
Knowledge Management Section

August 2008

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Preface

This manual provides doctrine for the organization and operations of the knowledge management (KM) section. It establishes the doctrinal principles, tactics, techniques, and procedures necessary to effectively integrate KM into the operations of brigades, divisions, and corps.

FM 6-01.1 has an introduction and three chapters. The introduction expands on the manual's purpose and summarizes the doctrine it contains. Chapter 1 discusses the basic KM definitions, principles, and concepts. It concludes by discussing the relationship among battle command, knowledge management, and information management as well as the KM process in the operational Army and in Army force generation (ARFORGEN). Chapter 2 provides doctrine for KM section organization and functions. It also addresses Soldier duties and responsibilities. Chapter 3 discusses the KM process and associated techniques and procedures that KM sections use to improve KM within staffs. Appendix A contains checklists for content management. Appendix B contains techniques for adapting the after action review technique used during training to support learning during operations. Appendix C includes interviewing techniques for collecting observations, insights, and lessons from operations. Appendix D provides a sample agenda for KM working groups.

FM 6-01.1 applies to KM sections in Army headquarters from brigade through corps. ("Brigade" includes brigade combat teams, support brigades, functional brigades, and multifunctional brigades.) The manual applies primarily to KM section members. Finally, this manual provides the doctrinal guidance for commanders, staffs, and leaders of the organizations responsible for KM in operations.

Army headquarters serving as the headquarters of a joint force land component command or joint task force may adapt this manual with appropriate modifications until joint doctrine or guidance is provided and technology and doctrine support operations with multinational partners. Army technology is not mature enough to support multinational forces, and joint doctrine and technology do not yet allow KM interoperability.

FM 6-01.1 uses joint terms where applicable. Most terms with joint or Army terms are defined in both the glossary and the text. *Glossary references*: Terms for which FM 6-01.1 is the proponent publication (the authority) have an asterisk in the glossary. *Text references*: Definitions for which FM 6-01.1 is the proponent publication are in boldfaced text. These terms and their definitions will be in the next revision of FM 1-02. For other definitions in the text, the term is italicized and the number of the proponent publication follows the definition.

FM 6-01.1 applies to the Active Army, Army National Guard/Army National Guard of the United States, and U.S. Army Reserve unless otherwise stated.

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Introduction

GENERAL

The twenty-first century is the age of the network and globalization. Its environment is one in which opportunities and rivals may come from anywhere. Successful operations in this environment depend on both innovation and the organizational learning underpinning this innovation. Success also requires unprecedented speed in learning, transforming that learning into new expertise, and applying that expertise to innovation. Innovation will significantly influence all aspects of the Army for the foreseeable future, partly because of the changing environment and partly due to ongoing operational and training transformations.

THE ROLE OF KNOWLEDGE MANAGEMENT

Although military forces have performed knowledge management activities implicitly since military operations began, the term “knowledge management” has only recently been identified and used. Throughout history it has been said that knowledge is power. But since 1980, it has become more evident that knowledge shared is power. Knowledge management doctrine has been developed to increase Army advantages in conducting operations. It does this by providing systematic and explicit management of the Army’s organizational knowledge and its Soldiers’ individual knowledge.

Military staffs evolved as the need to provide knowledge to commanders and to subordinate and adjacent forces increased. Even in the time of the ancient Greeks and Romans, rudimentary staffs existed to provide knowledge for commanders. As the complexity of warfare increased, the size and functions of staffs expanded. However, all military staffs continued to perform two major functions: First, they carried out functions for commanders that commanders could not perform alone or that required specialists, such as engineers, artillery, and logistics. Second, military staffs developed and managed information. They gathered and organized information, analyzed it to create knowledge, and applied it in planning and decisionmaking. Staffs also transferred information to the commander, other staff members, and higher, subordinate, and adjacent organizations.

The creation, organization, application, and transfer of knowledge—in these examples and through the nineteenth century—were all performed manually and within individuals’ minds. Some collaboration took place, but usually those involved had to be in one place. Occasionally, commanders met in a formal council of war, but this did not necessarily result in collaboration as currently understood. Transfer of information could be accomplished with physical means, such as co-location, flags, sounds (bugle, drum, flute), and lights. However, transfer of knowledge depended on messengers. Often these messengers were high-ranking officers with authority to amend instructions to fit changes in the situation that occurred while they were traveling.

Before the nineteenth century, commanders frequently reached decisions by synthesizing knowledge staff officers provided them. The nineteenth century brought the rise of formal staffs that began to formalize the creation, organization, application, and transfer of knowledge. New staff procedures allowed for more collaboration and synthesis of knowledge before it reached commanders for decision. Moreover, the formal delegation of authority to staff officers permitted them to direct functions that the commander no longer had the time or expertise to perform personally. During this period, the first nonmanual information technologies were developed: among them, telegraph, telephone, radio, phonograph, and dictating machine. However, with few exceptions these devices could not store information, let alone knowledge products.

The development of electronic information technology in the second half of the twentieth century brought new capabilities for the creation, organization, application, and transfer of knowledge. These capabilities enabled collection and storage of vastly greater quantities of information, making greater quantities of

knowledge available to more users. That, in turn, led to the development of knowledge management (KM) as a discipline, which the Army accepted in 2003.

EMERGING KNOWLEDGE MANAGEMENT REQUIREMENTS

The years since publication of FM 3-0 (2001) and FM 6-0 (2003) have brought significant changes to how the Army manages information and knowledge. These include the growth of KM within the Army and refinement of associated technology—both hardware and software. As the use of KM practices has grown within the generating force (formerly the institutional Army), operational Army organizations have attempted to use them as well. KM sections are already active in modular divisions—even in ones for which a KM section has not yet been authorized. And the Army is developing authorizations for KM sections at brigade through theater army headquarters.

Doctrine for the KM section's roles, responsibilities, and functions has been lacking. However, incorporating KM into doctrine is underway with the revisions of FMs 3-0, 5-0, and 6-0. This effort involves ensuring that Army doctrine nests with joint doctrine and is coordinated with organizational design, training, and leader development initiatives. It also requires incorporating input from the Army—especially the operational Army. Finished doctrine requires staffing, coordination, and resolution of differences.

Nonetheless, ongoing operations and continuing work in Army transformation require implementing some doctrine for KM immediately. FM 6-01.1 is the first step in meeting this need. It establishes doctrine for the KM section during operations. Feedback will be incorporated into FMs 5-0 and 6-0. It will also guide development of a future, overarching KM field manual.

Knowledge Management in Afghanistan

This vignette describes how knowledge management techniques improved the operations of Combined Joint Task Force 76 in Afghanistan in 2006. The commanding general had stated the following information requirement: "I want to know how many missions over the last 30 days were conducted by the 3d Brigade Combat Team and how many utilized aviation assets." Answering this question required the staff to manually search multiple personal folder storage (PST) files and call subordinate units. Answers using these procedures were often neither exact nor timely. To answer this recurring information requirement as well as others, the task force needed a faster, more accurate process.

The task force KM officer and Information Dissemination Management–Tactical (IDM-T) contractor examined the procedures used to synchronize planning efforts and coordinate mission briefs. (IDM-T was the task force's main information management tool.) Their analysis documented the following:

- Each subordinate unit had its own technique for tracking operations. Most units used static spreadsheets.
- Once a mission was received, task force and subordinate staff sections began parallel planning. For example, the sections synchronized intelligence resources (such as unmanned aircraft systems) and fires assets (including artillery and close air support).
- Staff sections frequently synchronized assets without the approval or knowledge of the task force chief of operations. This was a major problem, since the chief of operations was responsible for controlling all task force assets.
- When preparing situation briefs for general officers, current operations personnel from multiple staff sections lacked visibility of the overall operation.
- Access to draft operation orders was a problem when the staff tried to gather data in response to information requirements.

- No centralized repository existed for information about operations. Answers to information requirements existed in individual e-mail messages only. Subordinate units e-mailed electronic slide presentations to the chief of operations. The chief of operations forwarded them to appropriate staff sections and stored the presentations in personal folder storage files. These files contained well over four gigabytes of data.

The KM officer and IDM-T contractor developed an initial solution that reduced the time required to locate specific information to 30 seconds. The solution consisted of centralizing storage of status presentations and establishing a single format for entering report information. An IDM-T page for status briefings was posted on the task force IDM-T portal. It consisted of a centralized document library with controlled access. The KM section designed a customized data entry template to capture either the appropriate information or information that described that resource or data set. Standardizing the data used to identify status presentations increased search speed and reduced the amount of unusable information produced by searches. This reporting template allowed staff members to answer information requirements by entering information into the IDM-T database instead of sending e-mail messages. Entering data into a shared database in a standard format facilitated its processing into knowledge expressed in the form of a standard report. The database made the most current information available to the force as whole. This reduced the time required to answer the commander's information requirements. It also helped the task force staff and subordinate staffs synchronize operations by providing a single source of information about assets and employment on missions.

Effective KM significantly improved task force operations. Originally, answering information requirements regarding mission status took 40 hours and involved coordinating manual searches by six subordinate units. The new procedures and supporting software reduced search time to less than a minute and increased the information's accuracy. The revised processes also—

- Provided a secure, real-time, collaborative information-sharing environment.
- Facilitated decisions by making relevant information available to the right person at the right time.
- Standardized an inconsistent and labor-intensive process.
- Provided quick, reliable, and relevant answers to the commanding general's information requirements.
- Developed an easily accessible, centralized database of past and ongoing task force operations searchable by criteria.

This vignette is based on interviews with the KM officer of Combined Joint Task Force 76 during Operation Enduring Freedom in Afghanistan. The initiative was undertaken from May through July 2006.

Chapter 1

Fundamentals

This chapter discusses the fundamentals of knowledge management. It describes the nature of knowledge management and presents its purposes, role, principles, and components. The chapter concludes by discussing the relationship among battle command, knowledge management, and information management as well as the relationship of knowledge management to the operational Army and the generating force in Army force generation (ARFORGEN).

NATURE AND ROLE OF KNOWLEDGE MANAGEMENT

1-1. Knowledge management (KM) facilitates transfer of knowledge derived from experience and skill to staffs and finally to commanders. It contributes to achieving understanding, making decisions, and improving operational performance. Likewise, commanders guide and aid the understanding and decisionmaking of the staff and subordinates by transferring their tacit knowledge to them through commands and conversations. Since knowledge transfer occurs between people, KM includes creating techniques and procedures to develop knowledge skills in leaders, build experience, and transfer expertise.

1-2. Understanding the nature of knowledge management requires understanding its definitions and purposes. Definitions pertinent to knowledge management include the term itself, knowledge, explicit knowledge, tacit knowledge, and information management. The primary purpose of knowledge management is to help commanders and staffs make informed, timely decisions.

KNOWLEDGE MANAGEMENT AND KNOWLEDGE CREATION

1-3. *Knowledge management* is the art of creating, organizing, applying, and transferring knowledge to facilitate situational understanding and decisionmaking. Knowledge management supports improving organizational learning, innovation, and performance. Knowledge management processes ensure that knowledge products and services are relevant, accurate, timely, and useable to commanders and decisionmakers (FM 3-0). KM creates value for organizations by increasing operational effectiveness, decision quality, and unit innovation. ***Knowledge creation is the process of developing new knowledge or combining, restructuring, or repurposing existing knowledge in response to identified knowledge gaps.*** (See chapter 3.)

TYPES OF KNOWLEDGE

1-4. ***Knowledge is information analyzed to provide meaning and value or evaluated as to implications for the operation. It is also comprehension gained through study, experience, practice, and human interaction that provides the basis for expertise and skilled judgment.*** Operational knowledge management is concerned with two knowledge categories: general knowledge and mission or operation-specific knowledge. General knowledge resides mainly in individuals; however, it can be stored in the unit and transferred and applied to mission or operational requirements. Information is analyzed or evaluated through the following: explicit cognitive techniques, reflective experience, deliberate practice, and social interaction within a mental framework of patterns and facts. Analysis and evaluation provide context—the meaning or implications that form the basis for understanding and decisions. Creating mission-specific knowledge by integrating contextualized information supports effective decisionmaking and provides the basis for action. Knowledge includes the individual or organizational ability to perform tasks. It also

includes awareness gained from experience and culture. (FMs 3-24 and 3-05.301 discuss culture.) There are two types of knowledge: explicit and tacit.

1-5. **Explicit knowledge consists of written or otherwise documented knowledge in media that can be organized or stored, whether digital (such as computer files) or nondigital (such as paper).** It is definite, openly stated, and often objective. Explicit knowledge lends itself to rules, limits, and precise meanings. It is easily collected, stored, and disseminated using information systems. Examples of explicit knowledge include field manuals, unit standing operating procedures, operation orders, and technical specifications or capabilities of equipment. During operations, this knowledge is created and applied to support understanding and decisionmaking.

1-6. **Tacit knowledge consists of comprehension gained through study, experience, practice, and human interaction.** It resides in an individual's mind. All individuals have a unique, personal store of knowledge. They gain it from experiences, training, and informal networks of friends and professional acquaintances. However, individuals can also seek others' tacit knowledge to solve a problem or explore an opportunity. Intuition as discussed in FM 6-0 is an example of tacit knowledge. So is being able to understand the critical factors on which to focus in a complex situation. During operations, leaders are concerned with creating knowledge needed to accomplish the immediate mission. They also engage Soldiers' tacit knowledge to increase the unit's understanding. Knowledge from both sources help leaders make better decisions and conduct more effective operations.

INFORMATION MANAGEMENT AND INFORMATION CATEGORIES

1-7. *Information management* is the science of using procedures and information systems to collect, process, store, display, disseminate, and protect knowledge products, data, and information (FM 3-0). Information management provides a structure so commanders and staffs can process and communicate information and make decisions. Effective information management contributes to knowledge creation. In some ways, knowledge management and information management are inseparable; the two overlap. Some Army organizations use an information management plan to incorporate knowledge management into all operations process activities.

1-8. *Relevant information* is all information of importance to commanders and staffs in the exercise of command and control (FM 3-0). Information management places relevant information into one of four categories: specified requirements, implied requirements, gaps, and distractions. *Specified requirements* are requirements commanders specifically identify. Commander's critical information requirements, priority intelligence requirements, and friendly force information requirements are categories of specified requirements. *Implied requirements* are important pieces of information that commanders need but have not requested. Effective staffs develop implied requirements and recommend them for specified requirements. These often become priority intelligence requirements or friendly force information requirements. *Gaps* are elements of information commanders need to achieve situational understanding but do not have. Ideally, analysis identifies gaps and translates them into specified requirements. Intelligence, surveillance, and reconnaissance focuses on collecting and processing information to fill gaps. *Distractions* include information commanders do not need to know but continue to receive. Distractions contribute to information overload.

PURPOSES OF KNOWLEDGE MANAGEMENT

1-9. Effective KM provides commanders relevant information and knowledge for making informed, timely decisions. KM enables effective collaboration by linking the various organizations and Soldiers requiring knowledge. It reduces the fog of war and enhances rapid adaptation during dynamic operations. Since a broad range of knowledge potentially affects operations, the commander's information requirements may extend beyond purely military matters. Defining these requirements is an important aspect of KM.

1-10. Commander's critical information requirements focus knowledge product development. Leaders acquire knowledge by understanding the processes, activities, and systems available to share information. Commanders and staffs evaluate KM effectiveness by determining whether it lessens the fog of war. KM

narrows the gap between relevant information commanders require and that which they have. The staff organizes knowledge for the commander through KM. More specific purposes of KM include the following:

- Facilitating—
 - Situational understanding.
 - Common operational picture.
 - Decisionmaking.
 - Transfer and availability of expertise and experience.
- Enhancing organizational learning during operations.
- Enhancing collaboration among personnel at different places.
- Speeding knowledge transfer between units and individuals.
- Providing reachback capability to Army schools, centers of excellence, and other resources.
- Incorporating simulations and experiential learning into training.
- Helping leaders and Soldiers become more agile and adaptive during operations.
- Influencing doctrine development.

1-11. Knowledge managers use their experience and training to focus the KM purposes. KM includes using knowledge to support organizational learning, innovation, and performance. Knowledge managers use processes and information systems to accelerate learning and knowledge transfer to the appropriate members of an organization. In addition, knowledge managers assist commanders and other leaders by influencing Soldiers and leaders. Knowledge managers ensure that Soldiers and organizations follow KM processes and use information management processes established by the G-6/S-6 to coordinate actions.

1-12. KM includes using knowledge to facilitate situational understanding and decisionmaking. Situational understanding involves analysis and judgment. It is based on the commander's ability to relate situational awareness to experience gained operationally or through education. In essence, this ability is the "art" of knowledge management.

KNOWLEDGE TRANSFER

1-13. **Knowledge transfer is movement of knowledge—including knowledge based on expertise or skilled judgment—from one person to another.** It describes how knowledge is passed between individuals and groups. It includes knowledge developed within the unit and received from other sources. Effective knowledge transfer allows all involved to build on each other's knowledge in ways that strengthen not only individual Soldiers but also the entire organization. It is more than simply moving or transferring files and data.

1-14. Employing effective knowledge strategies (see paragraphs 1-43 through 1-47) increases knowledge transfer and learning. Knowledge transfer enables units and Soldiers to begin operations at a higher knowledge level. It also raises knowledge and learning levels throughout an operation. (See figure 1-1 [page 1-4].) Knowledge transfer facilitates collaboration among the organizations and personnel requiring knowledge. It helps commanders make more informed and timely decisions.

1-15. Commanders and staffs assess the effectiveness of knowledge transfer by considering how quickly it reduces the fog of war. Effective knowledge transfer—

- Facilitates better, more informed decisions.
- Encourages insight and innovation by the freer flow of ideas.
- Improves Soldiers' speed, efficiency, and productivity.

KNOWLEDGE TRANSFER ELEMENTS

1-16. Knowledge transfer has four elements: connection, collaboration, content, and context. All four are required for successful knowledge transfer. The transfer of knowledge starts with two or more individuals or organizations sharing ideas and or questions. Sharing may be verbal or written. Exchanging ideas and finding answers involves transferring a combination of tacit and explicit knowledge.

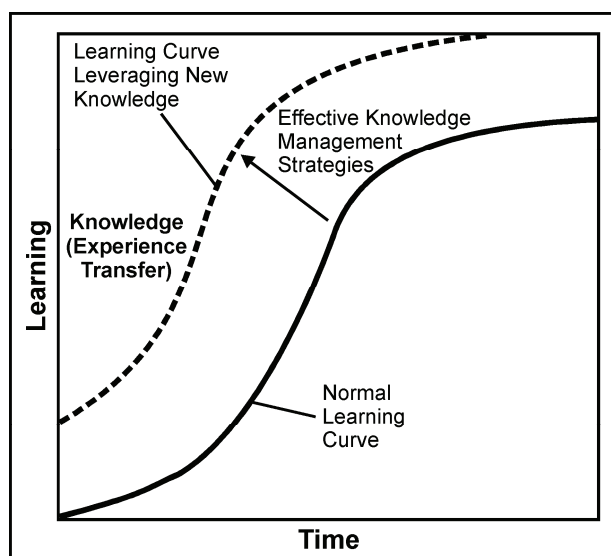


Figure 1-1. Knowledge transfer's contribution to knowledge and learning levels

1-17. *Connection* provides people with a structure and networks—both technical and social—that facilitate communication. Since knowledge is social and used for the benefit of people, most people seek it from those they know and trust before querying others or accessing databases. Seeking knowledge from other people leads to collaboration.

1-18. A *social network* is a social structure that can be described in terms of nodes connected by one or more types of links. Nodes are generally individuals or organizations. Links may take several forms. These include values, visions, ideas, jobs, operations, and military occupational specialties.

1-19. *Collaboration* is interaction among people at two or more locations who are developing knowledge for the same purpose. It may occur face to face in a small group or online using collaborative environments. Collaboration is an excellent means of transferring both tacit and explicit knowledge.

1-20. *Content* is actual information or knowledge. Many means of storing and transferring content exist. These means are called *media*. Nondigital media include paper documents, charts, graphs, and presentations. Digital media include word-processed text, multimedia presentations (recorded as graphic, audio, or video files), databases, and spreadsheets. Some content can be transferred directly from the medium to a learner, for example, through reading or viewing a video. Other content requires interaction between people to be transferred effectively. For example, learners often have to participate in a decision game to understand the lessons the game conveys. Reading the game's learning objectives can tell participants the lessons they are expected to learn. However, participating in the game is essential for participants to actually learn and understand those lessons. Transferring tacit knowledge almost always requires human interaction.

1-21. Digital information is often referred to as content. However, this is incomplete. Content refers to actual information or knowledge. Digital describes the media in which content is recorded and by which it is transferred. As much as possible, content stored nondigitally is converted into a digital medium so it can be managed electronically. When this conversion is not possible, content management still includes content stored in nondigital media. The KM section provides policies and procedures to manage digital and nondigital content from creation to destruction, including converting nondigital content into digital forms as much as possible. (See appendix A.)

1-22. Finally, *context* for military purposes is the operational environment within which the knowledge was created. Context identifies the applicable operational or mission variables and shows how they affect the outcome of applying the knowledge. (FM 3-0 discusses operational and mission variables.) For exam-

ple, a lesson learned in Afghanistan might not apply to a similar problem in Iraq due to cultural differences, geography, or religion. If the knowledge's context is not included in collaboration, the meaning of the knowledge may be distorted. The result may be a misapplied lesson. Context is essential to providing usable, relevant knowledge to decisionmakers.

KNOWLEDGE MANAGEMENT AND LEARNING IN ORGANIZATIONS

1-23. Integrating KM improves sharing of observations, insights, and lessons before, during, and after operations. KM integrates those lessons for organizational improvement and includes reachback to obtain additional expertise. KM processes organize lessons that have been incorporated into modified tactics, techniques, or procedures and disseminate them within the unit. KM processes also transfer these lessons to official lessons learned databases for others' use. KM tools help leaders research doctrine more effectively for tactics, techniques, and procedures to help solve tactical problems. KM also connects operational units with subject matter experts and peers with relevant experience to obtain their assistance, both before and during an operation. It also includes access to the vast lessons learned databases at the Center for Army Lessons Learned and other repositories of data and knowledge products, such as the Battle Command Knowledge System. It expedites incorporation of this knowledge into plans and orders and contributes to accomplishing missions. Finally, KM allows units to contribute their learning and lessons to these repositories, thus increasing the Army's institutional knowledge.

1-24. KM exploits LandWarNet's links between the operational Army and the generating force—especially those to centers of excellence and schools—to facilitate learning in all Army organizations. (FM 1-01 describes the operational Army and the generating force. FM 3-0, paragraph 7-61, describes LandWarNet.) KM allows commanders to bring operational lessons learned immediately into collective training to better prepare units in the Army force generation (ARFORGEN) reset/retrain pool. (See paragraphs 1-58 through 1-65.) Collaborative tools enable team development, planning, and operations. Sharing tacit knowledge through KM captures decisionmaking experience from the most experienced operators and trainers.

1-25. KM facilitates the transformation of Army forces into knowledge-based organizations. Those organizations integrate best practices—the most effective and efficient method of achieving any objective or task—into operations and training. Within organizations, KM improves knowledge flow, connecting those who need knowledge with subject matter experts. Soldiers and leaders share lessons learned to prepare for both current and future operations.

KNOWLEDGE MANAGEMENT PRINCIPLES

1-26. The following principles represent the most important factors affecting the conduct of effective KM. They are not a checklist. Rather, they summarize the characteristics of successful KM efforts. Knowledge managers consider them in all situations; however, the principles apply differently, based on the factors present.

EXPLOIT TACIT KNOWLEDGE

1-27. Information captured in digital form, on paper, and in pictures generally tells “what” and “why,” but not “how.” KM facilitates the transfer of the “how” in the form of tacit knowledge. Tacit knowledge resides in individuals. It includes experience and expertise gained from operations and training, learned nuances and subtleties, and work-arounds. Mental agility, effective responses to crises, and the ability to adapt to change are also forms of tacit knowledge. This knowledge form is the domain of individuals, not technology.

TREAT KNOWLEDGE MANAGEMENT AS A SOCIAL AND INTERPERSONAL ACTIVITY

1-28. Technology enables social interaction by providing access to people, storage, and online knowledge transfer. However, KM does not require technology. Learning, teaching, coaching, and mentoring occur just as easily, and often more effectively, in face-to-face exchanges.

FOCUS ON SHARING KNOWLEDGE

1-29. Knowledge shared is power. The concept of hoarding knowledge to make oneself indispensable benefits no one. Improved organizational effectiveness, operational processes, and decisionmaking are what give knowledge its value.

INTEGRATE KNOWLEDGE

1-30. KM transcends hierarchy and boundaries. By enabling knowledge integration and improving collaboration, KM breaks down stovepipes and enhances situational understanding. KM employs standard processes and best practices focused on organizational effectiveness and improved decisionmaking.

CONNECT PEOPLE WITH EXPERTISE

1-31. Knowledge creation depends on knowledge transfer from those with expertise. KM focuses transferring tacit knowledge between individuals, teams, and units through collaboration. It makes stored explicit knowledge more easily and readily available to more people and organizations. It contributes to integrating lessons learned during operations by organizations in all ARFORGEN phases.

FOSTER LEARNING ORGANIZATIONS

1-32. KM contributes to developing learning organizations by integrating informal learning, organizational learning strategies, and KM capabilities. Much learning comes from individuals' initiative in self-development and study. Thus, fostering learning begins with promoting initiative and innovation. It also involves encouraging knowledge transfer during interaction and collaboration. Fostering learning produces organizations and Soldiers able to learn faster than enemies and adversaries do.

PROMOTE TRUST AND MUTUAL UNDERSTANDING

1-33. One of the principles of mission command is encouraging trust and mutual understanding. Successful KM depends on willingness to share knowledge so that others can benefit. This sharing contributes to building an environment of trust and mutual understanding. In this way, effective KM aids mission command.

KNOWLEDGE MANAGEMENT COMPONENTS

1-34. Commanders cannot exercise command and control alone except in the simplest and smallest of units. Even at the lowest levels, commanders need support, however little, to exercise command and control effectively. At every echelon, each commander has a command and control system to provide that support. A *command and control system* is the arrangement of personnel, information management, procedures, and equipment and facilities essential for the commander to conduct operations (FM 6-0). Effective KM supports both the human and the technical components of a command and control system. As shown in figure 1-2, KM comprises three major components:

- **People**—those inside and outside the organization who create, organize, apply, and transfer knowledge, and the leaders who act on that knowledge.
- **Processes**—the methods of creating, organizing, applying, and transferring knowledge.
- **Technology**—information systems used to put knowledge products and services into organized frameworks.

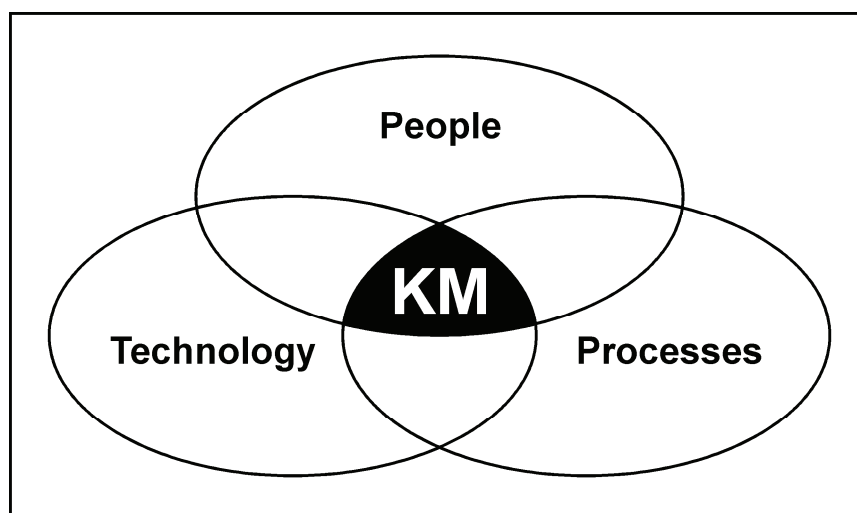


Figure 1-2. Knowledge management components

PEOPLE

1-35. Of the three components, people are the most vital for successful KM. Knowledge only has meaning in a human context. It moves between and benefits people, not machines. People include the commander and staff; higher, lower, and adjacent commanders and staffs; and other agencies that might contribute to answering information requirements.

1-36. Military staffs developed as institutions devoted to creating and managing knowledge. Staffs develop and provide knowledge on which commanders and other decisionmakers achieve situational understanding, make decisions, and execute those decisions. Staffs are involved both in directing actions and assessing progress. The structure of personnel, units, and activities creates explicit communication channels for knowledge transfer within and between organizations. (FM 6-0 discusses channels of communication.)

1-37. An estimated 80 to 90 percent of all knowledge exists as individuals' experience, expertise, or insights. This tacit knowledge is transferred primarily through conversations and immediate feedback based on direct observations of an activity. Therefore, knowledge transfer techniques focus on connecting people and building social networks. The after action review process is one technique for transferring tacit knowledge. (See appendix B.) Another is the simulation-based decision games used with senior commanders. These games help subordinates understand both how the commander thinks and why.

PROCESSES

1-38. The KM process comprises four KM functions. (See chapter 3.) Soldiers, groups, teams, and units employ it. The operational environment and the organization's knowledge needs and knowledge strategy (see paragraph 1-43) determine how KM sections employ the KM process.

1-39. The KM process and activities are not ends in themselves. The KM section uses them to improve KM within the organization before operations, throughout the operations process, and after operations. It also synchronizes them with the unit's battle rhythm.

TECHNOLOGY

1-40. KM technologies include hardware and various software tools. These include the following:

- **Information systems.** Information systems and their software, storage, inputs, processing, outputs, formats, content, software, and capabilities provide tools knowledge managers employ to manage knowledge. KM helps guide the use of information systems to fuse information to support a more effective common operational picture.
- **Collaboration tools.** These tools are information systems that include online capabilities that make team development and collaboration possible. Examples include chat, white-boarding, professional forums, communities of interest, communities of practice, and virtual teaming. (See chapter 3.)
- **Expertise-location tools.** These tools support finding subject matter experts.
- **Data-mining tools.** These tools support data analysis that identifies patterns and establishes relationships among data elements.
- **Search-and-discover tools.** These tools include search engines that look for topics, recommend similar topics or authors, and show relationships to other topics.
- **Expertise-development tools.** These tools use simulations and experiential learning to support developing experience, expertise, and judgment.

1-41. An important KM tool is the *common operational picture*—a single display of relevant information within a commander's area of interest tailored to the user's requirements and based on common data and information shared by more than one command (FM 3-0). Much of the KM effort is devoted to ensuring the accuracy of the data and information the common operational picture draws on, the processes that produce it, and the information systems that display and disseminate it. (See FM 6-0 for additional information on the common operational picture.)

1-42. Another important KM tool is the Global Information Grid—the globally interconnected, end-to-end set of information capabilities, associated processes, and personnel that collect, process, store, disseminate, and manage information for warfighters and others. (See JP 6-0.) LandWarNet is the Army's portion of the Global Information Grid.

KNOWLEDGE STRATEGIES

1-43. A knowledge strategy is an approach for supplying an organization with knowledge to conduct operations. Knowledge strategies range along a continuum from codification to personalization. (See figure 1-3.) A knowledge strategy supports both knowledge creation and knowledge transfer. It gives priority to one over the other based on the situation.

1-44. **Codification is the knowledge strategy that focuses on connecting people with content through technical networks, developing added value that supports organizing, applying, and transferring knowledge.** Codification makes content better organized and more portable, explicit, and understandable. Knowledge strategies focused more on codification are appropriate when—

- Mature knowledge products, such as doctrinal manuals, exist.
- Requirements for similar knowledge recur. Standing operating procedures and similar products address these situations.
- The explicit knowledge required for different projects falls into similar categories. Formats, such as the operation order format, address these situations.
- Standardized products or services, such as weapons effects data, are required.
- The explicit knowledge required is easily codified, as with weapons systems capabilities.

1-45. **Personalization is the knowledge strategy focused on developing social networks (informal, teams, and communities) to link people with tacit and explicit knowledge.** Personalization shares tacit knowledge through managed conversation. Knowledge strategies focused more on personalization are appropriate when situations—

- Require innovation, such as adapting to changes in enemy tactics.
- Include unfamiliar problems that do not have a clear solution at the outset.
- Require knowledge that applies across different types of problems, such as cultural awareness.
- Require highly customized knowledge to meet particular needs, such as coordinating activities between rival tribes in an austere area of operations.
- Require knowledge not easily codified, such as expertise and experience for an operation or task.

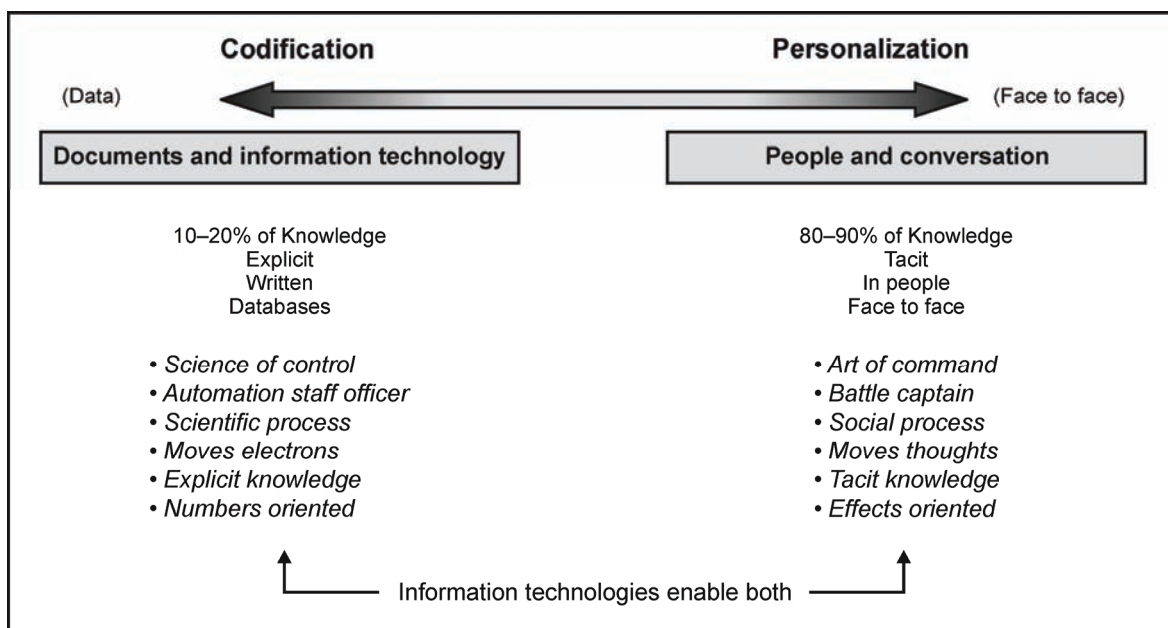


Figure 1-3. Range of knowledge management strategies

1-46. Knowledge strategies developed for specific situations use different degrees of codification and personalization. The organization's needs and the circumstances of the operational environment as well as the overarching operational goals determine the mix of the two knowledge strategies to use. Each project or communication emphasizes either codification or personalization, based on the situation. Neither knowledge strategy is ever used exclusively.

1-47. Figure 1-3 shows that most knowledge is in people's minds and hence is difficult to share. In organizations with a high turnover, it is important to convert key knowledge and experience from tacit to explicit knowledge. This helps pass institutional knowledge to new and remaining personnel.

BATTLE COMMAND, KNOWLEDGE MANAGEMENT, AND INFORMATION MANAGEMENT

1-48. Battle command, knowledge management, and information management are closely related. Information management feeds the development and management of knowledge. Knowledge management relies on information management and contributes to the situational understanding required for decisions and actions involved in exercising battle command.

BATTLE COMMAND

1-49. *Battle command* is the art and science of understanding, visualizing, describing, directing, leading, and assessing forces to impose the commander's will on a hostile, thinking, and adaptive enemy. Battle command applies leadership to translate decisions into actions—by synchronizing forces and warfighting functions in time, space, and purpose—to accomplish missions (FM 3-0). Effective commanders integrated battle command and knowledge management long before “knowledge management” became well known.

1-50. KM facilitates exercising battle command. Incorporating KM into all operations process activities helps accomplish this. This requires developing and managing a KM architecture and plan. KM facilitates applying in-depth knowledge and understanding of current and future operations as part of battle command. In coordination with the G-6/S-6, KM includes building competence in using information technologies. Finally, KM facilitates battle command by using models and simulations to improve individual, team, and organizational performance. This training can occur during current operations or to prepare for future operations. (See paragraphs 3-35 through 3-55.)

1-51. Tacit knowledge provides part of the foundation for intuition; therefore, it is a component of the knowledge commanders use to exercise battle command. Tacit knowledge allows commanders to combine explicit knowledge of the operational and mission variables to visualize an operation or battle. The commander's intent, commander's critical information requirements, and planning guidance are all forms of explicit knowledge. Commanders create them by combining their tacit knowledge with the explicit knowledge provided by staffs.

1-52. The knowledge commanders use achieve situational understanding, make decisions, and act begins as data. Machines and people process data into information. People using their minds and various tools add meaning to information to produce knowledge. Data, information, and knowledge are closely related. However, each is different from the others and makes a distinct contribution to developing understanding.

1-53. *Data* are unprocessed signals communicated between any nodes in an information system or sensings from the environment detected by a collector of any kind (human, mechanical, or electronic) (FM 6-0). Data can be quantified, stored, and organized in files and databases; however, data only becomes useful when processed into information.

1-54. In this context, *information* is data that have been processed to provide further meaning (FM 6-0). Processing places data within a context that gives it meaning and value. Like data, information can be quantified, stored, and organized; however, information alone rarely provides a sound basis for deciding and acting. Good decisions and effective actions require knowledge.

1-55. *Knowledge*, in this context, is information that has been analyzed to provide meaning or value or evaluated as to implications for the operation. Knowledge is meaningfully structured and based on experience. Some is usable as the basis for achieving understanding and making decisions. Other knowledge forms the background against which commanders make those decisions. (Table 1-1 shows a simple example of data becoming knowledge.) The cognitive hierarchy, shown in figure 1-4, portrays the place of data, information, and knowledge in developing understanding. Figure 1-4 also shows the roles of knowledge management and information management in this development.

Table 1-1. Example of data processed into information and knowledge

<i>Term</i>	<i>Example</i>	<i>Relationship</i>
Data	100 T72 tanks	Unrelated symbols out of context
Information	100 T72 tanks at grid location AB271683	<i>Processing</i> places the symbols in the context of the terrain and friendly forces
Knowledge	100 T72 tanks at grid location AB271683 indicates the enemy has committed its reserve	<i>Cognition</i> based on experience, analysis, or study provides meaning to the information

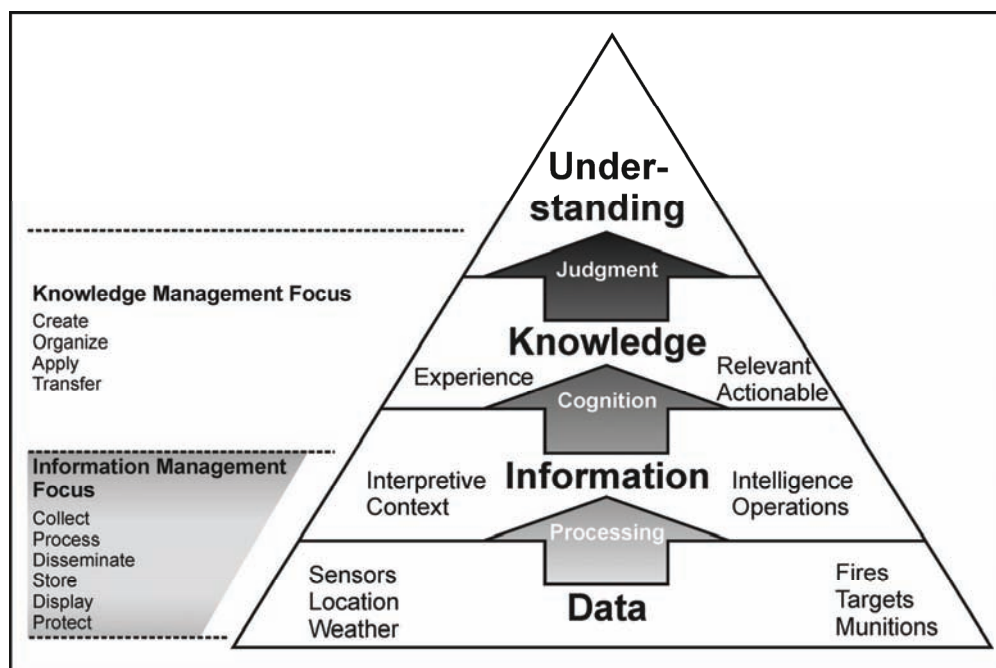


Figure 1-4. Knowledge management and the cognitive hierarchy

INFORMATION MANAGEMENT

1-56. Information management provides the timely and protected dissemination of relevant information to commanders and staff elements. It supports knowledge management. Information management includes lower level mechanical procedures, such as organizing, collating, plotting, and arranging. This management is more than control of data flowing across technical networks. It uses both staff management and automatic processes to sort, organize, and disseminate vast quantities of information, getting relevant information to the right person at the right time. Information management centers on commanders and their information requirements. The G-6/S-6 coordinates information management as part of the knowledge strategy throughout all operations process activities.

1-57. Information management complements knowledge management and knowledge development. (See figure 1-4.) Generally, information management relates to collection, processing, display, storage, dissemination, and protection of data and information before it becomes knowledge. In contrast, KM uses information to create, organize, apply, and transfer knowledge to support achieving understanding, making decisions, and ultimately taking effective action. Effective information management helps commanders manage knowledge better. It helps them apply their experience, learning, and judgment to decisionmaking that leads to action.

KNOWLEDGE MANAGEMENT IN ARMY FORCE GENERATION

1-58. ARFORGEN is a structured process that progressively increases unit readiness over time. It results in recurring periods of availability of trained, ready, and cohesive units prepared for operational deployment. ARFORGEN takes each unit through a three-phased readiness cycle: reset/train, ready, and available.

1-59. Units enter the *reset/train* phase when they redeploy from long-term operations or complete their planned deployment window in the available force pool. Units conduct individual and collective training focused on their core or theater-specific mission-essential task list. Units move to the *ready* phase when they are prepared to conduct higher level collective training and prepare for deployment. Training and preparation in the ready phase focuses on mission-essential training. Forces and headquarters deploying to

an ongoing operation or available for immediate alert and deployment to a contingency are in the *available* phase. At the end of the available phase, units return to the reset/train phase, and the cycle begins again. (See FMI 3-0.1 for additional information on ARFORGEN.)

1-60. Commanders can use KM processes and information systems (linked by LandWarNet) to access training resources that increase proficiency in battle command and improve Soldiers' cultural awareness. These resources can provide a continuous shared knowledge network (see paragraphs 3-9 through 3-12) between the generating force and the operational Army. KM in ARFORGEN focuses on knowledge transfer to forces throughout all ARFORGEN phases.

1-61. Most units training at home station focus on performing and refining collective tasks derived from the core mission-essential task list. Units preparing to deploy keep current on how deployed units are applying tactics, techniques, and procedures during ongoing operations. KM plays a vital role in enabling units to achieve this connection throughout all ARFORGEN phases. The Battle Command Knowledge System (BCKS) knowledge networks support this connection by enabling unit interactions.

RESET/TRAIN

1-62. KM preparation begins during the reset/train phase. Technical systems are put in place, and KM personnel ensure they understand KM processes they will use. The KM section at each level serves as the coordinating element and provides primary trainers. BCKS knowledge networks can support KM training. The unit establishes or uses knowledge networks at the beginning of the reset/train phase and again near the middle, primarily during mission rehearsal exercises.

READY

1-63. During the ready phase, the KM section advises the chief of staff on KM training. Although each staff element has a leader responsible for training, the chief of staff ensures that staff elements interact properly. With this oversight, units practice digital staff battle drills and use knowledge transfer techniques to prepare for deployment. Units use information systems and knowledge networks to transfer observations, insights, lessons, and organizational knowledge.

1-64. Lessons learned integration is a major capability facilitated by the KM section. The KM section, in coordination with the G-6/S-6, can help integrate observations, insights, and lessons by helping the unit connect with deployed units using the Army Battle Command System. This allows follow-on forces to observe battle update assessment briefs, review combat action reports, identify observations, insights, and lessons, and integrate them into training. This integration aims to decrease transition time in the area of operations while increasing situational understanding. The virtual right-seat ride is a popular technique for developing general situational awareness of a future area of operations. (See paragraphs 3-58 through 3-60.)

AVAILABLE

1-65. During deployments, the KM section operates from the main command post and focuses on two primary areas: lessons learned integration, and helping commanders bridge gaps between information provided and information needed to make decisions. Before and after redeployment, the KM section focuses on transferring observations, insights, and lessons to follow-on forces, the Center for Army Lessons Learned and BCKS. Such actions make this knowledge available for sharing Armywide. Throughout ARFORGEN, the KM section helps the organization capture what it learns, share that knowledge, and integrate its lessons learned into the larger Army training and education base. In addition, the KM section helps command post personnel more effectively use Army Battle Command System capabilities.

Chapter 2

Functions, Duties, and Responsibilities

The knowledge management section is responsible for enabling the staff to better accomplish its knowledge management responsibilities. It is neither a shadow staff nor a separate brain trust. This chapter discusses the knowledge management section—its support, organization, functions, and section member duties and responsibilities.

SECTION FUNCTIONS

2-1. The KM section's purpose is to support the commander and staff in achieving situational understanding and making informed, knowledgeable, and timely decisions. The section does this by managing the people, technology, and processes that furnish commanders and staffs with more and better knowledge and relevant information. Staff responsibility for KM begins with the chief of staff.

2-2. KM section members advise the unit's staff on KM processes and enabling technologies. These processes and technologies help the staff to better manage explicit and tacit knowledge. Doing this sustains an operational advantage against enemies and adversaries. The section, supported by technology, helps the unit create and apply KM processes. Creating and applying these processes improves the conduct of operations and mission accomplishment. The KM section also supports unit learning before, during, and after operations. It does this by developing and disseminating staff processes and activities that easily create or quickly transfer knowledge gained from operations. The KM section enhances command and control by helping organizations integrate information systems into the headquarters in a manner consistent with best KM practices and operational requirements.

2-3. The KM section gives technical network requirements to the G-6/S-6. It helps the organization identify knowledge gaps and apply KM principles to the operations process. Thus, the section helps the commander and staff receive the knowledge necessary to increase situational awareness and understanding. This knowledge can shorten the decisionmaking process and improve decision quality while mitigating risk.

2-4. The KM section is capable of 24-hour operations. It occupies two work stations in the current operations cell to maintain situational awareness. (FMI 5-0.1 discusses command post cells.) One station is near the chief of operations. The other is near the battle captain. The actual organization and manning of a KM section determines which of the functions listed in table 2-1 (page 2-2) the section can perform.

Table 2-1. Knowledge management section functions

Advise the commander and staff on KM solutions.

Develop techniques and procedures that support effective and efficient unit learning before, during, and after operations.

Provide a core team to resolve critical KM issues. This team forms the base of a multifunctional working group drawn from all staff cells. It is enabled by information systems.

Recommend integrated applications, processes, and services that accomplish the following:

- Provide the capability for effective command post operations.
- Are readily understandable.
- Get the right knowledge to the right people at the right time.

Integrate KM processes into unit functions during all Army force generation phases.

Build and sustain a knowledge network architecture that is social and interpersonal as well as technical. The network enables units to rapidly share tactics, techniques, and procedures; operational observations, insights, and lessons; and validated, explicit knowledge products. This knowledge network architecture uses the technical network architecture established by the G-6/S-6. It connects subject matter experts and enables individual and organizational learning. The section forwards KM revision requirements of the technical network to the G-6/S-6.

Advise the unit on using KM processes and tools to maximize relevant information availability.

Coordinate with external knowledge sources and integrate them into the organizational knowledge network. Coordinate technical network requirements with G-6/S-6.

Train the unit to effectively use and apply the Battle Command Knowledge System.

Develop and maintain a virtual right-seat ride capability. Facilitate virtual right-seat rides. (See paragraphs 3-58 through 3-60.)

Analyze newly recommended information technology for KM capabilities and recommend acceptance and integration into the unit Army Battle Command System architecture by the G-6/S-6 as appropriate.

Help the staff manage the common operational picture and briefings.

Tailor the unit's KM plan to develop and modify command standing operating procedures by—

- Recommending changes to the KM plan as needed.
- Coordinating the KM plan with the information management plan developed by G-6/S-6.
- Developing file and data management procedures that incorporate the most recent and effective standards to enhance search and retrieval capabilities.

Coordinate with the G-6/S-6 for technical network, database, and other related support.

Ensure that after action reviews are completed and documented.

SECTION MEMBER DUTIES AND RESPONSIBILITIES

2-5. The KM section reports directly to the chief of staff or executive officer. The section may contain the following positions: a KM officer, an assistant KM officer, a KM noncommissioned officer, and content management specialists. Section member duties and responsibilities depend on the number of Soldiers assigned to the section. This number also determines how many functions the section can accomplish. Not all positions described here may be authorized or required at a given echelon.

KNOWLEDGE MANAGEMENT OFFICER

2-6. The KM officer directs the KM section. KM officers ensure KM processes and procedures are understood within the unit. They demonstrate how these processes and procedures can improve efficiency and common understanding during training and enhance operational effectiveness during operations, especially in time-constrained environments. (Table 2-2 lists other responsibilities.) KM officers need not remain in the command post. Commanders may require their KM officer to move with them. The KM officer reports directly to the chief of staff.

Table 2-2. Knowledge management officer responsibilities

Help the staff perform internal and external knowledge gap analyses. Create techniques to bridge gaps.

Recommend creating an organizational knowledge network and provide metrics for evaluating its effectiveness.

Create a unit KM plan and execute it through the unit staff. Ensure the KM section fully supports this plan.

Continuously assess KM as it applies to staff readiness, unit infrastructure, and unit performance.

Advise the commander and staff on integrating KM practices and procedures throughout the organization.

Monitor emerging KM trends for incorporation into unit operations.

Monitor formal and informal social networks that transfer knowledge (that is, who the subject matter experts are, who goes to them, and what connects seekers with subject matter experts).

Facilitate achieving greater knowledge creation and transfer across the organization. Seek feedback to evaluate the progress of knowledge sharing initiatives.

Show staff teams how to develop knowledge sharing within their areas of expertise.

Develop KM policies and procedures and ensure commandwide dissemination and compliance.

Develop effective techniques and procedures for organizing, applying, and transferring observations, insights, and lessons from after action reviews into unit operations, standing operating procedures, and training.

Oversee planning and implementing KM activities across the unit by communicating with other commands' KM officers, both horizontally and vertically.

Establish and chair a working group made up of staff representatives and KM officers from subordinate units.

Plan the creation, management, and monitoring of active participation in a knowledge network within the unit's organizational structure to facilitate operational synchronization.

Coordinate and oversee the unit's KM training using Battle Command Knowledge System training assets.

Oversee the unit's content management efforts. (See paragraph 3-7 and appendix A.)

Serve as the chief architect for the KM structure. Understand the functions of its information systems and other technical networks and how to best use them to integrate their products into the common operational picture.

Coordinate with the G-6/S-6 to ensure that the unit's technical network supports knowledge creation, organization, application, and transfer across the unit.

Help subordinate units without KM sections apply KM.

ASSISTANT KNOWLEDGE MANAGEMENT OFFICER

2-7. The assistant KM officer ensures section members understand KM processes and technology. Assistant KM officers are responsible for understanding the Global Information Grid and Army operational KM, and for helping the unit use the capabilities of these resources. (Table 2-3 lists other responsibilities.) Assistant KM officers also help the G-3/S-3 and G-6/S-6 map the processes and information systems that produce the common operational picture. The assistant KM officer reports to the KM officer.

Table 2-3. Assistant knowledge management officer responsibilities

Coordinate and integrate the creation and organization of the common operational picture.

Initiate, coordinate for, and maintain a virtual right-seat ride capability. (See paragraphs 3-58 through 3-60.)

Execute KM policies and plans within the KM section.

Improve knowledge sharing and overall unit effectiveness by continuously assessing the unit's KM program, infrastructure, and readiness.

Develop, organize, and supervise implementation of the unit's content management effort. (See paragraph 3-7 and appendix A.)

Help the staff perform knowledge analysis to answer the commander's critical information requirements and create solutions for closing persistent gaps.

Seek techniques to incorporate experiential learning into organizational learning. (See paragraphs 3-63 through 3-65.)

Map the unit's KM network among personnel. Develop metrics for evaluating KM effectiveness.

Identify operationally relevant trends; observations, insights, and lessons; and significant actions. Ensure they are distributed vertically and horizontally.

Ensure systems for directing requests for information work efficiently.

Coordinate with the G-6/S-6 to ensure connectivity to the Global Information Grid and application of its capabilities.

Oversee KM-related roles and responsibilities as directed by the KM officer.

Direct the KM working group.

Monitor the unit's databases and Web sites to determine appropriateness of content and eliminate redundant files.

Develop the unit's KM training and certification program.

In coordination with the G-6/S-6, recommend integration of human and technical KM processes into the command and control system's technical structure to improve information flow.

KNOWLEDGE MANAGEMENT NONCOMMISSIONED OFFICER

2-8. As the senior enlisted member of the KM section, the KM noncommissioned officer advises the KM officer on improving knowledge creation and transfer within the staff. KM noncommissioned officers help integrate KM training concepts into the unit's individual and collective mission-essential tasks. They oversee KM training and certification programs. (Table 2-4 lists other responsibilities.)

Table 2-4. Knowledge management noncommissioned officer duties

Help staff sections organize the command post's layout to best facilitate staff interaction.

Coordinate appropriate audiovisual displays of the common operational picture and other operationally relevant KM products in command posts and other areas.

Monitor collaboration sites and knowledge networks and advise the staff on relevant content.

In coordination with the protection cell, address KM aspects of operations security.

Advise on designing briefings and text documents.

Help design templates and formats for recurring knowledge products to increase standardization and reduce redundancy.

Participate in the KM working group.

Ensure the unit's content management plan meets Department of Defense requirements and is fully understood and implemented across the unit. (See AR 25-1 for a list of references.)

Review the unit's file management techniques. Direct adjustments as needed.

Remain abreast of current and future trends in KM and content management. Integrate them into unit operations as needed.

Supervise training in knowledge transfer procedures.

Serve as the unit's expert for KM tool and system training, design, and use.

Serve as the unit's expert for designing information system architecture.

Coordinate with the G-3/S-3 and G-6/S-6 to incorporate KM tools, systems, and the Army Battle Command System architecture into the common operational picture input design and display.

Coordinate with G-6/S-6 technical teams to identify and implement KM initiatives.

CONTENT MANAGEMENT SPECIALIST

2-9. Content management specialists serve as the unit's experts on content management and retrieval. They ensure knowledge is available to Soldiers when they need it. These specialists help the G-6/S-6 manage digital content with tools that exchange explicit knowledge, collaborate, and connect with subject matter experts across the organization. (Table 2-5 lists other responsibilities.)

Table 2-5. Content management specialist duties

Support implementation of the unit's KM policies and procedures. Search for and capture observations, insights, and lessons from other units and individuals via nonsecure and secure Internet protocol router networks (NIPRNET and SIPRNET) sites and forums. Facilitate knowledge transfer between units and leaders. Develop comprehensive document naming conventions, data tagging policies, and data organization for the unit. Train staff members on how to obtain explicit knowledge stored in knowledge networks (see paragraphs 3-9 through 3-10), databases, and information systems. Help review the unit's databases and Web sites to determine the security and relevance of content. Help the KM noncommissioned officer design briefings, text documents, templates, and other recurring knowledge products. Help the KM officer and assistant KM officer provide expertise and training in using KM tools, processes, and systems. Remain abreast of current and future trends in KM and content management. Coordinate with the G-6/S-6 (through the KM officer) on incorporating current standards to improve information search and retrieval across various data sources. Supervise and conduct KM process training, including content management procedures for staff members. Coordinate with G-6/S-6 technical teams to identify and implement effective solutions in content management.

SECTION TRAINING

2-10. Training for KM section members focuses primarily on the art of knowledge management and how it can improve command and control. However, commanders cannot overlook the science of information management. KM section members serve as the primary KM trainers in their units. These KM specialists must understand the systems and technical architecture that provide Soldiers with knowledge and enable them to share it.

2-11. KM training for individual section members often occurs outside the unit in special courses related to KM processes and tools. Other training occurs in the unit, either by distributive learning or by training teams. This training often applies to individual skills and knowledge.

2-12. KM section collective training normally occurs in the unit. It focuses on collective skills to help commanders and staffs better apply knowledge in operations and in learning before, during, and after operations.

2-13. The KM section contributes to staff operations by developing KM portions of unit standing operating procedures, including content management practices. The section advises the staff on KM. It trains the staff to perform its own KM functions. In most cases, the section advises the staff rather than performing KM functions itself.

2-14. The KM section can enhance Army Battle Command System capabilities through KM practices, networked reachback, and collaborative applications. The section can also help develop and support staff individual and collective training on these subjects.

2-15. Training is critical to effectively using any information system. Soldiers and staff sections require training on the Army Battle Command System components they will use. Users should be able to test their component's integration into the technical network, produce digital staff products, and use the system to disseminate these products across the social network. Individual training involves how to use individual Army Battle Command System components. Collectively, staffs train in establishing and displacing the command post while developing collective staff products that are vertically and horizontally integrated, with or without digital enablers.

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Chapter 3

Process and Activities

Knowledge management is one of the integrating processes commanders use to synchronize operations throughout the operations process. This chapter introduces the processes and activities through which knowledge management and the knowledge management section contribute to operations. It discusses several knowledge management applications and how they can contribute to organizational and Soldier learning before, during, and after operations.

KNOWLEDGE MANAGEMENT PROCESS

3-1. The knowledge management process consists of five steps: assess, design, develop, pilot, and implement. (See figure 3-1.) Several activities occur within each step. However, these activities are interconnected and may be used in any step. The activities are discussed under the KM process step with which they are most associated. This list is not all inclusive. It does, however, introduce some of the most common KM process activities. This KM process is the basic one the KM section employs to help units manage knowledge more effectively.

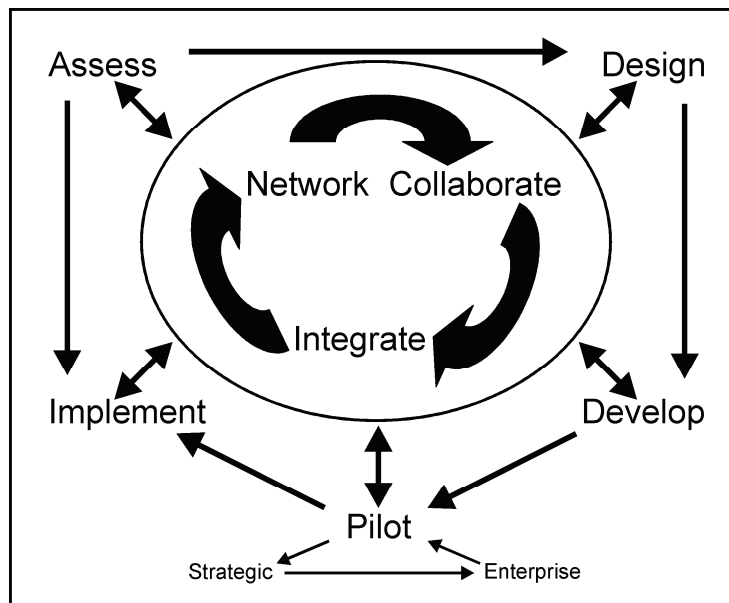


Figure 3-1. Knowledge management process

ASSESS

3-2. Assess in the KM context is analyzing the unit's knowledge needs. During assessment, the unit identifies the difference between what it can do (performance) and what it must do to succeed (requirements). (This assessment is much like a mission analysis.) The unit also identifies the difference between what it knows and what it must know to accomplish its mission.

3-3. Analysis determines if the performance shortfalls require additional training, materiel, or knowledge solutions. Aligning solutions to shortfalls is the key to solving the right problem. Not all performance shortfalls are knowledge related. However, if knowledge is seen as deficient, the KM section recommends knowledge-based solutions. KM activities under assessment include report analysis, technical systems analysis, and content management analysis.

REPORT ANALYSIS

3-4. Report analysis examines how reports are created, organized, and transferred. It identifies who uses the information reports contain and how to make that information available to the most people, consistent with security requirements. The KM vignette in the introduction provides an example of this activity.

TECHNICAL SYSTEMS ANALYSIS

3-5. Technical systems analysis provides operational and functional analysis of the technical systems supporting KM. The KM section can use the results to prepare customized digital status charts (often called “digital dashboards”) to display key KM performance indicators. These indicators show an organization’s KM status (or “health”). Digital dashboards use visual data displays from warfighting functions and information systems to provide action notices and warnings, track progress, and summarize KM performance.

3-6. The KM section may be tasked to determine KM requirements for new information systems before they are given to the G-6/S-6 for connection to the technical network. The KM officer and G-6/S-6 work together to meet user requirements while ensuring the confidentiality, integrity, and availability of the technical network are not jeopardized.

CONTENT MANAGEMENT ANALYSIS

3-7. ***Content management is an activity that focuses on managing digital and nondigital knowledge and information contained in any medium that conveys such content.*** Before computers and other electronic information systems became widely used, content management primarily concerned data and information technology administration based on data standardization. Content management in an organization using KM today has a wider focus. Content managers still consider when and how to apply information and knowledge to help a unit accomplish its mission. However they also consider how the visibility and accessibility of digital and nondigital knowledge products within and outside the organization affect mission accomplishment. This assessment includes how data is managed throughout its life cycle.

DESIGN

3-8. Design is identifying a KM product or service that effectively and efficiently answers a category of information requirements or meets the need for a specific knowledge category. For example, if Soldiers waste time finding documents or expertise related to a specific job, the need is determining where to find an expert or a reference. The solution may be to design a community of practice (see paragraph 3-19) for Soldiers with similar experiences and expertise to interact with others performing similar duties. Another solution may be to create a knowledge center (see paragraph 3-18) with a document library and a help desk. Design activities may include, but are not limited to, designing knowledge networks that include virtual communities.

KNOWLEDGE NETWORKS

3-9. A knowledge network is social and interpersonal as well as technical. This network type helps units to rapidly share tactics, techniques, and procedures; operational observations, insights, and lessons; and validated, explicit knowledge products. The knowledge network architecture uses the technical network architecture established by the G-6/S-6. It connects subject matter experts and enables individual and organizational learning.

3-10. Designing collaborative environments through knowledge networks for online sharing—including chat rooms, white-boarding, forums, and online virtual teams—are among the tasks associated with the design activity for knowledge networks.

Tactical Web Portals

3-11. Building tactical Web portals to integrate data sources and online collaboration software to enable knowledge networks is an important product. The Battle Command Knowledge System (BCKS) organization at Fort Leavenworth, Kansas, can help KM sections develop their own portals as well as connecting to existing ones.

Battle Command Knowledge System

3-12. BCKS connects various knowledge networks into an increasingly compatible Armywide network. This is done by creating a virtual environment in which Soldiers exchange knowledge. BCKS has begun creating a single access point for units, using Army Knowledge Online (AKO) with embedded unit software, topic feeds from professional forums (including classified forums on AKO-SIPRNET), and many other collaboration capabilities.

Stryker Symposium II – Exploiting Online Collaboration

The first Stryker brigade combat team symposium, held in 2005, was conducted at Fort Lewis, Washington. Travel and per diem payments to participants resulted in a significant expense. In contrast, the symposium conducted in 2006 employed an online collaborative learning environment. This environment facilitated knowledge transfer among all the participating brigades, two deployed and four at home station.

The 2006 symposium was a two-day event with focused dialog in three discussion areas, one for each Army force generation phase. Leaders from brigades with current experience or specific expertise facilitated each discussion. The 2006 symposium comprised 29 echelon and warfighting function subject groups. Participants in multiple locations engaged in virtual dialog using their normal military workstations. Each subject group used peer-facilitated discussions across all warfighting functions in small breakout sessions constituted from the brigade, battalion, and company echelons.

The symposium demonstrated how a geographically dispersed community could engage in dialog using network-based tools. The nearly 400 symposium participants made Stryker Symposium II the largest online collaborative event ever conducted by the Army.

The symposium demonstrated that meaningful knowledge transfer can occur in an online symposium. Based on that knowledge, the Army moved to acquire the hardware and software needed to form a collaborative network to support the Army's distributive learning program. The Stryker University began testing this network when the first Stryker brigade combat team returned from Iraq.

VIRTUAL COMMUNITIES

3-13. Communities are groups of people sharing common concerns, problems, or professional interests. Individuals deepen their knowledge and expertise by regularly interacting with each other. Communities are a natural part of organizational life. These people may not work together every day; rather, they meet because they find value in the interactions. As they spend time together, members share information, insights, and advice. They help each other solve problems. They discuss situations, their aspirations, and their needs. Some communities create tools, standards, generic designs, and publications. Others simply develop tacit knowledge that they share. Members accumulate knowledge and, through this process, form

ties based on learning together. Over time, they develop a perspective on the topic as well as a body of common knowledge, practices, and approaches. Members develop relationships and establish ways of interacting. Communities do not need technology to exist. They are completely social networks; however, technology has allowed communities to form without regard to members' locations. This has broadened their reach and made them more powerful and useful than ever before.

3-14. Army virtual communities take many forms, based on their purpose and the type of interaction among members. (See figure 3-2.) Some focus on accomplishing a specified set of objectives. Others focus on job-related solutions. Some allow access to broad information repositories, link members to leading experts, and facilitate document sharing. Others inform and link groups with which members share interests but not passion.

3-15. Each virtual community has a life cycle and serves a specific purpose. Key to all Army communities are links to organizational objectives and a need for facilitated, managed conversations. Forums that lack these features (most informal networks) tend to focus on nonprofessional areas. The Army does not usually support informal networks. It does support the other types of communities shown in figure 3-2.

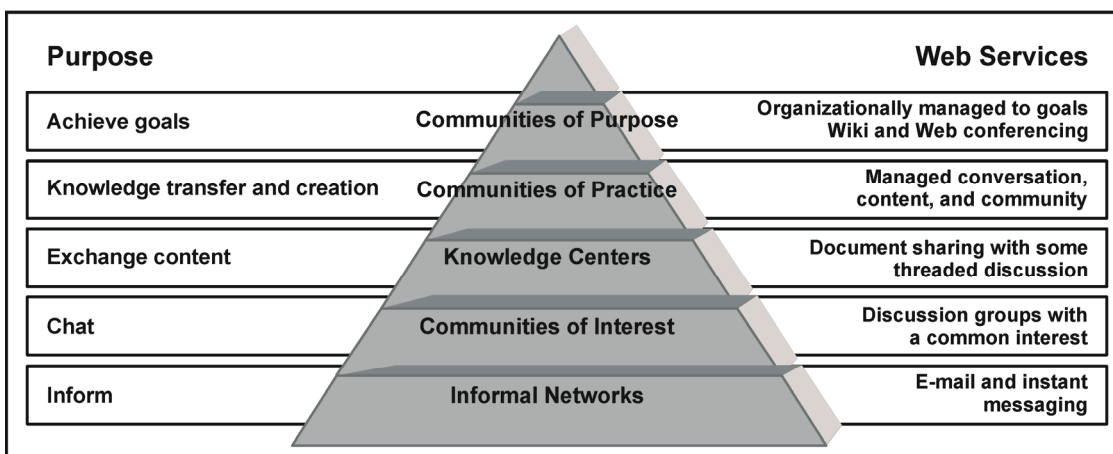


Figure 3-2. Virtual communities

Informal Networks

3-16. *Informal networks* consist of people who interact with one another but have few common bonds or mission focus. These networks allow members to communicate and share information and data informally. E-mail and instant messaging are communications media often used to link informal networks. Using these tools to communicate, people can form large, extensive communities. However, these communities lack strong interpersonal links. Members are tied to the community's focus but have few interpersonal bonds.

Communities of Interest

3-17. A *community of interest* is a group of people who share a common interest or hobby. These people exchange ideas and thoughts about the subject but may know or care little about each other. Nonetheless, participation in a community of interest can be compelling and entertaining. Members may create a community to which they return frequently and remain for extended periods.

Knowledge Centers

3-18. A *knowledge center* is a Web site where individuals share documents and engage in limited conversation concerning them. An AKO unit site is a good example of a knowledge center. The knowledge center may include additional collaborative tools as either links or add-on features. A knowledge center's purpose

is to help people find or share documents related to the center's subject. There is no enduring bond between users other than as members of an organization or interest in the center's subject.

Communities of Practice and Army Professional Forums

3-19. *Community of practice* refers to a group of people with a common interest who collaborate over an extended period to share ideas, find solutions, and build innovations. These groups are voluntary, self-organizing, and self-policing. They build a social network and develop bonds of trust deeper than those of other communities. Many organizations consider the benefits of communities of practice compelling enough to purchase the hardware and software necessary to create and maintain them. Communities of practice are widely seen as cost-effective ways develop organizational knowledge, create new knowledge, stimulate innovation, and share existing tacit knowledge.

3-20. Communities of practice serve a functional purpose as well. Members of the community assist each other by sharing experiences, suggesting strategies, and exchanging information on community-related issues or projects. A key component of communities of practice is the vitality of their conversation, that is, the frequency with which members communicate both within and outside the community's forums. Most research suggests 75 to 80 percent of conversations between members occur outside those forums. Communities of practice are most notable for the bonds between members and the trust members place in one another regarding assistance given and received.

3-21. The Army calls its supported and structured communities of practice *professional forums*. Army professional forums differ slightly from communities of practice found in other professions and industry. They share the characteristics listed in table 3-1. Membership in many professional forums is restricted to members in the practice. Professional forums focus on leader development. They intersect with other knowledge networks, communities of purpose, and knowledge centers through their members and facilitators. They maintain a secure place where candid conversations can occur.

Table 3-1. Characteristics of an Army professional forum

Shares the design principles of communities of practice.
Approved and supported by the Army.
Moderated and facilitated.
Linked to the organization's objectives.
Members do not necessarily share a single, common problem.
Crosses organizational boundaries.
Contains many communities or networks.
Membership is limited to those in the function, echelon, or other common characteristic.
Name is meant to communicate the intent of the professional conversation.
Positive voice for the Army.
Participation is voluntary.
Organizational support is provided but unobtrusive.
Adheres to established standards of implementation and sustainment of the forum.

3-22. Army professional forums maximize collaboration and productivity improvements across Army organizations. These forums allow sharing lessons from training and operations online. The online environment enables those needing the information to learn and apply it in hours rather than months. Professional forums may be one of three types: unit forums, leader forums, and functional forums.

Unit Forums

3-23. Unit forums—such as Cav Net and Ironhorse Net—are networks that support connection and collaboration up and down a unit's chain of command. They are hierarchical and directive. Information is shared immediately after an operation—from the most complex to low-level patrols—and is rapidly distributed to unit members. The KM section normally builds technical and social unit knowledge networks. The section may use BCKS for support in constructing and operating them. The G-6/S-6 builds unit technical networks. However, the KM section makes sure knowledge placed on unit networks is organized. The section also ensures these unit networks are effectively and efficiently used to meet organizational knowledge requirements.

Leader Forums

3-24. Leader forums—such as Company Command Net and NCO Net—are networks that allow Army-wide collaboration among peer leaders. Net forums create and transfer knowledge through conversations among Soldiers with similar leadership roles. Members request assistance or provide feedback by posting unclassified versions of tactics, techniques, and procedures; standing operating procedures; and observations, insights, and lessons from outside the unit. Agencies outside the unit construct these online collaborative spaces. Unit KM sections provide connections to them. Additionally, KM sections monitor how unit members use the networks to ensure compliance with operations security. Should the unit network demonstrate potential value as an Armywide network, its KM section obtains support from BCKS.

Functional Forums

3-25. Functional forums—such as Logistics Net (LOGNET) or S1NET—are networks that support collaboration among Soldiers and Army civilians who share functional duties and skills. These networks allow all ranks to exchange expertise equally in a positive, professional manner. Again, agencies from outside the unit normally develop these networks, while unit KM sections provide connections to them. KM sections also monitor members' use of the networks to ensure compliance with operations security.

Communities of Purpose

3-26. A *community of purpose* is a group of people tasked to accomplish a specific objective. These communities' life span is usually limited to the time required to accomplish the objective. Communities of purpose are valuable for teams and working groups. They are usually hierarchically structured and provide for some level of managed conversation and document sharing. Collaboration within these communities may be synchronous and asynchronous. *Synchronous collaboration* occurs in real time. It requires capabilities similar to those of a chat room, conference call, or video teleconference. *Asynchronous collaboration* occurs when technical capabilities or other factors do not allow all correspondents to simultaneously communicate with each other. Means of effecting asynchronous collaboration include telephone calls, e-mail, and instant messages that do not include all correspondents. Key to a community of purpose is the ability to link expertise rapidly to solve a specific problem. An example of a community of purpose might be an improvised explosive device defeat community formed to identify the best way to counter a specific device type. Other tools communities of purpose may use include desktop video teleconference collaboration tools, repositories, expertise locators, and wikis. (A *wiki* is software that lets users create collaborative Web sites. These sites are also called wikis.)

DEVELOP

3-27. Develop is the step that actually builds the solution derived from the assessment and design steps. The activities establish the social framework for the virtual communities designed in the preceding step and connect them to the technical network. The KM section works with the unit on both aspects of this step.

PILOT

3-28. Pilot is the KM process step in which the solution is tested with the unit to validate it. Activities may include continuous improvement by adjusting to new requirements, training, coaching, collaborative assistance, and team-peer assistance.

COLLABORATIVE ASSISTANCE

3-29. *Collaborative assistance* involves meeting (face to face or virtually) to help a leader or unit that requests assistance. The members share their knowledge with those who requested help. Collaborative assistance is a powerful tool in building intuition skills, making sense of cues and patterns for upcoming missions, and resolving tactical problems. These collaborative assists support knowledge transfer.

TEAM-PEER ASSISTANCE

3-30. One type of collaborative assistance is team-peer assistance. *Team-peer assistance* involves passing knowledge and insights from people outside the unit to unit members via virtual or face-to-face meetings. Mobile training teams are a long-standing form of team-peer assistance. All participants benefit from the dynamic learning environment generated by the interaction between unit personnel and assisting personnel. The assisting personnel return home with a broader knowledge base, while the assisted unit uses the knowledge gained to improve its readiness.

3-31. Units conduct team-peer assists when—

- A unit is about to conduct an operation similar to one that another unit conducted earlier.
- The unit has not conducted a certain type of operation recently, and it needs to know how tactics, techniques, and procedures have changed.
- There is enough time to disseminate the knowledge gained and incorporate it into the plan.

3-32. A team-peer assist does the following:

- Targets a specific technical or operational challenge.
- Identifies possible approaches and lines of thought that have proven effective in practice.
- Promotes sharing of knowledge between the team and Soldiers of the assisted unit.
- Develops strong networks within the assisted unit staff, between the assisted staff and assisting team members, and with Army professional forums.

3-33. Techniques for team-peer assistance visits include the following:

- Plan the team-peer assist early enough to be useful. It should start during planning and continue until mission completion.
- Share outcomes of team-peer assists with other organizations with similar needs.
- Clearly articulate to the assisting team both the problem and the objective of the assist. Be prepared to reframe both during the assist. Give the assisting team context via briefing material.
- Assemble an assisting team tailored to the objectives of the assist. Consider inviting people who have diverse skills and experience, challenge mental models, and offer options and new approaches. Invite people from other disciplines and organizations.
- Offer help, knowledge, and experience. Offer to reduce the organization's workload. Do not criticize the organization or add to its workload.
- Provide enough preparation time to form the peer-assist team and allow it to rehearse the assist.
- Recommend operational changes.
- Prepare an action list at the end of the meeting. Share progress against this list with the participants afterwards.
- Ask participants to consider what they have learned and will apply from the event.

IMPLEMENT

3-34. The fifth step in the KM process is implement. Implement is executing the validated KM solution and integrating it into the unit command and control system and operations. Activities may include the following: virtual right-seat rides; learning before, during, and after operations; storytelling; experiential learning; and expertise development.

LEARNING BEFORE, DURING, AND AFTER OPERATIONS

3-35. Supporting learning by Army organizations is an essential KM function. It is second only to facilitating more effective and efficient use of knowledge in conducting operations. The effectiveness of any operation can be increased through learning. A unit's KM section has the essential function of facilitating learning throughout an operation.

3-36. Learning is the acquisition and development of skills, knowledge, understanding, values, and judgment. It is the product of education and experience. Learning can occur before, during, and after operations. Learning before operations involves studying the applicable operational and mission variables, determining what needs to be learned, and determining how to acquire and disseminate the required knowledge. This learning includes determining who has participated in a similar operation before and what can be learned from that experience. Learning during operations occurs while assessing an ongoing operation. It involves identifying lessons and determining how to apply them. Learning after operations involves recording what happened, identifying what was learned, and determining how to apply lessons to succeeding operations. Learning after operations is based on the after action review (AAR) process. (See appendix B.)

3-37. The goal of learning is to improve unit performance in operations. The results of learning processes should produce learning that—

- Is relevant to current or projected operations.
- Is specific (clear, crisp and precise).
- Can be applied.
- Includes where support can be obtained.

3-38. The KM section establishes techniques and procedures for the staff to use in learning before, during, and after operations. The section organizes knowledge acquired from the learning in a way that makes it available when required and transferrable when needed. The staff creates and applies knowledge during the current operation and succeeding ones. However, the KM section should proactively organize this knowledge and transfer it to users needing it; otherwise, it does not contribute much for the resources invested. Only rarely and by exception does the KM section actually conduct training. Rather, it supports the staff and establishes the procedural and learning environment in which learning can be accomplished. The KM section facilitates knowledge transfer. It is not normally the direct “doer.”

Learning Before Operations

3-39. Military operations never occur in a vacuum; they always occur in a context. Learning before operations usually occurs before deployment. It begins with the commander and staff analyzing the operational environment in terms of the operational variables: political, military, economic, social, information, infrastructure, physical environment, and time. (FM 3-0 discusses the operational variables.) This analysis is essential to establishing the understanding of the projected theater of operations fundamental to battle command. Learning at this point includes lessons learned integration.

3-40. Once a unit has received orders to deploy, it focuses on learning as much as it can about its projected area of operations. The commander determines when to shift the focus of analysis from the operational variables to the mission variables of mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC). At that point, it is feasible to use learning techniques that transfer tacit knowledge from the organization the deploying unit will replace. When technically possible, the deploying unit participates virtually in the deployed unit's postoperations assessments (including mission debriefs and after action reviews).

Learning During Operations

3-41. Learning during operations occurs during all operations process activities. Continuous assessment provides information that is developed into knowledge throughout planning, preparation, and execution. Staff elements maintain this knowledge in their running estimates.

3-42. Learning during planning begins with the commander's visualization and continues throughout the military decisionmaking process. Within this process, the steps of mission analysis and course of action analysis (war-gaming) are those in which learning is most prominent. The KM section provides collaboration sites and spaces for these activities. The section also helps organize the staff products that result so they can be searched or disseminated as necessary.

3-43. Mission analysis produces knowledge about the specific situation described in terms of the mission variables. This step results in a mission statement, initial commander's intent, initial commander's critical information requirements, and initial planning guidance. Intelligence preparation of the battlefield also produces knowledge. Each of its steps produces knowledge about the enemy and environment needed to accomplish the mission. (See FM 34-130.) The KM section organizes the outputs of mission analysis as well as the supporting knowledge products generated by the staff. The section also makes organizational collaborative spaces and connections to external sources of knowledge and expertise available. These capabilities enable collaboration as part of the learning.

3-44. The next step in which learning is prominent is course of action analysis. Here, the action-reaction-counteraction considerations and analysis produce knowledge for all participants. The conclusions suggest to the commander and staff possible outcomes for each of the operation's phases, both those selected and those not selected. Participants learn about the options available during any phase and prepare branches based on the commander's guidance as the time available allows. Finally, course of action analysis produces measures of effectiveness and measures of performance for assessing the operation during preparation and execution. The KM section can arrange for remote services to conduct the war game virtually. War games are by their nature collaborative events. A virtual war game allows this collaboration to occur without bringing all participants to one place. Working with the G-6/S-6, the KM section arranges a system for organizing and storing raw data as well as the knowledge produced (the conclusions and analysis).

3-45. Assessment occurs continuously throughout the operations process. *Assessment* is the continuous monitoring and evaluation of the current situation, particularly the enemy, and the progress of an operation (FM 3-0). Assessment supports not only adjustments to operations but also learning. Learning during operations is based on assessment results. (See FMs 3-0 and 6-0, and FMI 5-0.1 for assessment doctrine.)

3-46. Assessment provides data, information, and knowledge that staffs can analyze. Staffs look for patterns that indicate the need to adjust how the organization applies tactics, techniques, and procedures. This task is key if the organization is to adapt effectively to changes in enemy practices and the operational environment. Staffs consider both immediate and long-term requirements. Assessment uses measures of effectiveness and measures of performance to indicate an operation's progress.

3-47. Learning during operations includes validating or disproving assumptions on which the operation order was based. Assessment supports this learning. This form of learning—checking the validity of assumptions as well as the effectiveness of tactics, techniques, and procedures—is critical to successful adaptation during operations.

3-48. The KM section helps organize the data, information, and knowledge produced by assessment during operations. Organized knowledge can be disseminated more easily to those who require it for assessment. The KM section also provides services to help the staff to create knowledge out of information produced during the operation. They further develop systems for applying this knowledge within the staff.

Learning After Operations

3-49. Learning after operations occurs during lulls between missions and after redeployment. The doctrinal techniques of learning after operations are the mission debrief, the after action review (AAR), and lessons learned development. The KM section normally will not perform these directly. KM Soldiers usually sup-

port their conduct by others in the unit. This support includes collecting and organizing the results so they can be easily disseminated and understood. These learning techniques are well established. However, KM techniques can enhance their effectiveness by codifying the information they collect and facilitating its dissemination.

Mission Debriefs

3-50. Mission debriefs occur immediately after a unit completes a mission. They capture information before Soldiers forget it. Higher headquarters personnel normally perform these debriefs. Mission debriefs may include all unit members and attached personnel, especially at the lowest echelons. Higher echelon debriefs may include only unit leaders. Normally, mission debriefs are oral. Sometimes a written report is required. Information in written reports should include—

- Size and composition of the unit conducting the operation.
- Mission statement, including the form of maneuver or task (for example, patrol, raid), location, and purpose.
- Departure and return times.
- Routes used.
- Detailed description of the terrain and enemy and civilian activities.
- Results of any contact.
- Personnel and equipment status at the end of the operation.

After Action Reviews

3-51. The AAR is designed to provide feedback on performance during exercises by involving participants in the training diagnostic process. Involving participants increases and reinforces learning. Although the AAR was originally developed for training, it can be applied effectively to learning after operations. In both cases, the AAR facilitator guides participants in identifying deficiencies and seeking solutions. This structured review process allows participants to discover for themselves what happened, why it happened, and how it can be done better. (See appendix B for ways to adapt the training AAR for use after operations.) The AAR is a professional discussion that requires participants' active participation. The AAR is not a critique. It has the following advantages over a critique:

- Focuses directly on key, operation-order-derived objectives.
- First addresses how well the unit accomplished the mission (measures of effectiveness); addresses meeting Army standards (measures of performance) only if failure to meet standards was a factor in mission failure or resulted in unnecessary losses.
- Encourages participants to discover important lessons themselves. (Using leading questions is one way to do this; see paragraph B-42.)
- Allows a large number of Soldiers and leaders to participate. More of the operation can be recalled. More perspectives, observations, insights, and lessons can be shared.

Lessons Learned Development

3-52. *Lessons learned* are validated knowledge and experience derived from observations and the historical study of military training, exercises, and combat operations that leads to a change in behavior at either the tactical ([standing] operating procedures; tactics, techniques, and procedures; and so forth), operational, or strategic level or in one or more of the Army's DOTMLPF [doctrine, organization, training, materiel, leadership and education, personnel, and facilities] domains (AR 11-33). The organization may conduct its own program for developing lessons learned, or it may use a collection and analysis team from the Center for Army Lessons Learned (CALL).

3-53. As a learning organization, the Army strives to keep its doctrine relevant to the security environment and to actual or potential enemies. KM can help incorporate knowledge gained during operations into unit practices and doctrine. This type of KM begins with collecting observations, insights, and lessons from operations. (The AAR is an important collection technique.) Leaders then assess these lessons, develop solu-

tions to identified problems, and apply solutions to operations as appropriate. If the solutions succeed in improving performance, they constitute lessons learned. These may be organized locally as well as disseminated to Army organizations that can use them. In many cases, these lessons may be significant beyond just the unit that developed them. Commanders and other leaders, while assessing operations or at the conclusion of any AAR, may identify knowledge to share with the rest of the Army and incorporate into their own operations.

3-54. Conducting AARs and integrating lessons from those AARs into ongoing operations are command responsibilities. Units share their important or significant observations, insights, and lessons with the rest of the Army by sending them to CALL at Fort Leavenworth, Kansas. CALL shares this information with the Army through various electronic and paper products.

3-55. Although CALL has the lead to gather and disseminate lessons learned, it cannot cover every warfighting function or operation without help from commanders and units. Branch proponents work with deployed unit commanders to gather lessons in general and lessons about warfighting in particular. They make these available either as contributions to CALL's database and Web site or through their own Web sites and repositories.

LEARNING TECHNIQUES

3-56. KM learning techniques emphasize creating the mental framework necessary to understand and apply tacit knowledge. Expertise based on firsthand experiences and insights drawn from tacit knowledge provides Soldiers with a frame of reference to capture and use complex, experience-based knowledge. When Soldiers cannot gain first-hand experience before operations, KM learning techniques provide virtual conditions that simulate those experiences. Scenarios experienced through guided practice provide a mental framework to which Soldiers can relate experiences. These simulated experiences develop or build on existing experiences needed to acquire new and more complex knowledge. The simulated experiences created as a result of knowledge transfer in communities of practice, judgment exercises, and decisions are critical to helping Soldiers retain the knowledge.

3-57. The following discussion addresses three learning techniques that have proven successful in enabling learning before, during, and after operations. Leaders use the technique that best helps Soldiers master the knowledge being transferred.

Virtual Right-Seat Ride

3-58. The virtual right-seat ride is a technique that uses collaborative tools to allow geographically separated Soldiers and units to interact and learn. Soldiers use the virtual right-seat ride to work with deployed forces to learn the duties they will assume on deployment. This technique allows commanders and staffs to interact with deployed counterparts throughout all Army force generation phases. The interaction occurs in real- or near real-time. That makes for faster knowledge transfer. It also gives recipients greater confidence in the knowledge's validity. Leaders can then tailor their predeployment training to the anticipated mission and operational environment. This helps them accelerate deployment preparation.

3-59. The virtual right-seat ride can be enabled by BCKS tools. Other tools include Army Battle Command System components, networked and embedded training, AKO, AKO-SIPRNET, video or voice teleconferences, and other Web-based applications. A virtual right-seat ride can include several subordinate techniques. Table 3-2 (page 3-12) lists some examples.

Table 3-2. Virtual right-seat ride techniques

Establish an online collaborative environment to facilitate the following forms of knowledge transfer:

- Learning situational awareness, latest insights, and current best practices.
- Understanding culture and organization in the projected area of operations.
- Learning about the next two higher echelons' plans.
- Monitoring deployed units' operations.
- Conducting personal discussions via AKO-SIPRNET, secure phone, and secure video teleconferencing.

Practice team-peer assists on issues critical for mission success.

Perform the following tasks based on actual situations in the projected area of operations:

- Build a codified knowledge base by transferring relevant content from the deployed unit to the preparing unit.
- Practice performing the military decisionmaking process.
- Rehearse battle synchronization.
- Rehearse staff battle drills.
- Conduct tactical decision exercises.
- Complete simulation and master-event-list simulated exercises and vignettes.
- Build relevant expertise through networked games and digital stories.

Facilitate warfare, leadership, learning organization seminars and workshops.

Create knowledge about the friendly forces and civil considerations in the area of operations, including topics such as the following:

- Civil-military relations.
- Family, community, and tribal information.
- Security force information.

Refine standing operating procedures based on a command post exercise using the deployed partner organization's common operational picture and orders.

3-60. Virtual right-seat rides have several benefits. They can—

- Build virtual experience that contributes to Soldiers' ability to make intuitive decisions. (FM 6-0 discusses intuitive decisionmaking.)
- Help leaders resolve tactical problems, using reachback resources.
- Transfer experiences and lessons.
- Shorten time required for a unit to be ready for operations upon arrival in the area of operations.
- Help Soldiers and units integrate knowledge about the projected area of operations.
- Develop knowledge that improves situational understanding from the moment a unit arrives in the area of operations.
- Improve performance during rotation into and out of the area of operations.

Virtual Right-Seat Ride

When the 3d Brigade Combat Team (Stryker), 2d Infantry Division, deployed to combat in Iraq, two things quickly became apparent. First, existing communications solidly connected the battle command training center facilities at Fort Lewis, Washington, with the 3d Brigade in Iraq. Second, during the more than year-long preparation, strong personal relationships had developed between the training center staff and the brigade's Soldiers. Coupling robust technical communications and networking capabilities with strong personal relationships led to an unprecedented reachback capability between Fort Lewis and its deployed brigade combat team.

Important information began to flow back to Fort Lewis from the 3d Brigade. Communications media included the brigade's tactical Web page, personal classified e-mail messages, and secure video teleconferences and telephones. The information was analyzed and observations, insights, and lessons drawn based on the friendly and enemy tactics and techniques. This knowledge was immediately incorporated into the training of 1st Brigade Combat Team (Stryker), 25th Infantry Division, which was being formed at Fort Lewis.

As 1st Brigade neared deployment, its members began using battle command training center links to learn about their projected area of operations. The training center contractors facilitated communication between members of the 1st and 3d Brigades. This interaction allowed the units to conduct staff training exercises based on actual, ongoing operations. When 1st Brigade deployed to replace 3d Brigade, it was ready to conduct operations immediately. The commanding general of Multinational Corps-Iraq commented that 1st Brigade was the best prepared unit he had seen arrive in Iraq.

Storytelling

3-61. Storytelling helps communicate complicated ideas, situations, and experiences. It helps Soldiers and units understand and recreate a mental framework for learning. Storytelling enables an organization to see itself differently, make decisions, and change behaviors in accordance with these new perceptions, insights and identities.

3-62. Technology enables storytelling as learning opportunities in the form of simulations and digital stories. Stories place users in a setting and force them to confront situations that may otherwise come for the first time on a battlefield. Stories are turned into decision games and judgment exercises to improve situational understanding.

Experiential Learning

3-63. Experiential learning is a process for learning through action. Trainers, coaches, and mentors engage with learners in direct experience and focused reflection to increase knowledge and develop cognitive skills.

3-64. Experiential learning uses various tools: among them, decision games, simulations, role playing, and stories. It develops Soldiers' judgment by placing them in situations likely to be encountered during operations. Experiential learning is not training in that it does not develop an automatic response to a given situation; more often, it is used to develop the cognitive skills required for how to think about a situation and solve problems. Experiential learning places Soldiers at the center of the learning.

3-65. Unit leaders become coaches and facilitators. They connect Soldiers as learners with ideas, content, and expertise. Learners develop deep understanding and a capacity for learning new concepts through guided, deliberate practice.

Plato's Diner

Plato's Diner is an experiential learning exercise developed by 3d Brigade Combat Team (Stryker), 2nd Infantry Division, in partnership with the I Corps Battle Command Training Center. It is designed to immerse leaders in the uncertain environment created by sectarian violence overlaid on a well organized, well funded, externally supported insurgency. The exercise uses computer simulation scenarios incorporating vignettes developed by the Stryker Center for Lessons Learned based on actual combat. Plato's Diner accelerates the acquisition of experience needed by brigade and battalion command teams. Such experience enables intuitive decision-making critical to battle command. Leader teams are challenged through repetitive immersion in virtual scenarios. These constructs are derived from contemporary combat situations that stimulate multiple senses. The situations let leaders practice battle command under pressure. Results confirm that participants are better able to—

- Know intuitively if to decide, what to decide, and when to decide.
- Anticipate the consequences of decisions for their unit and team.
- Proficiently communicate decisions while under stress and confidently act to effect speed, surprise, and focused action by their units.

The Plato's Diner leader professional development exercise is accessible on [StrykerNet's leader development zone](#).

Appendix A

Content Management

Content management focuses on how content—in both digital and nondigital media—is managed throughout the five knowledge management process activities. It differs from similar information management activities in that it concerns knowledge products rather than data or information. Effective content management provides users with immediate and secure access to trusted, relevant knowledge products. This appendix elaborates on the discussion of content management in chapter 3. It also contains content management techniques for individuals, teams, and organizations.

CONTENT MANAGEMENT DESIGN AND DEVELOPMENT TASKS

A-1. Content management design includes determining where content is located, who created it or is responsible for updating or deleting it, the format (structured or unstructured), the file types (defined by their file extension), and who uses it for what purpose. Content managers conduct interviews with the commander, subordinate leadership, primary and special staff, noncommissioned officers, and functional area subject matter experts. Content managers determine what content must be created and managed on the secure Internet protocol router network (SIPRNET). They use surveys, a detailed audit, or a content map to conduct the inventory. Table A-1 (page A-2) lists specific content management design and development tasks.

CONTENT MANAGEMENT IMPLEMENTATION TASKS

A-2. Content management organizes information and knowledge products for storage and transfer. It also makes content more readily available for collaborative knowledge creation. Implementing content management involves the following four task areas: create, apply, organize, and transfer.

CREATE

A-3. Content management provides procedures for identifying content within newly created knowledge. It also facilitates collaboration by broadening file availability, making it easier to share knowledge files.

A-4. Knowledge products move through several stages during their life cycle. Initially, one or more authors create a knowledge product. Over time others may change that product's content. One or more individuals may provide oversight and approve the content for transfer or storage. Creation further includes submitting a product for approval or sending it to other agencies for adding to or revising its content. Some products' content is updated periodically.

A-5. A critical aspect of content management is managing versions of a product as the product evolves. Authors and contributors may need to return to older versions of products. This situation may occur due to a process failure or an undesirable series of changes. Effective content management procedures allow easy access to a product's previous versions while keeping them separate from the current version.

A-6. Input for products under development can be obtained in two ways: The product can be sent individually to others for review; or the product can be posted to a Web page and a group of people granted access to it.

A-7. Upon approval, the product is disseminated. Dissemination may take many forms. However, all of them fall into the same two categories mentioned in paragraph A-6. Products can be sent electronically or

by some form of messenger or messenger service. Alternatively, the product can be stored on an information system and a group of people granted access to it.

Table A-1. Content management design and development tasks

Determine the essential sources of knowledge, including those located outside the unit. Identify content needed, when it is needed, the desired format, and how it must be made available for the unit to accomplish its mission.

Develop a taxonomy or structure for storing and managing content.

Determine where and how content will be created, organized, applied, and transferred.

Develop a process for organizing content so it can be discovered and managed throughout its life cycle. This includes adding identifying features within the content to allow discovery and retrieval by users, and tracking by managers.

- Determine who manages the documents.
- Determine what technology is available for management of content.
- Develop templates for storage and presentation of documents.
- Develop content management processes for internal management.
- Determine if the unit or organization will manage and identify their documents.
- Determine roles and access rights for content.

Determine workflow for content.

- Determine if documents are needed by a larger audience.
- Send appropriate documents to the Battle Command Knowledge System for conversion to other mark-up languages that support wider dissemination.
- Determine if the unit or organization needs different mark-up language capabilities.
- Tag products to facilitate discovery.
- Determine a timetable for content validity.
- Standardize content as much as possible. Use templates to ensure all data are entered properly.

Confirm control measures for physical security, operations security, classified documents, and dissemination with the operations security officer.

ORGANIZE

A-8. Organizing includes archiving, labeling, and identifying:

- *Archiving* consists of moving outdated and irrelevant knowledge from active status to an inactive status, based on rules and policies.
- *Labeling* takes content that is no longer relevant, archives it, and keeps it separate from current knowledge products.
- *Identifying* involves determining whether to archive or dispose of content. Subject matter experts do this by reviewing content that exceeds a specified date or does not meet usage benchmarks. Based on this review they determine whether regulations require retaining the content or if it can be destroyed.

A-9. The disposition of electronic records is determined as early as possible in the life cycle of the knowledge process. (Preserve information contained in any organizational information system, e-mail, command-specific systems, and systems maintained in an organizational office environment as specified in ARs 25-1 and 25-400-2.)

APPLY

A-10. Making content accessible to those who need to apply it is the primary purpose of content management. These content management tasks focus on the ability to publish the content to a repository and support access to it by staff members needing it for use. By identifying content for ease of retrieval by multiple users, content management further allows collaboration in applying knowledge.

A-11. To assist the staff, the KM section could adjust the KM architecture to identify commander's critical information requirements for a specific operation. They might also develop specific social networks focused on answering specific requirements.

TRANSFER

A-12. Transferring relevant information to those who need it, based on an analysis of the commander's critical information requirements and other information requirements, is a major content management task. The KM section constantly examines unit information requirements, actively searches out answers, and sends them to users. The section incorporates search and retrieval beyond the immediate unit. It organizes this content in a repository that allows more effective and efficient transfer of knowledge.

A-13. Content is organized or modified in a manner amenable for transfer and effective application. In operations, content management focuses primarily on organizing knowledge to answer information requirements. KM section members identify requirements, make adjustments as needed to knowledge products that answer them, and transfer the content to requesters.

CONTENT MANAGEMENT TERMS

A-14. A *repository* is a central place or known location where data is stored and maintained. It does not necessarily have to be a single location, but it provides access to all data. Before computers were developed, repositories were file cabinets or desks.

A-15. A *taxonomy* is a system of describing, categorizing, and naming data, and placing it in categories to allow retrieval by users. It is a guiding structure or framework that organizes knowledge into meaningful groups while establishing context-sensible relationships between them. The most common methods of arranging the data are by subject or format. A taxonomy may be thought of as a table of contents.

A-16. *Metadata* is generally defined as "data about data." In content management, it is "information about objects." (Object types include documents, images, and other information or knowledge products.) If no metadata capability is available, users can still share the information. The information can be placed in folders, or there can be a plan for how to share the information.

A-17. A *metric* is a parameter or measure for quantitative and periodic assessment of a process. Assessments can be either direct or indirect. Direct assessments measure the actual metrics. Indirect assessments measure indicators. The most important characteristic of a KM metric is whether it can tell how effectively the knowledge is contributing to understanding and decisionmaking. A secondary one is whether knowledge is being shared or used.

A-18. The *evolutionary life cycle* describes the posting, dissemination, and archiving of knowledge. Basically, all knowledge goes through a life cycle similar to the following: placing knowledge so people can use it, disseminating knowledge to those who need it, archiving knowledge for future reference, and destroying or removing knowledge products when they no longer apply.

CONTENT MANAGEMENT PRINCIPLES

A-19. The following principles represent the most important factors affecting effective content management. They are not a checklist. Rather, they summarize the characteristics of successful content management efforts. Content managers consider them in all situations; however, the principles apply differently, based on the factors present.

MAKE KNOWLEDGE PRODUCTS VISIBLE

A-20. Establish a repository where cleared users have easy access to knowledge products. Post a product before processing it when there is a need for immediate dissemination or access to the data asset. If a piece of information is critical to mission accomplishment or is time sensitive, post it first and assign it to a category later. (Pass information that answers a commander's critical information requirement to the commander immediately.) Make sure the information is reliable. Do not post rumors or speculation.

A-21. Create and maintain data asset catalogs that are searchable by user-friendly applications. Make sure the information is easy to find, regardless of where it is stored. Do not bury information where Soldiers have to search randomly for it. Time is precious during operations.

A-22. Conduct a data asset inventory to identify and prioritize data assets that support the unit's mission and near-term initiatives. Have a way to highlight items that are most important to the mission. For example, the content manager should highlight knowledge products from past operations containing information that might pertain to upcoming operations.

MAKE KNOWLEDGE PRODUCTS ACCESSIBLE

A-23. Balance accessibility with providing security. An area that provides security must also allow access to those who need the information. Most organizations have a public and a private Web site. Much of what the KM section provides relates to operations and needs to be protected on the private site.

A-24. User roles and data asset categorization, dissemination controls, and rights ensure proper access. Protect the repository behind a log-in firewall instead of posting information to a public site.

A-25. Consider the effects of file size and type of each data asset. Work with information technology personnel to ensure the programs can handle the objects being stored. Ensure the shared server is adequate.

MAKE KNOWLEDGE PRODUCTS UNDERSTANDABLE

A-26. Use a taxonomy for shared knowledge that makes sense to Soldiers. Soldiers will not take the time to search through a site they do not understand. Employ common terms when determining product categories. Try to use doctrinal language. Make sure the taxonomy is easy to read, so Soldiers can get the information they need. The effect of site design on users may be compared to shopping for a power tool. If shoppers see the instructions for using the product as too complicated, they will not buy it. Understandable format is key to a usable data asset.

MAKE KNOWLEDGE PRODUCTS RELIABLE

A-27. Reliability depends in part on information assurance. The repository should provide secure storage while allowing access by authorized users with a user name and password. Secure storage protects products from being corrupted by electronic attack. It also reduces the chance of compromising classified information.

A-28. Assign source data to each data asset in the repository. (Source data includes the author or publisher, contributors, date created, and date the asset expires or is no longer valid.) Tag items to verify trustworthiness. Complete source data gives readers confidence in the product's accuracy. Ensure only current or valid products are accessible.

A-29. Assign a security classification, dissemination controls, and rights (privacy, intellectual property and copyright) to each data asset in the repository. Do not post copyrighted materials. Obtaining copyright releases during operations is too hard to be worth the trouble.

SUPPORT DATA INTEROPERABILITY

A-30. Determine the level of standardization of knowledge products required to support searches by a variety of users. Soldiers must be able to access knowledge products. Units should be able to obtain access with the search engine they have available.

BE RESPONSIVE TO SOLDIERS

A-31. Provide secure, Web-enabled access to users regardless of their location and available bandwidth. Allow Soldiers to search, discover, and retrieve data assets no matter where the repositories are. Develop processes to match user needs to repository content. Categorizing objects aids in achieving this principle.

A-32. Establish metrics to track user behavior, identify trends, and improve service quality. Develop means to monitor how and to what extent knowledge is being transferred (for example, hits on a site, feedback, and participation in discussions).

A-33. Provide a feedback mechanism to involve users in improving the knowledge strategy. Techniques include periodic surveys, feedback forms, after action reviews, and engaging Soldiers directly.

CONTENT MANAGEMENT TECHNIQUES

A-34. Tables A-2 through A-4 list content management techniques for individuals, teams, and organizations.

Table A-2. Content management techniques for individuals

Compile a point of contact list.
Use existing software capabilities.
Create files and a folder for every task, project, or topic.
Design a personal file structure using a simple taxonomy.
Take written notes. Compile a log of every conversation and meeting.
Develop personal learning objectives for every meeting or conference.
Build smart books, such as continuity books, for tasks.
Develop checklists for each duty.
Send e-mail with links to Web sites or personal folders. Do not send e-mails with attached documents.

Table A-3. Content management techniques for teams

Follow meeting management practices.
Compile a team, unit, or group point of contact list.
Incorporate a meeting review into all meetings. At the beginning of every meeting, state that someone will be asked to give the five-minute review or summary of the meeting at its end.
Develop a file structure taxonomy.
Develop content management processes and roles.
Determine who tracks where everything is stored.
Develop templates for various teams, military occupational specialties, or units.
Create templates (in an electronic environment) or forms (in a paper-based environment) for reports and other recurring information requirements.
Use information management software tools and capabilities to organize and integrate tasks and groups.

Table A-4. Content management techniques for organizations

All techniques for individuals and teams.

Use the Battle Command Knowledge System's content management mark-up language conversion tools to identify and manage content.

Determine content validity timelines.

Appendix B

After Action Reviews During Operations

This appendix discusses how to modify the after action review for use as a learning technique after executing operations. Commanders modify these steps as necessary to fit the available time.

GENERAL

B-1. FM 7-1 contains doctrinal procedures for conducting after action reviews (AARs) during training. Leaders can use similar procedures for AARs during operations. Two types of AAR exist: formal and informal. Normally, only informal AARs are possible during execution of operations. Commanders normally conduct formal AARs after accomplishing a mission. (TC 25-20 also addresses AARs during training.)

B-2. Leaders plan formal AARs when they finalize an operation or otherwise realize they have the requirement, time, and resources available to conduct an AAR. Formal AARs require more planning and preparation than informal AARs. They require site reconnaissance and selection; coordination for aids (such as terrain models and large-scale maps); and selection, setup, and maintenance of the AAR site. During formal AARs, the AAR facilitator (unit leader or other facilitator) provides an overview of the operation and focuses the discussion on topics the AAR plan identifies. (See paragraphs B-11 through B-18.) At the end, the facilitator reviews key points and issues and summarizes strengths and weaknesses identified and discussed.

B-3. Leaders use informal AARs as on-the-spot coaching tools while reviewing Soldier and unit performance during or immediately after execution. Informal AARs are extremely important, as they involve all Soldiers. Those AARs provide immediate feedback to Soldiers, leaders, and units after execution. Ideas and solutions leaders gathered during informal AARs can be applied immediately as the unit continues operations. Successful solutions can be identified and transferred as lessons learned.

B-4. AARs during operations include the same four parts as AARs during training:

- **Review what was supposed to happen.** The facilitator, along with the participants, reviews what was supposed to happen. This review is based on the commander's intent for the operation, unit operation or fragmentary orders, the mission, and the concept of operations.
- **Establish what happened.** The facilitator and participants determine to the extent possible what actually happened during execution. Unit records and reports form the basis of this determination. An account describing actual events as closely as possible is vital to an effective discussion. The G-2/S-2 provides input about the operation from the enemy's perspective.
- **Determine what was right or wrong with what happened.** Participants establish the strong and weak points of their performance. The facilitator guides discussions so conclusions participants reach are operationally sound, consistent with Army standards, and relevant to the operational environment.
- **Determine how the task should be done differently next time.** The facilitator helps the chain of command lead the group in determining how participants might perform the task more effectively. This results in organizational and individual learning that can be applied to future operations. If successful, this learning can be disseminated as lessons learned.

B-5. Leaders understand that not all tasks will be performed to standard. In their initial planning, they allocate time and other resources for retraining after execution or before the next operation. Retraining allows participants to apply the lessons from AARs and implement corrective actions. Retraining should be

conducted at the earliest opportunity to translate observations and evaluations from AARs into performance in operations. Commanders ensure Soldiers understand that training is incomplete until the identified corrections in performance have been achieved. Successful lessons can be identified as lessons learned and disseminated.

B-6. AARs are often tiered as a multiechelon leader development technique. Following a session involving all participants, senior commanders may continue the AAR with selected leaders as an extended professional discussion. These discussions usually include a more specific review of leader contributions to the operation's results. Commanders use this opportunity to help subordinate leaders master current skills and prepare them for future responsibilities. AARs are opportunities for knowledge transfer via teaching, coaching, and mentoring.

B-7. Commanders conduct a final AAR during recovery after an operation. This AAR may include a facilitator. Unit leaders review the operation and discuss its overall conduct. Weaknesses or shortcomings identified during earlier AARs are identified and discussed. If time permits, the unit conducts training to correct these weaknesses or shortcomings in preparation for future operations.

B-8. Lessons can be disseminated in at least three ways. First, participants may make notes to use in re-training themselves and their sections or units. Second, facilitators may gather their own and participants' notes for collation and analysis before dissemination and storage for others to use. (The Center for Army Lessons Learned can provide trained facilitators.) Dissemination includes forwarding lessons to other units conducting similar operations as well as to doctrinal proponents and generating force agencies. Third, units should publicize future successful applications of lessons as lessons learned.

PLANNING, PREPARING, AND EXECUTING AFTER ACTION REVIEWS

B-9. Effective AARs require planning and preparation. During planning for an operation, commanders allocate time and resources for conducting AARs and assign responsibilities for them. The amount and level of detail needed during planning and preparation depends on the type of AAR and the resources available. The AAR process has four steps:

- Step 1—Plan.
- Step 2—Prepare.
- Step 3—Execute.
- Step 4—Follow-up (using AAR results).

B-10. AARs during operations differ from those during training in the lack of observer controllers or observer trainers. During operations, there are no dedicated collectors for data and observations. Instead, assessments of the operation's progress generated by the unit form the basis for the AAR.

PLANNING AFTER ACTION REVIEWS

B-11. An AAR plan provides the foundation for a successful AAR. Commanders develop a plan for each AAR as time allows. The plan specifies—

- Who will provide information and who will conduct the AAR.
- Aspects of the operation the AAR should evaluate.
- Who will attend the AAR.
- When and where the AAR will occur.
- Aids to be used for the AAR.

B-12. Commanders or facilitators use the AAR plan to identify critical places and events that must be covered to provide a useful AAR. Examples include the decisive operation, critical transitions, and essential tasks. The AAR plan also includes who will address each event.

B-13. Commanders specify what they want to accomplish with the AAR and what the AAR will address. The operation order and Army Universal Task List may provide tasks and conditions. Measures of effec-

tiveness and some measures of performance are extracted from the order. The Army Universal Task List contains measures of performance.

B-14. Copies of the operation order and daily journal are given to the senior facilitator. The senior facilitator distributes these to AAR facilitation team members. Team members review and use them to identify critical events and times for discussion during the AAR.

Scheduling After Action Reviews

B-15. Commanders plan for an AAR at the end of each operation whenever possible. Platoon-level AARs require 30 to 45 minutes, company-level one hour, battalion-level and above two hours. Quality AARs help Soldiers receive better feedback on their performance and remember the lessons longer.

Determining Attendance

B-16. The AAR plan specifies who the commander wants to attend the AAR. At each echelon, an AAR has a primary set of participants. At squad and platoon levels, all Soldiers should attend and participate. At company and higher levels, it may not be practical to have everyone attend because of operations or training. In this case, unit commanders, other unit leaders, and other key players may be the only participants. Facilitators may recommend additional participants, based on their observations.

Choosing After Action Review Aids

B-17. Appropriate aids add to an AAR's effectiveness; however, use an aid only if it makes the AAR better. Aids should promote learning and directly support discussion of the operation. Dry-erase boards, video equipment, terrain models, enlarged maps, and unit information systems are all worthwhile under the right conditions. Terrain visibility, group size, suitability to task, and availability of electric power are all considerations when selecting AAR aids.

Reviewing the After Action Review Plan

B-18. The AAR plan is only a guide. Commanders and facilitators should review it regularly to make sure it still applies and meets the unit's needs. The plan may be adjusted as necessary, but changes take preparation and planning time away from facilitators and leaders. The AAR plan allows facilitators and leaders as much time as possible to prepare.

PREPARING FOR AFTER ACTION REVIEWS

B-19. Preparation is key to effectively executing any plan. Facilitators begin to prepare for an AAR before the operation and continue preparations until the actual event. Facilitators announce to unit leaders the starting time and location as soon as possible after these are set. Doing this lets unit leaders account for personnel and equipment, perform postoperation actions, and move to the AAR site while facilitators are preparing and rehearsing.

Reviewing Objectives, Orders and Plans, and Doctrine

B-20. Facilitators review the unit's mission before the AAR. The mission's objectives form the AAR's focus and the basis for observations. Facilitators review current doctrine, technical information, and applicable unit standing operating procedures to ensure they have the tools needed to properly guide discussion of unit and individual performance. Facilitators read and understand all warning, operation, and fragmentary orders issued before and during execution to understand what the commander wanted to happen. The detailed knowledge that facilitators display as a result of these reviews gives added credibility to their comments.

Identifying Key Events

B-21. Facilitators identify critical events and ensure they collect data on those events or identify personnel who observed them. Examples of critical events include—

- Issuance of operation and fragmentary orders.
- Selected planning steps.
- Contact with opposing forces.
- Civil security attacks during stability operations.
- Passages of lines and reliefs in place.

Collecting Observations

B-22. Facilitators need a complete picture of what happened during the operation to conduct an effective AAR. Each facilitator for subordinate, supporting, and adjacent units provides the senior facilitator with a comprehensive review of collected data on their organizations and the impact those units had on the unit accomplishing its mission.

B-23. The senior facilitator receives input on the enemy from the G-2/S-2. The enemy's perspective is critical to identifying why a unit succeeded or not. During formal AARs, the G-2/S-2 briefs what is known of the enemy's plan and intent to set the stage for discussing what happened and why it happened. Obtaining this data after operations is extremely difficult; therefore, these observations often are treated as assumptions rather than facts.

B-24. During their review, facilitators accurately record what they learn about events by time sequence to avoid losing valuable information and feedback. Facilitators use any recording system that is reliable (notebooks and laptops, among others), sufficiently detailed (identifying times, places, and names), and consistent.

B-25. Facilitators include the date-time group of each observation so it can be easily integrated with other facilitators' observations. This practice provides a comprehensive and detailed overview of what happened. When facilitators have enough time, they review their notes and fill in any details not written down earlier.

B-26. One of the most difficult facilitator tasks is determining when and where to obtain information about the operation or the aspects of it selected for the AAR. Facilitators remain professional, courteous, and low-key at all times.

Organizing an After Action Review

B-27. Once facilitators have gathered all available information, they organize their notes chronologically to understand the flow of events. They select and sequence key events in terms of their relevance to the unit's mission and objectives. This helps them identify key discussion and teaching points.

B-28. An effective AAR leads participants to discover strengths and weaknesses, propose solutions, and adopt a course of action to improve future operations. Facilitators organize an AAR using one of three techniques: chronological order of events; warfighting functions; or key events, themes, or issues.

Chronological Order of Events

B-29. A chronological order of events is logical, structured, and easy to understand. It follows the flow of the operation from start to finish. Covering actions in the order they occurred helps Soldiers and leaders better recall what happened. This technique usually cannot cover all actions, only critical events.

Warfighting Functions

B-30. An AAR using this technique discusses the operation in terms of how each warfighting function contributed to the operation across all its phases. The warfighting functions technique is good for identifying systemic strengths and weaknesses. It is useful also for staff sections' learning.

Key Events, Themes, or Issues

B-31. This technique focuses the discussion on critical operational events that directly support achieving the AAR's objectives. This technique works well when time is limited.

Selecting After Action Review Sites

B-32. AARs should occur at or near where the operation occurred. Leaders should identify and inspect the AAR site and prepare a diagram showing placement of aids and other equipment. A good site minimizes wasted time by allowing rapid assembly of key personnel and positioning of aids. For larger units, this might not be possible for the whole operation. However, higher echelon AARs may include visits to selected actual sites to provide learning opportunities.

B-33. The AAR site should let Soldiers see the terrain where the operation occurred or accurate representations of it. If this is not possible, facilitators find a location that allows Soldiers to see where the critical or most significant actions happened. Facilitators should have a map or other representation of the area of operations detailed enough to help everyone relate key events to the actual terrain. The representation may be a terrain model, enlarged map, or sketch. Facilitators also require a copy of the unit's graphics or recovered displays of the situation from the information systems databases.

B-34. Facilitators provide a comfortable setting for participants by encouraging Soldiers to remove helmets, providing shelter, and serving refreshments. These actions create an environment where participants can focus on the AAR without distractions. Participants should not face into the sun. Key leaders should have seats up front. Vehicle parking and equipment security areas should be far enough away from the AAR site to prevent distractions.

Rehearsing

B-35. After thorough preparation, the facilitator reviews the agenda and prepares to conduct the AAR.

EXECUTING AFTER ACTION REVIEWS

B-36. Facilitators start an AAR by reviewing its purpose and sequence: the ground rules, the objectives, and a summary of the operation that emphasizes the functions or events to be covered. This ensures that everyone present understands what the commander expects the AAR to accomplish.

Introduction and Rules

B-37. The following rules apply to all AARs. Facilitators emphasize them in their introduction.

- An AAR is a dynamic, candid, professional discussion that focuses on unit performance. Everyone with an insight, observation, or question participates. Total participation is necessary to maintain strengths and identify and correct deficiencies.
- An AAR is not a critique. No one—regardless of rank, position, or strength of personality—has all the information or answers. AARs maximize learning benefits by allowing Soldiers to learn from each other.
- An AAR assesses weaknesses to improve and strengths to sustain.

B-38. Soldier participation is directly related to the atmosphere created during the introduction. Effective facilitators draw in Soldiers who seem reluctant to participate. The following techniques can help create an atmosphere conducive to maximum participation:

- Reinforce the idea that it is permissible to disagree.
- Focus on learning, and encourage Soldiers to give honest opinions.
- Use open-ended and leading questions to guide the discussion.
- Facilitators enter the discussion only when necessary.

Review of Objectives and Intent

B-39. After the introduction, facilitators review the AAR's objectives. This review includes the following:

- A restatement of the events, themes, or issues being reviewed.
- The mission and commander's intent (what was supposed to happen).
- The enemy's mission and intent (how the enemy tried to defeat the force).

B-40. The commander or a facilitator restates the mission and commander's intent. Facilitators may guide the discussion to ensure that everyone present understands the plan and intent. Another technique is to have subordinate leaders restate the mission and discuss the commander's intent. Automated information systems, maps, operational graphics, terrain boards, and other aids can help portray this information.

B-41. Intelligence personnel then explain as much of the enemy plan and actions as they know. The same aids the friendly force commander used can help participants understand how the plans related to each other.

Summary of Events (What Happened)

B-42. The facilitator guides the review, using one of the techniques in paragraphs B-29 through B-31 to describe and discuss what actually happened. Facilitators avoid asking yes-or-no questions. They encourage participation and guide the discussion by using open-ended and leading questions. Open-ended questions allow those answering to reply based on what they think is significant. These questions are less likely to put Soldiers on the defensive. Open-ended questions work more effectively in finding out what happened. (The examples of open-ended questions and things to avoid during interviews listed in tables C-1 and C-2 [pages C-1 and C-2] also apply to AARs.)

B-43. As the discussion expands and more Soldiers add their perspectives, what really happened becomes clearer. Facilitators do not tell Soldiers and leaders what was good or bad. Instead, they ensure that the discussion reveals the important issues, both positive and negative. Skillful guiding of the discussion ensures that participants do not gloss over mistakes or weaknesses.

Closing Comments (Summary)

B-44. During the summary, facilitators review and summarize key points identified during the discussion. The AAR should end on a positive note, linking conclusions to learning and possible training. Facilitators then depart to allow unit leaders and Soldiers time to discuss the learning in private.

BENEFITS OF AFTER ACTION REVIEWS

B-45. AARs are the dynamic link between task performance and execution to standard. Through the professional, candid discussion of events, Soldiers can identify what went right and what went wrong during the operation (using measures of effectiveness). When appropriate, they can evaluate their performance of tasks (using measures of performance). The discussion helps Soldiers and leaders identify specific ways to improve unit proficiency. Units achieve the benefits of AARs by applying the results of them. Applications may include organizing observations, insights, and lessons; revising how the unit executes tactics, techniques, and procedures; and developing future training. AARs may reveal problems with unit standing operating procedures. If so, unit leaders revise the procedures and ensure that the unit implements the changes during future operations. Leaders can use the knowledge AARs develop to assess performance, correct deficiencies, and sustain demonstrated task proficiency. These improvements will enhance unit performance in future operations.

Appendix C

Interviewing Techniques

Effective interviewing techniques are essential to identifying valid lessons after operations when circumstances do not permit an after action review. This appendix provides interviewing techniques to use in these situations.

ROLE OF THE INTERVIEWER

C-1. Interviewers have a dual responsibility—first to interviewees, and second to the ultimate audience. Interviewers able to fulfill these responsibilities have the following characteristics:

- Experience.
- Knowledge of the organization.
- Analytic skills.
- Ability to listen.

C-2. To those being interviewed an interviewer owes trust and respect. Interviewers look for the secrets of each Soldier's success and what each Soldier has learned from his or her mistakes. Gaining this information requires gaining the Soldier's trust. Gaining that trust begins with showing the Soldier respect.

C-3. Often, the issues uppermost in an interviewee's mind differ from the ones with the greatest learning potential. Interviewers often need to probe to some degree. Effective interviewers look on interviews as voyages of discovery for interviewers and Soldiers. Productive interviews are more than just a "brain dump"; they are a sharing of intense experiences that can lead to significant lessons that may save Soldiers' lives and lead to more effective operations.

C-4. Interviewers owe their superiors and prospective audiences information that is relevant, accurate, and in context. Meeting this obligation begins with thorough preparation. Before the interview, interviewers determine the information they are to acquire and the particular issues the commander or their superiors want to learn about. Obtaining the information they need also requires interviewers to maintain control of the conversation throughout the interview. To do this, interviewers ask questions and manage the conversation so that useful answers emerge. Interviewers strike a balance between a free-ranging conversation and a narrow focus on specific subjects. (Table C-1 lists examples of questions interviewers may use to do this. Table C-2 [page C-2] lists some things to avoid.)

Table C-1. Example interview questions

Why do you think you were so successful?
What would be your most important pieces of advice for the next person facing this challenge?
What was the missing area of process that caused that problem to occur?
What did you put in place to ensure success?
What makes you say that?
How did you achieve that?
Why? What were the reasons for...?

Table C-2. Things to avoid when interviewing

Don't send the interviewee a list of questions beforehand; send a list of topics instead.

Don't settle for woolly or vague answers, such as, "You have to allow enough time for planning." Instead, look for specifics: for example, "How much time do you think you needed for planning?"

Don't ask closed questions, such as, "Was it a success?" Instead, ask open questions, such as, "What made it a success?"

THE INTERVIEW

C-5. An interview is more than a one-time conversation. Each interview is a project that includes the following steps:

- Prepare for the interview.
- Conduct and record the interview.
- Transcribe the interview.
- Send the raw transcript to the interviewee. Ask questions similar to these:
 - "Can you check that I have recorded your words correctly?"
 - "Is there anything you would like to change at this stage?"
- Refine transcript, distill it, and package the result.
- Send the result back to the interviewee. Ask the Soldier to check it to ensure that his or her opinions are presented correctly.
- Submit the final results to the directing authority for incorporation into a report or for publication.

C-6. Table C-3 contains some tips on how to produce a useful interview product.

Table C-3. Tips for a successful interview

Record the interview—tape, video, shorthand, or type very fast. Revising the transcript can take two to five times as long as the interview itself.

Use direct quotes wherever possible.

Pictures have tremendous value. Take a photograph of the interviewee.

A short audio or video summary by the interviewee adds a lot to a Web site or compact disc.

For a crucial interview, use an assistant.

Appendix D

Sample Agenda for Knowledge Management Working Groups

Purpose/ Frequency	Purpose: Venue in which knowledge management initiatives, tasks, concerns, and ideas are shared and disseminated throughout the unit Frequency: Weekly	
Composition	Chair: Either chief of staff or unit knowledge management officer Attendees: • All subordinate knowledge management and information management officers • Assessment analyst • Army Battle Command System contractors • Others by exception	
Inputs/Outputs	Inputs: • Identify emerging best practices • Develop system and social network rapport and trust • Qualitative interviews (What's working for you?) • Mission observations (commonalities identified and reported) • AAR/debrief attendance and reporting (no airing of "dirty laundry") • Identifying reporting procedures by unit. (This get units thinking about the value of lessons to others: "What did we learn this week?") • Leader support—at every level • Unit focal point contact: If everyone is responsible, no one is responsible • Make it easy—10 minutes or less to transfer new knowledge to site	Outputs: • Weekly "push" highlighting what is learned (electronic)—targeted (demonstrated value) • Leader postings—what is working for us—<i>Building a Community of Practice</i> • Lateral sharing of knowledge—leaders sharing with leaders • Clean up public sites on SIPRNET • Submit inputs/outputs • Submit any recommendations to the working group summary format • Recommendations on collaboration initiatives • Knowledge management training inputs to unit training schedule
Agenda	• Inputs and outputs • Team pages • Working group summary format: key discussion, briefs, actions, and contacts • Collaborative forums • Collaboration portal support plan	

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Glossary

The glossary lists terms used in this publication with Army or joint definitions. Where Army and joint definitions are different, (*Army*) precedes the definition. Terms for which FM 6-01.1 is the proponent manual (the authority) are marked with an asterisk (*). The proponent manual for other terms is listed in parentheses after the definition.

SECTION I – ACRONYMS AND ABBREVIATIONS

AAR	after action review
AKO	Army Knowledge Online
AR	Army regulation
ARFORGEN	Army force generation
BCKS	Battle Command Knowledge System
CALL	Center for Army Lessons Learned
FM	field manual
G-2	assistant chief of staff, intelligence
G-3	assistant chief of staff, operations
G-6	assistant chief of staff, signal
IDM-T	information dissemination management–tactical
JP	joint publication
KM	knowledge management
S-2	intelligence officer
S-3	operations officer
S-6	signal officer
SIPRNET	secure Internet protocol router network
TC	training circular

SECTION II – TERMS

assessment

(Army) The continuous monitoring and evaluation of the current situation, particularly the enemy, and progress of an operation. (FM 3-0)

battle command

The art and science of understanding, visualizing, describing, directing, leading, and assessing forces to impose the commander's will on a hostile, thinking, and adaptive enemy. Battle command applies leadership to translate decisions into actions—by synchronizing forces and warfighting functions in time, space, and purpose—to accomplish missions. (FM 3-0)

***codification**

The knowledge strategy that focuses on connecting people with content through technical networks, developing added value that supports organizing, applying, and transferring knowledge.

command and control

(Army) The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of a mission. Commanders perform command and control functions through a command and control system. (FM 6-0)

command and control system

(Army) The arrangement of personnel, information management, procedures, and equipment and facilities essential for the commander to conduct operations. (FM 6-0)

commander's critical information requirement

(joint) An information requirement identified by the commander as being critical to facilitating timely decisionmaking. The two key elements are friendly force information requirements and priority intelligence requirements. (JP 3-0)

common operational picture

(Army) A single display of relevant information within a commander's area of interest tailored to the user's requirements and based on common data and information shared by more than one command. (FM 3-0)

conduct

To perform the activities of the operations process: planning, preparing, executing, and continuously assessing. (FM 6-0)

***content management**

An activity that focuses on managing digital and nondigital knowledge and information contained in any medium that conveys such content.

data

(Army) Unprocessed signals communicated between any nodes in an information system, or sensings from the environment detected by a collector of any kind (human, mechanical, or electronic). (FM 6-0)

decisionmaking

Selecting a course of action as the one most favorable to accomplish the mission. (FM 6-0)

***explicit knowledge**

Written or otherwise documented knowledge in media that can be organized or stored, whether digital (such as computer files) or nondigital (such as paper).

Global Information Grid

(joint) The globally interconnected, end-to-end set of information capabilities, associated processes and personnel for collecting, processing, storing, disseminating, and managing information on demand to warfighters, policy makers, and support personnel. The Global Information Grid includes owned and leased communications and computing systems and services, software (including applications), data, security services, other associated services and national security systems. (JP 6-0)

information

(Army) 1. In the general sense, the meaning humans assign to data. 2. In the context of the cognitive hierarchy, data that have been processed to provide further meaning. (FM 6-0)

information management

(Army) The science of using procedures and information systems to collect, process, store, display, disseminate, and protect knowledge products, data, and information. (FM 3-0)

information system

(Army) The equipment and facilities that collect, process, store, display, and disseminate information. This includes computers—hardware and software—and communications, as well as policies and procedures for their use. (FM 3-0)

***knowledge**

Information analyzed to provide meaning and value or evaluated as to implications for the operation. It is also comprehension gained through study, experience, practice, and human interaction that provides the basis for expertise and skilled judgment. (This definition replaces the definition established in FM 6-0 [2003].)

***knowledge creation**

The process of developing new knowledge or combining, restructuring, or repurposing existing knowledge in response to identified knowledge gaps.

knowledge management

The art of creating, organizing, applying, and transferring knowledge to facilitate situational understanding and decisionmaking. Knowledge management supports improving organizational learning, innovation, and performance. Knowledge management processes ensure that knowledge products and services are relevant, accurate, timely, and useable to commanders and decisionmakers. (FM 3-0)

***knowledge transfer**

Movement of knowledge—including knowledge based on expertise or skilled judgment—from one person to another.

lessons learned

Validated knowledge and experience derived from observations and the historical study of military training, exercises, and combat operations that leads to a change in behavior at either the tactical ([standing] operating procedures; tactics, techniques, and procedures; and so forth), operational, or strategic level or in one or more of the Army's DOTMLPF [doctrine, organization, training, materiel, leadership and education, personnel, and facilities] domains. (AR 11-33)

measure of effectiveness

(joint) A criterion used to assess changes in system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect. (JP 3-0)

measure of performance

(joint) A criterion used to assess friendly actions that is tied to measuring task accomplishment. (JP 3-0)

mission command

The conduct of military operations through decentralized execution based on mission orders. Successful mission command demands that subordinate leaders at all echelons exercise disciplined initiative, acting aggressively and independently to accomplish the mission within the commander's intent. (FM 3-0)

operational environment

(joint) A composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. (JP 3-0)

operations process

The major command and control activities performed during operations: planning, preparing, executing, and continuously assessing the operation. The commander drives the operations process. (FM 3-0)

Glossary

***personalization**

The knowledge strategy focused on developing social networks (informal, teams, and communities) to link people with tacit and explicit knowledge.

relevant information

All information of importance to commanders and staffs in the exercise of command and control. (FM 3-0)

running estimate

A staff section's continuous assessment of current and future operations to determine if the current operation is proceeding according to the commander's intent and if future operations are supportable. (FM 3-0)

situational awareness

Immediate knowledge of the conditions of the operation, constrained geographically and in time. (FM 3-0)

situational understanding

The product of applying analysis and judgment to relevant information to determine the relationships among the mission variables to facilitate decisionmaking. (FM 3-0)

system

(joint) A functionally, physically, and/or behaviorally related group of regularly interacting or interdependent elements; that group of elements forming a unified whole. (JP 3-0)

***tacit knowledge**

Comprehension gained through study, experience, practice, and human interaction.

warfighting function

A group of tasks and systems (people, organizations, information, and processes) united by a common purpose that commanders use to accomplish missions and training objectives. (FM 3-0)

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By order of the Secretary of the Army:

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General, United States Army
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