enable many applications that are beyond the capabilities of simple lists of tasks or other information that is either unstructured or idiosyncratic to individual jobs or organizational units.

All other things being equal, for any applications requiring comparison and understanding of similarities and differences among jobs (in terms of either work performance requirements or person attributes) across different organizational units (services or components, in the present context), use of a common OA framework or descriptor is preferable to having separate or different OA systems within each organizational unit.

However, other things are rarely equal. In the present context, at least three considerations preclude an immediate embrace of such a conclusion: (1) as was the case for competency, the intended or assumed characteristics of the "common framework" are insufficiently specified in the HCS; (2) the rationale for such a system in terms of specific needs or objectives is not well specified in the HCS; and (3) the implied replacement of large, entrenched, and complex service- and component-specific OA system infrastructures (and related personnel and data system infrastructures) by a common framework would require a considerable degree of due diligence to ensure appropriate value and benefits given the huge investments in time, cost, and resources undoubtedly entailed in such an undertaking.

Regarding the first two of the above considerations, further (and detailed) specification of common framework characteristics is needed, because this is not a unitary concept—there are many different ways in which a common OA framework can be conceived and designed, the specifics of which can be determined only in light of the applications or objectives required by the system's stakeholders and users. The most important features requiring specification are the following:

- Descriptor coverage: how many and which work- and worker-oriented attribute domains will be included in the system—abilities, skills, knowledge, preferences, machines and equipment, tasks? This subsumes the issue of whether the common framework will be implemented as a single set of a relatively limited number of descriptor elements representing a single level of description (as is typical of many "competency model" approaches used in the private sector and now under development for NSPS) or as multiple descriptor sets or taxonomies representing multiple attribute domains and levels of descriptions, the approach embodied in the O*NET system (Peterson et al., 1999).
- Descriptor level of analysis: the breadth or narrowness of descriptor definition, as well as whether or not to allow multiple levels of analysis via the use of hierarchical descriptor-element taxonomies.
- Whether descriptor coverage will apply (or will be designed so as to allow or promote application) to work, to workers, or to both.
- Whether individual jobs will be described exclusively in terms of descriptor sets that are used across all jobs in the system or will also include some types of job-specific information (such as tasks, tools and technology, education or training requirements), the approach used in the O*NET system.
- The policy and deployment question of how much and which parts (descriptors) of a common framework will be required for use by all organizational units, and which parts can be user-specific, as well as the further question of the degree to which, if user-specific framework components are permitted, common rules regarding descriptor format, structure, and metrics will be required (this is an approach to common language used by the National Skills Standards Board (NSSB, 1998)).

- The characteristics of the metrics, or scales, by which descriptors will be quantified, as well as the ways in which they will be quantified (e.g., in terms of importance, need upon job entry, proficiency level required).

This list illustrates the wide range of options and decisions that come into play when conceiving of and designing a common OA framework, which fundamentally is an information system that creates the potential for facilitating understanding of the work of an occupation (and the person characteristics required to do that work, if these are part of the system) and for more readily understanding similarities and differences between the work of different occupations. Deployment of a common OA framework does not change what the work of an organizational unit actually is or how it gets trained or performed, only the manner in which it is described, while still providing for the collection and maintenance of organization- and occupation-specific information under some design options.

## Occupational Analysis System Options for DoD

A recurring theme across the discussions above has been the importance of understanding, in fairly specific terms, the objectives or purposes to be served by an OA system before there can be any truly meaningful discussion of key underlying OA system concepts and issues. This is especially true when considering available OA options.

The purposes discussed in the HCS as providing the underlying rationale for the need for a common framework for OA (that is, the three strategic objectives of maintaining a force capable of decisive effects, integrating the Joint Total Force, and developing an increasingly agile force) are extremely broad, which leaves open questions about how to implement them. Equally broad are the rationales offered regarding how the proposed OA system would facilitate achieving these objectives. The HCS asserts that a competency-based system is superior to the historically task- and equipment-centric military OA systems of the past; would be better able to "enhance capability- or effects-based planning"; would "enable focused training to fill gaps in critical knowledge, skills, and abilities"; would "aid in staffing specific assignments and identifying quickly any critical competency gaps"; would support "a force capable of decisive effects" by helping "to identify the range of competencies needed to meet the array of possible threats, to generate an asymmetric offensive advantage rapidly, and to pinpoint the gaps in competencies"; would provide military commanders with "greater insight into resources with which they are asked to complete a mission"; would "enhance agility by developing the capability for the military to tailor units more rapidly to meet each mission"; and would be better able to integrate the Joint Total Force than the current method of task-based occupational planning that is "more appropriate to Cold War, industrial concepts that rely on relatively fixed, routine activity," because it uses "competencies, which are more enduring and portable" and "describe[s] individual attributes needed to perform successfully on the job."

These stated outcomes represent potentially desirable high-level objectives for an OA system, but they do not provide guidance on the specifications for such a system at the operational or application level. Moreover, they do not provide insight into how or why the use of competencies or a common OA framework would be the best way to realize these objectives. This is not to say that such linkages or rationales are not possible, only that they are not apparent in the HCS. In various briefings, the panel heard about potential cross-service OA needs at a somewhat more specific level, encompassing such things as (1) better methods for searching the labor pool (uniformed and civilian) for specific performance capabilities; (2) specification of the additional training needed to move from one assignment to another; (3) specifications for training (and cross-training) design; (4) the ability to determine similarities between civilian and military positions in the different services; (5) greater career flexibility for individuals and greater ability to identify and obtain the training necessary to attain this; (6) an information tool to help in such activities as restructuring occupations, human-systems integration, current/projected workload analysis, and pay setting; and (7) specifications for the performance capabilities to be assessed during performance appraisal. It would be useful to develop detailed and usable specifications of such goals in a systematic manner that provides a sense of their relative priority.

Absent such information, the panel's recourse is to consider OA system options either in a relatively abstract or generic manner or on the basis of assumptions about more-specific DoD needs and objectives. Under these conditions, the panel felt it could not form strong conclusions about the relative strengths and weaknesses of specific approaches or systems.

A fairly extensive body of literature exists on OA systems and taxonomic work related to the development of common descriptor frameworks for work and workers (Cornelius, Carron, and Collins, 1979; Fleishman and Quaintance, 1984; Knapp, Russell, and Campbell, 1993; National Research Council, 1999; Pearlman, 1980; and Peterson et al., 1999). The Knapp, Russell, and Campbell and NRC reports provide particularly detailed treatment of military OA systems. Table 2 displays a representative sample of such systems in terms of the descriptive scheme presented earlier in Table 1.

In the panel's judgment, despite some limitations, O*NET could provide a framework for developing much of the common language and functionality needed in a new DoD system and also has an extensive, existing database of occupational information across the entire labor force. However, descriptive information on the full set of O*NET occupations is presently

**Table 4.2**
**Examples of Job Analytic or Taxonomic Systems with Different Job Descriptor Categories and Levels of Analysis**

| Job Descriptor Category | Level of Analysis or Description | | |
|---|---|---|---|
| | Broad | Moderate | Specific |
| Work-oriented | Job Diagnostic Survey (JDS) (Hackman and Oldham, 1976); PPRF Work Styles (Guion, 1992; Raymark, Schmit, and Guion, 1997) | Minnesota Job Description Questionnaire (MJDQ) (Dawis, 1991) | O*NET Detailed Work Activities (DWAs) (Dietrich et al., 2002; U.S. Department of Labor, 2003) |
| Worker-oriented | Ability Requirements Scales (Fleishman and Mumford, 1988); Holland Interest Taxonomy (Holland, 1973) | Position Analysis Questionnaire (PAQ) (McCormick, Jeanneret, and Mecham, 1972); Functional Job Analysis (Data, People, Things) (Fine, 1955) Work Keys (http://www.act.org/workkeys/index.html) (accessed July 24, 2008) | NOICC Knowledge Taxonomy (NOICC, 1995) |
| Work- and/or worker-oriented (multilevel) | MOSAIC (Corts and Gowing, 1992) SCANS (Peterson, 1992) SHL Universal Competency Framework (Bartram, 2005) O*NET (Peterson et al., 1999, 2001) | | |

NOTE: PPRF = Personality-Related Position Requirements Form.

incomplete. In addition, while military occupations (that is, titles) are listed in the SOC, which is the basis for the O*NET classification structure, these occupations are not populated with substantive descriptive information. Also, O*NET, by design, does not collect certain types of job-specific information (for example, information regarding highly specialized or technical tasks, skills, or knowledge) that might be relevant to military applications. To some degree, this reflects the limitations inherent in all deductive OA approaches in terms of their relative insensitivity to highly specific or nuanced aspects of jobs. It also reflects the traditional scope and focus of O*NET on civilian occupations and the civilian workforce. While there is no structural aspect of O*NET that prohibits a potential broadening of this focus, it is nonetheless, in its present form, not especially "military-friendly."

From a broader perspective, we note that the specific content of some of the O*NET taxonomies has been considered by some to be less than ideal and that in some cases the taxonomies have not been as fully differentiated as would be desirable, such that there is conceptual overlap of some specific descriptor elements between taxonomies (for example, the "reading comprehension" skill and the "written comprehension" ability, and the "writing" skill and the "written expression" ability). There have also been some pointed criticisms of specific aspects of the O*NET methodology (Harvey and Wilson, 2000; Wilson, 2002), which have varying degrees of merit. However, many such issues and criticisms were directed toward the initial O*NET prototype work, including its very early data-collection efforts and initial data releases. Substantial improvements have been made in many of these areas since that time, and subsequent and ongoing research and development has provided further empirical support for some aspects of the methodology that have been questioned or has served as the basis for making changes and improvements where warranted (for example, see Hubbard et al., 2000). O*NET was always conceived as a dynamic system capable of changing, improving, and incorporating new and different types and levels of job descriptors and functionality (APDOT, 1993). To its credit, and despite some imperfections and limitations, it appears to be largely fulfilling this intent.

On balance, the panel's view is that no single existing system is likely to be fully appropriate for DoD's needs. Based on the members' collective knowledge of OA and military occupations, along with the preliminary information and assumptions regarding likely OA system purposes and objectives gleaned from the briefings provided to the panel, it appears likely that both the performance capabilities of individuals (equating this to HCS "competencies") and the performance requirements of a position or assignment must be described in substantive and concrete terms that convey a great deal of meaningful information to DoD planners, managers, and decisionmakers. All of the existing systems from the non-military sector, including O*NET, provide information that is too general and abstract. If DoD wishes to develop a uniform OA system applicable across the services, their components, and the civilian workforce, the need to build the system in-house seems inescapable. This is the only way it could be substantively meaningful to users and stakeholders.

However, this does not imply starting from scratch. All current positions have written performance requirements, most of them in the form of detailed task lists, which could provide the basis for developing a library or taxonomy of more-general performance requirements or capabilities, using an agreed-upon format. This, in turn, could provide the basis for derivation of valid worker-oriented descriptor profiles of occupations. At the very least, these are the types of options that could be more fully explored via an option development and pilot-testing process, as described in Chapter Five.

CHAPTER FIVE

# Blueprint for the Future: Creating and Implementing a Human Capital Strategy for the Department of Defense

The panel's review of the DoD HCS, its survey of the literature, and discussions with members of DoD and contractor personnel led it to a number of conclusions and recommendations that should be useful in the next iteration of a DoD HCS. The panel is aware that, ultimately, strategic plans develop organically. The following recommendations for an alternative to implementing the HCS as it is currently written should be viewed as contributing to the further development of a viable and effective DoD HCS.

## Establish an Oversight Organization

To assist in the ongoing development and implementation of a DoD HCS, a permanent Human Capital Strategy Working Group should be established, perhaps with sub-panels to tackle distinctive aspects of the strategy such as OA, or pay and benefits, or performance management. As envisioned in the initial version of the HCS, a comprehensive strategy touches every aspect of personnel management, from recruitment and selection, to training and development, to performance management, to compensation and benefits, and it touches every component of DoD, both military and civilian. Developing and implementing a strategy with this vertical and horizontal breadth requires the efforts of technical and policy experts and the support of senior DoD leaders with the authority to bring it about. The panel believes that without the commitment of experts and senior decisionmakers from all components of DoD, a comprehensive strategy cannot be developed or implemented.

The Human Capital Strategy Working Group should have technical representatives from the military services and DoD. Inherent in this recommendation is the formulation of a general-officer/SES-level steering group to oversee the activities of the working group and, in addition, the establishment of a committee of external technical experts to provide insight and review for best practices, as well as to inform the oversight of the steering group. The executive agent for this organization would be the Program Executive Officer (PEO) for the DoD HCS.

## Develop a Clear and Specific Statement of Objectives

Every facet of an HCS depends on a clear and specific statement of the objectives the system is designed to serve. Specific objectives play an important role in focusing the efforts of the organization and in providing a means for measuring progress. For example, conducting a systematic review of DoD OA systems and the needs of the services and of DoD that current systems fail to address is an absolute prerequisite for further progress on an HCS in general and on the occupational aspects of one in particular.

## Develop a Range of Options to Meet Determined Objectives

Once the objectives are determined and prioritized, a range of plausible options can be developed. One option might be a single cross-component OA system that describes each occupation in broad terms of worker abilities required for success in it. Another option might be one that describes positions (billets) in detailed terms of the component-specific tasks to be performed. Still another option might be to allow each component to develop and use its own OA system but require that it subscribe to a detailed crosswalk of information among the components. These options would emphasize different objectives or approaches to system operation. The aim of this exercise would be to obtain evaluative feedback, such as from later pilot-testing, on the relative strengths and weaknesses of different approaches.

Options could also include means other than OA-based strategies for achieving these objectives, such as changes in organizational structures or policies. As indicated in the initial version of the HCS, occupational requirements may change rapidly, so the OA system must be flexible enough to respond to the changes. Similarly, the priorities assigned to objectives can also change.

## Conduct a Cost-Benefit Analysis of Options

Even after satisfactory sets of specifications for various options or alternative versions of a system have been developed, the question still remains as to which options merit further investments of time and resources and could reasonably be considered candidates for eventual full-scale implementation. There is a need for some form of cost-benefit analysis of both the options developed and any other-than-occupational-analysis-based strategies developed. The evaluation should also include the opportunity costs of maintaining the status quo.

## Pilot-Test Selected Options

Pilot-testing or demonstration efforts are imperative. It might also make sense to consider something like a "pre-demonstration project" for the various options, the goal of which would be to gather input and feedback as a way of determining the best candidates for actual pilot-testing.

## Regularly Revisit the Human Capital Strategy

Finally, the panel recommends an explicit plan for regularly revisiting the HCS. All strategic plans have either an implicit or an explicit lifetime, and the HCS is no exception. Because of its connection with the QDR, the HCS has a natural lifetime of four years, suggesting that a major review of the HCS should occur every four years. The panel recommends that whatever HCS is adopted, it should be reviewed biennially for progress and midcourse corrections.

APPENDIX A

# Biographies of Panel Members

**Dr. Lawrence M. Hanser** is a senior behavioral scientist at RAND and Associate Director of the Manpower, Personnel, and Training Program of Project AIR FORCE. He has more than 25 years of experience with military personnel policies and the research that supports them. His work focuses on the structure and design of organizations and the selection and development of the people who work in them. In recent years, he has focused on understanding the skill requirements of senior leadership positions in large organizations and the effect of these requirements on development and succession planning. His work in this area has contributed to a revolution in the way the U.S. Air Force and other defense and U.S. government organizations develop and manage their most senior military and civilian leaders. Before joining RAND in 1989, he was Chief of the Selection and Classification Technical Area at the U.S. Army Research Institute for the Behavioral and Social Sciences in Alexandria, VA. In this capacity, he was responsible for developing and leading a broad portfolio of research on how the U.S. Army selects and retains highly qualified personnel. Dr. Hanser holds a B.A. in psychology from Marquette University (1972) and an M.S. in psychology (1975) and a Ph.D. in psychology (1977) from Iowa State University.

**Dr. John P. Campbell** is a professor of psychology and a professor of human resources and industrial relations at the University of Minnesota. For more than 30 years he has been at the forefront of research on occupational analysis, individual performance assessment, and personnel selection and classification. He served as associate editor and then editor of the *Journal of Applied Psychology* from 1973 to 1982. He has published five books, more than 100 papers, and many invited chapters. He has served as president of the Society for Industrial and Organizational Psychology (SIOP) and received the society's career award for distinguished scientific contributions to industrial and organizational psychology in 1992. He also has more than 20 years of experience as principal scientist on a series of projects dealing with the selection and classification of U.S. Army enlisted personnel, the most extensive of which was Project A, funded by the Army Research Institute. Project A is the topic of his most recent book, *Exploring the Limits in Personnel Selection and Classification,* which he co-authored with Deirdre Knapp. In 2006 he received the American Psychological Association award for distinguished scientific contributions to the application of psychology.

**Dr. Kenneth Pearlman,** currently in independent consulting practice, is an industrial-organizational psychologist who has specialized in research and applications in the areas of personnel selection and assessment, work and skill analysis, person-job matching, and productivity measurement and enhancement. From 1983 to 2001 he was responsible for various personnel research and development functions at AT&T and Lucent Technologies. Previously, he spent nine years as a personnel research psychologist at the U.S. Office of Personnel Management. Dr. Pearlman has been involved in a number of federal and military work analysis and assessment-related initiatives, including revision of the U.S. Department of Labor's *Dictionary of Occupational Titles* (to what is now O*NET), consultation for the National Skills Standards Board, and service on review and advisory panels for U.S. Army Research Institute personnel and classification research projects. He is on the editorial boards of *Personnel Psychology* and the *International Journal of Selection and Assessment*, and he served for eight years on the editorial board of the Society for Industrial and Organizational Psychology's (SIOP) *Professional Practice* book series. He is co-holder of a U.S. patent on an innovative job-analysis software tool. He has served as a member of the Board on Testing and Assessment of the National Research Council. Dr. Pearlman is a Fellow of the American Psychological Association, the American Psychological Society, and SIOP.

**Dr. Frank Petho** enlisted in the Navy in 1969 and served five and one-half years as a hospital corpsman. He left active-duty service as a second class petty officer and enrolled at the University of Vermont, where he received his M.A. and Ph.D. degrees in psychology. He returned to active duty in 1978 and received his commission as a Naval Aerospace Experimental Psychologist. After tours in medical research commands, he served on major education and training staffs, including the staffs of the Chief of Naval Education and Training, the Chief of Naval Air Training, and the Deputy Chief of Naval Operations for Manpower, Personnel, Training, and Education. His final tour on active duty was at the Naval Postgraduate School, where he served as chairman of the Operations Research Department, chairman of the National Security Affairs Department, and deputy superintendent and chief of staff. He is currently on the staff of the Deputy Chief of Naval Operations for Manpower, Personnel, Training, and Education.

**Lieutenant General (Retired) Tom Plewes** has served as a senior program officer on the staff of the Committee on National Statistics, National Academy of Sciences, since October 2002. Immediately before joining the staff of the National Academies, he served in the U.S. Army as chief of the Army Reserve and commander of the U.S. Army Reserve Command. His previous government service was as the associate commissioner for employment and unemployment statistics for the Bureau of Labor Statistics, Department of Labor, where he had responsibility for the nation's labor-market information programs. He also directed the most recent revision of the government's occupational classification systems. He left that position in 1996 to return to active military duty with the Army Reserve. He is a graduate of Hope College (B.A., economics) and The George Washington University (M.A., economics). He is a Fellow of the American Statistical Association and a Senior Fellow of the Association of the U.S. Army.

**Dr. Ken Spenner** is a professor of sociology and psychology and director of the Markets and Management Studies Program at Duke University. He has a B.A. from Creighton University, an M.A. from the University of Notre Dame, and a Ph.D. in sociology from the University of Wisconsin, Madison. His research interests include work and personality, occupational classification systems, career dynamics, technology, and the sociology of organizations and markets.

APPENDIX B

# Information Sources

1. Dr. David Chu, Under Secretary of Defense for Personnel and Readiness
2. Carl Dahlman, DoD Program Executive Officer (PEO) for DoD Human Capital Strategy; formerly of RAND
3. Janice Laurence, Director, Research and Analysis, Office of the Under Secretary of Defense for Personnel and Readiness
4. Anita Lancaster, Defense Manpower Data Center (DMDC)
5. Steve Reardon, Defense Manpower Data Center (DMDC)
6. Bob Campbell, Defense Manpower Data Center (DMDC)
7. Paige Hinkle, National Security Personnel System (NSPS)
8. Ray Conley, RAND
9. Bernie Rostker, RAND
10. Marcy Atwood, SAIC
11. Gail McGinn, DoD
12. MAJ Stevenson, DoD
13. Pete Stenner, USMC
14. Mike Applegate, USMC

APPENDIX C

# DoD Human Capital Strategy[1]

## I. Introduction

The mission of the Department of Defense (DoD) is "to provide the military forces needed to deter war and to protect the security of our country."[2] To carry out this mission, no element matters more than the people who make up the Total Force: Active and Reserve Soldiers, Sailors, Marines and Airmen, and the government civilians and contractors who support the armed forces. Indeed, the majority of the defense budget supports people. The quality of those who serve provides the United States with a critical advantage against competitors. The U.S. defense force is far better trained, educated, and supported, and more competent and professional, than any current or potential rival. We value our people more and invest in them more than do our adversaries.

The United States maintains the superiority of its military capability by recognizing that this prized workforce must constantly evolve. Recruitment and retention strategies change annually to meet current needs. Education and training regularly refresh and improve the skills and abilities of the workforce. And the Services – Army, Navy, Air Force, and Marine Corps – learn from one another and align the separate personnel practices of each with the others where appropriate. This collection of practices – forecasting demand, recruiting, selecting, training, developing, promoting, compensating, retaining, transitioning to another element of the Total Force, separating, or retiring individuals, all at the best value – falls under the umbrella of human capital management.

DoD continually updates its personnel management policies, but this DoD Human Capital Strategy, as called for in the 2006 Quadrennial Defense Review, provides broad strategic guidance for the development of human capital more consistent with the needs of the 21st century. As a human capital strategy, it aims to ensure DoD has the right people, doing the right jobs, at the right time and place, and at the best value. For DoD, it must also ensure that the people needed to perform the unique demands of DoD missions are provided within the context of an all-volunteer force and in accordance with federal workforce law and policy. In this regard, DoD will work closely with Congress to ensure that the law provides DoD with the authority necessary to implement this strategy.

[1] This appendix presents the version of the HCS that was reviewed by the panel. It has not been altered or edited by RAND.

[2] www.defenselink.mil/admin/about.html (accessed July 24, 2008).

### The Need for a New Human Capital Strategy

Major forces are changing the way America fights its wars and defends the nation, with implications for how DoD manages its people. The United States is well into a transformation from an industrial-age economy to an information-age one, and the defense workforce must transform with it. Rapid changes in technology and globalization have altered virtually every dimension of warfighting from the nature of the enemy to the design of the battlespace to the skills required of the people, to the capabilities required in the future. DoD now faces a wider range of adversaries that still include traditional military forces, but now also consist of rogue states, non-state organizations and even individuals with the will and means to disrupt international order.

To respond to these changes, the National Military Strategy (NMS) puts forward three principles to guide the development of the joint force: decisiveness, integration, and agility. The NMS argues that to meet these objectives, the defense workforce of tomorrow must have certain attributes. The workforce must evolve from being garrison-based to being expeditionary, from one where many are exposed to combat to one where fewer are exposed but are more capable of reaching back to support units, from one that is relatively manpower intensive to one that requires fewer people to perform the same job, and from one that is, in general, platform-based to one that is synchronized through networks.

To evolve in this way, the work of units and individuals must be redesigned. For example, defining a job specifically within the context of certain equipment, as is often done in the defense workforce, encumbers the organization in meeting new mission needs. Supporting units, too, currently are often not mission-focused, and so slow to respond to changing mission needs. In the future, the supporting units will need to be more flexible and able to provide quick responses to combat needs. The organization must also be leaner, and this requires greater competence, reliability, and endurance among those who remain. Finally, because DoD will continue to rely on a workforce that has been developed and trained from within DoD and not brought in mid-career, education and training approaches must be capable of adapting and responding to needs as they emerge, such as facility with new technologies, tactics, techniques and procedures. These needs support an approach to human capital planning that is more modular, flexible and joint.

These same challenges facing the DoD workforce are also reverberating throughout the private sector. Previously, industries were organized for mass production and individuals were hired to fill a specific job. Increasingly, however, harnessing competencies and quickly adapting to changing opportunities define success. In the global competitive environment, organizations have found that success requires shifting from routine and highly scripted jobs to adapting the skills and abilities of people to the evolving demands. Accordingly, industries are adopting competency-based systems for describing and organizing the capabilities of workers. They are working across the boundaries of their individual business units to blend their functional expertise to meet challenges and remain competitive. Further, they are structuring compensation models that reward the combination of skills and performance, and investing in training and education of workers to achieve competitive advantage.

The objectives of this Human Capital Strategy reflect the principles of the National Military Strategy: maintaining a force capable of decisive effects; integrating the Joint Total Force; and enhancing individual and institutional agility to contend with uncertainty. Three initiatives will advance these objectives: competency-based occupational planning, performance-based management, and enhanced opportunities for personal and professional growth. These initiatives are intentionally presented as broad and directional guidance for human capital management; to be successful, detailed implementation plans must be developed and carried out at component organization levels. The positive contributions of the components must be clearly visible and rewarded. That is, Defense is not just a collection of components but a coordinated constellation of capabilities that is poised to respond to emerging challenges.

As DoD develops and implements its human capital strategy for the Joint Total Force, it must continue to meet the human needs of the workforces. DoD relies on all geographic, gender, race/ethnicity, and socioeconomic segments of the U.S. population and will continue to value diversity and promote equal opportunity. Furthermore, DoD must maintain its social compact, a commitment to people and their families, and a covenant for quality of service with the workforce that adapts to the changing demands of the force.

This strategy explicates the strategic objectives in more detail, explains how DoD's strategic initiatives mesh with them and then elaborates on each initiative. It concludes with a discussion and timeline for implementing the activities.

## II. Strategic Objectives

### Decisiveness

While it has always been imperative that the United States maintains a force capable of decisive effects, the challenges in this area differ today. Defense forces must now be capable of tailoring specific actions to specific situations. As stated in the National Military Strategy, decisiveness may not require large forces but in some cases may involve innovative uses of capabilities – creating capability to mass effects rather than forces. Technological change has not only precipitated the need for change in the defense workforce, but also has facilitated change by enabling a move towards a more modular force that can exploit small unit and individual competencies. Now and in the future, commanders will focus on decisive outcomes, defining the effects they must generate and determining the capabilities they require.[3]

These changes in the nature of warfare call for a different kind of workforce. Perhaps the most valuable competency for today's workforce is the ability to adapt, to transfer learning from one system or scenario to another without formal retraining. The demand for those with skills working with new technologies has also increased in the military and in the private sector with globalization and technological advances. Demand is high for other competencies as well. Leadership, cultural awareness, and the ability to speak certain languages, for example, are at a premium both in DoD and the private sector.

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[3] Chairman of the Joint Chiefs of Staff, *The National Military Strategy of the United States of America: A Strategy for Today; A Vision for Tomorrow*, Washington, DC, 2004, p. 7.

These demands for people with particular competencies will require ever more sophisticated means of forecasting those demands and applying adaptive personnel policies to meet them. DoD will have to ensure that recruitment and training goals for competencies are responsive and forward-looking in order to provide a superior fighting force at the best value. The department must increase its capability to anticipate and, where possible, shape the forces that influence the availability of qualified military and civilian personnel.

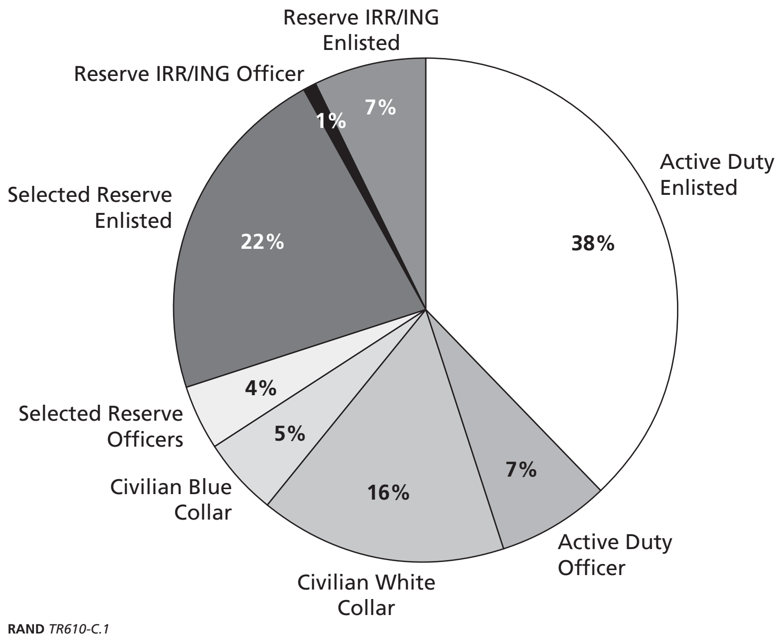
### Integration

Now and in the future, the U.S. defense forces must also fight as an integrated whole. This means integrating through training and development the human capital capabilities of DoD workforces across not only the Services – Army, Navy, Air Force, and Marine Corps – but also across components - Active Duty or Reserves, and the civilian sector (the "Joint Total Force"). Contractors serve as an "adjunct" member of the Total Force and should be integrated via their contracts, although their training and development fall beyond the purview of DoD. Integration seeks to ensure unity of effort so as to maximize the contribution of all partners. Military actions must be synergetic and synchronized to produce the greatest effect while taking full advantage of the cultural and doctrinal specialization of the Services and workforces. Components will remain responsible for their unique strengths and cultures, but department-wide integration and orchestration of specific and common talents are required to obtain the best-value solution and enhance core competencies. In addition, DoD must coordinate its actions with those who work alongside the forces, including other federal agencies, allied forces, non-governmental organizations, international organizations, contractors and local civilians – a true Joint Total Force manpower solution.

Integration is a daunting task. Unlike most federal agencies, DoD is a large workforce with over three million people across multiple organizations and agencies (see Figure 1). To complicate matters, each has developed occupationally in dissimilar ways. The Army, Navy, Air Force and Marine Corps have separate occupational systems for their officer and enlisted workforces while the civilian workforces follow the patterns of the federal workforce and use that occupational system. As a result, DoD uses over 15 different occupational systems with over 6,000 occupational definitions. These workforces are further supported by private sector contractors with their own occupational differentiations.

Until recently, these workforces have been managed as "stovepipes" with the civilian workforce following primarily Title 5, U.S. Code rules and the military workforces following Titles 10, 32, and 37, U.S. Code rules. Professional development of the civilian workforce has largely been the responsibility of the individual or his or her local commander. Both DoD and Congress have recognized the need for greater coordination across Services and components. In 1986, Congress mandated that the military workforces integrate more effectively to accomplish "joint" operations (formalized in the Goldwater-Nichols Act), and later mandated the development of a professional acquisition workforce. More recently, in 2003, Congress gave DoD authority to establish a new human resources management system for its civilian employees. The National Security Personnel System (NSPS) defines rules for a new system for DoD civilian employees which, when implemented, will improve how they are hired, assigned, compensated, and rewarded. The future promises further integration of these workforces at all levels of

**Figure C.1**
**DoD Workforces (3.14M)**




organization and across the services, expanding the definition of "Joint Matters" to include all operating domains (land, sea, air, space, and cyberspace) and types of operational partners.

This does not mean that the Joint Total Force will or should be but a blend of the various components. To borrow a metaphor from the civilian sector, the Joint Total Force should be a mosaic and not a melting pot. It is critical to preserve workforce and organizational cultures across the services and service levels. Service identity and specialization remain important. The demands that the workforce meets will continue to be determined at the component level while contributing to the overarching needs of Defense.

### Agility

Globalization and technological advances have contributed to an uncertain security environment, and protecting the United States in the face of this uncertainty requires greater agility. Given the breadth of challenges to national security, and the quick response times necessary to meet those challenges, it is simply not realistic to maintain a total force whose elements are customized to meet every possible threat or to fulfill every possible mission. Defense must continually assess risk and reevaluate its mission requirements to respond better to the changing nature of warfare and the national security environment.

Agility is what enables the U.S. defense forces to meet these challenges. Agility allows the total force to adapt rapidly to changing requirements through the flexible use of diverse individual and organizational capabilities linked to needed military outcomes. For a commander, agility maximizes the effects of surprise and supports quick transitions from one type or phase of an operation to another. In planning future engagements, agility enables a commander to conduct simultaneous operations while preserving the ability to respond to emerging crises.

## III. Strategic Initiatives

The three strategic objectives described above – developing a force capable of decisive effects, integrating the Joint Total Force, and increasing agility – are best realized through three human capital initiatives that should be implemented immediately.

First, DoD must develop and implement a **competency-based occupational planning system** to describe work and workers. Competencies may be defined as sets of integrated behaviors and underlying knowledge, skills, abilities, and other characteristics that define superior job performance. Under the competency-based occupational planning system, all aspects of defense capability, from firing weapons to landing aircraft, from leading troops to providing security, from manning a tank to delivering supplies will be defined by competencies and these definitions must be common across services and components. A focus on competencies rather than simply training for specific, equipment-centric tasks will enhance capability or effects based planning. Once the competencies are defined, competencies resident in the workforces and those needed in the future must be reconciled. These demands will be based not on specific units or tasks but rather capabilities required to support DoD's missions. In response to competency gaps, recruiting, training, and education efforts will be amended as appropriate. In addition, periodically this entire process from defining competencies to adjusting personnel practices and training must be repeated in response to future needs.

Second, DoD must develop and implement an enhanced **performance-based management system**. While the defense organizations currently use performance-based metrics in many cases, DoD will broaden the reach of these metrics both to evaluate the strengths and weakness of the establishment as a whole and to evaluate individual service members and employees.

Third, DoD must develop and implement enhanced **opportunities for personal and professional growth**. Defense organizations already strongly emphasize education and training of their personnel, but with this new human capital strategy, DoD will provide better access to better programs that support the strategic objectives, for all members of the Joint Total Force.

The strategic initiatives are interrelated in a variety of ways. For example, a well-functioning program for personal and professional growth enables DoD to attract, develop, and retain a workforce with the knowledge, skills and abilities it needs. Similarly, to have a well-functioning performance-based management system, the competencies necessary to succeed must be defined clearly and be aligned with identified Joint capabilities. In turn, those competencies must be measurable within the performance-based system. Finally, DoD cannot meet the needs of national military or defense strategy without clearly defining the competencies needed to meet that strategy, fostering them in the force through personal and professional growth, and measuring them to identify areas of strength and weakness.

The benefits and effects of these initiatives are also complementary. For example, together, they will build better surge capacity. The competency-based system improves visibility into capabilities of the Joint Total Force and lays the foundation for increasing operational availability and portability of the workforce. Integration improves coordination of the capabilities of the Joint Total Force, thereby supporting surge capacity. Second, the initiatives together will create personnel systems better aligned with mission requirements. The competency-based occupational system allows for flexibility and transfer of knowledge thus enabling more efficient and effective re-orientation of the force in response to deployment needs. The performance-based management system rewards those high performers who have the necessary competencies. Third, the initiatives together make recruitment, retention and development more efficient. The competency-based system better identifies the specific competencies to be targeted in recruitment, retention and training efforts, and fosters efficiencies in training and education. The performance-based system contributes to efficiency gains by improving the targeting of high performers for retention, as well as by identifying those who are not performing well for more training or for separation.

## IV. Competency-Based Occupational Planning

The cornerstone of this human capital strategy is the development and implementation of a competency-based occupational system. To date, organizations, including DoD, have been designed around individuals holding jobs. Job descriptions are developed, and people are hired and compensated based on their ability to meet those job descriptions. However, as economies transition from producing goods to producing knowledge and services, this design is proving inflexible, especially for an enterprise focused on national and international security—a far cry from goods or simple services. As organizations operate more globally, the competitive environment is less predictable and less stable, and a capability to respond quickly to these changes is critical. Competitive advantage under this new framework often lies more in the ability of an organization to develop certain competencies rather than in its size, economies of scale, or resources.[4] Flexibility and speed are key characteristics to the future defense workforce as well.

Developing a competency-based occupational system involves some challenging tasks. First, given sufficient authority to establish such a system DoD must create a common framework or set of descriptors to define with precision the work, the worker and the workplace across components. That is, the framework must be consistent across workforces, Services, and Service components. The set of definitions must be designed to accommodate the changes in these competencies over time. Competencies can be developed at various levels of specificity. In the case of high-demand skills such as security personnel and truck drivers, the set of defined competencies must be granular enough to account for the differences that exist in the operating environment and hence conduct of similar tasks in different Services. Such specificity would enable focused training to fill gaps in critical knowledge, skills, and abilities.

[4] For more on competency-based organizations, see Lawler, 1994.

Second, DoD components must identify the competencies, that are resident within their workforces and those that are needed to execute the capabilities in the short term. By identifying separately and comparing the competencies that are present with those that are needed, DoD will have important analysis to aid in staffing specific assignments and identifying quickly any critical competency gaps.

Third, DoD and the Services must identify the capabilities and corresponding competencies (i.e., resources) they will need in the future and develop a plan to ensure those resources are available. Each Service will examine the organizational capabilities they must have, and what individual competencies are required to deliver those capabilities. DoD and the Services will then analyze the match between needs and resources currently available. This analysis will indicate whether only incremental changes to personnel policies are necessary, or whether an entire new workforce structure is needed.

This effort requires appropriate supporting information technology systems to capture information about critical competencies (e.g., specific language and cultural expertise; information technology/information assurance capabilities), an individual's competency development and performance and on needed organizational capabilities. Managers should assess the utility of existing or emerging systems (e.g., Defense Integrated Military Human Resources System (DIMHRS)) relative to new systems. When fully implemented, the system will be able to provide valuable human capital information across components. This information will be used to provide options to leadership for shaping and relieving stress on the force and to creatively construct force packages or units for rapid delivery of capability. This is not to mean that capability is built person-by-person disregarding service domain expertise and unit cohesion. For example, building a joint staff will require individual expertise; developing mass capability will require expertise that is founded on units.

Given all the challenges that the development and implementation of a competency-based system involve, it makes sense to begin with a demonstration effort, perhaps with critically stressed functional areas. A pilot program will be essential to work out unforeseen difficulties in implementing the system and to begin to identify any unwanted outcomes that develop as a by-product of the changes.

Competency-based planning supports and drives all three strategic objectives. First, it supports a force capable of decisive effects. The U.S. military cannot maintain a force with individual specialized elements to meet each threat or fulfill each possible mission in today's complex and changing security environment. Competency-based occupational planning helps to identify the range of competencies needed to meet the array of possible threats, to generate an asymmetric offensive advantage rapidly, and to pinpoint the gaps in competencies. Also, by defining and identifying the competencies resident in the defense workforce now (and by developing those that are needed but not now present), military commanders have much greater insight into resources with which they are asked to complete a mission.

Second, competency-based planning is critical to integrating the Joint Total Force. The building blocks that are the foundation of the competency-based system will be common across services and organizations. Currently, occupational planning is task-based. Tasks are defined in a manner specific to each Service and often to each organizational level, and are more appropriate to Cold War, industrial concepts that rely on relatively fixed, routine activity. Competencies, which are more enduring and portable, describe individual attributes needed to perform successfully on the job.

Third, competency-based planning also enhances agility by developing the capability for the military to tailor units more rapidly to meet each mission. Competencies can be matched or developed to meet the needs of the rapidly changing defense environment. This advantage depends, however, on a delicate hand in developing competencies. Too much granularity in specifying those competencies will reduce responsiveness by creating over-specialization; if competencies are defined so specifically that each is held by only one individual, the entire system depends on the availability of that one individual.

Competency-based occupational planning yields other benefits as well. It increases the efficiency and productivity of defense workforces by improving the match between work demands and workforce characteristics or traits. Both are described in terms of knowledge, skills, and abilities. In the rapidly changing defense environment, people should not perform outdated or unnecessary tasks simply because they have been trained and organized to do them. Under competency-based planning, appropriate skill sets will be developed, maintained, and changed according to mission needs. Competency-based planning also increases career path flexibility, including a continuum of service, by assessing individuals in a more specific way than is possible with current occupational identifiers and then matching those individuals with jobs. People are identified in a more accurate and specific way by their competency inventory and that determines whether they are qualified for a position. Finally, it enables linking of military and civilian skill management systems, which will enhance the leverage across each system.

Risks exist to competency-based occupational planning, and they must be understood and managed. First, its operational value depends on the degree to which competencies can be both empirically related to work requirements and validly and easily measured. Second, the demand for the workforce must be developed objectively and challenged critically. Future demands must be well reasoned, fiscally informed, and balanced between risk and readiness. Third, competencies must be defined in a consistent and internally coherent manner – the implications of these definitions are significant and so it is critical for DoD to get it right. This will not be easy.

Fourth, competency-based planning requires units that can be broken down into force packages of varying size. The ability of the military to construct small units of capability is critical. But it is also true that development and planning based solely on competencies without preserving service culture and unit cohesion threatens to undermine that culture and cohesion, which would sharply affect readiness. If people are evaluated solely as the sum of their competencies, they will treat their job solely as the sum of the tangible benefits and costs. This result would eliminate one of the critical strengths of the U.S. defense forces and would have a major effect on the military's ability to wage war, or to do much else. How to maintain this culture and cohesion under the competency system will require careful consideration.

Finally, a move from a task-based to a competency-based system requires a shift in thinking with implications for personnel policy, governing legislation, financial resources, logistical support, and virtually every aspect of the current defense workforce. It will require significant investment of time on the part of senior leadership to make it happen.

## V. Performance-Based Management

While competency-based occupational planning provides a new framework for thinking about the defense workforce, the inclusion of a performance-based management system will greatly enhance that system by ensuring that DoD has access to the right people at the right place at the right time and at the best value. Enhancements to the performance-based management system are critical to this endeavor.

To afford more choice, a flexible system will be designed where the components will have the option of customizing incentive structures (monetary and non-monetary benefits) as required to reflect individual preferences and the institution's desire to retain that individual. Both assessments and rewards structures will consider potential repercussions across Services and organizations as well as provide incentives to reward attainment of competencies required in Joint, Service, and coalition warfighting. As the competency-based occupational system is developed, it will incorporate performance into its structure. The strength in the combination of these two systems is the ability to reward high performance in needed competencies to manage resources more effectively.

The exact elements of this enhanced system will, and should, be left to those designing the system, but some fundamental characteristics will guide this effort. Evaluation protocols will be based on objective, measurable criteria that hold individuals accountable. Quantitative ratings will help identify both high-performing individuals and organizations as well as inform DoD of training needs where performance is low or where emerging requirements are not met. The rewards system based on those ratings will also change.

The private sector thoroughly understands the benefits of a performance-based management system and a greater emphasis on it within defense organizations will help them compete for a high-quality workforce. It will help establish a rational and predictable relationship between accountable behavior and benefits.

A performance-based management system will also enhance agility. With an understanding of its priorities and associated opportunity costs, if properly designed, it establishes the framework that can readily respond to changes in mission and personnel requirements. With a performance-based management system, when an organization realizes the need for a new or increased level of competence in the workforce, it can provide incentives, in a logical and disciplined manner, to shape behaviors (to include teamwork) and thus enhance its capability.

As with a competency-based occupational system, risks with performance-based management must be understood and managed as well. While few doubt the wisdom of performance-based management in the abstract, the devil is in the details. If the system is not designed properly, results can not only be poor but can also be counterproductive. For example, if a certain behavior is present and valued but not measured, over time that behavior might lessen since the workforce has no incentive to continue it. In many situations, organizational performance and cohesion may matter more than individual performance. A performance-based system is only as good as the organization's ability to define and identify the desired behavior and to measure performance. The system also requires that management can and does make clear and unbiased distinctions in performance. It must be designed to discourage rating inflation and subjective evaluation. And it must do this in a way that minimizes the administrative burden of its adoption.

To make this process more challenging, many of the competencies so highly valued in military missions are among those most difficult to measure: competencies such as leadership and an ability to anticipate and plan for contingencies. In addition, for the military more than most organizations, individuals are valued as much for their potential as for their current abilities. For the most part, senior leaders in Defense are not hired, they are developed through military and civilian careers, and so the potential for the qualities of an effective senior leader must be identified using a common lexicon before they can be observed. Understanding how to include these competencies, either by improving how they are measured or by designing a system that can accommodate their imperfect measurement will require a great deal of thought and care.

Development of this system will require complementary changes in information technology infrastructure and governing legislation, and will demand financial resources and logistical support. As with competency-based occupational planning, the development of a performance-based management system will only occur with the sustained focus of senior leadership.

## VI. Providing Opportunities for Personal and Professional Growth

The education and training initiative is derived from, and critical to, the objectives and other initiatives of this Human Capital Strategy. Education and training programs increase the potential of people who are already part of the defense workforce. These activities complement recruitment and retention efforts and form a key component in maintaining a premier fighting force. Pursuing a strategy of training and education for the high-ability workforce enables organizations to develop capabilities needed to carry out the national security strategy.

The defense workforce already rates highly across multiple abilities. These inherent characteristics are emphasized in the military and civilian recruiting and selection process. People with appropriate levels of intellectual ability, physical fitness, and conscientiousness enter the defense workforces. Nonetheless, continuous learning is an important element of every individual who participates in military missions, be they Active Duty, Reserves, or DoD civilians.

Education and training are essential to the integration of the Joint Total Force. As articulated by the Chairman of the Joint Chiefs of Staff, leaders of the future force must be developed through a well-thought-out sequence of competency-based, Joint, Service, and functional education, training, and experience.

Education and training programs are also a fundamental element of the transformation to a competency-based occupational system. As described earlier, the defense workforces must transform to have the capabilities required for broader challenges; and must be agile enough to respond quickly to a range of potential crises. Education and training programs must develop the basic competencies that enable transformational learning over the entire length of a career. Simply put, education and training initiatives are vital to the department's quest to transform its human capital.

The combination of Joint, combined and interagency capabilities in modern warfare represents an evolution in Joint warfighting. DoD's education and training efforts must encompass the entire range of individual, unit, and staff level workforce training to support joint, interagency, intergovernmental and multinational operations. The department will revise its Training Transformation Plan to ensure the Total Force is prepared for emerging and changing missions, especially irregular warfare, complex stabilization operations, and information operations.

Given the growing demands of irregular warfare and the need to engage in missions alongside national and international partners, there must also be added emphasis on developing and maintaining appropriate technical, language, cultural, and information technology expertise. Recognizing this, the Quadrennial Defense Review approved initiatives to enhance national language skills and cultural awareness, including an emphasis on specific skills training based on competencies, language skill maintenance, and cultural awareness. In addition to these strategic initiatives, more tactical and operational ones include enhancing language and regional training before deployment. Education and training programs must also support proficiency with technologies and information management to leverage technology advantages, reach back capability, and network-centric warfare.

Through these education and training initiatives, DoD expects to reap the benefit of increased competency and capability. If managed properly, these efforts may also induce better retention of skilled workers by providing them the opportunity to evolve continuously their skills and to remain relevant as well as competitive. However, that same education and experience may also make it more difficult to retain workers because those skills and abilities are also valuable outside of the defense workforce. Thus DoD must be competitive as well. In addition, the benefits of the training and education only apply if they are put to use. DoD will need to put systems in place to ensure that the education and training is appropriate and applied.

## VII. Implementation

Implementation of the competency-based occupational system requires a focused effort under the authority of the senior leaders of the DoD with support from all components. The roadmap for implementation of the competency-based occupational system appears immediately below. This roadmap assigns overall authority to the Under Secretary of Defense (Personnel & Readiness) and charters a Program Executive Officer to develop, acquire, and manage activities associated with implementation. The PEO will be advised by the Defense Human Resources Board (DHRB), which will use an organizational structure similar to that for the National

Security Personnel System (NSPS). DoD components will provide resources as directed for PEO support and for implementation. Implementation will begin by March 2008, with spiral development continuing aggressively toward full implementation. Specific responsibilities and details of the PEO structure and schedule will be solidified in an operating charter to be developed. Simultaneously, DoD components – military and civilian – will implement the two initiatives for performance-based management and personal and professional growth and provide their strategies for doing this to the Under Secretary of Defense for Personnel and Readiness by March 2007 in the form of a Human Capital Strategy. The military departments, the Joint Staff, and the Under Secretary of Defense for Personnel and Readiness will ensure that such strategies are integrated within the Joint Total Force to produce agile forces capable of decisive effects. The components will undertake preparation for competency-based planning and once the competency initiative is completed, the components will incorporate the new construct into their human capital strategies.

Because of the extraordinary complexity of designing a competency-based occupational planning system and the expansive effect of its implementation, the system will be tested as a demonstration project as part of the steps taken to achieve Milestone B approval. In addition, in advance and throughout implementation of all phases of the three initiatives, DoD will monitor the effect of this strategy – the extent to which it is meeting goals and expectations set for it.

## VIII. Conclusion

The three strategic objectives – maintaining a force capable of decisive effects, integrating the Joint Total Force, and developing an increasingly agile force – and the development and implementation of three strategic initiatives – a competency-based occupational planning system, a performance-based management system, and enhanced opportunities for personal and professional growth – together form the basis for the new Human Capital Strategy. This strategy has enormous power to reform the military and other defense organizations and fulfill DoD's mission of providing the forces needed to deter war and protect the country. No other form of capital matters more to the defense of the U.S. than its human capital, and the strategic direction to maximize the value of this capital is crucial to the success of America's joint fighting force.

In conclusion, there are two important points to make about benefits and risks. First, the benefits of this strategy lie completely in DoD's ability to execute it well. A competency-based occupational system can yield great advantages in the military's ability to provide the right people to overwhelm adversaries, control situations and achieve definitive outcomes. A performance-based management system and education and training opportunities can ensure that the needed knowledge, skills and abilities are forever at the ready. But these changes are so complex, and so fundamental to the nature of the defense workforces, that they require enormous thought and care in their development and the attention of the Department's senior leadership.

## ROADMAP FOR COMPETENCY OCCUPATIONAL SYSTEM

| ACTION | COMPLETE | RESPONSIBILITY | EXPECTATION |
|---|---|---|---|
| Publish Human Capital Strategy | March 2006 | Secretary of Defense | |
| Delegation of authority and assignment of duties pertaining to competency occupational system | March 2006 | Secretary of Defense | Deputy Secretary of Defense is appointed Senior Executive for Competency Occupational System |
| Establish governance procedures | April 2006 | Senior Executive for Competency Occupational System | An Overarching Integrated Product Team composed of senior members of the Department will provide policy and strategic advice to the Senior Executive and the PEO and seek to resolve issues presented by the project manager. |
| Charter Program Executive Officer and Project Managers | April 2006 | Senior Executive for Competency Occupational System | PEO is accountable for developing competency occupational system design and acquisition; communicating and collaborating with stakeholders, DoD components, and other appropriate parties; and leading and managing activities associated with full implementation. Chain of supervision runs from the Secretary of Defense through the senor Executive to the PEO. |
| Designate Defense Human Resources Board (DHRB) as Senior Advisory Group | April 2006 | PEO | SAG will be composed of DoD component line and HR leadership and will advise on the general conceptual, strategic, and implementation issues of the competency occupational system. |
| Provide resources | April 2006 and continuing | USD(C) ICW USD (P&R)<br>DoD components | Resource needs determined by the PEO will be met. DoD components are responsible for resources needed for implementation. |
| Publish detailed schedule and milestones | May 2006 | PEO | |
| Provide plan for communications with internal and external stakeholders | May 2006 | PEO | |
| Produce requirements document | July 2006 | PEO | This document outlines fundamental requirements of the competency occupational system and guides design, acquisition, and implementation of all aspects of the competency occupational system. |
| Assess competency occupational system technology maturity and opportunities and complete analysis of alternatives to include IT architecture and applications. | March 2007 | PEO | Determine the risk, uncertainty, and the relative advantages and disadvantages of alternatives being considered. |
| Components deliver HCS | March 2007 | Components | Consistent with DoD HCS |
| Transition to system development and demonstration (including pilot test) (Milestone B approval). | April 2007 | PEO | Senior Executive will authorize entry into this designated point of the acquisition system if appropriate. |
| Transition to production and deployment (Milestone C approval) | March 2008 | PEO | Justification to continue to the next stage of acquisition will be provided. |
| Begin implementation | March 2008 | PEO and DoD components | Justification to continue to the next stage of acquisition will be provided. |
| Complete full implementation and enter sustainment | TBD | PEO, USD (P&R)<br>DoD components | Responsibility for sustainment policy and planning will reside with USD (P&R) |
| Disestablish PEO | TBD | Senior Executive | |

To the extent that these competencies are not measurable, not measured, or not measured properly, DoD's human capital will suffer. Key competencies not identified and not rewarded will likely wither under the new system in favor of those perhaps less important ones that are rewarded. As a quote attributed to John Maynard Keynes suggests, "It is better to be roughly right than precisely wrong." Further, the changes are massive, difficult, and long lasting. Change of this scope – in occupational planning, in performance management, and in personal and professional growth – would be difficult for any organization. But the effort to implement changes set forth in this human capital strategy in an organization the size of DoD while other significant demands are also being placed on it is of a different order of magnitude. For this reason, it is crucial that leadership for the design and implementation of the various elements is at the highest levels of the defense organization and is sustained. Of these elements, perhaps the most critical is the well-reasoned articulation of human capital demands; if it is not correct, what follows cannot be on target. Leadership must ensure that these demands are well reasoned and fiscally informed, providing a balance between risk and readiness.

Second, the initiatives presented here are not intended to be completed only once. Defining competencies, assessing needs, developing a rewards structure, refining education and training programs are all activities that must be conducted regularly. The work, worker and workplace evolve continuously, as do the goals, missions and strategies of the military, and so the competencies that support these must also. While the first round will require the greatest effort, provisions must be made for continuous review and adjustment.

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