

# DEVELOPING COMPETENCY MODELS TO PROMOTE INTEGRATED HUMAN RESOURCE PRACTICES

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*Today, competencies are used in many facets of human resource management, ranging from individual selection, development, and performance management to organizational strategic planning. By incorporating competencies into job analysis methodologies, the Office of Personnel Management (OPM) has developed robust competency models that can form the foundation for each of these initiatives. OPM has placed these models into automated systems to ensure access for employees, human resources professionals, and managers. Shared access to the data creates a shared frame of reference and a common language of competencies that have provided the basis for competency applications in public sector agencies. © 2002 Wiley Periodicals, Inc.*

## Introduction

High-performing people are critical for high-performing organizations. Whether driven by the need to improve efficiency, productivity, or profitability, or by the desire to provide world-class customer service, the combination of two components is critical: selecting talented and high-potential people to carry out the organization's mission and creating a culture that supports them. Many organizations recognize the link between high-performing people, an organizational culture that supports mission accomplishment, and high-performing organizations. Two challenges faced by most organizations are the identification of the most effective means to recruit, select, and retain a high-performing workforce, particularly within a tight labor market, and the creation and maintenance of a dynamic culture for employees that fosters achievement. Human resource management

professionals can contribute to the organizations' achievement of their missions and goals by providing managers and employees with information and tools to meet these challenges by maximizing human capital. Competencies provide the foundation through which human resource professionals can contribute to the success of their organization.

## Competencies Are the Future

David McClelland (1973) is often credited with launching the competency movement with the publication of his paper "Testing for Competence Rather than Intelligence." McClelland's research suggested that academic aptitude and knowledge content tests alone did not predict high job performance or success in life, and that individual characteristics or competencies can identify high performers. The use of competencies to identify high-performing people, or outstanding em-

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employees, has gradually become widespread in human resource management (Boyatzis, 1982; Lawler, 1994; Spencer & Spencer, 1993; Ulrich, 1997). Those characteristics that set these employees apart provide the basis for recruitment, selection, and development strategies that are effective and provide a high return on investment.

Human resource professionals must wisely invest their scarce resources. In the past, organizations hired those who could perform a set of tasks, usually focusing on technical knowledge. These traditional job-based selection and development strategies are less flexible than competency-based selection and development strategies. In rapidly changing business environments, organizations are recognizing the value of a workforce that is not only highly skilled and technically adept, but more importantly, a workforce that can learn quickly, adapt to change, communicate effectively, and foster interpersonal relationships. These characteristics, or competencies, are critical to organizational survival, productivity, and continual improvement.

By focusing on the full range of competencies or whole-person assessment, the emphasis is on potential, or what the person can bring to the organization, rather than on a set of narrowly defined tasks based on job requirements. Organizations that select for competencies such as creative thinking begin to build a high-performance culture. Using competencies as the basis for staffing provides the flexibility needed to select and place individuals where they can best serve the organization.

### Competencies in the Federal Government

As the use of competencies has grown, the number and variety of competency models and methods for developing competencies have also continued to increase. In 1997, the Society for Industrial and Organizational Psychologists commissioned a task force to review the practice of competency modeling and compare it to job analysis, noting the strengths and weaknesses of various techniques (Schippmann et al., 2000). For example, typical multimethod job analysis components are seen as more rigorous in methodology than typical competency modeling techniques,

which are often based on qualitative approaches. One of the strengths of competency models is that they are often linked to the business goals and strategies of the organization. Additionally, competency models provide insight into core competencies that are common to multiple jobs within an organization.

The United States Office of Personnel Management (OPM) has attempted to capitalize on the strengths of both traditional job analysis techniques and competency model development in its work. In 1990, OPM began developing competency models, recognizing the potential for the application of competency-based human resource applications in the federal government. OPM sought to incorporate traditional job analysis methodology into the development of competency models to provide an empirical foundation for the use of competencies by employees, managers, and human resource (HR) professionals in the public sector. To ensure competency models could be used by all HR functions, they were based on job analyses that met the standards set forth by the *Uniform Guidelines on Employee Selection Procedures* (Equal Employment Opportunity Commission, 1978) and other legal and professional standards.

Before developing competency models, it is important to establish a definition of competency. OPM defines a competency as *a measurable pattern of knowledge, skill, abilities, behaviors, and other characteristics that an individual needs to perform work roles or occupational functions successfully*. This broad definition of competencies forms the basis for “whole-person assessment.” Competencies such as interpersonal skills and teamwork can be as important as traditional knowledge, skills, and abilities (i.e., KSAs), but have not typically been assessed by the federal government. Research has indicated that these “softer skills” may have a significant impact on ultimate work success (Boyatzis, 1982). In conducting its competency research, OPM tried to capture both traditional KSAs, such as written communication, and softer skills, such as interpersonal skills, teamwork, and flexibility. OPM compared its competency framework to those successfully used in the private sector and those found in the literature to ensure a balanced framework. For ex-

ample, OPM compared its competencies to those representing emotional intelligence (Goleman, 1998). While OPM's model covered the majority of this work, small gaps were identified that will be incorporated into future work. Continually examining new competency models ensures that OPM develops comprehensive competency descriptions that cover a wide range of occupations.

OPM envisioned a uniform, competency-based common language that would enable federal agencies to describe jobs in the same way, eliminating inconsistencies across agencies and HR functions (e.g., staffing, performance appraisal, training). The common language reduces the costs of developing independent, and often redundant, models within the federal government. Consistently defined competencies promote a common understanding of the critical elements of each job among HR personnel, management, and employees. OPM has found that this common language is applicable for a broad range of public-sector organizations, including state and municipal governments.

Competencies provide a common language across HR functions; therefore, they provide a natural foundation for integrating these functions. OPM has conducted federal governmental job analyses that lay the foundation for public-sector competency models for many occupations.

### Occupational Analysis Methodology

Over the last decade, OPM conducted federal governmental job analyses studies (i.e., occupational analyses) of three occupational groups. First, the Leadership Effectiveness Study examined executive, managerial, and supervisory positions (Corts & Gowing, 1992; Gregory & Park, 1992). The second study examined seventy-seven clerical and technical occupations (Rodriguez, Usala, & Shoun, 1996), and the third study examined 119 professional and administrative occupations (Pollack, Simons, & Patel, 1999). Three additional studies are currently in progress to complete the initial studies of the world of work in the federal government: (1) one hundred Trades and Labor occupations (Bright, 2002), (2) four Information Technology occupations with ten

sub-specialty titles (Ricci & Savage, 2001), and (3) forty-six Science & Engineering occupations (Caldwell, 2002). Together, these occupational analyses will cover the major occupations common to organizations in the federal government.

Each of OPM's occupational studies is conducted using the Multipurpose Occupational Systems Analysis Inventory–Closed-ended (MOSAIC) approach. MOSAIC is a multipurpose, survey-based job analysis used to collect information on many occupations within an occupational group (e.g., information technology, clerical and technical) for a wide range of HR functions. The foundation of the MOSAIC approach is the development of a common language for competencies and generalized tasks that can be used to describe all occupations included within an occupational study group. This approach has several advantages (see Table I on next page) over traditional occupational analyses in which different HR branches would independently survey the same job incumbents and gather similar data. For example, within an organization, one HR function would collect information to build selection procedures while another function would collect information on training needs. Such an approach resulted in redundancy in effort and cost, as well as over-surveying of incumbents. Similarly, across the federal government, HR departments from different agencies would also duplicate data collection efforts. With the development of a single job competency model costing up to \$150,000, the costs of these individual studies add up quickly. The MOSAIC methodology eliminates the need to develop different surveys for different jobs. It also allows a one-time collection of data for all HR purposes, paving the way to a truly integrated approach to HR.

The savings from the systematic MOSAIC approach are significant. For example, the clerical and technical occupational study examined seventy-seven occupations for about the cost of ten individual studies, saving the federal government approximately \$130,000 per occupation for a total savings of over ten million dollars. Other associated costs are also reduced. For example, a single study for multiple purposes reduces the printing and survey administration costs of multiple studies.

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**TABLE 1** Advantages of the MOSAIC Approach to Occupational Analyses.

<i>MOSAIC Approach</i>	<i>Traditional Occupational Analyses</i>
<ul style="list-style-type: none"> <li>• Studying groups of jobs at one time reduces time and resource expenditures</li> <li>• Broadly defined, general tasks are more enduring</li> <li>• Common set of competencies and tasks allows comparisons across jobs</li> <li>• Facilitates integrated approach to human resource management (for example, serves as foundation for selection and promotion procedures, training needs assessment, performance management standards, and human resource planning)</li> </ul>	<ul style="list-style-type: none"> <li>• Studying one job at a time costly in terms of time and resources</li> <li>• Tasks defined at a high degree of specificity are easily outdated</li> <li>• Very specific KSAs and tasks do not allow comparisons across jobs</li> <li>• Not integrative; separate teams gather data for different human resource management initiatives (for example, selection and promotion procedures, training needs assessment, performance management standards, and human resource planning)</li> </ul>

Using a common language developed based on a group of jobs allows a single survey to collect information for multiple jobs and allows comparisons both within and across occupations in an occupational group. Because tasks are written broadly to apply to multiple jobs in an occupational group, they are typically more enduring and encompassing. For example, the MOSAIC task, "Uses a computer or word processor to create, edit, print, retrieve, or manipulate files," will be outdated far less quickly than the task, "Uses WordPerfect 6.0 to create letters." This broad wording of the MOSAIC task allows for changes in the types of output and changes in technology by focusing on the main part of the task "using a word processor." Additionally, rating the same tasks and competencies for all occupations provides data to identify occupations with similar task and competency requirements. This can be particularly useful for HR initiatives such as career transitioning, restructuring, and occupational consolidation. For example, in the federal government, people have traditionally remained in the same job classification and progressed in pay. The competency system helps focus on similarities across jobs, facilitating a career lattice approach where people can move among jobs based on the competencies that they bring to the job.

The MOSAIC approach ensures that HR decisions are founded on technically sound

and empirically based information. The approach provides the foundation for agencies to build integrated HR systems that use a common set of tasks and competencies to structure job design, classification, recruitment, selection, performance management, training, career development, and human resource planning. It also can ensure that employees receive a consistent message about the elements on which they are selected, evaluated, and trained.

The MOSAIC methodology consists of several steps: review of literature and job documents, development of competencies and tasks, identification of rating scales for the survey, linkage of tasks to competencies, development of competency benchmarks, and development of competency-based questions.

#### *Review of Literature and Job Documents*

The development of competencies and tasks begins with a comprehensive literature review. The goal of the literature review is to develop comprehensive competency and task lists for an occupational group. The literature review integrates information from the organizational and psychological literature, published job analysis studies, training and certification information, and documents such as current job descriptions and job advertisements from public and private sector organizations. The review also includes literature that addresses

future trends and work conditions of an occupational group, including projected future roles and job requirements. All KSAs, competencies, and tasks found in the literature review are compiled into a database. For example, over 10,000 tasks and 500 KSAs were collected for the clerical and technical study. This information is then sorted by key words to create competencies and tasks that cover the work performed by all the occupations in the study and that eliminate redundancy and confusion in terminology. After draft lists of competencies and tasks are developed, the lists are reviewed and finalized by focus groups comprised of subject matter experts. The final lists (e.g., 170 tasks and thirty-one competencies for seventy-seven clerical and technical jobs) comprise the common language for the occupational group under study.

#### *Selection of Rating Scales*

Scales for rating of competencies and tasks are evaluated for inclusion on the survey. Scales are selected to ensure that information from the survey is applicable for different HR functions and meets professional and legal requirements (Ricci, 2001). Since the surveys are lengthy, the scales are divided between job incumbents and supervisors. For example, in the clerical study, job incumbents were asked to rate how much time they spent on tasks. On their form, supervisors were asked to rate the importance of the tasks, because supervisors are expected to have the best understanding of tasks that are important for occupational success. A typical survey includes competency rating scales for importance (used for multiple HR purposes), required at entry (used for recruitment and selection), distinguishing value (used for selection and performance management), and need for training (used for career development). Task scales for importance and frequency or time spent (used for multiple HR purposes) are also included. See Table II for examples of these scales from the Professional and Administrative study.

#### *Task and Competency Linkages*

For a fully integrated, competency-based HR system, tasks must be linked to the compe-

tencies needed to perform them. The finalized task and competency statements are reviewed by a panel of research psychologists to determine the importance of each competency for successfully performing each task. Previous work (O'Leary, Rheinstein, & McCauley, 1989) has shown that ratings of psychologists are similar to those made by job incumbents. The linkage is the final step in finalizing the competencies and tasks for the occupational survey. This step ensures that the lists are comprehensive for the jobs. For example, when a competency does not link to any tasks, it indicates that either tasks are missing or the competency should not have been included. Task-to-competency linkages are also critical because (1) they are recommended by the *Uniform Guidelines on Employee Selection Procedures* (Equal Employment Opportunity Commission, 1978), and (2) the linkage information provides the foundation for developing a broad array of HR products (e.g., training objectives and curricula, performance standards, career development plans, recruitment and selection procedures).

#### *Competency Benchmarks and Questions*

The final step in the MOSAIC approach involves the development of benchmarks, or mastery levels, for competencies. An individual can be evaluated by comparing his/her mastery of a competency to the benchmark levels (see Table III). Similarly, successful performance in a position requires that an individual demonstrate mastery of the competency at a specific benchmark level. Although the occupational studies do not ask for levels of competencies, competency benchmark levels are important for many HR practices, such as performance management. Benchmark levels provide a standard way to define mastery of the competencies for an individual or position. Each competency benchmark consists of level definitions (i.e., the general statement of level) and behavioral examples (i.e., actual job behaviors). The definitions provide a standard that is not changed, while the examples can be modified and made job specific.

Psychologists and subject matter experts develop competency benchmarks. Psychologists develop benchmark level definitions

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**TABLE II** Professional and Administrative Study Rating Scales.

<i>Form</i>	<i>Task Scales</i>	<i>Competency Scales</i>
Incumbents	<b>Frequency:</b> 0 = Not Performed 1 = Every few months to yearly 2 = Every few weeks to monthly 3 = Every few days to weekly 4 = Every few hours to daily 5 = Hourly to many times each hour	<b>Importance:</b> 1 = Not Important 2 = Somewhat Important 3 = Important 4 = Very Important 5 = Extremely Important  <b>Need for Training:</b> 1 = Training Is Not Needed 2 = Some Training Is Needed 3 = Considerable Training Is Needed 4 = Do Not Know/Not Part of the Job
Form S1-Supervisors	<b>Importance:</b> 0 = Not Performed 1 = Not Important 2 = Somewhat Important 3 = Important 4 = Very Important 5 = Extremely Important	<b>Importance:</b> 1 = Not Important 2 = Somewhat Important 3 = Important 4 = Very Important 5 = Extremely Important  <b>Required at Entry:</b> 1 = Not Needed for the Job 2 = Not Needed at Entry because it is acquired through training or experience 3 = Desirable at Entry because those who possess it develop competence more readily 4 = Essential at Entry because those who do not possess it will not acquire it through training or experience
Form S2-Supervisors	<b>Importance:</b> 0 = Not Performed 1 = Not Important 2 = Somewhat Important 3 = Important 4 = Very Important 5 = Extremely Important	<b>Distinguishing Value:</b> 1 = Not Valuable 2 = Somewhat Valuable 3 = Valuable 4 = Very Valuable 5 = Extremely Valuable  <b>Need for Training:</b> 1 = Training Is Not Needed 2 = Some Training Is Needed 3 = Considerable Training Is Needed 4 = Do Not Know/Not Part of the Job

based on the literature review with higher levels incorporating greater scope and complexity. Using competency definitions, a list of tasks linked to the competencies, and their own knowledge of the jobs, subject matter expert panels develop examples of behavioral

statements corresponding to each benchmark level. These panels then rate each example on the extent to which it is related to the competency and assign a level to each example, using the benchmark definitions as the rating scale. The means and standard deviations of

**TABLE III** Competency Definition, Question, and Benchmark Levels.

<i>Teamwork</i>	
<p><b>Definition:</b> Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals.</p> <p><b>Competency-Based Questions:</b> Describe a situation in which you worked with a team to achieve a common goal. What was the goal? Who was on the team and how was the team assembled? What steps did you take to work toward meeting the goal? What was the outcome?</p>	
Competency Benchmark or Mastery Levels	
<i>Level Definitions</i>	<i>Behavioral Examples</i>
<p>Level 5 Fosters group identity and pride; motivates team members to achieve goals; contributes to team's proposal activities and effort to attain goals.</p> <p>Level 4 Contributes to team goal setting, work planning, and progress; facilitates group discussions by reflecting and summarizing members' comments; helps team to make significant progress toward attaining team goals.</p> <p>Level 3 Contributes to group discussions by giving short informative presentations; cooperates with team members to complete tasks assigned to the team.</p> <p>Level 2 Contributes to group discussions; volunteers to assist another co-worker who has excess work.</p> <p>Level 1 Performs routine tasks to assist co-workers in the immediate work area; follows instructions to complete assignments.</p>	<p>Level 5 Encourages win-win approaches and solutions at labor-management meetings; works on a team that develops and wins a large contract.</p> <p>Level 4 Serves as a committee member to set goals and to promote charitable contributions (e.g., Combined Federal Campaign); participates in a series of team meetings to develop strategies to improve a procedure.</p> <p>Level 3 Reviews and discusses the merits of candidate software assigned by LAN task force; works with another team member to interview customers to determine service strengths and needs.</p> <p>Level 2 Participates in meetings by citing experience with using a specific product or service; works temporarily in a department or unit where extra help is needed.</p> <p>Level 1 Coordinates with inventory clerk to ensure that materials are unloaded and stored in the proper order; completes forms clearly and accurately to facilitate processing by another clerk.</p>

these ratings determine benchmark examples that will be retained for each level.

After finalizing the benchmarks, questions are written for each competency to elicit behavioral responses that can be tied back to the benchmarks for rating purposes (see Table III). This represents an application of the behavioral consistency approach, where past behavior is a good indication of future behavior (Schmidt et al., 1979).

### Development of Competency Models

The size of the organization should be considered in determining the job analysis methodology. Larger organizations, like the federal government, should use survey approaches to collect job analysis information to achieve sufficient representation of the population, whereas smaller organizations or jobs with few incumbents may be adequately represented through focus groups.

To develop federal competency models, occupational analysis surveys are sent out to a stratified, random sample of incumbents and supervisors. The data are collected and analyzed to identify critical competencies and tasks for each occupation. The large number of respondents for each survey (e.g., 7,938 for executives, supervisors, and managers; 59,997 for seventy-seven clerical and technical jobs; 46,889 for 105 professional and administrative jobs) shows the scope of these projects. Data are analyzed for each occupation at every grade (i.e., pay) level where there are sufficient respondents. To create the final competency model for an occupation or occupational group, both incumbent and supervisor ratings are typically used. The Leadership Effectiveness Study, however, surveyed only incumbents.

#### *Developing Competency Models for an Occupational Group*

To identify similar jobs within an occupational group, statistical analyses are conducted. Cluster analysis is used to group occupations based on similarities in ratings of competencies on importance. These clusters provide the competency model for the occupational group in terms of general job families. Table IV shows the results of the cluster analysis of the clerical and technical jobs. The occupational group competency model provides a general guide to federal agencies about the competency requirements and similarities among jobs. It results in two sets of competencies: those core to the broad occupational group (e.g., clerical and technical occupations) and the competencies core to a smaller subset of similar occupations within that group (e.g., administrative cluster). Using the occupational clusters, competency-based products, such as selection examinations, can be designed for groups of occupations, reducing the costs incurred by developing separate products and tools for each occupation.

#### *Developing Competency Models for an Occupation*

The competency model, or occupational profile, for each occupation for which there are sufficient data is based on the ratings of importance by supervisors and incumbents as

well as ratings by supervisors of the requirement that individuals have that competency upon entry into the job. Competency models are also formed for several levels of each occupation (e.g., entry into the occupation, intermediate, full performing/journey). These competency models are intended for use by HR professionals and line managers to inform their daily HR activities by providing a sound basis for their decisions. The key to the success of this effort is to make this large database easily accessible by providing information in an automated format.

#### **Reasons for Automating Study Results**

OPM wanted to provide line managers, HR professionals, and employees with immediate access to occupational information. With advances in technology, it became possible to place this information in easy-to-use systems, ensuring that it is used for daily HR operational purposes as well as other programmatic initiatives. With the assistance of HR professionals within the federal government, OPM designed two automated occupational data delivery systems, the *Human Resource Manager (HR Manager)*, designed for use by HR professionals and line managers, and *USACareers* (originally called *Career Counselor*), designed as a career development tool for use by employees. These systems not only provide the results of the occupational analyses but also useful applications of the data. In addition, they place the same competency information in the hands of managers and employees, building a foundation for clearer communication of occupational expectations and career progression.

#### *The HR Manager System*

The *HR Manager* was designed to provide human resource professionals and line managers with the data necessary to make informed HR decisions. The *HR Manager* has undergone significant transformations as technology has improved and as users have provided suggestions. The *HR Manager* evolved from a strict data delivery system to one containing competency-based HR products (for

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**TABLE IV** Competency-Based Occupational Clusters and Associated Competencies for Clerical and Technical Jobs.

	<i>Information Support</i>	<i>Administrative</i>	<i>Technology and Programs</i>	<i>Financial</i>
	0072 Fingerprint Identification	0029 Environmental Protection Assistant	0204 Military Personnel Clerical & Technician	0344 Management Clerical & Assistance
	0305 Mail and File	0086 Security Clerical & Assistant	0313 Work Unit Supervising	0361 Equal Opportunity
	0350 Equipment Operator	0134 Intelligence Aid & Clerk	0332 Computer Operations	0503 Financial Clerical & Assistance
	0356 Data Transcriber	0203 Personnel Clerical Technician	0335 Computer Clerk & Assistance	0525 Accounting Technician
	1421 Archives Technician	0303 Misc. Clerk & Assistant	0390 Telecommunications Processings	0530 Cash Processing
	2091 Sales Store Clerical	0304 Information Receptionist	0392 General Telecommunications	0540 Voucher Examining
		0309 Correspondence Clerk	0394 Communications Clerical	0544 Civilian Pay
		0312 Clerk-Stenographer & Reporter	0675 Medical Records	0545 Military Pay
		0318 Secretary	0679 Medical Clerk	0561 Budget Clerical & Assistance
		0322 Clerk-Typist	1152 Production Control	0592 Tax Examining
		0326 Office Automation Clerical & Assistance	1411 Library Technician	0962 Contract Representative
		0382 Telephone Operating	1702 Education & Training Technician	0963 Legal Instruments Examining
		0986 Legal Clerk & Technician	2001 General Supply	0990 General Claims Examining
		1001 General Arts & Information Assistance	2005 Supply Clerical & Technician	0998 Claims Clerical
		1087 Editorial Assistance	2102 Transportation Clerk & Assistant	1101 General Business & Industry
		1802 Compliance Inspection & Support	2151 Dispatching	1105 Purchasing
				1106 Procurement Clerical & Assistance
				1107 Property Disposal Clerical Tech
				1531 Statistical Assistant
				2131 Freight Rate
				2132 Travel
				2134 Shipment Clerical & Assistance
Stamina	Reading Writing Speaking Listening Customer Service Organizational Awareness	Reading Writing Speaking Listening Customer Service Organizational Awareness Manages and Organizes Information Decision Making Reasoning	Reading Writing Speaking Listening Customer Service Organizational Awareness Manages and Organizes Information Decision Making Reasoning	Reading Writing Speaking Listening Customer Service Organizational Awareness Manages and Organizes Information Decision Making Reasoning Arithmetic/Mathematical Reasoning
		<i>Clerical/Technical Basic Competencies (associated with all four clusters)</i>		
Integrity/Honesty Conscientiousness	Technical Competence Interpersonal Skills	Flexibility Self-Esteem	Memory Self-Management	Teamwork

example, succession planning models, structured interview questions for selection). It consists of two major components. The first component provides the results of the occupational survey, displayed by occupation and pay level for each competency scale (for example, importance of competencies for entry-level secretary). These results formed the basis for the first iteration of the *HR Manager*, known as the *Report Generator*.

Subsequently, OPM worked with users to develop the second component. This component provides summarized data and competency-based HR tools designed primarily for use in job design and description, recruitment and selection, performance management, and career development and training. As additional occupational studies are performed, more data are added to the system. In addition, feedback from users continues to be incorporated into new iterations of the system. For example, the Internet version of the *HR Manager* offers many advantages over previous versions. The advantages include the ability to make more timely updates of data and features, easier access from remote locations, the ability to access the Internet-based system without installing additional software, links to other relevant sites, and the ability to transport data to other systems. Through leveraging technology, the *HR Manager* ensures that occupational information can be used on a daily basis to support HR practices and decisions. OPM is also working to assist several agencies that own *HR Manager* to integrate the data into their HR information systems.

The initial *HR Manager* was designed for federal agencies; however, state and local governments have found the system to be of great value in their HR processes. For example, the state of California needed to conduct an occupational analysis of its clerical classes to form the foundation of a new clerical test. Instead of developing new task and competency lists, they compared the competencies and tasks on the federal survey of clerical and technical occupations to the work of their clerical classes. They found that the OPM survey was comprehensive and subsequently administered it to employees in 90 clerical classes. The results of the California data were placed in the *HR Manager* in a separate

“agency-specific” component that allows the California users to access their data and compare it to the federal data. Other public-sector organizations also began to see the benefit of using a common language. While some of these have chosen to take part in the occupational studies (for example, the states of Michigan and Indiana), others matched their occupations to the federal occupations to be able to use the system (for example, the state of New Jersey). These matches are based on the similarity between the state or local jobs and the competencies and tasks in the federal occupational profiles.

#### *The USACareers System*

*USACareers*, based on the same data as *HR Manager*, helps employees to make informed choices when managing their careers. Several of the features in *USACareers* are identical to those in the *HR Manager* so that a consistent message is conveyed for employees and managers. However, the data in *USACareers* are for the employees' own self-assessment and development. Managers cannot view data for an individual employee; therefore, employees can use the system without concern for negative job impact. This system was designed to help employees gain a better understanding of the competency requirements for their current jobs and to help them understand the requirements of future career alternatives through assessment, training, development plans and activities, career exploration, and the availability of job opportunities.

This comprehensive system was designed to assist employees in a time when the federal government was reducing its numbers. However, it also helps employers understand the competencies of their current workforce. The system provides the employer with reports that can be used to identify the overall results of the competency assessments, assisting the employer in workforce planning by identifying target areas of improvement.

#### **Forming Partnerships: A Consortium Approach**

OPM has established consortia of interested parties for both the automated systems and

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the occupational studies to pool financial and human resources, benchmark best practices, and facilitate the exchange of information. These groups have grown to include federal agencies, state and local governments, and nonprofit associations and public institutions (e.g., libraries, public colleges and training institutes). The organizations participating in the consortia realize a return on their investment as the data are applied to programmatic and policy initiatives, as well to various HR processes (e.g., development of succession planning models, development of vacancy or job announcements).

### Applications of Competency Modeling

There are two primary levels for use of competency models. The first uses competency models for specific occupations to facilitate HR activities. The second level uses competency models of occupational groups to maximize use of resources. Once developed, these models can then be applied “as is” or tailored to facilitate the accomplishment of organizational objectives. This section will discuss the development and application of these models to showcase the flexibility and range of use of competencies from programmatic and operational perspectives.

#### *Level One: Competency Models for Individual Occupations*

Competency models are typically developed for individual occupations. To identify the critical competencies for an occupation, OPM uses supervisor and incumbent ratings of importance as well as the ratings by supervisors on the competencies that are needed for entry into a job. These critical competencies, along with critical tasks, form an occupational profile. Agencies and their subject matter experts review these models to ensure the fit of the model within the organization. OPM has used these profiles for a number of purposes, ranging from input into major federal initiatives to the posting of job announcements. Some highlights of OPM’s application of these models follow.

*Competencies and the Standard Occupational Classification System.* OPM has recognized

the importance of the new Standard Occupational Classification (SOC) that will provide a standard classification of jobs that will be used by all federal agencies in their data collection efforts (Pollack, Simons, Romero, & Hauser, 2002; U.S. Office of Management and Budget, 2000). This system will enable private and public sector organizations to share labor market information, such as pay surveys. Additionally, organizations that provide information to the Equal Employment Opportunity Commission will use the SOC as a reporting framework. The SOC working groups, responsible for the design of the new SOC, identified occupations that are based on workers who perform similar job tasks at similar skill levels. OPM provided occupational profiles (i.e., critical competencies and tasks) for clerical, technical, administrative, and professional occupations to the working groups to assist in this work. Clusters of occupations based on tasks and competencies were also provided to the working groups to help identify higher level categories in the SOC. For all new occupational studies, OPM will collect data according to the new SOC structure and provide the data to the SOC working groups. These data will contribute to the empirical foundation for future revisions of the SOC.

*Competencies used to revise qualification standards.* Building on the results of the occupational studies, OPM began a comprehensive review of federal qualification standards (minimum qualifying standards to enter an occupation) to identify how this occupational information can be used to update these standards. Starting with pilot projects for accountant and information technology positions, OPM is testing the modification of minimum qualification standards used for federal positions. This change would move the federal government from using rigid, traditional time-in-grade and experience requirements to a “whole-person” competency-based model, using the competency models of individual occupations. **A competency-based approach offers many advantages over the traditional system for identifying qualified applicants for federal positions. The competencies identified for occupations are soundly grounded in the scientific analysis from the MOSAIC studies.**

*OPM has established consortia of interested parties for both the automated systems and the occupational studies to pool financial and human resources, benchmark best practices, and facilitate the exchange of information.*

*Competency benchmarks from HR Manager were used to develop vacancy announcements and to develop scoring mechanisms (e.g., crediting plans, rating guides for structured interviews) for evaluating the candidates.*

They can be applied in the selection process through a variety of candidate assessment techniques (e.g., structured interviews, on-line tests, work sample assessments). This gives agency officials new options for fast and flexible hiring. As agencies have downsized, the importance of high-quality selections has increased and the criteria used to make these selections have become more critical for developing a high-performance workforce.

The two pilot projects testing the revised standards will be evaluated by participating agencies before being instituted throughout the government. In the Accountant Pilot, the Chief Financial Officers Council of the Federal Government, OPM, and a group of eight agencies contributed to the development of a competency-based job profile for accountant positions. This job profile was based on the empirical data gathered in the occupational study. Focus groups were conducted to further define the technical competencies (e.g., economics and accounting), taking them to a lower level (e.g., budgeting concepts and principles) than those found in the study of professional and administrative occupations. The pilot on IT occupations includes the development of new specialty titles to replace the general computer specialist title. OPM used the new SOC as its foundation for developing new IT titles and definitions of the work associated with these titles, while simultaneously working to revise the minimum qualification requirements for IT occupations using the data from the occupational studies. These competency-based requirements will be aligned with the new title structure. A new occupational survey is being sent to identify the critical tasks and competencies for each of the specialty titles. Results will be used to verify the new classification structure and qualifications profile.

OPM provides agencies participating in the pilots of the competency-based job profiles with recruitment and selection strategies and tools. These tools include new candidate assessment instruments, special recruiting material, a training program to insure correct and consistent application of the profile, and an outreach program to educate managers. Competency benchmarks from *HR Manager* were used to develop vacancy an-

nouncements and to develop scoring mechanisms (e.g., crediting plans, rating guides for structured interviews) for evaluating the candidates. Benchmarks and interview questions from *HR Manager* were used to develop a modular-format structured interview that could be administered on-line. Finally, a Web-based computer adaptive assessment system was provided to pilot agencies so that they could have access to over one hundred IT technical assessments.

The results of this work led to a system that focuses on an optimal competency profile for a job, not the minimum qualifications for a job. OPM plans to continue development of the competency-based qualification standards for other federal occupations.

*Competencies and HR functions.* Finally, competency models for individual occupations provide the basis for daily HR activities. Many agencies are using competencies as the foundation for recruitment and selection. For example, recruitment or job advertisements at many agencies now include competencies. Additionally, the advertisements may ask applicants to specifically address the competencies or to answer competency-based questions. The U.S. Mint has used this approach successfully and has found that the quality of applicants has improved, with the added benefit of some unqualified candidates self-selecting out of the applicant pool. The questions can also be used in structured interviews of qualified candidates. Rating criteria can be developed using the competency benchmarks or levels.

Within the Employment Service (ES) of the OPM, a pilot competency-based performance evaluation system has been established using competency benchmarks as the foundation for the system. This system was designed for all jobs within the ES using the competency data collected in the occupational studies. Competencies were selected as critical elements in the performance management system, based on information collected on importance and distinguishing value (i.e., which competencies were rated the highest for distinguishing superior performers). Competency benchmarks were used to anchor the rating scale for the per-

formance review process. These competency ratings are combined with ratings on the achievement of results to provide a complete picture of an individual's performance.

Competency models of individual occupations also form the foundation for training and development activities. For example, the Forest Service (FS) is deploying a competency-based training information system using competencies from the *HR Manager* as the basis for needs assessment. This system will search course information and identify courses that provide training on the competencies selected as critical for the job. Employees and supervisors provide ratings on competencies to identify which competencies are most critical in an employee's development during a given time period. The system will also feature an on-line catalog, approval of all non-FS courses, and track the training history of individuals. Within the state of Colorado, several departments have begun to use occupational profiles as a foundation for their career models. The Colorado Department of Transportation (CDOT) has used critical competencies to develop a competency-based engineering succession and development planning model by tying engineering examinations and training to the competencies. The Colorado Department of Human Services is also using a competency-based approach to succession planning. It is using a "Competency Assessment Form" to rate the current importance and future importance of various competencies for its managers and supervisors, and to assess their current preparedness and future preparedness to meet these needs. This subset of applications represents how empirically based competency models for individual occupations provide the foundation for supporting HR applications.

#### *Level Two: Developing Competency Models for Occupational Groups*

Using competency models based on an occupational group can help streamline HR initiatives, which will reduce resource needs, as well as provide a larger snapshot of groups of jobs. The groups of jobs can be based on empirical data or strategic needs. In both cases, the common competencies for a group

of jobs are identified and the resulting competency model is used.

*Assessment.* OPM developed job clusters (see Table IV) to provide the foundation for a new selection test for federal clerical occupations. Four clusters of clerical occupations were identified, with a set of core competencies identified for all clerical occupations. For each of the four clusters or families of jobs (e.g., administrative), additional cluster-specific core competencies were identified. The clerical examination measures both core and cluster-specific competencies. The clerical test is in modular form so that different sections of the test can be used for appropriate job families (e.g., Arithmetic/Mathematical Reasoning for jobs in the Financial Family; see Table IV).

*Career banding.* OPM's job families have been used as a foundation for occupational consolidation and career banding. For each job family, career bands can be defined. Career bands are broad levels (e.g., entry, intermediate, full, and expert) for which required competencies are identified. This grouping is similar to the banding of pay grades in broadbanding, but is not designed to modify pay grades. By developing families and bands of jobs that are based on common competencies, employers are able to fully utilize their resources by developing and implementing training programs that reflect these competencies. Employees, in turn, can begin to understand the competencies required for progression in their current jobs and become aware of other career alternatives.

*Succession planning.* Another empirically based application of a competency model for an occupational group was the development of a leadership succession model that provided the critical competencies for supervisors, managers, and executives. This succession planning model identified the competencies targeted for training by the Federal Management Development Centers. Training course descriptions are linked to these competencies. The leadership competency model for executives was updated in 1998 (Eyde, Gregory, Muldrow, & Mergen, 1999) using an extensive literature review, benchmarking study with the private sector, and executive focus groups.

*By developing families and bands of jobs that are based on common competencies, employers are able to fully utilize their resources by developing and implementing training programs that reflect these competencies.*

The updated model provided the basis for the Federal Senior Executive Service (SES) Leadership Core Qualifications that are used to assess applicants into SES positions. A future government-wide survey will expand on the research done for executives. Results will update the succession planning model developed from the 1992 leadership study.

#### *Competencies and the Organizational Mission*

The role of HR professionals has expanded to include new responsibilities as a strategic partner to management and change agent (Ulrich, 1997). Competencies support these new roles since they can be linked to and promote the strategic mission and values of an organization. The linkage of occupation-related competencies and activities to the organizational mission and goals provides a clear line of sight between individual and team performance and organizational success. The organization can reward the accomplishments directly related to the agency's mission and reward those competencies that drive organizational success. By aligning the strategic plan with competencies, an organization can effectively derive recruitment, selection, and training strategies that will support projected future needs, resulting in high-performing employees and a high-performance organization.

To ensure the continual linkage of workforce competencies to an organization's strategic mission and the adaptation of competencies to the changing business environment, an organization can conduct periodic competency audits using its performance management results. Aggregating individuals' strengths and weaknesses on mission-critical competencies will allow the organization to assess the strategic objectives that can be achieved with its existing workforce. The skills gap analysis at the organizational level provides key information for workforce planning strategies. The competency audit will allow the organization to determine how to leverage its resources most effectively with regard to the strategic mission. The audit provides a focused approach for relocating employees within the organization and providing training and development where they can serve the best organizational purpose.

The strategic use of competencies can also promote the desired culture of an organization.

For example, the U.S. Mint has established an executive contract (i.e., a performance contract) that ties these concepts together. Instead of focusing only on results, the Mint also focuses on competencies used to achieve the results. By identifying competencies or groups of competencies that are critical to the organization and placing them in a performance contract, an organization is communicating the way that business should be conducted. Performance contracts can result in decreases in grievances, absenteeism, and sabotage.

Changes in federal policy and HR practices have been facilitated by competency data. In the early 1990s, the primary mission of ES was to recruit and retain a high-quality federal workforce. Competency models provided the data to promote this mission, by identifying the critical competencies for different occupations to establish the criteria for selection tests. Currently, with a tight labor market, it is important for the federal government to increase the flexibility of its hiring system. ES is using the results of the occupational analyses to pilot test a competency-based approach to establish qualifications for jobs, resulting in a dramatic change in the way the federal government can hire. These applications demonstrate the broad implications of the use of competencies to support HR initiatives.

#### **Future Directions**

OPM was created to ensure that a merit system of hiring and promotion is maintained in the federal government. Recent and future work adds to this mission by supporting the basic elements of a merit system, as well as promoting the selection of individuals with the optimal combination of competencies for performance within an occupation and for the best fit with the organization. The results of the MOSAIC studies have provided the foundation for OPM's policy initiatives as well as for integrated HR tools for managers, employees, and applicants. This foundation of occupational information is essential for HR to be value-added in the twenty-first century by assisting organizations in moving forward and responding quickly to their changing needs.

Occupational information allows HR to bring useful information and data to the decision-making process, while reducing the risk of legal challenges for their organization.

The federal government, as well as many other organizations, must be able to more quickly adapt to changes. OPM will continue to leverage technology and improve methodology to ensure the competency models remain current and applicable and that these models are quickly distributed. By building partnerships with the public and private sec-

tors, OPM will work to ensure a common language for describing jobs. OPM will continue to provide data to support national initiatives.

Although many organizations will probably never conduct the large-scale occupational analyses that OPM does, organizations can build on the publicly available competency models developed by OPM. OPM plans to continue its work with competency models and ensure that results are publicly available so that these models may be a source of information for other organizations.

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## ENDNOTE

The views expressed in this article are those of the authors and do not reflect the official policy or views of the U.S. Office of Personnel Management.