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Knowledge Processes and Policy Directives

One of the most fundamental implications emerging from the science of complexity is that order naturally emerges in systems, no matter how simple, complex, nonlinear, or chaotic the system is. Natural order evolves through self-organization.
(Lewin 1999, 215)

Government agencies and departments, like all organizations, produce new strategies, structures, and processes from interaction with their external and internal environments. This evolutionary process is reflected in the phenomenon known as *organizational learning*. Organizational learning is ethic free; it can be either good or bad. Members of an organization will tend to act in ways they are expected to act. Two factors help shape organizational learning: leadership and organizational culture. These two concepts are used by senior managers in their efforts to influence the direction that organizational learning will take. Public-sector managers, administrators, and workers develop behavior patterns from cues they receive from information and experience. Some of that learning comes from higher-level managers in the form of a clearly identified vision and ethic; more learning comes from workers' interactions with their peers and their experiences carrying out their occupational tasks. Knowledge management facilitates both types of learning.

Organizational behavior is also learned. Knowledge that is shared, combined, and applied in new situations helps shape the organizational learning process by capturing the best practices of the organization and the identified exemplar models they are encouraged to emulate.

Governments everywhere are promoting learning and knowledge building in individuals and organizations. Knowledge management systems and the monitoring of best-practices model performances are among the tools used in this process. The federal government has been involved in a con-

tinuing process of transforming the way it operates since the early 1990s. Although the labels and processes may change, the direction of the desired changes has not: Government is trying to become more responsive to market pressures.

This chapter examines two related processes that are shaping public management in the first decade of the twenty-first century: the primacy of collaboration in knowledge creation, sharing, and use; and management policy directives that are driving the transformation of government. Collaboration is a fundamental tenet of knowledge management; government transformation is encapsulated in the e-government and the President's Management Agenda initiatives.

Chapter Objectives

Objectives for this chapter include helping readers to achieve the following:

- Gain an understanding of the mechanisms and interactions involved in the processes that help make knowledge management systems possible.
- Become aware of some of the tools and processes involved in creating, capturing, and sharing knowledge in public-sector organizations.
- Be able to define and understand how such social interactions as collaboration and integration are facilitating knowledge sharing in government agencies.
- Understand the relationship that exists between e-government and knowledge management.
- Understand how the federal government's enterprise architecture initiative and the President's Management Agenda are shaping present and future government operations, including knowledge management.

Social and Policy Influences on KM

For an organization to achieve its inherent potential, its existing knowledge must be identified, collected, organized, and shared; in brief, the existing knowledge must be put to work. When workers in government agencies put their knowledge to work, both they and the agency learn from the experience. That learning occurs as a result of and during a series of logical action processes. This chapter focuses on three major themes related to knowledge management in the public sector. First, it briefly reviews fundamental social interactions that characterize human activity in knowledge management systems. Second, it looks at how government is selectively adopting, shaping, and reacting to information and communications technologies, concepts, and

practices in collaborative efforts to achieve its operational objectives. Third, it examines management directives that are shaping the way that government is organized, functions, and delivers services, information, and knowledge across government agencies and to outside stakeholders.

The first force shaping learning and knowledge creation in the public sector relates to the processes individuals and government organizations go through as they react to events in their environment. These are the social actions and behaviors that individuals and organizations follow in the process of learning. Learning activity, in turn, facilitates the key KM activities of creating, developing, combining, and sharing of knowledge. Creative solutions to old and new problems and innovation are produced by the application of that knowledge. A primary process of a successful knowledge management system that is enabled by these interactive activities is cross-agency and cross-government collaboration and integration.

The second force shaping the internal and external operations of government—including knowledge management—is discussed under a framework established by the federal government’s enterprise architecture initiative. This program facilitates the horizontal and vertical collaboration and integration sought for federal, state, and local governments by establishing common standards and guidelines for all information technology applications.

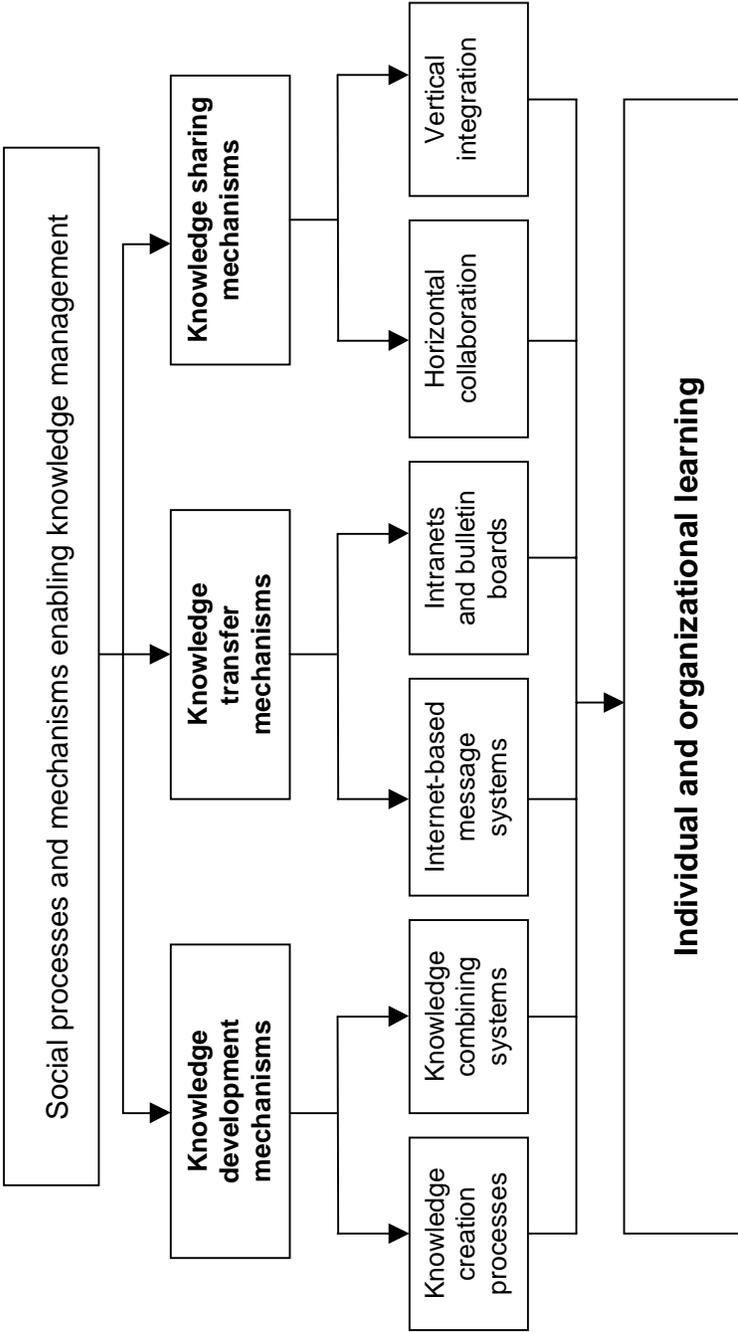
The third influence shaping the public sector has to do with changes taking place in the way that government is thought about, the way it operates, and the paths that reformers believe it should be taking. These concepts are reviewed in the framework of the primary policy directives driving government transformation: the President’s Management Agenda and the e-government initiative.

Interactive Social Processes

Three interactive social processes contribute to this major subsystem: knowledge development, knowledge transfer, and knowledge sharing. These processes and examples of the activities and tools with which they are associated are displayed in the model shown in Figure 4.1.

When organizations invest in the technologies necessary to promote these knowledge creation, development, and learning processes they facilitate knowledge sharing and distribution. The effectiveness of these learning processes is a product of the agency’s investment in its information and communications technology. However, the more important elements of this subsystem are not the technology but the social interactions that technology makes possible. Available technology may give birth to the informal, self-regulating communities of practice that are at the heart of knowledge management applications.

Figure 4.1 Mechanisms Facilitating Knowledge Management and Agency Collaboration



Each of these mechanisms hosts at least two separate but related procedures. For example, the two primary components of the knowledge development mechanism are knowledge creation and knowledge combining. Together, they contribute to individual and organizational learning.

Knowledge creation is a product of science and experience. Learning follows experimentation. Researchers in individual and organizational learning have studied the phenomenon extensively. They have concluded that in humans, learning usually takes place in a closed circle of steps called the learning cycle.

Building on the cycle of adult learning proposed by Kurt Lewin (1946), David Kolb (1984) provided a model of the learning cycle that is used to describe the process people go through in learning. The model identifies four stages, which follow from each other: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Concrete experience knows something by being acquainted with it—by doing and experiencing—as opposed to the more theoretical “knowing about” something (which is represented by abstract conceptualization). Reflecting observation is more passive than concrete experience, which involves observing and thinking about something. Active experimentation is learning by doing.

A similar cycle of learning has also been suggested for knowledge applications in organizational learning, which follow these four social interactions: socialization, externalization, combination, and internalization (Nonaka and Takeuchi 1995). Many believe this process to be one of the fundamental subsystems in all knowledge management systems. Socialization refers to personal knowledge that is generated in social situations such as the workplace. Externalization refers to individuals’ absorbing the new knowledge and communicating it to others. Combination is the process of putting bits and pieces of existing knowledge together to create new knowledge or new applications for existing knowledge. Internalization is the process of acceptance and even “taking ownership” of the newly formed knowledge.

Two components that illustrate the processes contained in the knowledge transfer mechanism are Web-based communications systems and intranets, among a host of other tools and processes. Knowledge transfer is facilitated by information and communications technology. And, two of the key components in the knowledge-sharing mechanism include collaboration and integration, which are key concepts in the government’s enterprise architecture initiative. These transactions are facilitated and enhanced through functioning knowledge management systems.

These three mechanisms and their respective components facilitate the collaboration that is being required in government today. Collaboration is the efforts of two or more entities or agencies to accomplish more than the

sum of their individual efforts. Collaboration occurs between government agencies, between subdivisions in an agency, between businesses and the government, and between individuals and government. Supporters of collaboration claim that it can lead to better service to the public, lower taxes, better decision making, and greater public participation in government processes. Collaboration in government is not new; there are many examples where government has successfully collaborated with others. Unfortunately, many collaborative opportunities are missed, and others fade due to the high level of effort needed to keep them working successfully (SAP 2001).

E-government has not changed the need for and desirability of collaboration; it just makes it easier to do, more cost effective, easier to monitor, and thus easier to maintain. E-government technology affects government collaboration in three ways. First, it improves communications between agencies, individuals, or groups; second, it can automate the process, as in natural disaster alerts and homeland security warnings; and third, it allows better monitoring of processes, as exemplified in the regular monitoring of agency progress on complying with mandated collaboration programs (U.S. GAO 2003b).

Monitoring Agency Progress with Collaboration

A concern with collaborative programs is whether they are being implemented as originally planned, and whether actual benefits are being realized. This is critical when a program depends on the cooperation of many groups. Congress has required regular updates of the progress that agencies are making in achieving their collaboration objectives. For example, the General Accounting Office issued a report in 2003 on the progress made by four federal agencies (see Table 4.1).

After more than a year of working to achieve their collaboration goals, none of the agencies studied had fully achieved involving all their important stakeholders in their program. For example, the e-payroll initiative managed by the Office of Personnel Management had initiated steps to promote close collaboration with its four selected e-payroll providers (reduced from the original twenty-two providers). However, it had yet to address the concerns of a key stakeholder whose participation will be required to make changes to its payroll processes and procedures. For the Geospatial one-stop initiative, the Interior Department had established a board of directors with broad representation, but had not yet taken steps to ensure that key state and local government stakeholders were involved.

The GSA-sponsored integrated acquisition environment had put a number of tools to work promoting collaboration, but had not yet involved the chief financial officers of their partner agencies. And finally, the business

Table 4.1

Four E-Government Collaboration Efforts Reviewed

Agency/activity	Managing partner	Collaboration goal
E-payroll	Office of Personnel Management	Standardize payroll operations across all federal agencies
Geospatial one-stop	Department of the Interior	Coordinate the collection and maintenance of geospatial data (all data associated with geographic locations)
Integrated acquisition environment	General Services Administration	Improve federal agencies' acquisition of goods and services
Business gateway	Small Business Administration	Reduce the paperwork burden on small businesses and help them find, understand, and comply with federal, state, and local laws and regulations

gateway program of the Small Business Administration had not taken critical steps to enable an effective collaborative decision-making process, and had not reached formal agreements on partner roles and responsibilities.

Award-Winning Examples

It is important to note that, despite such problems, most government agencies are making stellar progress in their efforts to meet the collection of transformation initiatives. For example, two federal agencies and one State of Illinois program were honored for their progress by being named the three best-practices knowledge management agencies of 2005 by the E-Government Institute. The institute annually selects best-in-class programs in three categories:

- *Innovative Use of Technology in a Knowledge Management Solution:* Presented to a project that has used contemporary or leading-edge commercial technology to implement a creative solution to a real business problem.
- *Knowledge Management Initiative Delivering a High Value to a Broad User Community/Supporting Agency Mission:* Presented to a solution that was successfully adopted and used by a larger user community.
- *Initiative or Organization Successfully Using Innovative Knowledge Management Practices:* Presented to an organization or initiative that promoted the practice of KM and information sharing to the benefit of an organization.

The Joint Forces Command's Collaborative Information Environment (CIE) won in the first category, Innovative Use of Technology. The CIE combines information technology with complementary organizational changes and dynamic KM processes to transform future command-and-control operations. CIE is a virtual collection of individuals, organizations, systems, infrastructure, and processes that let users create and share the information needed to plan, execute, and assess joint forces operations, and make decisions better and faster than their adversaries. Using a virtual information warehouse, users can rapidly extract timely, assured, and relevant information needed to accomplish their mission.

The Defense Acquisition University (DAU), Department of Defense, Technology and Logistics Sharing System (AT&L), was honored for achievement in the second category, a high-value KM program. DAU's knowledge systems provide the AT&L workforce and their partners with the tools and resources they need to improve job performance anywhere and at any time. This is done by integrating learning assets and maintaining a continuous presence to the workforce by online communities of practice and knowledge systems that support the AT&L's performance learning model. AT&L's knowledge sharing system is a key component serving as the central gateway for all AT&L resources and information. As the primary reference tool, it provides a link for sharing information and reference assets among a wide range of organizations and disciplines for an integrated, decentralized information system.

The collaboration component of the DAU program is called the Acquisition Community Connection (ACC). The ACC includes publicly accessible knowledge communities whose goal is to connect people with know-how across government and industry. There are more than 10,000—out of a potential of 1.5 million—members of the ACC dispersed across Defense Department services and agencies, private industry, and a combination of federal, state, and local governments.

The award-winning state program is the Knowledge Management Division of the Bureau of Strategic Sourcing and Procurement arm of the State of Illinois central management services agency. This agency won for innovative use of technology and KM processes. The Bureau of Strategic Sourcing and Procurement (BOSSAP) created the knowledge management division to supply five separate outreach portfolios to various procurement staff spread throughout state offices. The KM division provides such services as research, professional development, administration of procurement systems, contract compliance, and a procurement call center. Using a "home-grown" system on a Lotus Notes platform instead of expensive new technology, the division's KM system has helped save more than \$100 million out of an estimated \$7-

billion budget. According to the awards announcement press release, “The KM division minimizes reinvention and knowledge evaporation, and integrates business functions with related knowledge, thus creating a connected and continual learning environment.”

IT Architecture Influences

Political and policy influences are two of the more influential forces acting on public-sector IT and KM in the first decade of the twenty-first century. Together, these influences are shaping knowledge formation and application, and are contributing to continued evolution in information and communications technology. Political and policy decisions are requiring government agencies to achieve three objectives: (1) adopt strategic IT architecture planning that includes provision for knowledge management; (2) transform their operations to coincide with mandated business-based management models and significantly greater cooperation and collaboration across agencies; and (3) design and implement new information acquisition and delivery systems for more and improved e-government programs. The federal enterprise architecture (FEA) initiative is the program developed to achieve the first of these objectives. Business models contained in the President’s Management Agenda are being applied for achieving the second of these objectives; and an e-government initiative is facilitating the third.

Bringing Rationality to IT

It became clear in the 1990s that some degree of higher-level coordination and control was needed over the acquisitions and applications of IT systems by agencies; a single organization was proposed for overseeing all IT resources. The federal government’s answer was to place information resources management (IRM) under the auspices of the Office of Management and Budget. The OMB’s tasks and responsibilities include oversight of planning and budgeting for all federal agency activities associated with acquiring, storing, processing, and distributing data and information.

While the OMB began assisting agencies to increase their coordination and control over their IT, others in government were envisioning a greater role for IT in all levels of government. The dream was to put the lessons learned in the private sector’s use of IT to work for similar goals in government—to make government more like business. If government was to be more businesslike, it meant following higher performance standards, more and stronger measurements, and a greater emphasis on—and stricter accountability for—results. That vision became codified in the reinventing govern-

ment and national performance review initiatives that came out of the Clinton White House.

The adoption of e-government at the federal level became more of a reality in February of 2002, when President George W. Bush included his President's Management Agenda (PMA) in the annual budget submission to Congress. The PMA was offered as a way of getting government to be more focused on citizens and results. Two key components of the PMA were (1) an e-government focus on Internet-based technology in an effort to make it easier for citizens and businesses to interact with government agencies and departments, and (2) a federal enterprise architecture initiative that aimed to transform government to be more like business (U.S. OMB 2005a).

The policy directive in 2002 established the federal enterprise architecture (FEA) process to guide agencies in the analysis of their current and future IT needs. It also proposed the implementation of common practices and systems government-wide. The FEA initiative was developed by the OMB's Office of E-Government and Information Technology, which continues to hold oversight responsibility for FEA. The structure of the FEA is illustrated in Figure 4.2

The term "enterprise architecture" refers to a transformation model that federal agencies are required to implement prior to making new IT purchases. Agencies are required to identify their present and future lines of business, their desired outcomes, the kinds of data they produce and use, and the information technology and service channels through which their products and services are delivered to the public. It consists of five reference models, a set of policies, and instructions for operating procedures. The models include business- and performance-based processes and a framework for cross-agency collaboration, transformation, and improvement.

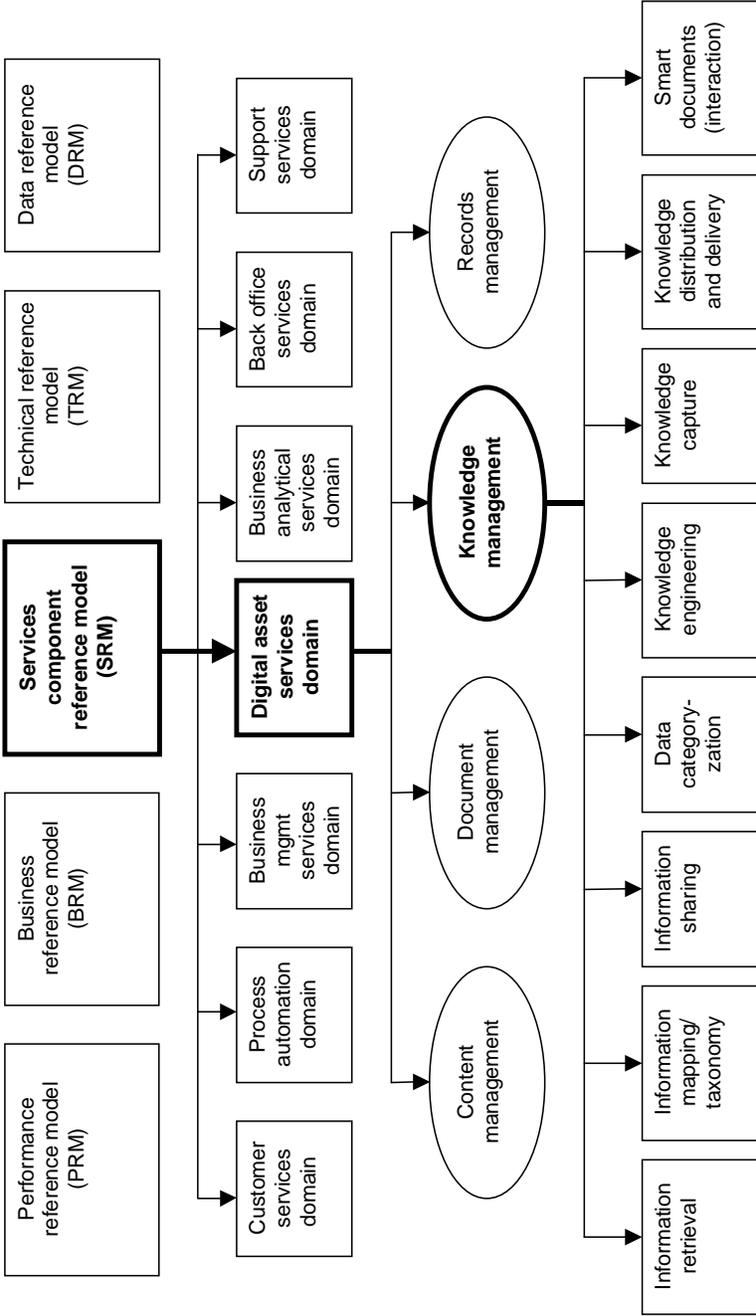
Integrating KM into the FEA

The FEA program is constructed around five interrelated elements: a performance reference model (PRM), a business reference model (BRM), a services component reference model (SRM), a technical reference model (TRM), and a data reference model (DRM).

Each reference model incorporates a number of different "domains," or business activities, under its umbrella. For example, the services component model covers seven domains: customer services, process automation, business management services, digital asset services, business analytical services, back office services, and support services (U.S. OMB 2005a).

The OMB has also recommended performance measurement categories for each of the reference models in its description of the FEA program. For

Figure 4.2 KM in the Federal Enterprise Architecture Reference Model (FY07)



Source: U.S. OMB 2005c.

Table 4.2

KM Capabilities to Transform Information into Meaningful Knowledge

Service component	Defines the set of capabilities that
Information retrieval	Allows access to data and information for use by an organization and its stakeholders
Information mapping/taxonomy	Supports the creation and maintenance of relationships between data entities, naming standards, and categorization
Information sharing	Supports the use of documents and data in a multiuser environment for use by an organization and its stakeholders
Categorization	Allows classification of data and information into specific layers or types to support an organization
Knowledge engineering	Supports the translation of knowledge from an expert into the knowledge base of an expert system
Knowledge capture	Facilitates the collection of data and information
Knowledge distribution and delivery	Supports the transfer of knowledge to the end user
Smart documents	Supports the interaction of information and process (business logic) rules between users of the document; that is, the logic and use of the document is embedded within the document itself and is managed within the document parameters.

Source: U.S. OMB 2005c.

example, seven measurement groupings are included for information and technology management: lifecycle/change management, system development, system maintenance, IT infrastructure maintenance, IT security, record retention, and information management.

Each domain frames a distinct set of “capabilities” or tasks that contribute to achieving the mission of that domain. For example, four capabilities are included in the digital asset services domain: content management, document management, knowledge management, and records management. The eight primary functions or responsibilities that fall under the knowledge management set of capabilities and their definitions are displayed in Table 4.2.

To summarize, the federal government’s knowledge management functions and processes are one of the four capabilities in the *digital asset services domain*, which is one of the seven domains included in the *services components reference model* (SRM), which is one of the five reference models that make up the federal enterprise architecture program.

Box 4.1

Enterprise Architecture at the Department of Defense (DoD)

The U.S. Department of Defense Architecture Framework (DODAF) is the department's guiding framework for implementing the five reference models contained in the Federal Enterprise Architecture (FEA) initiative. The framework is built on the assumption that there is no single view of an architecture (business processes, networks, hardware, data management, knowledge management, etc.) that is right for all users. Despite this assumption, DoD IT architecture will use standardized products, components, terms, and definitions wherever possible.

Three fundamental positions guide development and maintenance of DoD's enterprise architecture: an operational view, a technical view, and a systems view. The operational view focuses on user needs by addressing the tasks and activities of concern and the information and knowledge exchanges that are required for DoD to achieve its mission.

Second, the technical view is shaped by a minimal set of time-based standards and rules that govern the implantation, arrangement, interaction, and interdependence of system requirements. And third, the systems view is centered on systems of concern and the connections among them, in keeping with the view of first importance, the operational view.

Source: Malafsky 2005.

Box 4.1, describing the agenda guiding the Department of Defense as it implements the FEA, is typical of the basis for the flexible approach encouraged by the OMB for FEA implementation by federal departments and agencies.

A Bigger Role for KM

The concept of a *knowledge base* is important to cooperative planning processes in all agency operations, including e-government. The term *knowledge base* has traditionally referred to the data produced by the knowledge-acquisition and compilation phases of creating an expert system application. That definition must now be broadened to include every imaginable corporate intellectual, technological, and experiential asset—it refers to

Table 4.3

Additional Services Model (SRM) Domains and Capabilities with KM

Domains	Service component	Capabilities
Business management services:	Organizational management	Workgroup/groupware, network management
Digital asset services:	Content management	Content authoring, content review and approval, content publishing and delivery, syndication management
	Document management	Document imaging, document referencing, document revisions, library/storage, document review and approval, document [format] conversion, indexing, classification
	Records management	Record linking/association, document classification, document retirement, digital rights management
Business analytical services:	Knowledge discovery	Data mining, modeling, simulation
	Reporting	Ad hoc (supports use of reports as needed); standardized/canned (supports use of preconceived or pre-written reports); OLAP (supports analysis of information summarized into multidimensional views and hierarchies)
Back office services:	Data management	Data exchange; data warehouse; data mart (subset of a data warehouse); meta data management (data that describes data); data cleansing, extraction, and transformation (manipulation of data); loading and archiving; data recovery; data classification
Support services:	Collaboration	E-mail, remarks logs, document library, shared calendaring, task management
	Search	Query (records retrieval), precision/recall ranking, classification, pattern matching
	Communication	Real time/chat, instant messaging, audio/video conferencing, community of interest management

Source: U.S. OMB 2004c.

the complete collection of all expertise, experience, and knowledge of all personnel within a public organization.

In keeping with this broadened definition, government managers are beginning to bring other information assets and practices into knowledge management. Elements of knowledge management are spread across several domains of the services components model, as noted in Table 4.3. KM pro-

cesses and procedures are also found in the business management, business analytical, back office services, and support services domains.

Missing IT Architecture

Table 4.2 does not include the technology domains, service components, or capabilities included in the enterprise architecture initiative. These elements are included in the technical reference model (TRM). Although current thinking in KM places a lesser importance upon technology than occurred in the recent past, most observers recognize that these elements clearly contribute to an effective, well-oiled knowledge management system (McElroy 2003).

The TRM is a component-driven, technical framework for standards and technologies that support and enable delivery of the knowledge management activities in the service components and capabilities. It is also designed to unify existing agency technology and provide e-government guidance by providing a foundation for reuse and standardization of technology and service components government-wide.

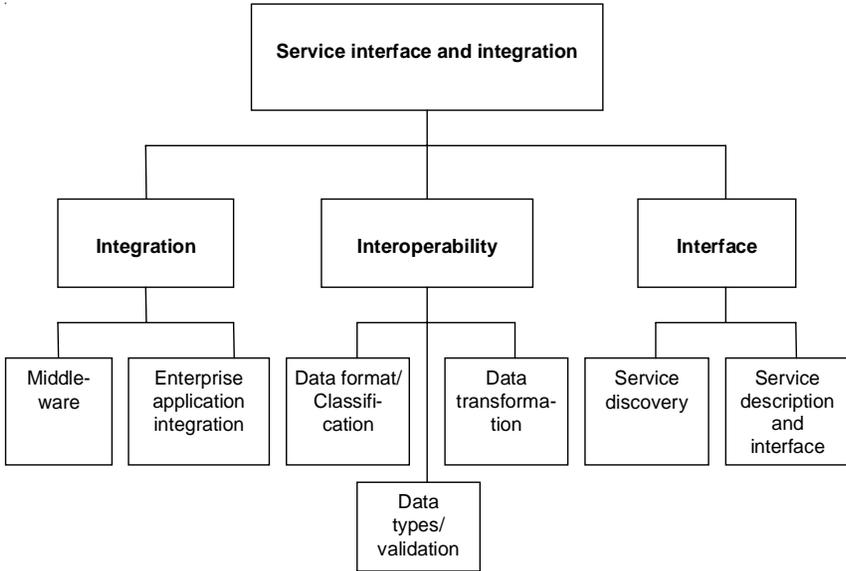
The TRM consists of four broad components: service access and delivery, service platform and infrastructure, component framework, and a service interface and integration element. All of these components contribute to successful operation of a KM system, although the following three may be slightly more relevant: service access and delivery, service platform and infrastructure, and the service interface and integration component.

The service access and delivery element manages the collection of access and delivery channels used to leverage the service component. It is also charged with managing adherence to the legislative requirements and mandates affecting IT use. Its responsibilities include:

- Access channels (Web browsers, wireless, collaboration communications, etc.),
- Delivery channels (Internet, intranet, and extranet delivery, peer-to-peer communications, etc.),
- Service requirements (legislative compliance, hosting, user authentication, etc.), and
- Transport (supporting network services, etc.).

The services platform and infrastructure element defines the collection of platforms, hardware, and infrastructure standards that enable component-based architectures and service component reuse. Component-based architectures base their design on categories of business, service, performance, technical, and data elements. Larger lines of business, service, and technol-

Figure 4.3 **Service Interface and Integration Service Areas**



Source: U.S. OMB 2004c.

ogy infrastructures are composed of these “building blocks.” The services platform manages the following processes:

- Support platforms,
- Software engineering,
- Delivery servers,
- Database management and storage, and
- Hardware and infrastructure.

The service interface and integration component deals with the discovery, interaction, and communication technologies that join disparate systems and information providers. The three service program activity/process categories included in this domain are presented in Figure 4.3.

One of the functions in this domain of the TRM model that has received significant attention since 9/11 is the capability of legacy systems to integrate outside agency information stovepipes. Integration refers to software that enables elements of distributed applications to interoperate, that is, to be able to share function, content, and communications across agencies and a

variety of environments. Service integration is designed to produce platform and location transparency, transaction management, basic messaging between points, and guaranteed message delivery. *Middleware* describes the technologies that enable flexibility, interoperability, and portability of existing infrastructure by linking two otherwise separate applications.

FEA at the Department of the Interior

The U.S. Department of the Interior (DOI) has produced a pilot enterprise architecture application for the recreational facilities operated by department agencies. An earlier version of the data reference model (DRM) of the FEA was used to set the program in motion. The DRM is designed to promote common identification, use, and sharing of data and information across the federal government, a department, or an agency. It does this by standardizing data in three areas: data context, data sharing, and data description.

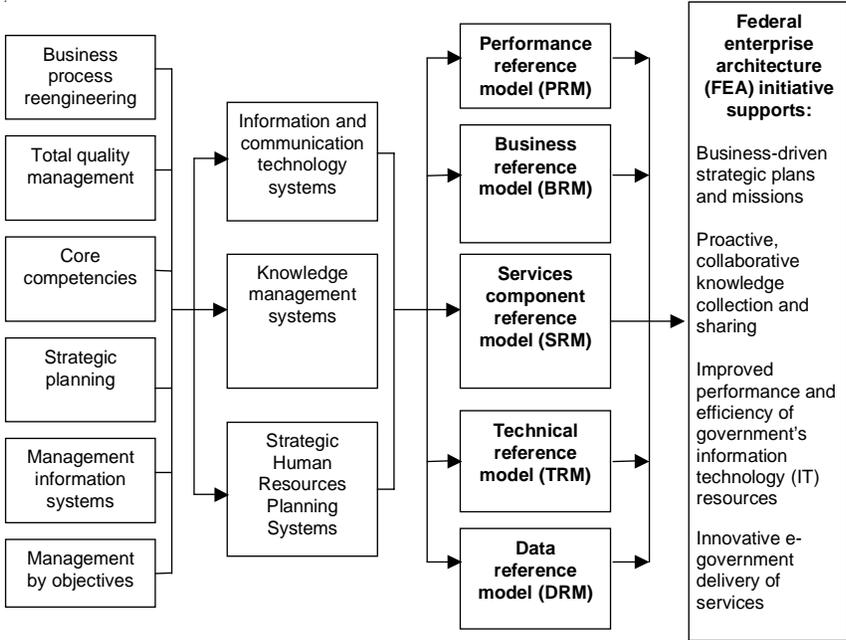
Interior uses the DRM to share information on its recreational amenities in a way that can be easily interpreted and used by many different users. Data are categorized according to activities performed within the recreational resource, resource management, and tourism activities, thereby supplying requesting agencies with information about recreation areas and activities. An agency with an inquiry can look in the BRM for a function that describes the activity it is seeking. Once the function is identified, the agency can use the federal enterprise architecture management subsystem to identify investments that the DOI supports in the recreation/amenity. This allows the inquiring agency to identify investment needs, and to avoid unnecessary duplication in recreation investments (OMB 2005c).

Management Agenda Influences

A global trend to transform government so that it more closely reflects best practices found in business has been under way since the 1980s. This trend has blurred much of the former distinction that existed between public- and private-sector management. A reflection of this trend is the global movement to move the public administration discipline from its traditional focus to a business-driven approach that is reflected in the proposed new title: new public management (Barzelay 2001, Christensen and Læg Reid 2002, Lane 2000), as the following quote explains:

Since the 1980s, the international tendency in administrative reform has been a neo-liberal one, encompassing managerial thinking and a market

Figure 4.4 **Evolution of Business Models into the President’s Management Agenda (PMA) of 2002**



Source: U.S. OMB 2004c.

mentality. The private sector has become the role model, and public administration has come to be seen as a provider of services to citizens who were redefined as clients and consumers. . . . These new administrative doctrines came to be known collectively as new Public Management. (Christensen and Lægreid 2002, 17)

In the United States, new public management concepts are reflected in the business reference models contained in the President’s Management Agenda (PMA) and its sister initiative, e-government. Both are reflections of the changes now taking place in government, and knowledge management is an integral component in these transformation initiatives. The PMA focuses on bringing rational planning to IT in government. E-government is putting IT to work by making it easier for citizens to communicate with government agencies. Figure 4.4 illustrates how KM and earlier management concepts contributed to the evolution of the structure and focus of the PMA.

Conclusion

This chapter focused on three major KM themes. First, it examined some of the fundamental social interactions that characterize knowledge management systems. Second, it looked at how government is adopting, shaping, and reacting to information and communications technologies, concepts, and practices in collaborative efforts to achieve its operational objectives. Third, it examined management directives that are shaping the way that government is organized, functions, and delivers services, information, and knowledge across government agencies and outside stakeholders.

The forces shaping knowledge creation in the public sector include three interactive social processes: knowledge development, knowledge transfer, and knowledge sharing. Also shaping the internal and external operations of government—including knowledge management—is the federal government's enterprise architecture initiative, which is designed to bring about horizontal and vertical collaboration and integration among federal, state, and local governments by establishing common standards and guidelines for all information technology applications.

Changes in the way that government operates and the paths that reformers believe it should follow are influenced by the President's Management Agenda and the e-government initiative.

E-government technology affects government collaboration in three ways: it improves communications between the agencies, individuals, or groups; it can automate the process; and it allows better monitoring of the processes. Collaboration between government agencies, between subdivisions in an agency, between businesses and the government, and between individuals and government is also facilitated by interagency knowledge management initiatives.

Political and policy decisions require government agencies to adopt strategic IT architecture planning that includes provision for knowledge management, to transform their operations to coincide with using business-based management models, and to exercise greater cooperation and collaboration across agencies. Agencies must also design and implement new information acquisition and delivery systems for more and improved e-government programs. The federal enterprise architecture (FEA) initiative, the business models contained in the President's Management Agenda, and an e-government initiative are the policy directives driving the changes.