

ATP 6-01.1 (FM 6-01.1)

Techniques for Effective Knowledge Management

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Headquarters Department of the Army

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Techniques for Effective Knowledge Management

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Preface

Publication ATP 6-01.1 provides doctrinal knowledge management guidance. It provides doctrine for the organization and operations of the knowledge management section, and establishes the doctrinal principles, techniques, and procedures necessary to effectively integrate knowledge management into the operations of brigades and higher.

ATP 6-01.1 applies to knowledge management activities in Army headquarters from brigade through Army Service component command (“Brigade” includes brigade combat teams (BCT), support brigades, functional brigades, and multifunctional brigades).

Commanders, staffs, and subordinates ensure their decisions and actions comply with applicable U.S., international, and, in some cases, host-nation laws and regulations. Commanders at all levels ensure their Soldiers operate in accordance with the law of war and the rules of engagement. (See Field Manual [FM] 27-10).

The principal audience for ATP 6-01.1 is all members of the profession of arms. Commanders and staffs of Army headquarters serving as joint task force or multinational headquarters should also refer to applicable joint or multinational doctrine concerning the range of military operations and joint or multinational forces. Trainers and educators throughout the Army will also use this manual.

ATP 6-01.1 uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text. Terms for which ATP 6-01.1 is the proponent publication (the authority) are marked with an asterisk (*) in the glossary. Definitions for which ATP 6-01.1 is the proponent publication are boldfaced in the text. For other definitions shown in the text, the term is italicized and the number of the proponent publication follows the definition.

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

The proponent of ATP 6-01.1 is Headquarters, U.S. Army Training and Doctrine Command. The preparing agencies are the Combined Arms Doctrine Directorate and the Army Operational Knowledge Management Proponent, both subordinate to the U.S. Army Combined Arms Center. Send written comments and recommendations on DA Form 2028 (*Recommended Changes to Publications and Blank Forms*) to Commander, U.S. Army Combined Arms Center and Fort Leavenworth, ATTN: ATZL-MCK-D (ATP 6-01.1), 300 McPherson Avenue, Fort Leavenworth, KS 66027-2337; by e-mail to usarmy.leavenworth.mccoe.mbx.cadd-org-mailbox@mail.mil; or submit an electronic DA Form 2028.

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Introduction

The Army embraced knowledge management as a discipline in 2003. How the Army manages information and facilitates the movement of knowledge has changed dramatically in recent years. This includes the growth of knowledge management in the Army and refinement of associated technology—both hardware and software. Recognizing that the ability to efficiently manage knowledge is essential to effective mission command, the Army authorized the Army Knowledge Management Qualification Course, with additional skill identifier to prepare Soldiers for knowledge management's complex challenges. Knowledge management sections at brigade through theater army headquarters now work with commanders and staffs to help manage knowledge in their organizations; bridging the art of command and the science of control through knowledge management.

What individuals and small elements know that could help others cannot be widely shared without the means to share it. The volume of available information makes it difficult to identify and use relevant information. Knowledge management provides the means to efficiently share knowledge, thus enabling shared understanding and learning in organizations. To do this, knowledge management creates, organizes, applies, and transfers knowledge and information between authorized people. It seeks to align people, processes, and tools—including information technology—in the organization to continuously capture, maintain, and reuse key information and lessons learned to help units learn and adapt and improve mission performance. Knowledge management enhances an organization's ability to detect and remove obstacles to knowledge flow, thereby fostering mission success. Because collaboration is a key contributor to knowledge management, it is imperative that everyone be involved in the process: from the generating force, that trains and sustains the Soldier, to the Operating Force, which ensures Soldiers survive and thrive every day in every circumstance or location.

The contributions of everyone are important because anyone may be the source of an idea that may become the catalyst for a solution that accomplishes missions and saves lives. Though the focus of this document is operations, knowledge management can be used by organizations and individuals to accomplish many tasks.

This publication, and its successors, provides guidance on successfully implementing knowledge management to Soldiers, as well as commanders and staff; in present and future operational environments.

ATP 6-01.1 has an introduction, six chapters, and Appendixes A through H. The introduction expands on the manual's purpose and summarizes the doctrine it contains. Chapter 1 explains Knowledge management to support the U. S. Army. Chapter 2 discusses the Knowledge management assessments. Chapter 3 discusses designing knowledge management solutions. Chapter 4 discusses developing knowledge management solutions. Chapter 5 discusses piloting knowledge management solutions. Chapter 6 discusses implementing knowledge management solutions. Appendix A provides a format for a knowledge management annex. Appendix B contains information on knowledge management standard operating procedures (SOP). Appendix C discusses knowledge management tools. Appendix D discusses techniques for content management. Appendix E discusses interviewing techniques. Appendix F discusses techniques for facilitation of a professional forum. Appendix G discusses focus areas for knowledge management assessments. Appendix H provides a format for a knowledge strategy.

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Chapter 1

Knowledge Management Support to the Army

This chapter provides an overview on how knowledge management supports the Army. It begins with a brief overview of knowledge management foundations. It describes how knowledge management enables the mission command warfighting function and continues by describing how knowledge management helps commanders in organizing the mission command system. It then describes how knowledge management enables operations. The chapter concludes by describing how every element of an organization contributes to a knowledge-sharing organizational environment.

KNOWLEDGE MANAGEMENT

1-1. *Knowledge management* is the process of enabling knowledge flow to enhance shared understanding, learning, and decisionmaking (ADRP 6-0). Knowledge flow is the ease of movement of knowledge in organizations. Knowledge management uses a five-step process to create shared understanding. The steps of knowledge management include:

- Assess.
- Design.
- Develop.
- Pilot.
- Implement.

1-2. Each step of the knowledge management process is described throughout this manual. Figure 1-1 shows knowledge management as an iterative cycle.

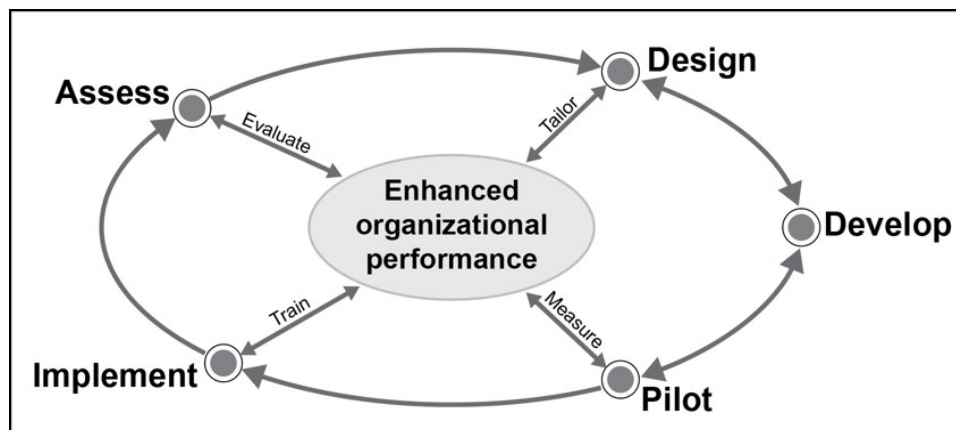


Figure 1-1. Knowledge management – an iterative cycle

1-3. Table 1-1 on page 1-2 shows the five steps of the knowledge management process.

Table 1-1. The knowledge management process

Key inputs	Step	Key outputs
<ul style="list-style-type: none"> • Unit organization and task organization • Unit standard operating procedures and policies • Commander's critical information requirements • Results of interviews • Applicable military decisionmaking process 	Assess <ul style="list-style-type: none"> • Define • Describe • Analyze • Depict See table 2-3	<ul style="list-style-type: none"> • Knowledge management map • Gap chart and priorities chart • BUB chart • Recommendations to chief of staff • Knowledge management strategy
<ul style="list-style-type: none"> • Knowledge management strategy • Knowledge management map • Gap chart and priorities • BUB chart • Guidance from chief of staff 	Design <ul style="list-style-type: none"> • Conceptualize • Refine • Prepare See table 3-1	<ul style="list-style-type: none"> • Knowledge management action plan
<ul style="list-style-type: none"> • Knowledge management action plan 	Develop <ul style="list-style-type: none"> • Confirm • Outline • Build See table 4-1	<ul style="list-style-type: none"> • Briefing to chief of staff (if required) • More fully developed and informed knowledge management action plan
Knowledge management action plan	Pilot <ul style="list-style-type: none"> • Plan • Prepare • Execute • Evaluate See table 5-1	<ul style="list-style-type: none"> • Pilot after action review • Go/no-go decision (chief of staff) • Implementation plan guidance
<ul style="list-style-type: none"> • Implementation Plan 	Implement <ul style="list-style-type: none"> • Produce • Synchronize • Assess See table 6-1	<ul style="list-style-type: none"> • Approved implementation plan that results in effective knowledge management solutions

1-4. Table 1-2 shows key inputs and outputs for each step.

Table 1-2. Inputs and outputs

Key inputs	Step	Key outputs
<ul style="list-style-type: none"> • Unit organization/task organization • Unit/knowledge management standard operating procedures and policies • Commander's critical information requirements • Results of interviews • Applicable military decisionmaking process output 	Step 1: assess	<ul style="list-style-type: none"> • Define • Describe • Analyze • Depict

Table 1-2. Inputs and Outputs (continued)

Key inputs	Step		Key outputs
<ul style="list-style-type: none"> Knowledge management strategy A knowledge management map Gap chart and priorities chart BUB chart Guidance from the chief of staff 	Step 2: design	<ul style="list-style-type: none"> Conceptualize Refine Prepare 	<ul style="list-style-type: none"> Knowledge management action plan
<ul style="list-style-type: none"> Knowledge management action plan 	Step 3: develop	<ul style="list-style-type: none"> Confirm Outline Build 	<ul style="list-style-type: none"> Briefing to chief of staff (if required) More fully developed and informed knowledge management action plan
<ul style="list-style-type: none"> Knowledge management action plan 	Step 4 pilot	<ul style="list-style-type: none"> Plan Prepare Execute Evaluate 	<ul style="list-style-type: none"> Pilot after action review Go/no-go decision Implementation plan guidance
Implementation plan <ul style="list-style-type: none"> Note: Depending on unit requirements and/or the operational environment, the implementation plan may be expressed in the form of a knowledge management annex to the operation order. 	Step 5: implementation	<ul style="list-style-type: none"> Produce Synchronize Assess 	<ul style="list-style-type: none"> Approved implementation plan that results in effective knowledge management solutions

TYPES OF KNOWLEDGE

1-5. Knowledge provides meaning or value for the operation. It is gained through study, experience, practice, and human interaction and is the basis for expertise and skilled judgment. (See FM 6-22, Army Leadership, for discussion on tactical knowledge, technical knowledge, joint knowledge and cultural and geopolitical knowledge). In this manual, knowledge is differentiated into tacit knowledge and explicit knowledge.

Tacit Knowledge

1-6. *Tacit knowledge is what individuals know; a unique, personal store of knowledge gained from life experiences, training, and networks of friends, acquaintances, and professional colleagues.* It includes learned nuances, subtleties, and workarounds. Intuition, mental agility, and response to crises are also forms of tacit knowledge.

Explicit Knowledge

1-7. *Explicit knowledge is codified or formally documented knowledge organized and transferred to others through digital or non-digital means.* Explicit knowledge has rules, limits, and precise meanings. Examples include computer files, dictionaries, textbooks, and Army and joint doctrinal publications.

KNOWLEDGE MANAGEMENT COMPONENTS

1-8. The five-step knowledge management process in figure 1-1 aligns people, processes, and tools in the organization and culture for leaders and subordinates to collaborate and share understanding. The four components of knowledge management include:

- People.
- Processes.
- Tools.
- Organization.

People

1-9. People are important to successful knowledge management. Knowledge has meaning only in a human context. It includes individual experience, expertise, or insight. Leaders use tacit knowledge to solve problems and make decisions. Leaders engage subordinates' tacit knowledge to improve organizational learning and enhance the unit's innovation and performance.

1-10. Knowledge managers connect people and build formal and informal networks to transfer knowledge. Knowledge transfer is moving knowledge, including knowledge based on expertise or skilled judgment, from one person to another. Knowledge managers find sources of knowledge, capture that knowledge, and facilitate its transfer to those who need it.

Processes

1-11. The five-step knowledge management process aligns people, processes, and tools in the organization and culture to create shared understanding. Knowledge management and its associated activities are integrated into operations and all other staff and organizational processes. This integration enables the transfer of knowledge between and among individuals and organizations. Knowledge transfer occurs formally through established processes and procedures and informally through collaboration and dialogue.

Tools

1-12. Knowledge management tools share and preserve knowledge. Various factors determine the tools used including mission, availability, and determination of the simplest or most effective tool for the required purpose. The tools are non-digital, digital, or used in combination. Non-digital tools include transferring knowledge through manual, visual, or tactile means (Appendix C describes knowledge management tools). Non-digital tools include:

- Map boards.
- Sand tables.
- Butcher paper.
- Sticky notes.
- Bulletin boards.
- White boards.
- Black boards.

1-13. Digital tools include:

- Information systems and the software, storage, inputs, processing, outputs, formats, content, software, and capabilities provide tools that knowledge managers use.
- Collaboration tools that include capabilities that make team development and collaboration possible. Examples include chat, white-boarding, professional forums, communities of practice, and virtual teaming.
- Expertise-location tools that support finding subject matter experts.
- Data analysis tools support data synthesis that identifies patterns and establishes relationships among data elements.

- Search-and-discover tools include search engines that look for topics, recommend similar topics or authors, and show relationships to other topics.
- Expertise-development tools include use simulations and experiential learning to support developing experience, expertise, and judgment.

Organization

1-14. An organization is a matrix where people, processes, and tools function to integrate individual and organizational knowledge and learning strategies. Individual knowledge includes acquired ideas, beliefs, values, and knowledge. Knowledge management capabilities contribute to a learning organization. Organizations such as staff, squads, and larger groups bring these attitudes, feelings, values, and behaviors together. This creates a process facilitated by tools that characterize that group. These factors are its organizational culture. Knowledge management practitioners know this dynamic and advise and help organizations regarding knowledge solutions.

1-15. The culture of an organization provides the perspective by which information, goals, and motivations are viewed. This allows rapport, knowledge sharing, and accurate interpretation to understand and acquire a broad view of a situation. The commander and primary staff understand the organization culture to affect organizational change.

ENABLE THE MISSION COMMAND WARFIGHTING FUNCTION

1-16. Executing the mission command staff task of “perform knowledge management and information management” provides commanders the information and knowledge to create and maintain understanding and make decisions. The staff studies the operational environment, identifies information gaps, and helps the commander develop and answer information requirements. The staff performs information management to organize and process collected data into information and applies analysis to develop information into knowledge.

1-17. The commander is the central figure in mission command. Commanders drive operations through understanding, visualizing, describing, directing, leading, and assessing operations. The staff supports the commander by performing operations. Knowledge management is integral to commanders and staffs as they perform these tasks. The knowledge management role in the commander’s task of driving operations is described in paragraph 1-54.

1-18. During operations, knowledge flows between individuals and organizations. Staffs manage this exchange and use knowledge management practices to enable knowledge transfer. Knowledge transfer occurs formally through processes and procedures and informally through collaboration and dialogue. Army-wide knowledge management implementation enables the Army, through mission command, to execute decisive action. Shared understanding creates adaptive learning organizations. This helps the commander achieve a relative advantage on the battlefield.

1-19. Mission command establishes a mindset among leaders that the best understanding comes from a balance of bottom-up and top-down understanding. The foundation of this understanding is an individual’s tacit knowledge acquired through operating an environment and circumstances. They share their knowledge with other members of their unit. However, knowledge that remains only in the unit is limited. Knowledge management aligns people, processes, and tools in the organization and culture to capture and distribute this knowledge and understanding across the force through communities and centers of excellence.

1-20. Knowledge management enables the mission command warfighting function by:

- Supporting the commander’s decisionmaking throughout operations.
- Facilitating dialogue and interaction required for successful mission command through collaborative tools and processes.
- Facilitating the capture and transfer of tacit knowledge shared in the organization.
- Facilitating the transfer of explicit knowledge shared in the organization.
- Helping the staff provide timely and relevant information and knowledge.

- Enabling adaptive learning organizations.
- Supporting mission command warfighting function tasks.

1-21. The Signal Corps manages information. This enables knowledge management and provides relevant information to the right person at the right place and at the right time. Signal personnel enable knowledge management by:

- Providing network architecture and the technological tools to support content management and knowledge sharing.
- Providing network operations and information management support, both through the signal staff officer.
- Serving in various positions in the knowledge management section. This includes providing software developer capability support in knowledge management sections.

SUPPORTING COMMANDER’S DECISIONMAKING

1-22. The knowledge management staff helps units implement processes and practices to provide commanders with the knowledge and understanding to make decisions. Staffs use various information and knowledge management practices to help commander’s process information. They piece together data and information and produce knowledge through analysis and evaluation. Staffs provide collective knowledge to the commander. Commanders apply judgment to transform knowledge into understanding (Table 1-3 shows how knowledge management enhances decisionmaking).

Table 1-3. How knowledge management enhances decisionmaking

<i>Enabling the unit to focus and direct</i>	
Element	Examples
The right information	<ul style="list-style-type: none"> • Commanders critical information requirements • Significant activity reports • Situation reports • Medical evacuation • Requests
To the right person	<ul style="list-style-type: none"> • Commanders • Staffs • Action officers
At the right time	<ul style="list-style-type: none"> • Latest time information of value • Battle rhythm
In the right form	<ul style="list-style-type: none"> • Significant activities • Spot reports • Ground intelligence summaries • Size activity location unit time equipment
In the right place	<ul style="list-style-type: none"> • Command posts • Boards • Battlefield update briefs • Commander’s updates • Situation reports
In order to enable informed decisionmaking based on shared understanding	

FACILITATING DIALOGUE AND INTERACTION

1-23. Knowledge management has many collaborative tools and processes to facilitate dialogue and interaction. These include tools to help units perform and record virtual meetings, share documents and presentations, brainstorm via white boarding; and collaborate through tools such as SharePoint and a variety of Army professional forums, communities of purpose, and knowledge networks. The knowledge

management working group enables collaboration in units, sets up processes and facilitates training so organizations collaborate and interact. The resulting dialogue enhances critical and creative thinking essential to successful mission command.

FACILITATING THE CAPTURE AND TRANSFER OF KNOWLEDGE

1-24. Knowledge is a transferable asset that grows with use and application. Linking sources of tacit knowledge and encouraging interaction at all levels (individual to enterprise) helps the Army acquire and share knowledge to support the mission. Knowledge management tools that facilitate collaboration and the exchange of knowledge enable staffs to capture tacit knowledge. Tacit knowledge provides part of the foundation for intuition. It is a component of knowledge commanders use to exercise mission command. Commanders combine their tacit and explicit knowledge to visualize an operation or battle. When commanders have tacit and explicit knowledge, their situational understanding improves and they make more effective decisions. Effective knowledge management makes both tacit and explicit knowledge from a wide range of sources available to those who need it and when they need it so they can operate more effectively.

PROVIDING TIMELY AND RELEVANT INFORMATION AND KNOWLEDGE

1-25. Effective knowledge management identifies the information the unit needs and its importance. Staffs use processes to produce information from data and analyze and evaluate that information to produce knowledge. Staffs provide collective knowledge to commanders who apply experience and judgment to transform that knowledge into understanding. Knowledge management, supported by information management, helps do this more effectively. Information management helps staffs extract relevant information from the vast amounts of data and available information so they can provide timely and relevant information and analysis to help commanders build and maintain situational understanding. Through analysis, staffs develop and provide knowledge to commanders by running estimates and providing recommendations to help commanders understand situations, make and implement decisions, control operations, collaborate with peers, and assess progress on the operation.

ENABLING ADAPTIVE AND LEARNING ORGANIZATIONS

1-26. Knowledge management helps Soldiers and organizations learn and adapt. The increased collaboration and interaction between commanders and Soldiers across the force improves flexibility, adaptability, and integration of the warfighting functions. Knowledge management connects leaders, subordinates, and organizations and facilitates sharing and integration of information and knowledge. It integrates informal and organizational learning strategies to foster learning. Together, these contribute to developing adaptive learning organizations. Leaders who promote initiative and innovation foster learning. It involves knowledge transfer during interaction and collaboration and leverages resources inside and outside the organization. Organizations and Soldiers adapt faster than enemies and adversaries when they foster learning.

SUPPORTING THE MISSION COMMAND WARFIGHTING FUNCTION TASKS

1-27. Commanders exercise mission command through the commander tasks and the staff supports the commander in the exercise of mission command by performing the staff tasks. For commanders, creating shared understanding through knowledge management is an important principle of mission command. Staffs perform knowledge management as a part of mission command. The knowledge management staff provides processes for shared understanding and supports the commander's tasks and staff tasks of the mission command warfighting function. Other ways knowledge management supports mission command include:

- Enhancing collaboration among staff and subordinate commanders to develop the knowledge the commander needs to make good decisions.
- Establishing processes and means to collaborate across the organization and among unified action partners.
- Organizing knowledge for the commander.

- Eliminating unnecessary information from relevant information.
- Producing knowledge products to support activities such as informing and influencing audiences or products based on answering the commander's critical information requirements.
- Provide input on knowledge gaps to the assessment activity of operations.

ORGANIZING THE MISSION COMMAND SYSTEM

1-28. Commanders have a mission command system through the arrangement of personnel, networks (both technical and social), information systems, processes and procedures, and facilities and equipment that enable them to conduct operations. Commanders organize their mission command system to:

- Support the commander's decisionmaking throughout operations.
- Collect, create, and maintain relevant information and prepare knowledge products to support the commander's and leaders' understanding, visualization, and description.
- Prepare and communicate leader strategy and directives.
- Establish how commanders and leaders connect (formally and informally), communicate, collaborate, and facilitate the functioning of teams.

1-29. To provide these four overlapping functions, commanders arrange the five components of their mission command system:

- Personnel (for example: staff members, trained systems operators, subordinate commanders and leaders, and Soldiers who know their jobs and understand the commander's intent).
- Networks, including informal and leader networks (e.g. Noncommissioned Officer Net and Leader Net), technical networks (e.g. Joint World Wide Intelligence Communication Systems and Non-classified Internet Protocol Router Network).
- Information systems (e.g.: command post of the future [CPOF]; Tactical Ground Reporting System (TIGR); and Combined Information Data Network Exchange [CIDNE]).
- Processes and procedures such as significant activity reporting; battle update and assessment briefs, and noncommissioned officer evaluation reporting process.
- Facilities and equipment including command posts, platforms, operations centers, signal nodes, and call for fire trainer.

1-30. The components of the mission command system and the components of knowledge management (people, processes, tools, and organization) are similar. The two concepts and their components, although separate and distinct, form a nested framework. Regardless of the framework used to describe it, the terms mutually supporting and reinforcing, and it is in part through this logical consistency that shows the importance of knowledge management to perform mission command.

1-31. The knowledge management officer, with the working group and section, helps commanders organize the components of their mission command system by aligning people, processes, and tools in the organizational structure and culture to optimize the integration and functioning of those components. The knowledge management assessment provides a baseline to direct the organization's knowledge management effort and help the commander organize the elements of the mission command system (Chapter 2 describes the knowledge management assessment). To affect this alignment, knowledge management personnel:

- Works effectively with all personnel dedicated to mission command. These include deputy commanders, executive officers (XO), command sergeants major, and staffs.
- Understands the networks (both informal and technical).
- Understands the information systems the unit uses and their limitations.
- Has a clear understanding of the networks that comprise the mission command system.
- Understand the processes the unit uses and how they relate to the information systems they interact with (for example, significant activity status reporting with TIGR and how it feeds the common operating picture).
- Identify areas where facilities (such as command posts) obstruct communication and recommend ways to improve their arrangement so people can share their information, ideas, and knowledge.

1-32. The knowledge management officer considers the interaction of user audiences with the tools available, level of training, and other factors to determine how to align people, processes, and tools to integrate the components of the mission command system. The audience is internal, higher, subordinate, lateral, joint, inter-governmental, multinational, or other. Each type of audience has different requirements and connectivity. Considerations for these audiences include:

- Tools they use to interact, collaborate, and share knowledge.
- Networks they use to communicate.
- Processes and procedures, commonalities and differences, and how to best integrate.
- Organizational position match-up. For example, a civil-military operations center director coordinates with personnel from the United Nations refugee agency that work in the area of operations.
- Personnel staff officer coordinates with personnel from host-nation security forces.
- Classification of material and security clearances of personnel.

1-33. The knowledge management officer analyzes the information systems' effectiveness. This analysis is part of the knowledge management assessment. It:

- Identifies the systems used to communicate in organizational elements (for example, subordinate, internal, higher headquarters, lateral; echelon, Army Service component command, corps, division, etc.).
- Identifies how effective each system is in that category and echelon.
- Prioritizes which information system provides primary, alternate, contingency, and emergency (PACE) functions at an echelon (in coordination with G-6).

1-34. Based on this analysis, the knowledge management officer develops recommendations on better ways to integrate their usage so the organization maximizes the capabilities of each system.

ENABLING THE OPERATIONS PROCESS

1-35. The Army's operational concept emphasizes the importance of operations—plan, prepare, execute, and assess—as the engine of mission command. Commanders drive operations and focus on the major aspects of operations. Staffs conduct operations and help commanders plan, prepare, execute, and assess. Knowledge management permeates operations, being both a specified staff task and an implied commander task (ADRP 5-0 provides more detailed information about operations).

KNOWLEDGE MANAGEMENT AND PLANNING

1-36. Although knowledge management is part of all operations activities, its role in “plan” and “assess” are the most visible (Chapter 2 describes knowledge management and assessment. FM 6-0 describes the role of knowledge management and the other operations activities).

1-37. Army leaders employ three methodologies for planning. Commanders and staffs determine the appropriate mix of these methodologies based on the scope of the problem, their familiarity with it, the time available, and the staff available (see ADP 5-0 and ADRP 5-0). Methodologies that help commanders and staffs plan include:

- Army design methodology.
- Military decisionmaking process.
- Troop leading procedures.

Knowledge Management and Army Design Methodology

1-38. Commanders and their staffs use Army design methodology to help them with the conceptual aspects of planning. Effective knowledge management helps commanders and their staffs apply critical and creative thinking to understand, visualize, and describe unfamiliar problems and envision approaches to solving them. The understanding developed through Army design methodology continues through preparation and execution as continuous assessment and is communicated with staff and subordinates to build shared understanding (ADP 5-0).

Knowledge Management and the Military Decisionmaking Process

1-39. The Army's *military decisionmaking process* is an iterative planning methodology to understand the situation and mission, develop a course of action, and produce an operation plan or order. (ADP 5-0). Through the eight step process that leads to the development of a plan or order, the commander and staff share understanding of the operational context and commander's intent. Knowledge management practices applied to the military decisionmaking process helps Soldiers and organizations learn and adapt as they plan and operate and validate assumptions.

1-40. Knowledge management contribution to the military decisionmaking process results in a completed knowledge management annex in operation plans and orders.

Knowledge Management and Troop Leading Procedures

1-41. *Troop leading procedures* are a dynamic process used by small-unit leaders to analyze a mission, develop a plan, and prepare for an operation (ADP 5-0). Knowledge management practices help small-unit leaders achieve and share understanding with members of their unit to optimize the mission analysis, planning, and preparation for operations.

KNOWLEDGE MANAGEMENT AND OPERATIONS PRINCIPLES

1-42. The principles of operations include commanders who:

- Drive the operations process.
- Build and maintain situational understanding.
- Apply critical and creative thinking.
- Encourage collaboration and dialogue.

These principles highlight the important role of knowledge management. The relationship of knowledge management to these principles is described in paragraphs 1-43 through 1-48.

Commanders Drive Operations

1-43. Commanders are the central figure in mission command. They drive operations through execution of their tasks of understand, visualize, describe, direct, lead, and assess. The knowledge management staff supports the commander's understanding and visualization by facilitating access to sources of knowledge including those that support the staff to prepare running estimates for the commander. Knowledge management collaboration tools help commanders share their own understanding as they describe their visualization and direct actions of staff and subordinate commanders. Collaboration and dialogue leads to shared understanding of the commander's intent and enables commanders to effectively lead.

Build and Maintain Situational Understanding

1-44. Staffs perform knowledge management and information management to find relevant information from large amounts of data and available information. They provide timely and relevant information and analysis to help commanders build and maintain situational understanding. Through analysis, staffs develop knowledge for commanders and run estimates and recommendations to help commanders understand situations, make and implement decisions, control operations, and assess progress.

1-45. Knowledge management tools and processes facilitate the commander's situational understanding. The staff executes knowledge management and information management to help a commander's situational understanding, and makes and implements decisions, controls operations, and assesses progress. Knowledge management enhances the staff's ability to help subordinate units (commanders and staffs) and keep units and organizations outside the headquarters informed throughout an operation. This requires connecting people and knowledge. Knowledge management transfers tacit knowledge between individuals, teams, and units through collaboration.

1-46. The product of shared understanding is better decisionmaking at every level. Collaboration and interaction help subordinate leaders understand the commander's guidance and intent. This enables them

to make appropriate decisions when circumstances change. They communicate and reinforce the commander's intent to Soldiers whose individual decisions and actions reflect their understanding of it.

Apply Critical and Creative Thinking

1-47. Collaboration and dialogue, as discussed in paragraph 1-46, helps with critical and creative thinking as participants share knowledge and insights. They question each other's assumptions and exchange ideas. This exchange helps commanders and staffs understand situations, make decisions, and direct action. When commanders encourage a collaborative environment where knowledge and ideas are freely shared, the resulting creative thinking leads to new insights, novel approaches, fresh perspectives, and new ways of to understand and conceive situations.

Encourage Collaboration and Dialogue

1-48. Knowledge management aligns people, processes, and tools in an organization to facilitate collaboration and interaction between leaders and subordinates. Collaboration, dialogue, and other forms of interaction occur with commander and staff, commander, and/or staff with subordinate commanders, in working groups, during battle update briefings, in communities of purpose via Army professional forums, centers of excellence or other means. Through collaboration and dialogue, participants share their knowledge, perspectives, and understanding of a situation. This exchange increases shared understanding of the enemy and the operational environment, problems to be solved, and approaches to solving them. This exchange contributes to the overall Army knowledge base.

CREATING A KNOWLEDGE-SHARING ENVIRONMENT

1-49. In a knowledge-sharing environment, individual members of an organization share what they know with others because they understand everyone will benefit. This environment facilitates knowledge sharing by removing barriers to knowledge flow and using simple processes and procedures. This type of environment facilitates both individual and organizational learning.

1-50. Commanders create positive command climates that foster mutual trust and understanding in their command and with unified action partners. They establish a culture of collaboration. Successful commanders invest time and effort to visit with Soldiers, subordinate leaders, and partners to understand issues and concerns. Commanders and staffs build and maintain shared understanding in the force and with unified action partners by collaborating during operations.

1-51. Leaders at all echelons encourage, teach, and promote an environment where Soldiers exchange knowledge in and out of the chain of command. Those in knowledge management positions show other leaders and Soldiers how to share knowledge and employ good knowledge management practices. This enhances unit performance and helps individuals. Leaders set the example by sharing their own knowledge, experience, and insight and pass on information of value to others (leader and soldier roles in knowledge management are described in more detail in paragraphs 1-91 through 1-98).

THE KNOWLEDGE MANAGEMENT TEAM

1-52. The knowledge management team is an important component of a knowledge-sharing environment. The team has personnel across the entire organization. Those personnel involved in knowledge management and related activities that underpin the organization's mission command processes comprise the knowledge management team. The exact composition varies depending upon echelon and the commander's experience with knowledge management.

1-53. Everyone in the organization is responsible for aspects of knowledge management. Those with specifically assigned or implied knowledge management responsibilities include:

- The commander and subordinate commanders.
- The chief of staff (COS)/XO.
- Unit staff.
- Knowledge management working group.

- Knowledge management representatives.
- Knowledge management section (when assigned).

The Commander and Subordinate Commanders

1-54. Commanders are the formal “knowledge leaders” in their units. Commanders provide clear intent, set policies, establish procedures, and make decisions. Their support and involvement is important for a knowledge management program. They establish a command climate that encourages a culture of collaboration that fosters shared understanding through both the informal and formal leaders and networks.

1-55. Commanders encourage and leverage knowledge lines that are omni-directional in Army organizations. This is vertical and hierarchical. Flattening organizational staff processes makes knowledge transfer faster and more efficient (Figure 1-2 shows a flatter staff process where knowledge is transferred more efficiently). Commanders at all echelons understand the difference between the transfer of reports and information in the hierarchical chain of command and the transfer of knowledge among people and organizations based on function and relationship.

1-56. Subordinate commanders support and execute higher commanders’ vision and intent, including supporting and contributing to shared understanding. They understand the interrelationships between people, processes and tools and how they help their units and higher echelon organizations work better, smarter, and faster.

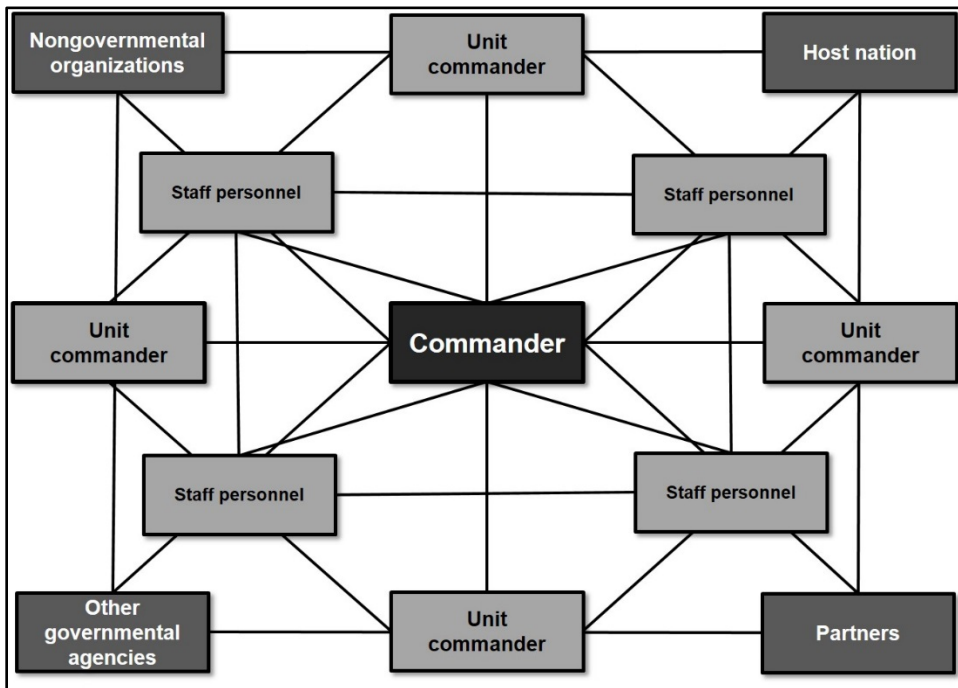


Figure 1-2. Flattening organizational staff processes

Chief of Staff or Executive Officer

1-57. The COS or XO is the senior knowledge management officer in the organization and advises the commander on knowledge management policy. The COS/XO is responsible for directing the activities of each staff section and subordinate unit to capture and disseminate organizational knowledge.

1-58. The COS/XO provides leadership, enforcement, and a mission command focus. The COS/XO supervises the knowledge management officer in developing knowledge management and integrating those activities into the plans, operations, and training of the unit. The COS/XO also:

- Integrates a knowledge capture plan that supports all plans and orders, tactical standard operating procedures (SOP), command and staff updates, capture of lessons learned, after action reviews, and other activities that capture knowledge.
- Provides direction to the knowledge management officer.
- Provides staff authority to the actions of the knowledge management working group. The COS/XO may chair the group or designate the knowledge management officer to do so.
- Focuses on reducing organizational costs and administrative redundancy while increasing the opportunities to share knowledge vertically and horizontally.

Unit Staff

1-59. The unit staff is integral to the success of knowledge management. Their understanding and support of knowledge management enables it to function effectively; therefore, knowledge managers communicate, coordinate, and seek staff input and educates staff members on knowledge management practices. All staff members collaborate, interact, share knowledge, and ensure they understand the commander's intent (and other key knowledge and information) and share it with their subordinates.

1-60. Staffs perform knowledge management under mission command. Staffs use information and knowledge management to provide commanders the information needed to create and maintain their understanding and make effective decisions. Every staff element and subordinate command shares the responsibility of implementing and integrating knowledge management activities into their organizations.

1-61. The COS/XO must integrate staff expertise to optimize effectiveness. Effective staff integration brings functional experts together from across the staff and outside organizations to support the commander's ability to make sound decisions (FM 6-0 describes the duties of all coordinating and special staff officers).

1-62. Knowledge management responsibilities common to all staff members include:

- Ensuring their portion of the Army battle command system provides timely, relevant, accurate data to the common operational picture.
- Continuously updating information for the commander's battle update brief, battle update assessment and/or the commander's dashboard for real-time organizational awareness.
- Continuously assessing processes and looking for ways to eliminate gaps in information flow.
- Collaborating with other staff elements to share knowledge.
- Creating and managing information according to established SOPs.
- Ensuring content is accessible through existing knowledge and information systems.
- Ensuring content is stored and managed in a structure that is easy to understand and facilitates easy search and retrieval of information and files.
- Incorporating blogs, discussion boards, document libraries, surveys and polls, and databases (asynchronous tools) into the daily work environment to improve cross organizational collaboration.
- Implementing audio, web, and video conferencing, chat, instant messaging, white boarding, and application-sharing capabilities to improve synchronous communication.
- Developing a working relationship with similar staff sections from other organizations to improve horizontal knowledge sharing.
- Performing comprehensive after action reviews and capturing observations, insights, and lessons learned to add to the Army's institutional knowledge base.
- Providing input through the knowledge management working group or knowledge management section to the command's knowledge management plan and activities as it affects their section.
- Creating an atmosphere of innovation and creativity in the section, focused on identifying and publicizing best practices; tactics, techniques, and procedures; and lessons learned.
- Training their personnel on procedures that support effective knowledge management; including the use of SharePoint, communities of purpose, information systems, and other knowledge management tools both digital and non-digital.

- Enabling subordinate headquarters by being responsive to their knowledge needs and supporting their efforts to integrate knowledge management.
- Utilizing social and informal leader networks (for example MilSuite) to collaborate.
- Developing, following, and enforcing the staff section SOPs.
- Ensuring content is easily accessible by other staffs and the commander.
- Ensuring file structure and naming conventions are easily understood.
- Establishing and enforcing content management in their staff section.

1-63. Although all staff members perform knowledge management as a mission command task, the operations staff officer and the signal staff officer play critical roles in knowledge management.

Operations Staff Officer

1-64. The operations staff officer is the principal staff officer responsible for training, operations and plans and integrates and synchronizes the operation as a whole for the commander. The operations staff officer has the broadest area of operations of all staff sections. With regard to knowledge management, the operations staff officer:

- Ensures knowledge management is integrated into the plans, operations, and training of the unit.
- Coordinates the after action review and lessons learned effort with the Center for Army Lessons Learned.
- Ensures that knowledge produced in the unit is captured and sorted for retrieval.
- Works with the knowledge management officer and signal staff officer to verify that databases and other information sources are integrated to eliminate stovepipes and improve organizational knowledge sharing.
- Ensures that training plans address proficiency and efficient use of all applicable information systems and networks of the mission command system.
- Establishes requirements for information to be included in the unit common operational picture.
- Integrates training requirements stemming from knowledge management solutions into the overall training plan.

Signal Staff Officer

1-65. The signal staff officer provides the knowledge and expertise to develop the technology architecture of mission command system and focuses on technical aspects to support knowledge management. The signal staff officer provides input to the organization's knowledge management plan and develops and implements information management policies and procedures with the knowledge management officer. The signal staff officer ensures adequate support for knowledge management from other signal staff personnel, such as the network operations officer, who provides expertise and support for knowledge management initiatives requiring the use of information systems, network communications, or computer operations. This includes developing the PACE plan to ensure communication redundancy.

Knowledge Management Working Group

1-66. The knowledge management working group eliminates obstructions to knowledge flow and contributes to shared understanding. The knowledge management working group is the organization's primary means of implementing knowledge management. The working group is how the knowledge management officer assesses and improves the transfer of knowledge in the organization. It also helps the COS/XO improve knowledge flow. How the group's ability mitigates bottlenecks and improves mission command determine success.

1-67. The knowledge management officer facilitates the working group, although the COS/XO chairs the group. This working group includes a representative from each of the major staff sections (knowledge management representative duties are described in paragraphs 1-70 through 1-73). Meetings are according to the unit's operational tempo and integrated into the organization's existing battle rhythm. This promotes regular attendance and improves the group's productivity.

1-68. Since the knowledge management working group's duties involve analyzing knowledge gaps throughout the organization, inviting a wider representation from time to time to take part in the working group provides a broader perspective to guide further investigation and problem-solving.

1-69. Considerations when establishing a knowledge management working group include:

- Commander's intent and COS/XO guidance for the knowledge management program.
- Determining who is responsible for what information to address knowledge flow issues.
- How the organization is structured and the challenges and benefits that structure presents to the integration of knowledge in the organization.
- How cross-functional teams (such as the current operations cell) function and how they affect knowledge flow in the organization.

1-70. The knowledge management working group's members understand knowledge management, what it can do for their section, and what it can do for the organization as a whole. They must understand that knowledge management is not specifically digital tools, but how people work with the most appropriate tools to enhance shared understanding. The analysis they perform during knowledge management identifies the appropriate tools (analog, digital, and others) for the organization's decisionmaking processes (Appendix G discusses focus areas for performing assessments).

1-71. The knowledge management working group's responsibilities and expectations are established early. This includes participants, report procedures, and priorities, with guidance and input from the COS/XO. This information is shared with the entire staff in an initial report or similar document.

Knowledge Management Representatives

1-72. Knowledge management representatives are staff section personnel designated as the agent of the staff principal to coordinate with the knowledge management staff section. They are usually the first responders to knowledge management issues and are well-versed in their organization's collaborative processes. They have technical skills or special training in knowledge management and want to improve the organization and be creative and critical thinkers.

1-73. Knowledge management representatives are agents of the commander or staff principal to coordinate knowledge management efforts in each primary staff section or at the company level. Operationally focused and specialists in their own warfighting function, these representatives understand the collaborative processes of their sections. If the organization has a knowledge management section, the knowledge management representatives work closely with it to mitigate any gaps that prevent information and knowledge transfer. These representatives are located in all organizations from company level to Army major commands.

1-74. Knowledge management representatives implement approved changes and improvements in their staff section or organization. Knowledge management representative functions do not include updating the information management systems or updating the collaborative sites; however, if their primary duties include updating these systems, they would normally continue to do so. In either case, knowledge management representatives understand how content is managed and understand the requirements for effective collaborative sites.

1-75. There are three main areas where knowledge management representatives contribute to implementing knowledge management in their organizations to include advocacy, support, and knowledge-brokering.

Advocacy

1-76. Advocacy includes spreading the knowledge management message and educating and emphasizing the importance of sound knowledge management practices. For example, they demonstrate to co-workers how to share knowledge using available knowledge management tools. Some advocacy actions include:

- Transmitting communications from the knowledge management officer to their section.
- Encouraging and setting the example in knowledge-sharing and learning.
- Leading knowledge management awareness training at staff section professional development.

- Collecting and sharing feedback from the staff section to the knowledge management officer, section, and working group.

Support

1-77. In their support role, knowledge management representatives attend knowledge management meetings and seek out projects and processes to streamline and automate. They help identify gaps in the processes used in their staff section. In addition to representing knowledge management initiatives to their staff sections, they provide their own staff section's perspective to the section and enable them to understand the needs of the organization. Knowledge management representatives are internal staff section representatives for knowledge management initiatives. Support actions include:

- Identifying gaps in staff element processes.
- Acting as liaison between the knowledge management officer/section and their staff section.
- Planning, coordinating, and delegating knowledge management activities for their staff section.
- Providing feedback to staff section leaders on the impact of knowledge management initiatives.
- Providing suggestions for new knowledge management initiatives or improvements.
- Providing knowledge management-specific training.

Knowledge Brokering

1-78. As knowledge brokers, knowledge management representatives link their colleagues to knowledge and information sources outside their immediate context. Specific ways knowledge management representatives act as a knowledge broker include:

- Facilitating knowledge sharing during meetings, activities, and operations.
- Networking with other knowledge management representatives and building contacts with experts.
- Responding quickly to staff section requests for support with timely push to the knowledge management officer and section.
- Identifying major knowledge and information needs and gaps in the staff section.

1-79. Key attributes for a knowledge management representative to be successful include a willingness to learn, excellent communication skills, and ability to overcome resistance to change. Knowledge management representatives influence others to be open to knowledge management initiatives and implement new processes and tools.

Knowledge Management Section

1-80. The knowledge management section (when assigned) provides advice and recommendations to commanders regarding how knowledge management improves shared understanding throughout the organization, including that of other staff sections. Commanders direct the implementation of knowledge management improvements per priorities, considering the recommendations of the knowledge management officer and with consultation from the staff.

1-81. Knowledge management section members advise the unit's staff on knowledge management and tools. These help the staff to manage explicit and tacit knowledge. The section uses available tools to help the unit create and apply knowledge management. The knowledge management section supports unit learning before, during, and after operations and helps the staff develop and disseminate techniques and activities that create or transfer knowledge gained from operations. The knowledge management section enhances mission command by helping organizations integrate information systems into the headquarters in a manner consistent with best knowledge management practices and operational requirements.

1-82. The knowledge management section builds and sustains knowledge architecture to connect people and help them to collaborate and rapidly share techniques, procedures; operational observations, insights, lessons, and knowledge products. Elements of this architecture include a knowledge management working group (people); unit knowledge processes critical to operations (e.g. situation reports [SITREP]); SOPs that detail unit collaboration methods (e.g. SharePoint and Defense Connect Online

[DCO]); other sources of knowledge (e.g. Centers of Excellence); and knowledge management representatives in all subordinate units (organization).

1-83. Knowledge networks are an important part of knowledge architecture. These include social networks like MilBook, interpersonal networks like knowledge management working groups, and technical networks like the Secure Internet Protocol Router network. Commanders, staff, and leaders establish social and interpersonal networks, while the signal staff officer establishes the technical network architecture. The knowledge management officer and the knowledge management section facilitate collaboration among each of these networks and help connect subject matter experts to enable individual and organizational learning.

1-84. The knowledge management section's responsibilities include:

- Executing the five steps of the knowledge management process.
- Identifying and resolving knowledge gaps.
- Providing a core team to resolve knowledge management issues. This team forms the basis of the multi-functional knowledge management working group drawn from all staff sections.
- Advising the commander and staff on knowledge management solutions.
- Developing techniques and procedures to support unit learning throughout all force pools of Army force generation (ARFORGEN).
- Advising the unit on using knowledge management processes and tools.
- Coordinating with external knowledge sources to make available to the organization.
- Developing and modifying SOPs for knowledge management.
- Analyzing newly recommended information technology for knowledge management utility and recommend acceptance and integration by signal staff as appropriate.
- Coordinating with the signal staff officer for technical network, database, and other support.
- Ensuring after action reviews are collected, documented, and disseminated internally and externally as required.

1-85. In forming a knowledge management section, commanders determine who among their staff meets the requirements of people, processes, tools, and organization and how they overlap. Commanders identify those individuals who:

- Best understand the organization's people and their operational and training requirements (skills often resident in operations officers and non-commissioned officers).
- Have a solid understanding of the processes used to transfer knowledge in the organization.
- Know of subject matter experts on the information systems that support the mission command systems and processes of the organization (warfighting function master gunner).
- Understand the available tools, including information systems and how they are networked.

1-86. Section member duties and responsibilities depend on Soldiers assigned to the section. Not every echelon has a knowledge management section and its composition may vary. The number of personnel determines how many functions the section can accomplish. Not all positions described here are authorized or required at a given echelon.

1-87. The knowledge management section may contain the following positions:

- Knowledge management officer.
- Assistant knowledge management officer.
- Knowledge management noncommissioned officer.
- Content management specialists.

Knowledge Management Officer

1-88. The knowledge management officer directs the knowledge management section. He or she reports to the COS/XO and advises the commander and staff on knowledge management. The knowledge management officer ensures the knowledge management process and procedures are understood in the unit. He or she demonstrates how these processes and procedures improve efficiency and shared

understanding during training and enhance operational effectiveness during operations, especially in time-constrained environments. During operations, the knowledge management officer moves with the commander, or remains in the command post, as required (FM 6-0 provides additional information about knowledge management officer duties and responsibilities). Responsibilities include:

- Creating an organizational knowledge network and metrics for evaluating its effectiveness.
- Developing knowledge management techniques, policies, and procedures and ensuring command-wide dissemination.
- Advising the commander and staff on integrating knowledge management practices throughout the organization.
- Writing the knowledge management annex to plans and orders and updating as necessary.
- Performing staff planning and coordination of knowledge management functions and activities to improve shared understanding, learning, and decisionmaking.
- Leading efforts to identify gaps in organizational processes.
- Leading the staff in assessing unit knowledge processes.
- Synchronizing knowledge management functions and activities with higher commands and subordinate commands.
- Monitoring emerging knowledge management trends for incorporation into unit operations.
- Directing knowledge management working group efforts and facilitating its meetings.

Assistant Knowledge Management Officer

1-89. The assistant knowledge management officer ensures section members understand the knowledge management process and tools. They understand the major processes used in the unit and the functions of the information systems that support those processes. Assistant knowledge management officers help the operations officer and signal staff officer map the processes and information systems that produce the common operational picture. The assistant knowledge management officer reports to the knowledge management office. Responsibilities include:

- Initiating, coordinating for, and maintaining a virtual right-seat ride capability.
- Understanding the supporting information systems and knowing the subject-matter experts that support those systems.
- Coordinating with battle captain and operations section to clearly understand how the operations process applies to unit's battle rhythm.
- Executing knowledge management policies and plans in the knowledge management section.
- Developing, organizing and supervising implementation of the unit's content management effort.
- Assisting the staff in knowledge analysis to answer commander's critical information requirements.
- Seeking techniques to incorporate effective knowledge transfer and learning techniques into organizational learning.
- Mapping the unit's knowledge management network.
- Developing metrics for evaluating knowledge management effectiveness.
- Identifying operationally relevant trends, observations, insights, and lessons; and significant actions.
- Ensuring efficient processes for directing requests for information.
- Coordinating with the signal staff officer to ensure connectivity to relevant information systems and networks.
- Overseeing knowledge management-related roles and responsibilities as directed by the knowledge management officer.
- Establishing procedures to monitor the appropriateness of a unit's content.
- Developing the unit's knowledge management training and certification program.

Knowledge Management Noncommissioned Officer

1-90. As the senior enlisted member of the knowledge management section, the knowledge management noncommissioned officer advises the knowledge management officer on ways to facilitate knowledge-sharing in the staff; improving knowledge transfer, knowledge tools and processes; and other knowledge management matters. Knowledge management noncommissioned officer s help integrate knowledge management training concepts into the unit's individual and collective mission-essential tasks. They oversee knowledge management training certification programs. Responsibilities include:

- Assisting staff sections organize the command post's layout to best facilitate staff interaction.
- Coordinating appropriate audiovisual displays of the common operational picture and other operationally relevant knowledge management products in command posts and other areas.
- Monitoring collaboration sites and knowledge networks and advising staff on relevant content.
- Addressing knowledge management aspects of operations security in coordination with the protection staff section.
- Collaborating with unit command sergeants major, battle staff noncommissioned officers, staff section noncommissioned officers in charge, network and information systems subject matter experts, and mission command system subject matter experts, to gain a clear understanding of critical processes in the mission command system.
- Advising on designing briefings and text documents.
- Helping design templates and formats for recurring knowledge products to increase standardization and reduce redundancy.
- Participating in the knowledge management working group.
- Ensuring the unit's content management plan meets requirements and is implemented across the unit.
- Reviewing the unit's file management techniques and directing adjustments as needed.
- Remaining abreast of current and future trends in knowledge management and content management and integrating them into unit operations as needed.
- Supervising training in knowledge transfer procedures.
- Serving as the unit's expert for knowledge management tool and system training, design, and use.
- Coordinating with the operations officer and signal staff officer to incorporate knowledge management tools, systems, and information system architecture into the common operational picture input design and display.
- Coordinating with signal staff officer technical teams to identify and implement knowledge management initiatives.
- Ensuring after action reviews from previous events is considered in any new missions.

Content Management Specialist

1-91. Content management specialists are experts on content management and retrieval. They ensure knowledge is available to Soldiers when they need it. These specialists help the signal staff section manage digital content with tools that exchange explicit knowledge, collaborate, and connect with subject matter experts across the organization and the Army. They implement content management in the four task areas of creating, organizing, applying, and transferring knowledge. Each task area is associated with steps of knowledge management. Responsibilities include:

- Supporting implementation of the unit's knowledge management policies and procedures.
- Searching for and capturing observations, insights, and lessons from other units and individuals via non-secure and secure internet protocol router networks and forums, as related to content management.
- Facilitating knowledge transfer between units, Soldiers, and leaders.
- Reviewing the unit's file management techniques and directing adjustments as needed.
- Developing comprehensive document naming conventions, data-tagging policies, and data organization for the unit consistent with Army policies.

- Training staff members to organize and obtain explicit knowledge stored in knowledge networks, databases, and information systems.
- Helping review databases and web sites to determine the security and relevance of content.
- Helping the knowledge management noncommissioned officer design briefings, documents, templates, and other knowledge products.
- Helping the knowledge management officer and the assistant provide expertise and training in using knowledge management tools, processes, and systems.
- Helping the battle staff noncommissioned officer and battle captain exercise content management specifically in the mission command system.
- Understanding current and future trends in knowledge management and content management.
- Coordinating with the signal staff (through the knowledge management officer) on incorporating current standards to improve information search and retrieval across various data sources.
- Coordinating with signal staff for information assurance and information security matters as related to content management.
- Supervising and performing knowledge management training including content management procedures.

1-92. In some situations, the knowledge management section is augmented with civilian contractors. These personnel become integral contributors to knowledge management efforts and expanding the capabilities of the knowledge management section by performing such duties as mission command system integrators or developers.

LEADERS

1-93. Leaders drive knowledge management and determine how successful a program will be. Leaders embrace and enforce knowledge management standards. They support efforts of the knowledge management section, knowledge management representatives, and knowledge management working group. Lastly, they support knowledge management training and activities such as performing assessments and enforcing content management.

1-94. Leaders understand the tools and processes in their section and mentor subordinates. They understand the commander's intent to communicate that intent and the commander's critical information requirements to their subordinates.

1-95. Leaders set the example by sharing their own knowledge with others. Leaders support their commanders and establish a culture of collaboration and contribute to collaborative efforts through the use of informal networking, collaboration sites such as SharePoint or DCO and Army forums such as S-3/XO net or Noncommissioned Officer Net. Leaders know understanding comes from the bottom-up, not the top-down, and are open to ideas, innovations, and insights that come from the lowest echelons. Leaders empower their subordinates by ensuring they can access knowledge resources of all types and know how to use them. Leaders build trust in subordinates.

1-96. Leaders develop teams that share knowledge to carry out the commander's intent. They effectively collaborate with each other and with those outside the team that affect their ability to execute their mission. Leaders understand knowledge management so they can effectively support their teams' ability to collaborate effectively. The trust and respect in teams facilitates knowledge sharing in the team. Leaders show Soldiers the value of applying the knowledge management components (people, processes, tools, and organization) to collaborate and share what they know and the consequences of failing to share knowledge.

1-97. Teams execute collective tasks to accomplish their mission. Army leaders collaborate with subordinate, lateral, and higher elements to ensure they gain knowledge and understanding as possible. They collaborate with other leaders to share their knowledge, increase their own knowledge and apply that knowledge to make their teams better.

1-98. As they build their own teams, leaders support their higher commander's team building tasks. This brings together teams that work toward a common goal with unity of purpose, even in the absence of unity of command.

1-99. Leaders recognize that shared understanding is critical to act according to the commander's intent and to complete a mission. Leaders perform or support activities to facilitate the creation and transfer of knowledge, such as after action reviews, post-mission debriefings, and rapid dissemination of knowledge and information.

SOLDIERS

1-100. Soldiers are an integral component of a knowledge-sharing environment and every Soldier understands and practices knowledge management. This enables Army commands at every level to be learning organizations. Soldiers perform knowledge management as part of daily business. Specifically, all Soldiers:

- Understand their expertise is valuable if shared with other Soldiers, organizations, and the Army.
- Understand critical processes used in their section.
- Share what they know with others.
- Be proficient on critical individual and unit information systems such as SharePoint and CPOF.
- Learn before, during, and after operations.
- Know how to use search-and-discover and expertise-location tools to find knowledge and information they need.
- Know the capabilities and how to use tools and systems available to them.
- Know proper reporting procedures.
- Participate in post-mission debriefings and after action reviews.
- Know how to access additional knowledge resources, such as those found in the Center for Army Lessons Learned and centers of excellence.
- Know the commander's critical information requirements.
- Share lessons learned.

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Chapter 2

Assessing Knowledge Management

Assessment is the first step of knowledge management. This chapter begins by describing assessment as a continuous activity of operations and knowledge management's role in it. It then provides an overview of knowledge management assessment. The chapter continues by describing step by step how to perform knowledge management assessment and assessment outcomes and recommendations. It then presents seven areas that are common focus areas of assessment. The chapter concludes with an illustrative scenario to show how a new knowledge management officer learns about the organization and performs knowledge management assessment in certain areas.

ASSESSMENT

2-1. *Assessment* is the determination of the progress toward accomplishing a task, creating a condition, or achieving an objective (JP 3-0). Together with the other operations process activities of plan, prepare, and execute, continuous assessment is one of the major mission command activities performed during operations. Assessment precedes and guides the other activities of the operations process. Assessment involves comparing forecasted outcomes with actual events to determine the overall effectiveness of force employment. It also involves continuously monitoring and evaluating the operational environment to determine what changes affect the conduct of operations. Assessment helps commanders determine progress toward a desired end state, achieving objectives, and performing tasks.

2-2. All staff sections assess progress; it is not the purview of any one staff section or command post cell. Each staff section assesses the operation from its area of expertise. However, these staff sections coordinate and integrate their individual assessments and associated recommendations across the warfighting functions to produce comprehensive assessments for the commander, particularly in protracted operations. They do this in the assessment working group (see ADRP 5-0 for more information). The knowledge management staff assesses ongoing activities and the overall operation from a knowledge management perspective; informing the broader assessment activities of the operations process.

2-3. During operations, commanders and staffs assess the situation to understand current conditions and determine how the operation is progressing. In the context of the Army operations process, assessment includes, but is not limited to, these three activities:

- Monitoring the current situation to collect relevant information.
- Evaluating progress toward desired end state conditions, objectives, and tasks.
- Recommending or directing action for improvement (see ADRP 5-0 for more information on the three assessment activities of the operations process).

KNOWLEDGE MANAGEMENT ASSESSMENT OVERVIEW

2-4. Assessment, as the first step of the knowledge management process, analyzes the unit's knowledge needs and establishes approaches that improve shared understanding, decisionmaking, and organizational learning. Knowledge improves unit performance. Knowledge management assessment involves monitoring unit performance to evaluate how the unit manages time and information and what is considered critical for its leaders to make decisions. The knowledge management staff assesses how knowledge and information move through the organization, noting the interaction of the people, processes, and tools involved.

2-5. During operations, the knowledge management staff focuses on the operation and monitors operations and unit performance to determine how knowledge management helps the organization learn

and improve. Understanding the unit's operations and insights provide focus for performing knowledge management assessment. Commander's guidance and priorities guide the knowledge management staff in determining how to best support the organization.

2-6. The assessment helps the staff to understand current and desired conditions. It examines all four knowledge management components of people, processes, tools, and organization—in the context of the organization's mission. The assessment also gives a baseline of the organization's current knowledge management status by depicting the connections between them. The knowledge management assessment accomplishes the following:

- Graphically depicts the organization's knowledge management status.
- Identifies impediments to knowledge flow in the organization and with unified action partners.
- Identifies knowledge and performance gaps and determines their causes or contributing factors.
- Assesses the impact each gap has on the organization.
- Determines measures of effectiveness and priorities for addressing the gaps.
- Provides the basis for recommendations to close identified knowledge gaps and reduce impediments to knowledge transfer.

2-7. The knowledge management officer helps the knowledge management working group perform the assessment. The officers leverage staff expertise and collaborate with stakeholders to inform the analysis and create recommendations. Knowledge management representatives from various staff sections contribute insight in their functional specialties. Content management specialists, if assigned, provide analysis in this key area. The operations sections expertise in mission command processes and the signal staff section's expertise in network operations and information management are also important contributors.

2-8. In performing the assessment, the working group examines a variety of sources, including but not limited to:

- Commander's guidance and intent.
- Commander's critical information requirements.
- Orders and task organization.
- After action reviews.
- Post-mission debriefs; particularly leader-focused debriefs.
- Lessons learned development.
- Leader interviews (see Appendix E for interviewing techniques).
- Subject matter experts on information systems.

2-9. Depending upon factors such as time and personnel available, the operational tempo, the commander's guidance, and areas identified as priorities to assess, the knowledge management assessment may be deliberate or abbreviated.

DELIBERATE

2-10. A deliberate knowledge management assessment identifies all people, process, and tools and places them in their context for entire organization. It is ideally suited for establishing or standing up a new organization.

ABBREVIATED

2-11. Abbreviated knowledge management assessments are focused on needs or identified problems. The commander or executive officer (XO)/chief of staff (COS) directs an assessment focused on those identified areas. This type of assessment focuses on a single topic, unit, process, or tool. A rapid knowledge management assessment is done when a performance gap has been identified, to determine if a knowledge-based solution will improve performance (paragraphs 2-28 through 2-30 describe performance gaps and their analysis).

PERFORMING THE KNOWLEDGE MANAGEMENT ASSESSMENT

2-12. A knowledge management assessment has four steps:

- Step 1: Define the organization and its environment; people, processes, tools, and organization.
- Step 2: Describe the organization’s internal and external linkages and dependencies.
- Step 3: Analyze the organization and evaluate its knowledge and performance and the gaps in its knowledge and performance.
- Step 4: Depict the connectivity and alignment of the organization’s knowledge management components in easily understood graphical representations.

2-13. The steps are not executed in isolation. Relationships and dependencies are identified at every step. Depicting the organization begins early and helps the knowledge management working group visualize what they define, describe, and analyze (Table 2-1 shows the knowledge management assessment steps and its key inputs and outputs). Each step is described in paragraphs 2-14-2-42.

Table 2-1. Steps of assess – key inputs and outputs

Step 1: Assess		
Purpose: to accurately capture the current arrangement of people, processes, technology, and organization including knowledge management gaps, across the organization. <ul style="list-style-type: none"> • Inputs derived from multiple sources as needed. • Outputs from assess form the basis of inputs for design. 		
Key inputs	Steps	Key outputs
<ul style="list-style-type: none"> • Unit organization and task organization • Unit and knowledge management standard operating procedures • Commander’s critical information requirements • Unit policies • Results of key personnel interviews • Military decisionmaking process (as applicable) 	Define <ul style="list-style-type: none"> • Define the organization and its PPTO environment 	<ul style="list-style-type: none"> • Draft knowledge management map depicting the initial arrangement of people, processes, technology, and organization
<ul style="list-style-type: none"> • Draft knowledge management map 	Describe <ul style="list-style-type: none"> • Describe the organization’s internal and external linkages and dependencies 	<ul style="list-style-type: none"> • Refined knowledge management map depicting a more informed arrangement of people, processes, technology, and organization
<ul style="list-style-type: none"> • Refined knowledge management map 	Analyze <ul style="list-style-type: none"> • Analyze the organization’s knowledge throughput 	<ul style="list-style-type: none"> • Draft gap chart depicting shortfalls in people, processes, technology, and organization • Draft recommended priorities chart based on commander’s critical information requirements, PIR, and initial guidance

Table 2-1. Steps of assess – key inputs and outputs (continued)

Step 1: Assess		
Purpose: to accurately capture the current arrangement of people, processes, technology, and organization including knowledge management gaps, across the organization. <ul style="list-style-type: none"> • Inputs derived from multiple sources as needed. • Outputs from assess form the basis of inputs for design. 		
Key inputs	Steps	Key outputs
<ul style="list-style-type: none"> • Refined knowledge management map • Draft gap chart • Draft recommended priorities chart 	Depict <ul style="list-style-type: none"> • Depict the organizational knowledge matrix 	<ul style="list-style-type: none"> • Assessment update to chief of staff • Approved knowledge management strategy that includes the knowledge management map gaps and priorities chart • “BUB” chart

DEFINE

2-14. The first step of a knowledge management assessment is to define the organization and its environment with the ongoing mission and activities of the organization (Table 2-1 shows a simple tool to collect data on the knowledge management components).

People

2-15. The knowledge management working group identifies individuals with key knowledge management roles in the organization. These are individuals in positions important to the movement of knowledge and information through the organization. They include the commander, command sergeant major, coordinating and special staff, subordinate commanders, and staffs. It may also include others, such as liaison officers and those who communicate with unified action partners. It can also include individuals outside the organization, such as the ambassador, agency head, or others. It also includes training level of key personnel on critical tools (see the tools section below).

Processes

2-16. The knowledge management working group identifies all knowledge-based operational processes in the organization (i.e. orders process, targeting cycle, intelligence preparation of the battlefield, battle update briefs and assessments, reporting, and others).

Tools

2-17. The knowledge management working group identifies all knowledge systems (digital and non-digital) of the organization. This includes non-organic systems that feed directly into the organization’s knowledge processes. These include, but are not limited to, the common operational picture, the components of the mission command system, external networks and linkages with unified action partners.

Organization

2-18. The first step is to define the organization and its environment including people, processes, tools, and organization. The knowledge management working group defines its organization in terms of the higher echelon, subordinate units, elements, and components of the organization. For example, a brigade combat team (BCT) knowledge management working group will define its organization for all levels, from company to division.

2-19. To adequately define the organization and its environment, the knowledge management working group monitors the current situation and progress toward accomplishing objectives. It seeks to gather the tools and data needed to perform knowledge management assessments. These include, but are not limited to:

- The higher headquarters’ plan or order, including the knowledge management and assessment annexes if available.
- Post-deployment after action reviews and reports.
- Access to subject matter experts, both internal and external to the unit.
- If replacing a unit in an operational area (relief in place/transfer of authority), any current knowledge management assessments, and assessment results.
- Relevant assessment results (classified or open-source) produced by civilian and military organizations.
- The identification of potential data sources, including academic institutions and civilian subject matter experts.

Table 2-2. A simple tool for collecting people, processes, tools, and organization data

	<i>People</i>	<i>Processes</i>	<i>Tools</i>	<i>Organization</i>
Physical Location				
Virtual Location				

DESCRIBE

2-20. The second step is to describe the organization’s internal and external linkages and dependencies. This includes:

- Defining and describing linkages between key individuals in the organization (i.e. direct and indirect, superior and subordinate, regular and intermittent, formal and informal).
- Defining and describing linkages and dependencies between all subordinate units, elements, and components of the organization.
- Subdividing and grouping logical subordinate components by warfighting function, task organization, or geographic location.
- Defining and describing linkages and dependencies between the knowledge-based operational processes in the organization.
- Defining and describing significant characteristics and linkages and dependencies between the knowledge systems and their associated organizational data bases.

ANALYZE

2-21. The third step is to analyze and evaluate the organization’s knowledge flow. Knowledge flow is the ability of knowledge to move freely throughout the organization. This evaluation is at the heart of the assessment process. Initially, this step examines the frequency and volume of knowledge flow between each of the key individuals, units, elements, processes, and systems defined and described in the first two steps (define and describe). It identifies interruptions and bottlenecks—factors impeding effective knowledge transfer. This analysis provides a baseline of the unit’s current knowledge matrix. Its results are shown in the next step (“depict”); and also inform a critical part of analysis that examines knowledge links to unit performance called gap analysis.

2-22. Based on its analysis, the knowledge management working group determines the priority in which identified problems should be addressed (determining priorities is addressed in paragraphs 2-40 and 2-41).

Gap Analysis

2-23. Gap analysis identifies shortfalls in knowledge and shortfalls in unit performance, analyzes the linkage, and determines how knowledge-based solutions help fill the gaps. The knowledge management

staff's primary concern is to remedy the knowledge shortfalls that affect the unit's performance and ability to accomplish its missions.

2-24. The knowledge management working group uses various methods to gather information and feedback to inform its analysis. These include facilitated discussions, interviews (one-on-one or small group), observations, feedback from working groups, and surveys. The knowledge management working group plans and prepares these activities with great care to avoid wasting the time of those involved and to ensure that it collects the information it needs.

2-25. Gap analysis considers knowledge gaps and performance gaps, current state, and desired state. Fundamentally, assessment is about measuring progress toward the desired end state; therefore, the knowledge management working group determines the current situation and desired states of knowledge flow in the organization.

Knowledge Gaps

2-26. Knowledge gaps are the difference between what the force performs at the desired effectiveness and what it knows now. Knowledge gaps:

- Are linked to the factors that impede knowledge transfer (interruptions and bottlenecks).
- Occur when there are disconnects between what an organization knows and what it must know to accomplish its mission.
- Adversely affect unit performance.

2-27. The outcome of knowledge gap analysis is recommended processes and procedures to improve knowledge transfer and close the knowledge gaps.

Performance Gaps

2-28. The staff analyzes relevant information collected through monitoring to evaluate the operation's progress. This reveals performance gaps. Performance gap analysis compares actual, current performance against potential or required performance. The gaps between current and potential performance is targeted to improve overall unit effectiveness.

2-29. The performance gap analysis determines tasks that the force cannot perform now but that it performs to reach the desired state. Some of the tasks are not clear at this point because of knowledge gaps, but this provides a general sense of what the force needs to perform at the desired level.

2-30. The performance gap analysis determines where knowledge-based solutions are needed to improve unit performance.

Current State

2-31. Gap analysis begins with an assessment of the unit's current state. The primary sources of the current state analysis are monitoring and facilitated discussions and/or interviews. Facilitated discussions and/or interviews identify gaps as perceived by key leaders. The knowledge management officer seeks feedback on the types of knowledge that leaders believe they need the most or have difficulty obtaining and discusses the different types of approaches available to correct the gaps. The facilitated discussions or interviews return to the question, "If we are successful, what will you know, have, or be able to do?"

2-32. These discussions include:

- Strengths, weaknesses, opportunities, and threats.
- Social and information networks, feedback mechanisms, communication, collaboration, knowledge flow, and technologies used.
- Organizational structures, culture, and other areas as necessary.

Desired State

2-33. Desired state analysis identifies and describes the organization's desired state. Much of this is defined by doctrine and institutional requirements; but other elements are tied to a commander's vision or

other requirements specific to the organization. The goal is to answer the question, “What must our organization do that it cannot currently do?” The answers to this question are the performance gaps to address to reach the unit’s desired end state.

2-34. Desired state analysis understands the impact of the future operational environment and how it impacts the vision and goals and envisioned changes in:

- Stakeholders.
- Organizational structure.
- Social and information networks.
- Feedback mechanisms.
- Communication and collaboration.
- How knowledge and information move in the organization.
- How change occurs in the organization.
- Why the organization needs to change.

2-35. The discussion identifies the major knowledge management activities the organization performs as part of its future state. This thematic approach helps leaders and staff organize and focus. Naming activities is flexible and reflects what the organization believes it is or needs to do. There are usually multiple gaps in each activity. Examples of knowledge activities are:

- Knowledge transfer.
- Content management.
- Collaboration over social networks.
- Use of collaborative technologies.
- Team development.
- Staff processes and oversight.
- Expertise development.
- Integration of knowledge management into learning.
- Battle drills.
- Pre-combat checks.
- Section training.
- File management.
- Battle/commander update briefs/assessments.
- Reporting.
- Use of expertise development tools.

Gap Analysis Steps

2-36. The steps to perform gap analysis include:

- Step 1: Analyze the current state; what the force knows now and what it does now (For example: know the situation report (SITREP) formats; know how to operate the radio; and submit SITREPs by radio.)
- Step 2: Compare the current state to the desired state and know what the force knows and what it does. For example, know how to use information systems (e.g. command post of the future [CPOF], how to enter SITREP information into systems, and how systems integrate and submit SITREPs.
- Step 3: Identify the knowledge gap between what the force knows now and what it needs to know. What it needs to know will enable it to do what it needs to do (e.g. staff and Soldiers do not know the capabilities of or how to use the digital information systems).
- Step 4: Identify the performance gap between what is missing in what the force can do now and what it needs to do (e.g. the staff and Soldiers cannot submit SITREPs or other reports using the digital information systems; they cannot integrate the systems to take advantage of their full

capabilities; or they must be able to perform these things to populate the common operational picture with accurate, updated information).

- Step 5: Analyze how the force learns and innovates now and enables it to perform in its current state. (e.g. communications training is performed in sections/subordinate units for new personnel).
- Step 6: Analyze how the force learns and innovates to do what it needs to do. (e.g. perform centralized refresher training on the digital systems and perform collective training with battle drills with the digital systems).
- Step 7: Determine the types of improvements that can help close the gaps. (e.g. unit-wide training for all new personnel who will use the digital systems, regularly scheduled refresher training, and battle drills on the systems in collective training events).

2-37. Identify contributing factors for each gap. Contributing factors are those things in the operational environment that cause or contribute to knowledge or performance gaps. Common contributing factors include:

- Lack of a common operational picture across the organization.
- Lack of understanding of the commander’s intent.
- Use of multiple calendars instead of a common, synchronized calendar.
- Soldiers unable to find information they need.
- Content management misunderstood or not practiced (no naming conventions, multiple documents posting in different formats, or associated problems).
- Collaborative tools absent, misused, or misunderstood are viewed as a hindrance.
- E-mail used as a primary collaborative tool and often used to convey complex messages better communicated face-to-face.
- Opportunities for face-to-face interaction to exchange knowledge are missed or mismanaged.
- Too many meetings and many meetings are not well-organized and are without right attendees. General meeting mismanagement.
- Knowledge lost with personnel turnover and lack of effective handoff to transfer knowledge to incoming personnel.

2-38. The gap analysis chart is a useful tool to show knowledge and performance gaps. The completed gap analysis chart, which shows the analysis results, becomes the product of gap analysis. The gap analysis chart identifies performance and knowledge gaps, matches them with knowledge management components, indicates actions to bridge the gaps and suggests priorities (Table 2-3 shows an example of the gap analysis chart).

Table 2-3. Gap analysis chart

Gap analysis					Knowledge management strategy input				
Operational issue	Performance gap	Knowledge gap	Priority	Knowledge management component				Proposed solution	Proposed required action
				P	P	T	O		
Interagency coordination and cooperation	Assigning responsibilities for the interagency requests	Insufficient interagency interface coordination. No LNO.	2	X				New policy	Rewrite policy
Document reviewers 75% accuracy rate			5		X			New analytics through data mining	Review process
Information sharing with Department of Defense	Accessibility of Department of Defense	DoD information not being retrieved	3		X		X	Policy and portals for access	New policy and network

Table 2-3. Gap analysis chart (continued)

Gap analysis					Knowledge management strategy input				
Operational issue	Performance gap	Knowledge gap	Priority	Knowledge management component				Proposed solution	Proposed required action
				P	P	T	O		
Naming convention	Documents hard to find: files lack organization	No naming convention	4		X			Establish universal naming convention	Information assurance policy
PPTO – people, processes, technology, and organization									

2-39. To assess progress toward the desired state, the knowledge management working group develops assessment measures. This progress is measured during the “pilot” step of the knowledge management process (Assessment measures are described in Chapter 5).

Determining Priorities

2-40. The knowledge management working group seeks input from stakeholders to determine and recommend priorities of effort for the next step in the knowledge management process. This designs solutions to improve knowledge transfer and bridge the identified gaps. A useful tool is the knowledge management priorities chart. The knowledge management working group builds the knowledge management priorities chart based on results of preceding assessment steps.

2-41. Figure 2-1 shows areas that need improvement and shows impact and effort along a continuum. The knowledge management officer shows this to key leaders to seek their input on where the priority efforts should be among the identified knowledge management issues. The goal is to obtain key leader consensus on priorities. The knowledge management officer includes recommendations for priorities in briefing the recommended approach and methodology to the COS/XO for decision (Figure 2-1 shows an example knowledge management priorities chart).

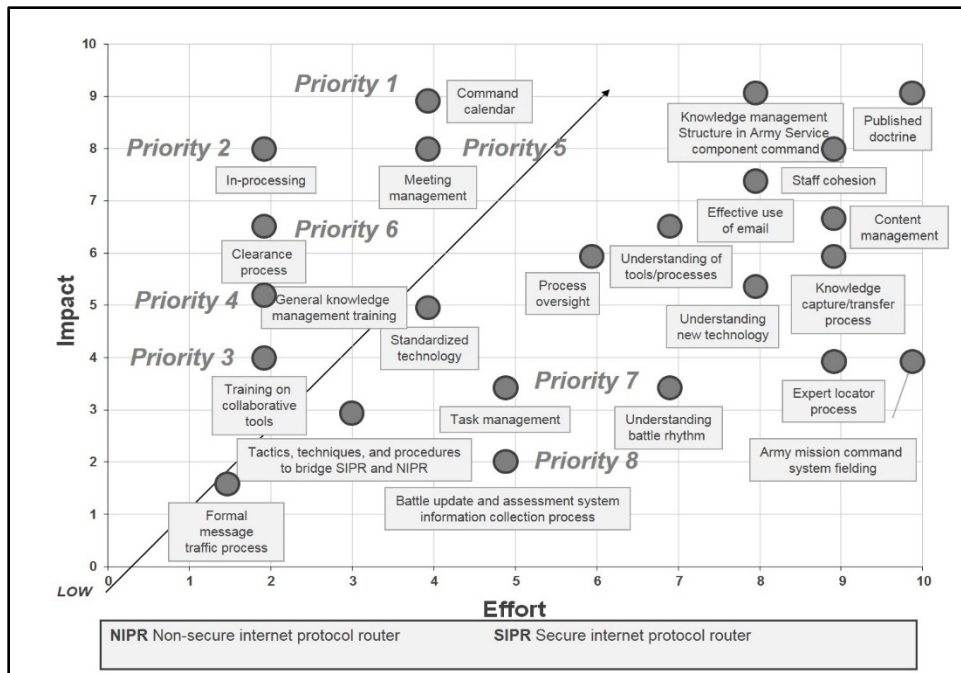


Figure 2-1. Example of knowledge management priorities chart

DEPICT

2-42. The fourth step shows the organization. This is done through knowledge management mapping, which identifies and categorizes knowledge assets found in organizations.

Knowledge Management Maps

2-43. Knowledge management maps are a graphic representation or map of the organization. Knowledge management maps are either concept maps or knowledge maps. Both types are helpful tools in assessment. Knowledge management maps are roadmaps to locate the information, resources, knowledge centers, and other knowledge assets and pathways. Concept maps and knowledge maps are different because concept maps provide the “how” and the “why.” Knowledge maps provide the “what” and the “where.”

2-44. Knowledge management mapping begins early during assessment and continues throughout assessment. The maps become important tools to inform current state analysis. Knowledge management maps display the organization’s current knowledge management status by identifying and placing in context with one another the people, processes, and tools.

2-45. Concept maps and knowledge maps are as simple as hand-drawn matrices on a white board or as complex as those developed through the use of specialized knowledge mapping software applications. Fully developed knowledge management maps allow for critical pathways and gaps to be identified quickly. Knowledge management maps help organizations to become aware of what they know, where that knowledge is created, and how it flows throughout the organization. These maps help knowledge management practitioners visualize linkages and relationships between the components in the context of the organization and the operational environment and recognize critical information and knowledge. These maps also help recognize knowledge dependencies and identify knowledge gaps and bottlenecks. The knowledge management working group analyzes and identifies knowledge gaps.

Elements of Knowledge Management Maps

2-46. Concept maps and knowledge maps have these elements in common:

- The over-arching categories or major headings which can be one or more categories under a major heading.
- The paths or the channels along which information or knowledge moves or the link a category has with its supporting or connected parts. Paths indicate directional, bi-directional, or multi-directional linkage.
- Connecting verb or phrase or term(s) used to show the link and between one or more categories or elements of the concept.
- Gaps to show the delta between what the unit should know (can know) and what it does know. Knowledge or information that is required to fill a void in the concept or knowledge map.

Concept Maps

2-47. A concept map shows information or knowledge created. It provides additional information and/or knowledge. Concept maps show relationships between different components or processes. A concept map provides an illustration of relationships between different components or processes to:

- Aid in design of structures.
- Link roles and relationships.
- Diagnose issues or gaps.
- Communicate complex ideas and relationships.
- Transfer the results of ideas.

2-48. Concept maps are used to:

- Convey complex ideas in an easily understood format (critical path analysis).
- Show the “as is” and “to be” concepts of a problem and resolution (knowledge management assessment).
- Find critical information quickly (operations order deconstruction).

- Illustrate relationships between different components or processes.
- Improve decisionmaking and problem solving (after action review storyboards).
- Find key sources of knowledge creation.
- Identify the knowledge gaps and bottlenecks.
- Provide an inventory and evaluation of intellectual assets (nodal analysis).
- Highlight islands of expertise (spider diagram).
- Develop interviews.
- Develop lessons learned process and methodology.
- Provide a visual of the network analysis.

2-49. Concept maps do the following:

- Have a subject, make a statement, or answer a question.
- Connect elements and subelements with a verb or phrase.
- Provide a logical progression of ideas and pathways.
- Show available knowledge (facts).
- Show the paths of knowledge flow.
- Show gaps in knowledge and in knowledge flow.
- Include nonstandard symbols in a legend.

Knowledge Maps

2-50. A knowledge map shows identified knowledge assets. These maps categorize the association of knowledge assets in their organization—people, processes, content, and tools. Knowledge maps provide an assessment of existing or required knowledge and information in the following categories:

- What does the individual need to know?
- Where does this knowledge come from?
- Who owns it or has it?
- Is the knowledge tacit or explicit?
- Is the knowledge routine or non-routine?
- What issues does it address?

2-51. Essential elements of a knowledge map (similar to a concept map) include:

- Identify what processes the knowledge map enables.
- Identify stakeholders and parties of interest.
- Identify what systems are used to store the knowledge.
- Determine what knowledge is available.
- Determine where that knowledge resides.
- Determine best means of capturing knowledge.
- Show the knowledge's location (relational).
- Make knowledge maps available to the right people in established security constraints.

Building a Concept or Knowledge Map

2-52. Building a concept map or a knowledge map takes place in five phases.

- Brainstorming phase: write down all items the working group thinks are important.
- Organizing phase: create groups and subgroups.
- Layout phase: arrange elements that represent collective understanding and interrelationships.
- Linking phase: this is an action verb. Use lines with arrows to connect and show the relationships between connecting items.
- Finalization phase: convert the map into a permanent form. Incorporate the knowledge map into the concept map where and if appropriate.

2-53. The map must be revisited and revised to reflect changes in the knowledge management components of people, processes, and tools in the organizational context (Figure 2-2 on page 2-12 shows an example of a concept map). The knowledge management working group should be used to develop knowledge maps.

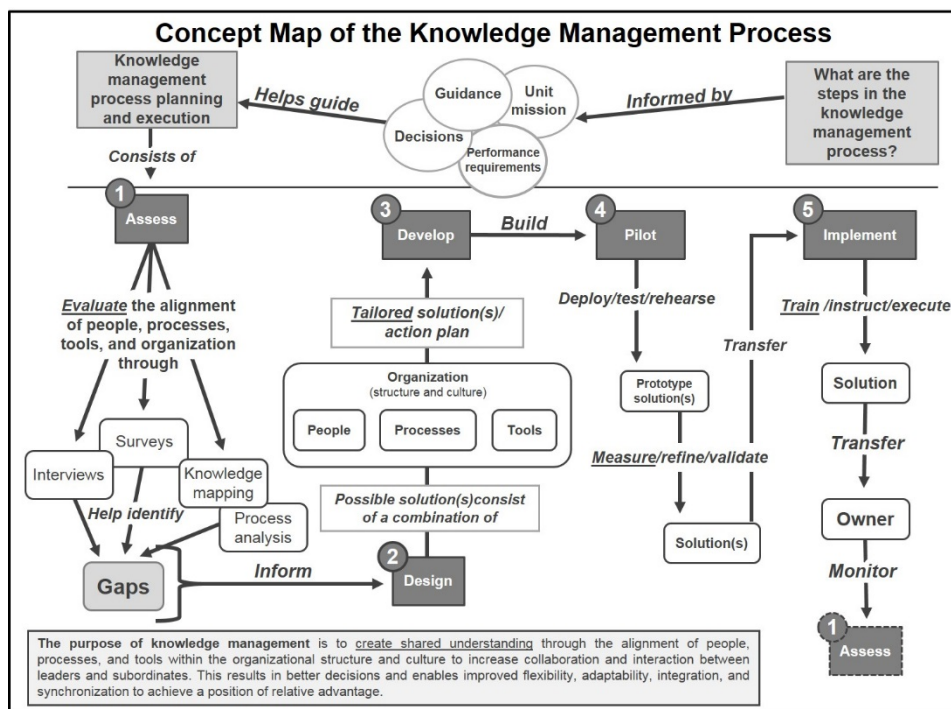


Figure 2-2. Example of a concept map

Components of Knowledge Management Maps

2-54. The components of any knowledge management map are the four components of knowledge management: people, processes, tools, and organization. These components show a variety of ways depending upon the tools and time available. These components illustrate the paths where knowledge moves in the organization. A missing or interrupted path indicates a gap in knowledge flow.

People

2-55. People represent organizational entities. They can be individuals, such as commander, COS, or ambassador, or they can be units or organizations, such as patrol, platoon, company, staff section, or working group. People are further differentiated by warfighting function.

Processes

2-56. Processes are the staff processes and the operational processes performed by the unit and its subordinate elements. Processes are lines that connect tools and people. Dependent processes, where an event or action is dependent upon a preceding event or action, are distinguished with bold lines. Intermittent paths, which occur at irregular intervals, are distinguished with dotted lines. These process pathways illustrate connections between elements. The process paths reveal unexpected connections offering useful insights into organizational processes.

Tools

2-57. Tools are the organizational processes and organizational tools used to capture and flow knowledge. Examples are processes such as after action review, intelligence preparation of the battlefield, or shift change briefings. Tools are also the actual digital or analog tools used to capture and transfer knowledge.

Organization

2-58. The organization refers to both the formal organizational structure of the military unit assessed and the knowledge flow visualized through the knowledge management map.

Briefing Tools

2-59. Because concept maps and knowledge maps are used by knowledge management professionals, briefing tools show key information from the concept maps or knowledge maps. The knowledge management officer develops other products to show its key information into presentations such as the battle update brief or assessment. Most importantly, these products show the interruptions and bottlenecks that impede effective knowledge transfer. The tool or tools depends on how the commander prefers to receive information (Figure 2-3 shows an example of a “stoplight” briefing tool).

Knowledge Management Update				
Section	People	Process	Tools	Organization
G-1	<p>R</p> <p>No knowledge management representative for over 30 days</p>	G	G	G
G-2	G	G	<p>A</p> <p>New software patches will be required on the “XYZ” system within 30 days</p>	G
G-3	G	<p>A</p> <p>Recommend a G3 rep be included in the “ABC” working group in order to bring operational perspective.</p>	G	G
<p>Ongoing knowledge management section tasks:</p> <ol style="list-style-type: none"> 1) Currently working an abbreviated knowledge management assessment on meeting management in accordance with chief of staff guidance (S: _____) 2) Next meeting of the knowledge management working group will be _____. 3) Knowledge management section conducting knowledge management representative training on _____. 				

Figure 2-3. A way to convey key knowledge management mapping information

ASSESSMENT OUTCOME AND RECOMMENDATIONS

2-60. The knowledge management officer delivers the assessment report and briefs the COS or XO on assessment results. The assessment report includes the results of gap analysis, key leader consensus on priorities of effort, the unit knowledge map, and graphical depictions to summarize the unit’s knowledge status as appropriate. The report and briefing recommend broad actions for improvement as a knowledge management strategy. The COS or XO approves or modifies the knowledge strategy as needed and signs the approved document. The knowledge management strategy aligns efforts across the four components. The approved strategy is ready to be further developed into an action plan during the design step of the knowledge management process which is discussed in chapter 3.

FOCUS AREAS FOR ASSESSMENT

2-61. The areas shown below are central to how information and knowledge move in organizations and are common areas where organizations encounter problems. These areas are the focus of knowledge management assessments (Appendix G describes the analysis performed for each of these areas during assessment and Chapter 3 describes design actions for each):

- Standards.
- Time management.
- Meeting management.
- Reporting.
- Technical systems.
- Content management.

SCENARIO ILLUSTRATING ASSESSMENT

2-62. Captain Smith, a new knowledge management officer, arrived in the 22nd BCT during the reset force pool of Army force generation (ARFORGEN). Captain Smith outlined what she needed to accomplish in the first 30 days and developed the plan for the knowledge management components of people, processes, tools, and organization. It included four types of actions:

- Actions to improve her own understanding of knowledge management (for example, additional training).
- Actions to develop her understanding of the unit's knowledge processes (for example, working groups, meetings, and use of SharePoint and how the unit shares information and knowledge).
- People she wanted to meet and what she would like to discuss with them (for example, meet with the XO and discuss the battle rhythm with the command sergeant major to gain perspective about the organizational culture).
- Actions to initiate as soon as possible.

2-63. To help determine what she needed to accomplish, Captain Smith considered:

- The existing knowledge management team—the other personnel on the staff including the knowledge management representatives and included their ideas and suggestions to improve the plan.
- An initial intent statement to provide an immediate understanding of what she intended the knowledge management team to accomplish. Their efforts must be fully synchronized with the initial plan.
- The need to be flexible, since she would likely find it necessary to alter the plan as she learned more about the organization.
- The need to gain the support of the unit's chain-of-command. Not just the commander and XO but also subordinate commanders and primary staff officers.
- The need to establish the knowledge management working group and train the knowledge management representatives as soon as possible.
- The need to achieve early successes and knowing that the faster knowledge management could prove its value to the unit, the more support she could count on for new initiatives.

2-64. To help her understand her new unit, Captain Smith obtained the following documents and information:

- Tactical standard operating procedures (SOP).
- Commander's critical information requirements.
- Knowledge management SOPs.
- The order with the knowledge management annex for recently completed deployment.
- Observations, insights, and lessons learned from the recent deployment.
- Commander's policies and intent.

2-65. These sources revealed that knowledge management in the unit was not well established or developed. The knowledge management annex for the last deployment was information management. The observations, insights, and lessons learned from the deployment indicated that knowledge management had improved to some extent during the deployment but it seemed ad hoc. The knowledge management officer during the deployment had not been school-trained. The effectiveness of the knowledge management working group appeared very limited. Only two of its members were still in the unit. The BCT knowledge management SOPs focused on information management and was not consistent across echelons. Some subordinate units had no knowledge management SOPs.

INITIAL OBSERVATIONS

2-66. Captain Smith observed the knowledge management practices taking place during the unit's ongoing activities in the Reset force pool. Knowledge sharing was not part of the organizational culture. Information moved vertically through traditional hierarchical channels. There was little cross-talk or mechanisms for this to occur, except during weekly staff meetings. During these meetings, staff sections were surprised at what other staff sections reported. She began sketching a concept map of the organization to depict her initial observations about how knowledge moved through the BCT.

2-67. The signal staff section, in charge of information management and network operations, appeared organized and competent. Captain Smith listened and participated at the weekly staff meetings and understood the unit's battle rhythm and how information and knowledge transfer took place.

2-68. Captain Smith took these actions:

- Met with the commander, XO, and command sergeant major.
- Met with staff principals.
- Met with signal staff and information management officer to seek their views on respective roles and functionality of the signal staff, information management, and knowledge management.
- Met with the battalion knowledge management officers.
- Obtained XO support to identify knowledge management representatives and establish the knowledge management working group.
- Obtained slots for knowledge management representatives to attend the knowledge management qualification course.
- Convened the first meeting of the knowledge management working group.

2-69. Throughout this process, Captain Smith sought feedback from the chain of command and staff about knowledge management issues and asked questions such as:

- Is there critical information you are having trouble accessing?
- Is the staff providing the necessary decisionmaking information?
- Are there reports that don't make sense or are not clear?

2-70. There were three consistent themes: one was the lack of adequate SOPs. Most of those she interviewed said that good knowledge management SOPs would go a long way toward solving many of their issues. A second theme was that too much time was being wasted in meetings and many of the meetings provided nothing of value. The third theme was that no one talked to each other. Every staff section seemed to be an entity unto itself. Also, the relationship between the staff and subordinate commanders were not positive and communication between them was often adversarial.

2-71. Captain Smith briefed the XO on her observations. The XO agreed that the current organizational culture and possibly the physical environment seemed to inhibit free and open knowledge-sharing among staff members.

2-72. The XO directed Captain Smith to perform a knowledge management assessment of 22 BCT with particular attention to three areas:

- Standardizing knowledge management practices in the BCT.
- Making meetings more efficient and less time-consuming.
- Improving communication and knowledge-sharing among staff and between staff and subordinate commanders.

2-73. Captain Smith began the assessment with a knowledge management working group meeting. Although some members were now in the knowledge management qualification course, those that were present would have an opportunity for on-the-job training by performing assessments.

2-74. Captain Smith explained the four step process the knowledge management working group would use to perform the knowledge management assessment: define, describe, analyze, and depict. She explained that although this was an abbreviated assessment, they would use it as a starting point to begin defining, describing, and depicting the entire BCT; is completed before the BCT deploys again. Although the BCT was currently in a garrison environment in the Reset force pool of ARFORGEN, this would not be the case for long. She also made sure they understood that their assessment must lead to recommendations for broad actions to take for correcting problems such as a knowledge management strategy. This is further refined into an action plan during the design step of the knowledge management process. The knowledge strategy must also recommend priorities of effort for designing and developing.

2-75. For the initial assessment, Captain Smith and the knowledge management working group focused on one area at a time: standards, meeting management, and improving communication and knowledge-sharing.

2-76. To inform their assessment, they performed interviews and surveys and facilitated meetings. Captain Smith did the following to determine what needed to go into the SOPs:

- Interviewed the commander about how he wanted to receive information and how he wanted it displayed on the digital dashboard.
- Learned about the commander's mission command system.
- Talked to the signal staff about the technical networks and information systems.
- Studied the observations, insights, and lessons learned from the unit's deployment.
- Studied how content was managed.

2-77. As they assessed each area, they followed the four knowledge management assessment steps.

2-78. The define and describe steps provided the context for each of the three areas of emphasis. They examined each of the knowledge management components in context with the ongoing mission and activities of the organization. They built a word picture of the BCT for each of the three areas assessed. Together, the knowledge management working group began developing a knowledge map and continued developing the concept map already begun by Captain Smith. These knowledge management maps helped the knowledge management working group to visualize what they were also describing in words. As they continued building the concept map and knowledge map, the knowledge gaps became apparent. The maps, together with briefing tools to present its key information succinctly, would be finalized during the depict step.

2-79. During the "analyze" step, the knowledge management working group analyzed gaps, current state, and desired state for standards, meeting management, and how knowledge was shared—including the communications gaps—between staff and subordinate commanders. The knowledge management working group's members provided valuable insight into the BCT's problems in each area and ideas on improvements. The concept maps and knowledge maps they built helped them to see where and how knowledge was linked to unit performance.

2-80. Captain Smith viewed the knowledge-sharing issue as an area they could improve relatively quickly and gain a "win" for knowledge management. As Captain Smith and the knowledge management working group worked together to perform analysis in each area, they evaluated how freely knowledge was able to move throughout the organization; examining the frequency and volume of knowledge flow between key individuals, units, elements, processes, and systems defined and described in the first two steps. They sought to find the interruptions and bottlenecks that impeded knowledge transfer.

2-81. In performing gap analysis, they analyzed the current state and the desired state for standards, meetings, and knowledge-sharing. They used the gap analysis chart as a tool to help visualize the knowledge and performance gaps. To gather information and insight, they performed interviews, surveys, and facilitated meetings with leaders throughout the BCT. The completed gap chart provided a record of the issues and potential broad actions to resolve the problems (Table 2-4 shows the completed gap analysis chart).

2-82. The knowledge management working group used the knowledge management priorities chart to depict the problems that needed to be remedied; with an estimate of the effort level it would take to remedy each problem and the impact it would make on the organization. They showed this to key leaders to gain their input and consensus on priorities for subsequent design and development efforts.

Table 2-4. Completed gap analysis chart for the initial assessment

<i>Gap analysis</i>								<i>Knowledge management strategy input</i>	
Operational issue	Performance gap	Knowledge gap	Priority	Knowledge management component				Proposed solution	Proposed required action
				P	P	T	O		
Lack of standard knowledge management practices across the brigade combat team	Inconsistent reporting Hard to find content Outdated content mixed with current No consistent naming protocol	Communities of practice not accurate or up to date Not trained on systems Users don't know where to find information or place information Don't know how to name documents	1	X	X	X		Revise and rewrite standard operating procedures to address these and other needed areas Training and certification on information systems and collaboration tools	Knowledge management working group collaborates to rewrite standard operating procedures Determine content management standards Prepare and conduct training in selected content management topics (do this during RESET)
Too many meetings with no apparent results or purpose to some	Staff behind in essential work and meetings do not result in action	Meetings are redundant with no clear outcomes and poor scheduling	3	X	X		X	Require a seven minute drill for meetings Require quad charge with key information	XO emphasis Eliminate supply and maintenance meeting Combine into sustainment working group Create weekly meeting schedule

Table 2-4. Completed gap analysis chart for the initial assessment (continued)

Gap analysis					Knowledge management strategy input				
Operational issue	Performance gap	Knowledge gap	Priority	Knowledge management component				Proposed solution	Proposed required action
				P	P	T	O		
Lack of knowledge sharing across the brigade combat team including staff to staff; staff to sub commanders and staff.	Collaborative effort degraded. Analysis and planning degraded. Trust is eroded.	Leader acceptance of collaboration tools with training in tools	2	X	X	X	X	Change to organizational culture and structure. Physical changes to organizational structure	Conduct events (brownbag lunch) and trust building Remove physical barriers to communication. Conduct professional development for officers and non-commissioned officers. It will take a series of actions to change the culture and will not be immediate.

2-83. The knowledge management working group finalized the concept map and knowledge map in the depict step of assessment. The knowledge map depicted the SOPs as a tool that helped enable knowledge flow through the organization. Meetings were depicted as processes and as part of the battle rhythm. The knowledge map depicted the interruptions and bottlenecks to knowledge transfer that resulted from the lack of communication and knowledge-sharing in the staff and between BCT staff and subordinate commanders.

2-84. After the knowledge management working group completed the four assessment steps, Captain Smith submitted the assessment report and briefed the XO. She used a “stoplight” briefing tool to show some of the key information. She recommended a knowledge management plan with broad actions needed to mitigate the problems identified. She also used the priorities chart to recommend priorities of action for the subsequent design step of the knowledge management process. The XO advised Captain Smith to start looking at how to improve knowledge flow in the BCT’s upcoming collective training events and incorporate that into the strategy. Once Captain Smith completed this, the XO approved and signed the knowledge management strategy. He directed Captain Smith to proceed with designing solutions.

ASSESSMENT CONTINUES

2-85. The knowledge management working group continued to build the knowledge map and concept map to consider the changes to task organization and unified action partners in the upcoming collective training event.

2-86. The unit, now in the train/ready force pool, underwent a series of collective training events, including a combat training center rotation to prepare for upcoming operational deployment. Although knowledge management practices throughout the unit had improved considerably, these practices revealed the following knowledge and information management shortcomings:

- The common operational picture did not contribute to shared understanding during movement or when troops were in contact with the enemy.
- The targeting cell was not getting necessary information in time to successfully attack targets.

- Reporting from some subordinate units was inadequate, did not follow consistent formats, and lacked key information needed for decisions.
- The commander was unable to track use of key assets.
- Leaders and Soldiers had problems finding the information they needed.
- The staff had problems collaborating with the other unified action partners in the scenario.

2-87. The working group reviewed and expanded its work to define, describe, and analyze and focused on the training issues. It continued to develop the knowledge management map to make it reflect the changes.

2-88. The knowledge management working group used the gap analysis chart and interviews, surveys, and facilitated meetings to assess the current and desired state of each of the issues identified during collective training (Table 2-5 shows the gap analysis chart they used in analyzing the knowledge issues that came to light during collective training). Captain Smith used the knowledge management priorities chart to brief key leaders and determine priorities to address issues. She adjusted the recommended priorities on the gap analysis chart to reflect leader consensus before briefing the XO on the working group recommendations.

Table 2-5. Completed gap analysis chart for the follow up assessment

Gap analysis					Knowledge management strategy input				
Operational issue	Performance gap	Knowledge gap	Priority	Knowledge management component				Proposed solution	Proposed required action
				P	P	T	O		
Communities of practice degraded, Not able to keep up to date when command post was on the move or during contact with the enemy	Command post and sub-units can't synchronize actions effectively.	Use of analog (non-digital) systems	4	X	X	X		Develop and use analog systems when command post is on the move	Training on analog systems.
Targeting is not meeting objectives. It is behind the decision cycle	Targeting working group not receiving intel on time to act on targets effectively	Battle rhythm. Intel not available when needed.	3		X		X	Reschedule intel working group. Meets before targeting working group.	Effect on other parts of battle rhythm to include analyze and monitor.
Commander cannot track key assets. Mission planning impeded.	Assets (aviation/unmanned aerial systems) not available when needed or come at the last minute with no prep time	Tracking system inadequate	2		X	X		Consolidate asset reporting. Using existing systems	Establish/enforce the policy on reporting assets. Provide training on systems and reporting standards
Lack of collaboration among unified action partners	Unity of effort lacking. No synergy/synchronization	No collaborative means/knowledge of other efforts	1		X	X		Ways/means to collaborate and coordinate efforts	Identify and locate partners. Communicate and establish collaborative means.

PPTO – people, processes, technology and organization

2-89. The knowledge management working group completed the assessments. Captain Smith briefed the commander and XO. Following the briefing, the commander provided guidance on his priorities. The XO approved the strategy and provided suggestions to Captain Smith about how to incorporate some of the commander's guidance into it. He directed the knowledge management working group to continue work and design solutions (Chapter 3 will continue the scenario for designing solutions).

Chapter 3

Designing Knowledge Management Solutions

This chapter provides information about the second step of the knowledge management process—designing solutions for problem areas identified during the assessment. It begins with an overview of the design step and continues by describing solutions to the common problem areas of standards, time management, meetings, reporting, technical systems, and content management. The chapter concludes with an illustrative scenario. The scenario provides examples of designing solutions to address issues that assessment of an organization might identify and of problems encountered during major collective training events before deployment.

DESIGN OVERVIEW

3-1. In the context of the knowledge management process, design is identifying and tailoring solutions to close and mitigate the gaps or problems identified during assessment. This could be refinements of existing processes or tools; training and educating people; changes to organizational structure or culture; and aligning all of these to achieve the best results with a viable solution. It starts with the approved knowledge management strategy from the assessment step and through the three-step process described below, results in an action plan with a methodology, a way to evaluate results of the solutions that will later be piloted, and a timeline. Design focuses on the knowledge management products and processes to improve knowledge flow—the free movement of knowledge and information.

COLLABORATIVE NATURE OF DESIGN

3-2. Knowledge management is collaborative by nature. The knowledge management working group collaborates with experts and unit members with insight into the nature of the unit's needs to determine how to approach the design step. For example, unit leaders provide their perspective on types of social networks (both formal and informal) that helps them in different situations. Soldiers describe what they need to find out about their jobs and confronting challenges. Individuals provide their expertise as required. The knowledge management working group leverages the experience of staff members, leaders, and Soldiers so they understand the organization's needs and can design solutions that best align the people, processes, and tools with the organizational culture. Much of this information and insight is gained from facilitated meetings, interviews, and surveys performed during the assessment step. The working group reviews the proposed designs with stakeholders. This collaborative process enables the working group to align the people, processes, and tools in the organizational culture so that the solution meets the needs of the unit.

CONSIDERATIONS FOR DESIGNING KNOWLEDGE MANAGEMENT SOLUTIONS

3-3. Foremost in the considerations is that knowledge management is human-centric. All knowledge transfer and collaboration occurs between individual human beings and not units. This is true whether the interaction occurs online, telephone, radio, e-mail, or face-to-face. Although solutions consist of combinations of people, processes, and tools in the organizational structure and culture—it always takes people to implement.

3-4. In designing solutions, the knowledge management working group asks what approach will best create shared understanding to improve the unit's mission command performance. This maintains focus on the knowledge management objective to get the right information, to the right people, in the right format, at the right time, and to arrive at the right decision.

- 3-5. The design step ensures that solutions:
- Fit the problem(s) identified and will remedy the problem.
 - Are satisfactory to stakeholders and do not increase their workload.
 - Can be developed, piloted, and implemented within the resource constraints of the organization with the means available and a reasonable level of effort.
 - Continuing to be effective over time in meeting its purpose. Often this quality is a result of meeting the first three criteria. Also, designing training to accompany solutions helps solutions to meet this characteristic.
- 3-6. Other design considerations include:
- Taking advantage of existing processes, tools, networks and systems rather than wasting time designing new ones if existing systems can fill the knowledge or performance gap through standardization or training.
 - Designing solutions to be simple. Never use a complex process or technique when a simpler one will work.
 - Drawing upon expertise from across the staff and higher, lower, adjacent formations, and centers of excellence to design potential knowledge solutions.
 - Tailoring solutions to the organization. Although there may be common elements in many solutions, one size does not fit all. The knowledge management working group must keep several things in mind:
 - Existing systems or established processes that can fit the need.
 - The needs of the unit's leadership.
 - The needs of the unit's staff.
 - The needs of Soldiers who are not leaders or staff. All individuals need enough knowledge and experience to be able to successfully complete a mission, task, or function.
 - Training, education, and mentoring that will pilot and implement the solution.
 - Resource limitations that define what can practically be accomplished.
- 3-7. The knowledge management working group ensures that potential solutions are supportable in terms of resources, including:
- The time required and available to design, develop, pilot, and implement the solution.
 - The personnel involved to design, develop, pilot, and implement the solution.
 - Monetary cost and if the organization's budget supports the design, piloting, and implementation of the solution (budgeting).
 - Capability of implementing the solution or if an alternative should be considered (organizational capabilities).
 - The technology required and if non-technical means are better suited as a solution.
 - The expertise required and available to design, pilot, and implement the solution.

DESIGN STEPS

- 3-8. Knowledge management design consists of three steps:
- Conceptualize an organizational approach to mitigate the gaps in the knowledge management components: people, processes, tools, and organization.
 - Refine the details of the ways to solve the problem and the means available.
 - Prepare an action plan to guide the development step (Table 3-1 on page 3-3 shows the three design steps, and its key inputs/outputs).

Table 3-1. Steps of design - key inputs and outputs

<i>Key inputs</i>	<i>Step 2: Design</i>	<i>Key outputs</i>
Purpose: To produce an actionable plan from which viable knowledge management solutions can be built. <ul style="list-style-type: none"> Inputs for design derived largely from outputs of assess. Outputs from design form the basis of inputs for develop. 		
<ul style="list-style-type: none"> Guidance from chief of staff Approved knowledge management strategy that includes knowledge management map and gaps and priorities charts "BUB" chart (These are just examples) 	Conceptualize Conceptualize an organizational approach to mitigate the people, processes, technology, and organization gaps	The main ideas that inform design of detailed organizational approaches: <ul style="list-style-type: none"> Meeting management Time management Reporting solutions Technical systems
The main ideas in terms of organizational approaches.	Refine Refine the problem in terms of the organization and its people, processes, technology, and organization environment	Detailed ways and means to close knowledge management gaps (for example, the knowledge management working group begins developing specific methodology (ways) to achieve the desired result). <ul style="list-style-type: none"> List of resources required Tentative timeline Tentative identification of who performs the actions Assessment measures
<ul style="list-style-type: none"> Identified approaches (ways) Resources available (means) Draft action plan that includes methodology, timeline, resources, responsibilities, and assessment measures 	Prepare Prepare the knowledge management action plan	Update to chief of staff (as required) Approved action plan that includes methodology, resources required, timeline, responsibilities, and assessment measures

Conceptualize

3-9. An approach takes the broad actions presented in the knowledge management strategy and develops the main ideas for a set of actions that target one or more of the knowledge management components. The gap analysis chart used during assessment initially matched identified problems to people, processes, tools, and organization and indicated corresponding very broad approaches. The knowledge management strategy further described the approaches; identifying ends, ways, and means. For design, conceptualizing the approach provides a blueprint of the actions needed aligning this with corresponding people, processes, tools, and organization. For example, if problems are identified in reporting, the approach provides actions to target processes and tools used in reporting and targets people by developing training to overcome shortfalls.

3-10. An approach could be as complex as designing a knowledge network or as simple as redesigning reports to provide the information the commander needs for decisionmaking. It is tailored to the unit's needs and addresses problems.

Refine

3-11. The knowledge management working group refines the precise nature of the problem in terms of the people, processes, and tools in the organizational context. The knowledge management working group refines the approach into a methodology—ways and means—to correct the problems. This describes the actions to take step by step, establishes a tentative timeline, and identifies resources required to solve the problem. It also develops assessment measures (measures of performance, measures of effectiveness, and indicators), and tentatively identifies what staff section (or other entity) is responsible for actions.

Prepare

3-12. Based upon the refined approach, the knowledge management officer prepares an action plan. The action plan assigns or recommends responsibilities. This is done for design but later for the remaining steps of the knowledge management process (develop, pilot, and implement). The chief of staff (COS) or executive officer (XO) reviews and approves or modifies the action plan. In areas where the knowledge management officer does not have authority to assign responsibilities, the COS or XO approves and signs the action plan. For example, the knowledge management officer cannot task the other staff sections to help design or develop solutions or task personnel from subordinate units to prepare and perform training that is part of the knowledge solution. The approved action plan includes:

- Methodology.
- Resources required.
- Timeline.
- Responsibilities.
- Assessment measures.

SOLUTION DESIGN FOR COMMON PROBLEM AREAS

3-13. The areas in paragraphs 3-15–3-62 are central to how information and knowledge move in organizations and also where organizations encounter problems. When analysis of any of these areas during the assessment step reveals problems, the knowledge management working group collaborates to find the best solutions (Chapter 2 introduced these areas and Appendix G describes each one in terms of assessment):

- Standards.
- Time management.
- Meetings.
- Reporting.
- Technical systems.
- Content management.

3-14. Designing solutions for each of these areas is described in paragraphs 3-15 – 3-62. The text discusses each of the areas in terms of its own characteristics without breaking it into the three design steps.

STANDARDS

3-15. Analysis performed during the assessment step reveals that knowledge and information is not reaching those who need it, or when they need it, because the unit does not follow standard knowledge management practices. It may reveal that there is no common standard for knowledge management in the organization.

3-16. In designing standards solutions, the knowledge management working group considers the commander's guidance, policy letters, plans/orders, and SOPs, and other sources that establish and adhere to knowledge management standard practices. The working group corrects inconsistencies and ensures the SOP defines the organization's objectives (e.g. developing shared understanding) and procedures and incorporates all elements of knowledge management. The solution is tailored to the organization's needs but there are items to address in any knowledge management SOP. These include:

- Responsibilities, roles, and duties of the knowledge management officer and section.
- Responsibilities and procedures for the knowledge management working group and knowledge management representatives.
- Knowledge management in the organization's battle rhythm, and meeting procedures.
- Proper content management that makes content visible, accessible, understandable, reliable, and responsive to Soldiers (see content management solutions in paragraphs 3-41-3-49).
- Use of SharePoint, e-mail, and other collaboration methods and digital systems (the standard operating procedures [SOP] addresses each digital system).

- Procedures for changing the SOPs and planned, periodic updates (at least annually, more often in the early stages of an organization's knowledge management program), to ensure it remains relevant to the operations process.

TIME MANAGEMENT

3-17. Time management solutions make the organization's battle rhythm efficient and productive. Analyzing one sequence of activities at a time provides greater insight than attempting to view the entire organizational battle rhythm. This enables the design to incorporate solutions specific to that aspect of the battle rhythm. These could be piloted incrementally, adjusted as needed, and implemented with minimal disruption.

3-18. Battle rhythm changes affect the entire organization and should be approved by the COS or XO. Make changes to the battle rhythm incrementally to alleviate disruption in routines, identify how the changes affect other battle rhythm events, and to ensure the battle rhythm remains nested with that of higher headquarters. Battle rhythm changes that improve shared understanding and require less time for the same work will demonstrate the usefulness of the knowledge management program and garner further support.

3-19. The time management design incorporates aspects of meeting management solutions, ensuring every meeting is nested in the battle rhythm and eliminating those that can be combined with other meetings or are otherwise unnecessary.

3-20. The time management solution ensures:

- The unit's battle rhythm is nested with higher events.
- Changes to the battle rhythm allow subordinate units time to adjust and establish their routine.
- The battle rhythm is tailored to match events on the ground and the intensity of the engagement or operation.
- The battle rhythm provides time between routine events to allow for leaders and staffs to plan and consider information and knowledge garnered.

MEETINGS

3-21. Meeting management is important to proper time management. Designing a solution to improve meeting management takes the battle rhythm into account. An overarching goal for meeting management is ensuring that the right people are in the right place for the right reasons. Meeting management requires careful analysis of both individual meetings and a broader analysis of their sequencing and scheduling. The analysis of existing conditions and broad steps to improve them takes place during the assessment step. The design step requires the knowledge management working group to focus on ways to improve meeting management and set priorities. The knowledge management working group works closely with the COS or XO to design suitable solutions to improve meeting management.

3-22. Designing a solution to improve meeting management ensures that meetings have a purpose, agenda, participant roster, and expected inputs and outputs. The solution includes the following objectives:

- Making individual meetings more productive and as short as possible.
- Eliminating duplicative meetings—i.e. meetings that serve the same purpose as other meetings. Determine what is important and combine or eliminate altogether.
- Sequencing meetings logically so that what is learned, developed, and accomplished in previous meetings informs and assists subsequent meetings.
- Synchronizing meetings with other meetings and events in the organization's battle rhythm.
- Facilitating lateral communication with working groups or boards that have the staff representation needed to accomplish the purpose and foster shared understanding.
- Ensuring meetings facilitate parallel planning when appropriate.
- Eliminating arbitrary changes to meetings.

3-23. The meeting agenda quad chart accomplishes the objectives shown in paragraph 3-22. Appendix G discusses the meeting agenda quad chart. Table 3-2 on page 3-6 shows an example quad chart.

3-24. Because meeting management impacts battle rhythm, the same considerations apply. To avoid unexpected negative effects from changes to the battle rhythm, the priorities are:

- Improve the productiveness of individual meetings.
- Eliminate unnecessary meetings including duplicative meetings (where redundancy is not required).
- Sequence and synchronize meetings for meeting outcomes to be available and useful for subsequent activities.

3-25. Ongoing monitoring and assessment reveals how meetings are better sequenced and synchronized. Changes made incrementally are less disruptive and meet less resistance.

Table 3-2. Example meeting agenda quad chart

Meeting name: Frequency, duration, and location: Chair and members:	
Requirements for the current week	Requirements over the next 30 days
Requirements over the next 60 days	Significant issues

REPORTING

3-26. Designing adequate reporting solutions starts with precise assessment of the problems. It also requires collaboration between the knowledge management, operations, signal staff sections, and sometimes other staff sections. Reporting issues fall into different fields of expertise. The knowledge management working group designs reporting solutions that efficiently disseminate the information contained in reports to people who need it and ensure reporting effectively provides the information to support decisionmaking.

3-27. The types of reporting issues in the purview of knowledge management are those related to mission command factors (decentralized operations, level of understanding of task, purpose, and commander’s intent, collection focus, standardization, and efficient information movement and analysis), and training factors. These factors include Soldiers’ understanding of the different tools and systems, their ability to use them to their potential, proper use of reporting procedures, and understanding what needs to be reported.

Standardization in Reporting

3-28. A lack of standardization causes reporting problems, especially when report SOPs are not standard across the organization. The standards analysis performed during the assessment step identifies the shortcomings in the SOP, which the designed solution addresses. The main body addresses all the types and categories of reports required including frequency, method, format, reporting channels, priorities, and other pertinent information. Different annexes describe the different information systems and their use and ideally provide examples of how to use them for different reporting requirements. If adequacy or standardization of the SOP is one of the issues, the knowledge management staff collaborates with the operations and signal staff section to design the solution.

Standardized Templates and Forms for Common Reports

3-29. Standardizing templates and formats for common reports makes them easier to prepare, understand, and ensures all required information is included. A significant activities report (SIGACT) is a typical common report. There are often three types of SIGACT reports; initial, update, and final. An example of an initial SIGACT report format is shown in Table 3-3 on page 3-7.

Table 3-3. Example significant activities initial report

<p>WHO: 2/7/2 IA</p> <p>WHAT: IED ATTACK</p> <p>WHEN: 30 1200 JUN 09</p> <p>WHERE: 38SLF 12345 12345 (EAST MOSUL)</p> <p>HN REPORT</p> <p>AT 30 1200 JUN 09, A 2/7/2 IA MOUNTED PATROL WAS ATTACKED WITH AN IED AT 38 SLF 12345 12345</p>

3-30. Unit SOPs provide detailed instructions with examples of all the types of reports required. Instructions include, as a minimum:

- Type of report.
- Who must submit the report?
- How often the report is submitted (daily, weekly, upon occurrence, no later than time, etc.).
- To whom the report is submitted.
- Method used to submit the report.
- Report format.
- Example: unit intelligence summary/graphic intelligence summary.
 - a. Subordinate unit: Submit daily unit Intelligence Summary 0800 hours daily to brigade combat team (BCT) S-2.
 - b. Method: Post on IRONHORSE Web Portal (Secure Internet Protocol Router network) in the S-2 folder.
 - Format: Subordinate units are authorized to submit their intelligence summary (INTSUM) in their respective unit format.

3-31. Other mission command factors that affect reporting require collaboration with the operations staff section and/or intelligence staff section and the information management staff to design a solution. For example, if information becomes bottlenecked or does not move efficiently to its intended destination this makes subsequent analysis inefficient and impedes the timely provision of relevant information to commanders. When assessment reveals poorly integrated systems (typically depicted on a concept map), designing a solution focuses on prioritizing the use of the different information systems and improving their capabilities to complement one another.

3-32. Lack of integration of different systems is encountered in multinational operations and sometimes between different Services. Assessment reveals any incompatibility between systems and known fixes such as hard copy data transfer if what is initially identified as a reporting issue will fall more under designing technical systems solutions.

3-33. Training factors require collaboration to identify the type of training required, the best means of delivery, and the design of a training program. A frequent training-related problem is lack of understanding of the full capabilities of the different information systems. Design reporting solutions includes a training component.

3-34. Because of its nature and wide variety of reporting problems that assessment reveals, design solutions to improve reporting is a multidiscipline endeavor. The knowledge management working group, with its representation from the different staff sections, performs much of the design work.

TECHNICAL SYSTEMS

3-35. The result of technical systems analysis during the assess step, which provides operational and functional analysis of the technical systems supporting knowledge management, indicates a need to design a customized digital status chart or improve the existing one. These digital dashboards provide an easy-to-read, real-time user interface to show a graphical representation of the organization's current status and historical trends of key performance indicators to enable rapid and informed decisionmaking.

Digital Dashboards

3-36. Digital dashboards include tools to analyze how the organization performs knowledge management. These dashboards analyze the knowledge management process to enable knowledge flow and shared understanding, learning, and decisionmaking. Typically, changes to digital dashboards are indicated when the commander or a staff principal cannot quickly find critical information, or when command information requirements change.

3-37. The knowledge management working group knows the type of knowledge and information the commander considers important to making decisions. The staff gains this insight from the commander's critical information requirements, guidance, intent and description of the mission. This could be an issue that the COS brings to the attention of the knowledge management officer for an abbreviated assessment. The knowledge management working group responds to this by adjusting what the commander receives and how it is displayed.

3-38. How information and knowledge is provided and presented is based on how the commander prefers to receive and process it. The knowledge management officer seeks the best way to align the people, processes, and tools (helping the commander organize the mission command system) to present what the commander needs to know—reliably, accurately, and on time—with minimal effort.

System Integration

3-39. Existing systems are checked to ensure they are capable of supporting whatever process the unit performs. If not, the first design solution determines if existing system are "redesigned" to support the existing process. If they cannot, the knowledge management staff collaborates with the signal staff section to design a new means to meet user requirements while protecting the network. Both designs, existing and new, must be accomplished before the system is connected to the technical network. Designing solutions for the use of new information systems requires the staff to:

- Identify where the information system communicates in each category (e. g. subordinate, internal, higher headquarters, lateral, etc.) in its echelon (brigade, division, corps, Army Service component command).
- Determine how effective each system is in that echelon and category.
- Determine the system's priority primary, alternate, contingency, emergency (PACE) among the other information systems used at an echelon.
- If the system has a certificate of net-worthiness.

3-40. For establishing PACE priorities, all information systems are placed in context with other information systems used at echelons using the following criteria:

- Justification. For example, a justification for "primary" is that the system is "available immediately, reliable, and provides visibility to adjacent and higher units.
- Who needs to receive the report? (operations officer, company intelligence support team, and others. Refers to the report sent via the new information system).
- Information required to be included in the report.
- Standardized reporting times.
- How to send the report (e.g. e-mail as a contingency because chat is down).

- Permissions required.
- Data entry point.
- Other pertinent information.

CONTENT MANAGEMENT

3-41. Content management problems are among the most frequent problems that organizations encounter. Knowledge management staffs above brigade are assigned content management specialists. At brigade and below, the knowledge management officer collaborates with the signal staff to design content management solutions. Content management specialists are the unit's experts on content management storage and retrieval. They ensure knowledge is available to Soldiers and leaders when and where they need it. They are required to help manage digital content with tools that exchange explicit knowledge, collaborate, and connect with subject matter experts across the organization.

3-42. Successful content management solutions adhere to the content management principles. These summarize the characteristics of successful content management efforts. The content management principles are:

- Make knowledge products visible, accessible, understandable, and reliable.
- Support data interoperability.
- Be responsive to Soldiers (Appendix D describes the content management principles).

3-43. Each section has its own content manager responsible for subsequent implementation and execution of the content management plan. The section content manager assists in designing and piloting content management solutions.

3-44. The knowledge management working group has to design a solution for one or more content management functions under any of the four content management task areas of create, organize, apply, and transfer because of a rapid or abbreviated assessment. Designing content management solutions includes (see Appendix D):

- Determining a common language for the organization.
- Determining where content is located.
- Determining who created the content and version controls.
- Determining who is responsible for updating or deleting it; the format (structured or unstructured), and the file types (defined by their file extension).
- Determining who uses the content and for what purpose.
- Determining where in the PACE the content is staged.

3-45. To accomplish these things, content managers perform interviews with the commander, subordinate leadership, primary and special staff, noncommissioned officers, and functional area subject matter experts, and Soldiers. Content managers determine what content must be created and managed on all networks. They use surveys, a detailed audit, or a content map to perform the inventory. In joint and multinational environments, multiple networks are considered (for example, Combined Enterprise Regional Exchange System; International Security Assistance Force Net; Joint Warfighting Interoperability Demonstrations). Content managers work with the signal staff section to help mitigate and manage classified spillage.

3-46. Designing content management solutions includes determining the essential sources of knowledge and those located outside the unit (i.e. centers of excellence). The knowledge management working group identifies content needed, when it is needed, the desired format, and how it must be made available for the unit to accomplish its mission. This involves determining where and how content will be created, organized, applied, and transferred. Tasks that support content management include:

- Determining who manages the documents.
- Determining what technology is available to manage content.
- Determining roles and access rights and classifications for content.

3-47. The knowledge management working group confirms physical security control measures, operations security, classified documents, and dissemination in coordination with the operations security and information assurance officers.

3-48. A content management plan defines standards, processes, and roles for the organization as a whole including the staff sections and subordinate organizations. The plan includes training requirements on those processes and standards for the entire organization. Standardized practices allow knowledge sharing and makes knowledge integration routine. Designing a solution to content management issues ensures that content management in the organization includes, as a minimum:

- A file-naming standard or taxonomy.
- Standardized procedures for collecting, storing, or sharing the content.
- A common acronym list.
- Document tagging to ease in searching for relevant content.
- Standardized templates and forms for common reports are useful for recording information with minimal effort.
- Archiving procedures for dealing with obsolescent or out of date content.
- Permissions and Access policies to various types of content.
- Handling, Sharing, and Storage of content containing personally identifiable information.

File-Naming Standards

3-49. A standardized naming convention for files is essential to proper content management. If six months of a weekly report has 24 different names, the files are hard to find and use. However, with a standardized nomenclature, they are easy to find, and more efficient to use. Naming convention standards support data identification or retrieval (Table 3-4 shows an example of a file naming convention).

Table 3-4. Example of file naming convention (update graphic dates)

Report	Individualized report names	Taxonomic report names
Status report, Jan 12	STATREP 2012-11-01.docx	1AD_Status_Report_2015_Jan.docx
Status report, Feb 12	Report, Status, 2012, Feb, 11.doc	1AD_Status_Report_2015_Feb.docx
Status report, Mar 12	Sullivan’s Report for Mar12.docx	1AD_Status_Report_2015_Mar.docx
Status report Apr 12	COS Monthly Status Report.docx	1AD_Status_Report_2015_Apr.docx
Status report, May 12	SITREP 05112012..txt	1AD_Status_Report_2015_May.docx
Status report, Jun 12	MyReport v12 w/notes.pdf	1AD_Status_Report_2015_Jun.docx

Content Management in the Mission Command Information System

3-50. Content management is crucial when developing the common operational picture in the various mission command information systems, specifically command post of the future (CPOF). Content management standards are established to address mission command system issues such as privileges, permissions, and proper use of stickies, pasteboard, icons, drawings, frames and overlays.

Standardized Procedures for Storing or Sharing Content

3-51. Designing standardized procedures for storing or sharing content provides an effective information filing storage and retrieval system that uses standard file naming conventions. The design builds around the unit’s web portal (Microsoft SharePoint is currently the Army’s enterprise environment for storing and sharing knowledge and information).

3-52. A sound design solution for standardizing procedures for storing or sharing content improves organizational information flow and allows easier access to a common information and provides the following benefits:

- Reduce the undisciplined and disorganized use of shared drives and e-mail with attachments as primary means of sharing important information.

- Provide a more organized, disciplined collaborative environment that allows users to:
 - Share common calendars.
 - Create wikis for standardizing SOPs and operation orders.
 - Develop collaboration tools with viewer commenting abilities.
 - Customize workflows to improve business processes.
 - Create various views of the same data set for different audiences.
 - Design informational dashboards to improve situational awareness.
- 3-53. The content management standard for storing or sharing content includes:
- One specified location for all types of content used by the organization.
 - Identification of the content creator.
 - Identification of the person, office, or proponent responsible for updating the content.
 - Identification of the person, office, or proponent responsible for deleting content.
 - Identification of a structured or unstructured format for content management.
 - Identification of file types.
 - Identification of the content purpose.
 - Identification and responsibility for metadata.
- 3-54. Taxonomy or structure facilitates content discovery and retrieval. It facilitates user understanding by:
- Being easy to read and understand.
 - Using common terms when determining categories for organizing content.
 - Using doctrinal terms and including doctrinal language where applicable.
- 3-55. The design ensures that the method used to ensure proper access to content includes:
- User roles, user controls, and permissions.
 - Rules on file size protect networks and information systems.
 - A cyber-security policy secures content while allowing access by authorized users.
 - Effective naming conventions.
 - Effective use of metadata.
 - Effective use of versioning.
- 3-56. Compatibility and access procedures maximize the availability of content for users regardless of location, access to networks, or information systems. For example, to ensure compatibility, a software version is specified to ensure compatibility for all users. To ensure access procedures, for example; because of limited bandwidth a large file is broken into smaller pieces to facilitate access to users; a slide library is a good tool for this. Content managers ensure that all files types used by the section/organization are supported by the various information systems.

Web Portal Standards

- 3-57. Standards for the unit's web portals include:
- Rules that enforce sorting content based on relevancy and importance. For example, after login, a policy requiring no more than one click from the unit's homepage to access information identified as the most relevant and important (sometimes called "Tier 1" information). The "one-click rule" for Tier 1 information applies to unit SOPs, battle drills, battle rhythm, links to web-based services required for use to support the unit's operations process, current orders and fragmentary orders, and the commander's critical information requirements.
 - Current contact information for key personnel is considered one level below the most relevant and important. This is also known as "two-click rule" or "Tier 2" information, and must be included on each staff section and subordinate unit page.
 - All battle rhythm events/meetings have a "digital home" on the web portal that includes:
 - Critical information regarding meeting/event such as the purpose, who chairs, attendees required, and agenda (Example: quad charts).

- Current inputs and outputs.
- Archive of past meetings.
- Meeting notes or executive summary of most recent meeting, when applicable.

3-58. All subordinate unit portal sites follow the structure established by the higher headquarters to streamline access to information.

Training

3-59. Designing solutions to improve standardizing procedures involves training users. Designing the training solution includes context because every unit/section will use the tool differently and have its own challenges. The gap analysis performed during assessment identifies gaps in capabilities of the different elements in the organization and proposes broad approaches to fill those gaps. Design focuses even more closely in building solution sets which include training specific to the unit using the tools.

3-60. The knowledge management officer has a close working relationship with the information management/assurance officer or information systems managers and digital systems engineers and/or field service representatives when developing solutions for mission command information system (MCIS) gaps and must know the electronic challenges that hinder knowledge and information flow. The knowledge management officer collaborates and coordinates with the unit training team, web portal administrators, and web developers to develop a training plan that meets the requirements of each staff section or subordinate command.

3-61. Ensure that the content management training program includes required elements of the analysis, design, development, implementation, and evaluation training model (analysis, design, development, implementation, and evaluation).

- Analysis.
 - How often training is required?
 - What training is required (task, conditions, standards)?
 - Who requires training?
- Design:
 - When the training takes place.
 - Where the training takes place.
 - Delivery methodology.
 - Instructional methodology.
 - Expected training outcomes.
 - Description of the assessment methodology.
 - Resource requirements.
- Development:
 - Training plans written according to training development capability standards.
 - Validate training tests.
 - Identify delivery methodology.
 - Identify instructional methodology.
 - Describe instructor train up.
- Implementation:
 - Right people attend training.
 - Maintain training records.
- Evaluation:
 - Formative evaluation (evaluation of a course of training or instruction that typically takes place during its development or improvement).
 - Summative evaluation (evaluation or judgments about a course made at its conclusion).

Archiving Procedures

3-62. To reduce information overload, archiving moves outdated and irrelevant content from active to inactive status based on rules and policies. This is a task under organize together with labeling and identifying. Labeling takes content that's no longer relevant, archives it, and keeps it separate from current knowledge products. Identifying involves determining whether to archive or dispose of content. Content owners 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 (AR 25-400-2, Army Records Information System, provides detailed information of records management and archiving).

3-63. The knowledge management working group determines workflow for the content. Tasks that support this include:

- Determining if documents are needed by a larger audience.
- Determining if the unit or organization needs different mark-up language capabilities.
- Determining a timetable for content validity.

SCENARIO ILLUSTRATING DESIGN SOLUTIONS

3-64. This scenario is continued from chapter 2. Based on the XO's guidance following the initial assessment of the organization, Captain Smith, the knowledge management officer, worked with the knowledge management working group to design solutions to:

- Improve adherence to common knowledge management standards across the organization.
- Improve the efficiency and productivity of meetings and reduce time spent in meetings.
- Improve communication and knowledge sharing among the staff and with the staff and subordinate commanders.

3-65. For each of the design areas, Captain Smith, together with the knowledge management working group, reviewed the approved knowledge management strategy which outlined broad actions to take to design a solution. They also reviewed the knowledge management component people, processes, tools, and organization factors identified with each problem.

3-66. To perform design for each area, they refined the strategy including actions to target people, processes, tools, and organization. As they continued work, they refined the approach into a step-by-step way and means to solve each problem. In doing this they identified sequence of actions such as who would be responsible for actions; what equipment, facilities, or particular expertise they would need; how much time would be required; who were target audiences for training; and other details.

3-67. Based upon the refinement, they drafted an action plan looking as far forward in the knowledge management process as possible. The brigade combat team (BCT) XO reviewed the action plan, directed some modifications, and approved it. The XO's involvement and the approved action plan helps Captain Smith cooperate and assist other staff sections and subordinate elements while she carried out the knowledge management process.

PROPOSED DESIGN FOR STANDARDS SOLUTIONS

3-68. The solution designed to ensure a common knowledge management standard across the organization focused on the knowledge management SOPs. It would require rewriting the SOPs and ensuring that every subordinate unit had its own knowledge management SOP with the same standards. The major areas the new knowledge management SOPs would cover include: (Appendix B provides an example knowledge management SOP):

- Individual and collective responsibilities, roles and duties of the knowledge management officer, information management officer, and knowledge management section (if assigned).
- Responsibilities and procedures for the knowledge management working group and knowledge management representatives.
- Unit battle rhythm and meeting procedures.
- Information systems integration.

- Knowledge products, content management, file taxonomy, and meta-data requirements.
- Knowledge management tools: use of SharePoint, other collaboration methods, and digital systems.

3-69. The solution also specified and assigned responsibilities for training in the following areas:

- Knowledge management representative training.
- Portal management and use of SharePoint.
- Naming conventions and file management.
- Information systems.
- Collaboration tools and methods.

3-70. The solution designed to make the brigade combat team's (BCT) meetings more productive and reduce the time staff members spent in meetings included the following actions (working groups and boards would also include frequency of the meetings and composition including the chair and attendees):

- Each meeting must have six critical elements:
 - Have a clear, stated purpose.
 - Have an agenda.
 - Identify personnel required to attend.
 - Identify the required inputs.
 - Identify the expected deliverables or outputs.
 - A posted meeting agenda quad chart provides information about the meeting.

3-71. Other design solutions for meetings include:

- Elimination of several meetings.
- Combining/consolidating some meetings with others that had essentially the same purpose.
- Reducing the need for meetings by making all staff section running estimate results available on the unit SharePoint portal instead of shared drives.
- The sequencing of meetings was readjusted based on outputs of some meetings being needed for inputs of others.
- Teaching staff members how to use the portal for posting and retrieving information.
- Establish ground rules for all meetings (including boards and working groups) that go into the SOP briefed to the entire staff and enforced by the COS.
- All meetings have a "digital home" on the unit web portal that includes critical information about the meeting such as:
 - Critical information regarding meeting/event such as the purpose, who chairs, attendees required, and agenda (e. g. quad charts).
 - Current inputs and outputs.
 - Archive of past meetings.
 - Meeting notes or executive summary of most recent meeting, when applicable.

3-72. All subordinate unit portal sites follow the structure established by the higher headquarters to streamline access to information.

PROPOSED DESIGN TO IMPROVE KNOWLEDGE-SHARING ACROSS THE ORGANIZATION

3-73. The solution designed to improve knowledge-sharing focused on three things:

- Changing the organizational culture by eliminating insularity of staff sections and distrust and hostility between staff and subordinate commanders and staff.
- Changing the organizational structure by removing some physical impediments to human interaction.
- Providing a way to digitally share staff running estimates across the entire organization including a forum for questions and other input.

3-74. To begin changing the organizational culture, the BCT in the continuing scenario took advantage of the current garrison environment, with an off-site brown-bag luncheon as the initial venue. The luncheon would have a speaker and small group facilitators and provide time for socializing and small group effort in solving a problem. Seating would be pre-arranged to put people together who did not normally work together. The purpose was to allow people to get to know others outside their own section and lay the foundation for building trust. A follow-up event was also proposed whose nature was to be determined based on the after action review for the initial event.

3-75. An officer and noncommissioned officer professional development class on knowledge management would also occur with one of these other events.

3-76. To address the organizational structure, the design solution proposed physical changes by removing some of the partitions that separated staff sections. It also brought some staff sections back into closer proximity to the others since discovering they had originally moved because of remodeling and remained in their temporary areas after the project was completed.

3-77. The proposal for digitally sharing information shared the meeting management design solution to post results of staff running estimates on the unit digital portal. This includes a digital forum to allow other sections and subordinate commanders and staff to post questions or provide input. Ground rules were established for this forum.

3-78. The unit was now in the “train-ready” force pool of Army force generation (ARFORGEN). Following the unit’s combat training center rotation and mission rehearsal exercises, the knowledge management working group performed an abbreviated assessment of problem areas identified during collective training events and design solutions to them. Those problems identified were:

- The common operational picture was not effective for shared understanding during movement or when troops were in contact with the enemy.
- The targeting working group was not getting the information it needed to provide targeting information to the joint targeting board including lethal and nonlethal effects.
- Reporting from some subordinate units was inadequate and did not follow consistent formats and lacked key information needed for decisions.
- The commander was unable to track use and availability of key assets such as aviation and unmanned aircraft system platforms.
- Leaders and Soldiers had problems finding the information they needed.
- The staff had difficulty collaborating with the other unified action partners in the scenario.

Problem 1: Common Operational Picture

3-79. The common operational picture was not effective in contributing to shared understanding during movement or when troops were in contact with the enemy. The major contributing factor was that the use of digital systems degraded under less than ideal conditions. The commander’s guidance included the following:

The BCT has to provide the link between subordinate units that have upper tactical internet access and the ones that do not. Our headquarters has to manage the flow of information to, from, and between subordinate units using both the upper and lower tactical internet simultaneously. This is important because we don’t want to forfeit the benefits gained by sharing information and knowledge using the upper tactical internet whenever one or more battalion task forces lose access for a period of time. I want our knowledge and information management plan to articulate the processes and procedures required to make this happen. This includes the SOP and PACE plan which provide unit specific standards on reporting requirements, formats, and selecting the method for reporting.

3-80. The knowledge management working group’s design for improving the common operational picture while on the move and/or in contact with the enemy depended on reorganizing the mission command system to be more responsive to changing conditions. The designing the solution required collaboration with the signal staff section.

- 3-81. The command post must be able to do the following:
- Maintain continuous communications with higher and adjacent units. This requires the BCT to effectively use and protect the information systems and networks on the upper tactical internet.
 - Share information with subordinate units using both upper and lower tactical internet systems; providing the link between units with upper tactical internet and those without it.
 - Maintain a digital common operational picture using the mission command information system with an analog back up and “on the move” capability.
 - Maintain a parallel and collaborative planning capability with higher and subordinate units.
- 3-82. Subordinate echelons must be able to:
- Maintain continuous lower tactical internet communication with higher headquarters and subordinate units.
 - Establish and maintain upper tactical internet communications when the main command post is stationary.
 - Maintain a digital common operational picture using the mission command information system with an analog back up and “on the move” capability.
 - Maintain a parallel and collaborative planning capability.
 - Plan and collaborate internally as well as with higher unit staff.
- 3-83. The design solution took the following factors into consideration:
- The command post will not always operate from a fixed site with reliable access to the upper tactical internet.
 - The command post will displace and be operational while on the move.
 - Not all echelons will have the same networks and information systems available, or the same mission requirements, at the same time.
 - Not all echelons will have continuous and reliable connectivity to the upper tactical internet.
 - The need to capture and share information on the common operational picture will continue even if the main command post is forced to reposition unexpectedly or if digital systems are unavailable due to enemy action, weather, equipment failure, or human error.
- 3-84. The knowledge management working group designed a solution that proposed the following approach:
- Develop and enforce reporting standards that are common across systems placing these standards into the SOP.
 - Develop a PACE plan that accounts for all warfighting functions and access to the upper tactical internet.
 - Balance the digital and analog components to the common operational picture.
 - Develop individual and collective training for proficiency in using unaccustomed analog elements in the command post;
 - Track and enforce MCIS training through the Mission Command Digital Mater Gunners Course (and the Mission Command Systems Integration Course; which can be accessed through the Army Training Requirements and Resources System.)

Problem 2: Timely Information for the Targeting Working Group

3-85. During a recent training event, the targeting working group was not getting the information it needed in time to provide targeting recommendations to the targeting board so the targets were not successfully attacked. This included lethal and nonlethal effects. The knowledge management working group analyzed the sequence of meetings whose outputs were required to develop and submit targeting information to the targeting board.

3-86. The problem with lethal effects was fairly straightforward, and the knowledge management working group proposed the following solution:

- Adjust the sequence of meetings, so the intelligence working group and the fires working group meet before the targeting working group with time to provide their outputs.

- The intelligence and fires working group post their outputs on the unit digital portal.
- The intelligence and fires representatives in the targeting working group provide the outputs of their respective working group meetings.

3-87. For the non-lethal effects problem, the knowledge management working group proposed the following solution:

- Civil affairs and military information support operations (MISO) have representatives in the targeting working group to provide information concerning their capabilities.
- Civil affairs and MISO information to support lethal effects.
- Civil affairs and MISO representatives provide information from their perspective to the intelligence working group and the operations coordination meeting; including local conditions observed; attitudes of the local populace/leadership; effects of their operations, estimate of what activities would achieve desired results.
- Civil affairs and MISO post ongoing operations, and other pertinent information, onto the unit digital portal SharePoint site.

Problem 3: Inadequate Reporting

3-88. Reporting from some subordinate units was inadequate; did not follow consistent formats and lacked key information needed for decisions. The assessment revealed three issues: (1) some subordinate units had not incorporated the changes in the SOPs which covered reporting procedures and provided formats; (2) some operators were not proficient in using the digital information systems; (3) some leaders (officers and noncommissioned officers) at subordinate units did not understand the capabilities of the information systems at their echelons.

3-89. The knowledge management working group proposed the following solutions:

- Knowledge management representatives provide oversight and assistance as needed in incorporating changes and making sure all subordinate units had the revised SOPs.
- The commander/XO provides command emphasis at weekly command and staff meeting.
- The signal staff section and knowledge management representatives develop and provide training to individual operators of information systems.
- The digital system engineers and field service representatives used as subject matter experts regarding information systems.
- Knowledge management representatives develop and provide officer and noncommissioned officer professional development classes to officers and noncommissioned officers on the information systems used at the unit.
- Knowledge management officers along with digital master gunners and signal staff section develops a certification program for the information systems.

Problem 4: Difficulty Tracking Key Assets

3-90. The commander was unable to track use and availability of key assets; specifically, aviation and unmanned aircraft system platforms. The knowledge management working group proposed the following solution:

- Centralizing storage of status presentations and establishing a single format for entering report information.
- Posting a SharePoint portal page for status briefings, consisting of centralized document library with controlled access.
- Designing 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 to increase search speed and reduce how much unusable information is produced.
- Enabling staff members to answer information requirements by entering information into the database instead of sending e-mail messages.

3-91. Entering data into a shared database in a standard format will facilitate its processing into knowledge expressed as a standard report. The database will make the most current information available immediately to answer the commander's critical information requirements (friendly force information requirements.)

Problem 5: Leaders' and Soldiers' Ability to Find Needed Information

3-92. Leaders and Soldiers were unable to find information they needed in a timely manner. During and before the collective training events; particularly the combat training center rotation, individuals seeking information in these areas:

- Could not access subject matter expertise online.
- Could not collaborate easily with peers who may have faced similar issues.
- Had difficulty finding archived documents on the topics they were seeking. Also, documents found were sometimes outdated.

Accessing Subject Matter Expertise

3-93. Assessment had indicated that the portal—the organization's home page—did not provide links for reachback to subject matter experts. To resolve this, the knowledge management working group proposed to improve and update the organization's own knowledge center on its home page by:

- Adding/updating links to knowledge networks (i.e. communities of practice), Army Training Network, and professional forums.
- Adding a link to connect directly with the Center for Army Lessons Learned.
- Enabling a search by topic; providing links to subject matter experts and their content.

Collaboration with Peers

3-94. Assessment showed that the organization did not collaborate with peers to share experiences to help one another solve problems. Likewise, the unit portal did not have easy to access links to Army professional forums or communities of practice that would enable Army-wide collaboration on issues. To resolve this, the knowledge management working group proposed the following solutions:

- Ensuring the organization's portal (home page) included easy-to-access links to collaborative Army professional forums and communities of practice.
- Improving the organization's own existing unit forum by designating a facilitator and keeping it up to date with information of interest and establishing the means to rapidly disseminate information following operations.
- Establishing a leader forum in the unit's forum to enable collaboration among leaders of all echelons. This would have links with Army-wide leader forums.
- Establishing a Soldier forum in the unit's forum to enable input from and collaboration among Soldiers to resolve common problems encountered.
- Developing and providing a tutorial on using the newly designed unit portal.

Difficulty Finding Archived Documents

3-95. Assessment showed that the root causes of the difficulty in finding documents were content management problems to include the organizing function and the common practice of using unit databases to store files instead of the SharePoint site on the unit portal. The design to resolve these problems included:

- Following established rules and policies for archiving; moving outdated and irrelevant documents from active to inactive status; and archiving outdated content to ensure its separation from current knowledge products.
- Labeling documents and other knowledge products correctly based on their use, creation, and characteristics.
- Identifying content to archive or destroy. This requires subject matter experts to review content that exceeded a specified date or did not meet usage benchmarks.

- Ensuring SharePoint's proper organization and usage in maintaining and providing ready access to documents and other knowledge products.
- Using the knowledge management representatives to train their sections to use of SharePoint to post content. This training would address reducing the use of unit databases for document storage and proper use of e-mail and refer to documents on SharePoint instead of large e-mail attachments.
- Ensuring metadata was being added to aid in searching for relevant information.

Problem 6: Collaboration with Unified Action Partners

3-96. The staff had difficulty collaborating with the other unified action partners in the scenario. Assessment showed there was no established means, other than e-mail and face-to-face meetings, to collaborate. It also indicated a lack of understanding about the roles and capabilities of the unified action partners. The knowledge management working group proposed a solution including the following actions:

- Finding out which unified action partners were operating in the projected area of operations.
- Including the unified action partners on the knowledge management map.
- Establishing and building relationships with unified action partners in the area of operations.
- Identifying the networks, systems, and primary and alternate means available to communicate and collaborate with the different unified action partners.
- Developing the means to quickly field an online community of purpose for interagency teams and working groups. This included providing training as required.
- Identifying the security problems and working with the security manager to resolve them.
- Providing for quick dissemination to all stakeholders of knowledge gained and other pertinent information resulting from any form of collaboration among unified action partners.
- Practicing effective meeting management with unified action partners to ensure most effective use of time spent in meetings. Identify the different unified action partners expected to be operating in the future operational area, once known.
- Educating leaders and Soldiers about unified action partners (and vice versa).
 - Preparing information sheets about U.S. governmental agencies, international organizations, and non-governmental organizations; focusing on those that could be expected to be operating in the future operational area.
 - Performing officer and noncommissioned officer professional development classes on the role of other instruments of national power (diplomatic, informational, and economic) in military/multi-agency operations.

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Chapter 4

Developing Knowledge Management Solutions

This chapter provides the guidelines for developing knowledge management solutions. Following the overview, it provides steps to developing solutions. The chapter then continues the illustrative scenario from the previous two chapters to provide examples of developing solutions to fill commonly encountered knowledge and performance gaps. The scenario in this chapter focuses on a brigade combat team (BCT) transitioning from train-ready to available force pool of Army force generation (ARFORGEN) as it prepares for upcoming deployment. The scenario is continued from the previous chapter, and highlights two knowledge and performance gaps.

OVERVIEW

4-1. The develop step of the knowledge management process builds the solutions derived from the assessment and design steps. The knowledge management officer communicates regularly with the chief of staff (COS)/XO to verify if the solutions as designed are on the right track to fill the knowledge and performance gaps. Continuous assessment also reveals if any changes are necessary before actual development begins. Development is a detailed, step-by-step building process that should result in a completed solution, ready to be tested and validated in the pilot step. It typically requires close collaboration between the knowledge management working group, the signal staff, and information management personnel.

4-2. When there is more than one solution under development, the working group identifies where there are areas of crossover (for example, between meeting management and time management; standards and reporting; and others as applicable), to coordinate efforts and avoid unnecessary redundancy. Close coordination is particularly valuable in the development of training that typically must accompany new solutions. The knowledge management officer also confirms priorities to ensure the correct focus of development efforts.

DEVELOPING SOLUTIONS

4-3. The following steps to developing solutions will help ensure the solution developed will be adequate and ready to pilot (Table 4-1 on page 4-2 shows the develop steps and the key inputs and outputs).

- Confirm unit priorities, commander's critical information requirements, and unit status.
- Outline each action required to build the solution.
- Build the solution.

CONFIRM

4-4. The knowledge management working group confirms the priorities of effort for development with the COS and XO. Priorities may have changed based on the unit's current situation. Each solution for development requires effort and resources; therefore it is important to place priority of effort on the solution that will help the unit the most in its current circumstances.

4-5. During operations, the commander's critical information requirements focus knowledge and information management efforts. The knowledge management working group confirms that it has the most current commander's critical information requirements; and the proposed solution focuses on these. The knowledge management working group also confirms that it understands the unit's current capabilities for the areas targeted to develop. This requires reviewing the assessment results. The concept maps and knowledge maps from the depict step are important sources of understanding.

OUTLINE

4-6. This includes a fully staffed outline of each required action, and involves coordinating with those elements assigned responsibilities for development actions. This step requires updating the action plan developed previously (Chapter 3 describes the knowledge management action plan).

BUILD

4-7. The knowledge management working group builds the solution to the extent that it is ready to be piloted. Individuals who build the solution may be from outside the knowledge management working group or knowledge management section. The chief of staff (COS) or executive officer (XO) provides oversight assisted by the knowledge management officer.

Table 4-1. Steps of develop – key inputs and outputs

<i>Key inputs</i>	<i>Step 3: Develop</i>	<i>Key outputs</i>
Purpose: To develop actual knowledge management solutions that are feasible and suitable to proceed to validation on a small scale <ul style="list-style-type: none"> • Inputs for develop derived largely from outputs of design • Outputs from develop form the basis of inputs for pilot 		
<ul style="list-style-type: none"> • Guidance from chief of staff • Approved action plan that includes methodology, resources required, timeline, responsibilities, and assessment measures 	Confirm Confirm unit priorities, commander's critical information requirements, and unit status	<ul style="list-style-type: none"> • Updated knowledge management map • Shared understanding of the organization's status and current capabilities
<ul style="list-style-type: none"> • Updated knowledge management map • Knowledge management officer/knowledge management section with knowledge management working group input. It details the required actions in each focus area. The outline of actions may include resource requirements, training requirements, and standard operating procedures revisions 	Outline Outline each action required	<ul style="list-style-type: none"> • A complete and fully staffed outline of each required action for each knowledge gap • An updated action plan
<ul style="list-style-type: none"> • A complete and fully staffed outline of each required action by organizational approach • Updated action plan 	Build Build the solutions	<ul style="list-style-type: none"> • Fully built knowledge management solutions ready to be piloted • Examples include new standard operating procedures, a revised change management plan, a restructured working group, and a new significant activity reporting process • The chief of staff approves solutions for movement to pilot

SCENARIO ILLUSTRATING SOLUTION DEVELOPMENT

4-8. The solutions for those problems identified during Captain Smith's (the knowledge management officer) initial assessment of the unit were successfully designed, developed, piloted, and implemented. These were:

- Standards. The knowledge management working group developed and fielded new knowledge management standard operating procedures (SOP), standardizing knowledge management throughout the organization. The solution included training associated with new procedures;
- Time management. An interim solution focused on making more effective use of time during garrison activities; especially reducing time spent in meetings. Adjustments would take place during later collective training events; with further assessment as needed;

- Meetings. Meetings became more efficient and productive and unnecessary and redundant meetings were eliminated. This solution contributed to time management in garrison. The solution included training on using the unit portal to post and retrieve information from the newly established “digital home” on the portal for all meetings.
- Improving knowledge-sharing across the organization to include three areas:
 - Changing the organizational culture by using the garrison environment to educate and provide opportunities for face-to-face interaction and trust-building to instill a culture of sharing knowledge.
 - Changing the organizational structure by removing or reducing physical barriers to personal interaction and knowledge-sharing. These solutions were also modified and implemented for collective training events focusing on command post layout.
 - Providing a way to digitally share staff running estimates across the organization by creating a forum for questions and other input. This solution transitioned seamlessly into collective training events.

4-9. Now that the initial issues identified during the Reset force pool of ARFORGEN were resolved, the focus turned to the knowledge and performance gaps identified during collective training events. The working group designed solutions to address these and developed them. The BCT was about to enter the “available” force pool.

COMMANDER’S GUIDANCE

4-10. The commander received a warning order for upcoming deployment of the BCT within the next six months. The deployment date was still to be determined. The commander provided the following guidance to a knowledge management working group meeting with the COS presiding:

After our combat training center rotation I told you to fix problems with our common operational picture; with the targeting working group not getting its information on time; with reporting; with tracking key assets; with people not able to find out what they need to know; and with how we can work with the interagency folks and other partners better. You’ve already put together a way to track assets so that’s fixed. I liked your design work on the common operational picture. I want you to keep developing that because that ability to maintain the common operational picture when we’re not stationary or we’re in contact will be very important to us. Our content management and portal’s improved so folks can find answers to their questions in one-stop shopping.

Now we’re in the box for deploying again. We will be part of a combined joint task force (CJTF); CJTF Condor, based in north-central Pashmako; in Pashmako Regional Stabilization Command North. We will also be working with lots of other agencies, international governmental organizations, non-governmental organizations, multinational partners, and the Pashmakan security forces. We’ll be replacing the 71st (“Black Cat”) BCT, with a National Guard infantry BCT. I want you to focus on two things.

First, we need our problems with the common operational picture on-the-move solved. Second, I want you to do a full-court press on developing ways to effectively collaborate with our unified action partners so we can exploit the advantage they bring. We are only part of the equation and we will be much more effective if we can get that going as early as possible. We need to be able to do collaborative planning. That was a problem during our last deployment and it was still a problem at the national training centers with the interagency piece. I want to know who the other governmental and nongovernmental agencies are; what kind of host-nation forces we’re dealing with; what international organizations work in our area so we’re not asking all those questions after we get there. Get with the two and find out all you can about them. Find out how the Joint Task Force is working with the different agencies.

Finally, we’ve had a chance to look at our reporting procedures at the National Training Centers and other collective training. I asked you to put together a design to improve our

reporting; and we did see some improvement. But we need to flatten our whole system. Information is getting stove-piped, and folks only know what's going on in their own areas. We'll be spread all over the battlefield so we need to get out of our little worlds and talk to each other. This means flattening our network. This needs to energize the intelligence warfighting function so everybody knows what's going on. Our network has to work faster and better than the enemy's. If we get good at these three big areas we will solve a lot of problems and have a lot of success.

DEVELOPING “COMMON OPERATIONAL PICTURE ON-THE-MOVE/IN-CONTACT” CAPABILITIES

4-11. The steps in paragraphs 4-12-4-20 describe the capabilities.

Step 1 - Confirm Unit Priorities for Development, Commander's Critical Information Requirements, and Unit Status

4-12. Captain Smith and the knowledge management working group confirmed that this was the commander's priority for developing solutions. Although the unit was not currently in operations, a successfully developed, piloted, and implemented solution would facilitate answers to the commander's critical information requirement during operations. They studied the knowledge management map and results of “define” and “depict” assessment steps. They reviewed the written after action reports/reviews from recent collective training events for the BCT's current capabilities and ways of maintaining the common operational picture. They also determined it would be useful to communicate with the knowledge management officer of the “Blackcat” BCT currently in theater for insights into common operational picture issues, and any other insights and lessons learned they may want to share.

Step 2 – Outline Each Action Required

4-13. Captain Smith and the knowledge management working group outlined the actions required to develop the solution in the bullets:

- Standardize reporting across the BCT. Review all reporting formats and procedures currently in the BCT and subordinate unit SOPs. Revise as required.
- Use reporting standards to ease the transition of information between the upper and lower tactical internet through common reporting formats, including a comprehensive primary, alternate, contingency, and emergency (PACE) plan.
- Work with the signal staff section to develop a PACE plan and standards for reporting.
- Work with the operations staff section to determine the best way to balance digital and analog elements of the common operational picture. Digital predominant when stationary; analog when on the move.
- Knowledge management representatives assisted by functional experts, develop training for individual and collective proficiency and focus on using analog (non-digital) elements.
- Target audiences for training and schedule training sessions.

4-14. After staffing the outline of actions and making necessary adjustments, Captain Smith updated the action plan and provided it to the XO for approval.

Step 3 – Build the Solution

4-15. Building the solution included developing reporting standards that eased the transition of information between the upper and lower tactical internet through common reporting formats and a comprehensive PACE plan. This tied in with the correcting the reporting problems identified during collective training. The unit ensures all subordinate units receive relevant information regardless of their access to the upper or lower tactical internet. The solution also included the following actions:

- Built upper tactical internet networks to mirror the lower tactical internet when possible (e.g. tactical chat network mirrors the frequency modulation network).

- Developed common reporting requirements and formats for upper and lower tactical internet systems (e.g. same report format used over frequency modulation is used on Tactical Chat or Ventrillo).
- Developed report formats that easily feed the common operational picture (e.g. sustainment update easily feeds into BCT S-3 or combat power update covers all metrics displayed on the common operational picture).
- Determine ways for the command post to relay traffic on both upper and lower tactical internet (e.g. the main command post receives a report over frequency modulation and then types out the information into tactical chat and broadcast to all for situational awareness or action as required).

Primary, Alternate, Contingency, and Emergency Plan for Reporting

4-16. Building the solution included the following actions:

- The knowledge management working group, with signal staff assistance, developed a PACE plan for how information and knowledge will be managed and shared. The plan determined optimal methods for sharing information in different situations, and ensured management of the flow of information across systems to prevent overloading.
- The staff developed a framework for how information flowed. It identified requirements at each echelon to determine what systems are available and best suited to meet the requirement.

4-17. The PACE plan was developed by warfighting function, with the aim of accounting for all communication that must take place between the unit and subordinate units two levels down. This helped identify issues with the PACE, such as overloading a particular system with too many reports being sent at the same time.

Balancing the Digital and Analog Elements of the Common Operational Picture

4-18. The work included developing analog tools that mirrored the digital systems and report formats. This involved printing or physically drawing operational graphics and other overlays that are received or created digitally. The design had taken into consideration that various echelons had different equipment, different manning requirements, and different mission requirements. As a result the common operational picture at each command post would be different in terms of how much information is available digitally and how analog tools are incorporated into the common operational picture (Table 4-2 on page 4-6 shows the balance between analog and digital elements in the proposed solution).

Train for Individual and Collective Proficiency

4-19. Developing training included building individual proficiency in using both digital and analog systems. Using the analog backup systems such as paper maps, and overlays on acetate posed a challenge because personnel in the command posts had become dependent upon digital systems. The training team developed increasingly difficult simulated conditions that would precede collective training. Collective training incorporates “on-the-move” and “in-contact” scenarios at different echelons including the main command post.

Ready for Piloting

4-20. The completed solution was ready for piloting at the next BCT collective training event. The after action review would reveal any required changes, so it would be ready to implement after deployment.

Table 4-2. Balancing the digital and analog components in the brigade combat team

<i>Digital components (primary)</i>	<i>Analog components (backup/on the move)</i>
<ul style="list-style-type: none"> • Command post of the future • Force XXI battle command brigade and below • Advanced field artillery tactical data system • Air and missile defense workstation • Mission command support and sustainment system • Distributed common ground system – Army • Full motion video (one system remote video terminal) • Tactical ground reporting system • Web portal • PowerPoint • Audio visual equipment • Digital radios 	<ul style="list-style-type: none"> • Map and imagery • Overlays and graphics • Markers and whiteboards • Push pins and sticky notes • Battle boards and status charts • Hard copies of orders • FM radio
<i>United processes and procedures to maintain communities of practice</i>	
<ul style="list-style-type: none"> • Primary method for storing and displaying information is digital; analog backup • Reporting formats mirror digital systems to ease data entry • Analog map with graphics maintained in all command posts • Analog documents and charts mirror digital components of the community of practice • Analog tools updated twice daily to facilitate a rapid transition from digital to analog 	
<i>Units must live in both worlds</i>	
<ul style="list-style-type: none"> • Process and procedures for information sharing feed the communities of practice regardless of the reporting method • Digital information systems and equipment capture information for the primary community of practice • Analog tools and equipment are available to produce a backup community of practice • Analog tools and equipment are available to produce a backup community of practice or an “on the move” capability • Develop processes and procedures to maintain the analog community of practice as needed to meet mission requirements • Implement knowledge management plan to ensure relevant information is available at each echelon 	

DEVELOPING COLLABORATIVE CAPABILITIES WITH UNIFIED ACTION PARTNERS

4-21. The steps in paragraphs 4-22-4-49 describe how to develop collaborative capabilities with unified action partners.

Step 1 - Confirm Unit Priorities for Development, Commander’s Critical Information Requirements, and Unit Status

4-22. Captain Smith and the knowledge management working group confirmed that the commander’s second priority was to develop collaborative capabilities with unified action partners. His commander’s critical information requirement was to find out everything he could about the other governmental agencies and non-governmental organizations, host-nation forces, international organizations and others who are in our projected area of operations. Current unit status is that 22 BCT was not designed to operate effectively with unified action partners in recent exercise scenarios. They also needed to find out about the Combined Joint Task Force (CJTF), the Black Cat BCT, and their ways and means of working with unified action partners.

4-23. In addition to collaborating with the intelligence staff section, this step required communicating with the knowledge management personnel in the Black Cat BCT currently deployed in Pashmako. They would

need to learn how they communicate and collaborate with unified action partners; and the challenges involved. Specifically, Captain Smith needed to:

- Identify the unified action partners in the BCT's operational area (including U.S. governmental agencies; international governmental organizations; joint, multinational, and host-nation forces; and nongovernmental organizations).
- Identify systems currently in use to communicate and collaborate with unified action partners and determine their capabilities and limitations.
- Maintain communications with the Black Cat BCT to stay abreast of lessons learned and other developments.
- Obtain a copy of the Black Cat's tactical SOP.

4-24. Captain Smith communicated by e-mail with the knowledge management officer of the Black Cat BCT to find out the key information. The unified action partners in the projected area of operations included:

- In CJTF Condor: North Atlantic Treaty Organization (NATO) command element; the Black Cat BCT, a U.S. Air Force squadron, an Army aviation brigade, a Dutch reconnaissance squadron, a British Royal Marine battalion, a Swedish civil-military cooperation detachment, an Australian Army infantry battalion, and a NATO Special Operations Task Group (Polish land and air components, and Lithuanian maritime component).
- The CJTF higher headquarters was the Pashmako Regional Stabilization Command North. Two echelons up was the NATO-led International Stabilization Force.
- U.S. governmental agencies included the U.S. State Department, the United States Agency for International Development; Central Intelligence Agency; Drug Enforcement Administration; the Defense Intelligence Agency; and a Provincial Reconstruction Team which is U.S. State Department-led.
- International organizations included:
 - United Nations High Commission for Refugees office.
 - International Committee of the Red Cross office.
 - World Food Programme office.
- Host-nation security forces included the Pashmakan Land Forces Regional Command and the 15th Infantry Brigade and the district headquarters of the national police and its assigned rural gendarmerie battalion.
- The Pashmako nongovernmental organization coordination bureau was the coordinating body for most non-governmental organizations in Pashmako. The major non-governmental organizations in the area of operations included:
 - Pashmako Relief Organization (Canadian).
 - Red Crescent.
 - Medecins sans Frontieres (Doctors without Borders).
 - Agence Française de Développement (French Development Agency).
 - Pashmako Information Management Services.
 - Micro finance Investment Support Facility for Pashmako.
- Current systems/tools in use included:
 - CJTF Condor SharePoint portal.
 - Non-U.S. forces use Joint Operations Center, as their primary database.
- U.S. mission command information systems included:
 - Command post of the future (CPOF).
 - Combined Information Data Network Exchange (CIDNE).
 - Force XXI Battle Command Brigade-and-Below joint capabilities release.
 - Distributed Common Ground System-Army (DGCS-A).
 - Advanced Field Artillery Tactical Data System (AFATDS).
 - Tactical Ground Reporting System (TIGR).

- Air and Missile Defense Work Station.
- Tactical Airspace Integration System.
- Sustainment System Mission Command.
- Joint Automated Deep Operations Coordination System.
- Networks used included:
 - Pashmako Mission Network – NATO initiative that connects national systems and creates one common network from a collection of national and NATO networks.
 - World-wide Web. This was the only network the host-nation security forces were allowed to use.
 - Non-classified internet protocol router (NIPR) – U.S. and NATO.
 - Secret internet protocol router (SIPR) – U.S.
 - Joint World-Wide Intelligence Communications System.

4-25. CPT Smith also obtained the following information:

- The Pashmako Mission Network, which is the Black Cat BCT's primary means of communicating with all non-U.S. CJTF elements.
- The CJTF SharePoint portal is on the Pashmako Mission Network. Classification firewalls between non-U.S. and U.S. forces inhibit its use across the force. The Black Cat BCT has its own SharePoint portal.
- CPOF is only available to U.S. units. Significant activities reports (SIGACT) are reported in CPOF.
- CIDNE is the event-of-record database for the CJTF, but it is not used. SIGACTs are recorded in CIDNE.
- The nongovernmental organization coordination bureau is reasonably effective in coordinating non-governmental organization work. It has a representative in the Black Cat BCT's civil-military operations center.
- There is no central clearinghouse for development projects across the area of operations. This has caused problems.
- The Black Cat BCT recently was allocated Commander's Emergency Response Program funds and appointed a funds manager.
- The United Nations organizations offices are in Pashmako City about an hour's drive away (Pashmako City is part of the area of operations).
- The Black Cat BCT knowledge management officer does not know what the United Nations organizations do and is not aware of any coordination with the CJTF. There is no coordination with the Black Cat BCT.
- The Pashmako Defense Force has an Army brigade based in the city with one battalion always with the CJTF in its own adjacent area.
- A national police brigade headquarters is in Pashmako City. It is responsible for the security of Pashmako City. The CJTF has a training mission to develop their capability. They send a representative to a weekly CJTF meeting.
- Nongovernmental organizations are not authorized to use the Pashmako Mission Network.

Step 2 -Outline Required Actions

4-26. The knowledge management working group met to outline the actions required to build the solution to enable and enhance coordination with all unified action partners in their future area of operations. However, the complete solution cannot be built or piloted until after the BCT has deployed; though some aspects could be applied during an upcoming mission rehearsal exercise that included unified action partner representation.

4-27. The knowledge management working group identified the actions needed to build the solution and assigned responsibilities for each. Pre-deployment actions included:

- Establishing the social (formal and informal) frameworks for the stabilization knowledge network (community of purpose).
- Expanding upon the BCT's knowledge map and concept map including known and projected unified action partners.
- Preparing and performing training that enables better collaboration.
- Building the stabilization knowledge network (community of purpose) that will be piloted at the mission rehearsal exercise.
- Determining set-up and operation of the stabilization knowledge network pilot during the mission rehearsal exercise.
- Performing virtual right-seat ride with the Black Cat BCT knowledge management officer. Include civil affairs elements in-theater and those who will deploy.

4-28. Actions to be carried out once the 22 BCT deployed included:

- Establishing relationships with unified action partners.
- Seeking input on their needs for the collaborative site.
- Adjusting set-up and operation of the stabilization knowledge network to be implemented in the area of operations.

Establish the Social Frameworks for the Stabilization Knowledge Network (Community of Purpose)

4-29. Known social networks at this point were:

- Army civil affairs. The 22 BCT would include attached elements of a civil affairs battalion and individual ready reserve augmentees.
- U. S. Aid and other U.S. governmental agencies with stability and development responsibilities.
- United Nations organizations: World Food Programme.
- Provincial reconstructive team.
- French development agency.
- Non-governmental organization coordination bureau; all non-governmental organizations in the area of operations.
- Pashmakan security forces (Army and police in the area of operations).
- CJTF Condor headquarters and staff. Currently has no knowledge management working group (except in the Black Cat BCT).

Prepare and Perform Training That Enables Better Collaboration

4-30. The knowledge management noncommissioned officer, assisted by the intelligence and operations staff sections, developed officer professional development/non-commissioned officer professional development classes about the unified action partners in-theater; about the role of the different sources of power (diplomatic, informational, military, and economic) in stability operations. These classes, and supplemental quick reference materials for Soldiers, prepare 22 BCT personnel to interact and effectively collaborate with the various organizations they would encounter in their area of operations.

4-31. In addition, they prepared written instructions on how to use the stabilization knowledge network. These would be distributed to all users.

Build the Stabilization Knowledge Network (Community of Purpose) for Piloting at the Mission Rehearsal Exercise

4-32. This reflects many characteristics of the knowledge network to be fielded in theater. Responsibilities for the signal staff section include build/set up. Responsibilities for the assistant knowledge management officer include facilitation once in operation).

Determine Set-up and Operation of the Stabilization Knowledge Network Pilot at the Mission Rehearsal Exercise

4-33. This action prepares the knowledge management working group to perform an initial pilot of the stabilization knowledge network during the upcoming mission rehearsal exercise. Responsibilities for the signal staff section include set up and responsibilities for the designated assistant knowledge management officer includes management of the data on the network.

Perform Virtual Right-Seat Ride with the Black Cat BCT Knowledge Management

4-34. The knowledge management officer continues communicating with the Black Cat BCT knowledge management officer and set up a virtual right-seat ride at the best opportunity. If possible, engage the Black Cat knowledge management officer or knowledge management staff in laying some of the ground work for closer coordination with the stabilization and development community. The virtual right-seat ride would also include cross-talk with civil affairs elements in the area of operations and those civil affairs elements that would deploy with 22 BCT.

Perform Pre-Deployment Site Survey

4-35. The knowledge management officer would accompany the pre-deployment site survey from 22 BCT. The objectives would include gathering updated status from the Black BCT's knowledge management officer; obtaining contact information for the unified action partners in the area of operations; and meeting as many of them as possible face-to-face. Captain Smith began coordinating with the Black Cat knowledge management officer for actions to accomplish during the pre-deployment site survey.

Perform Actions After Arriving in Area of Operations

4-36. These actions included establishing relationships with unified action partners and seeking their input on their needs. This would be a key factor in the success of the knowledge network. As much as possible, it builds upon contacts established. Where no contact had been previously made, Captain Smith would use the information gathered about the organization to seek common ground upon which to build a relationship.

4-37. Once in theater, the signal staff section and knowledge management officer would confirm which network or networks to use for the stability knowledge network. They would also investigate any other methods and means of collaboration.

4-38. Based upon the knowledge gained from the above actions, the operations and signal staff sections and the knowledge management working group would adjust the set-up and operation of the stability knowledge network to be implemented.

4-39. After staffing the actions required and making necessary adjustments, Captain Smith updated the action plan and provided it to the XO for approval. The XO approved the action plan and gave the go-ahead to continue developing the knowledge network for the community of purpose. His guidance was to stay open to all venues of collaboration, to talk to the unified action representatives at the mission rehearsal exercise for their ideas, to establish contact as early as possible with the unified action partners in theater, and continue working with the Black Cat BCT's knowledge management officer. He also reminded the knowledge management working group that the other coalition forces were also unified action partners; and the BCT needs to collaborate very closely with them as well as the different development agencies.

Step 3 –Build the Solution

4-40. Building the solution requires learning what collaboration means were currently available and whether building a community of purpose knowledge network was feasible. If so, over what means, who are the unified action partners, and how is each one networked, and other information. The lessons learned in developing, piloting, and implementing their own meeting management solution would be helpful in applying them to interagency/multinational collaboration, while recognizing that the BCT's degree of control would not be as great as with its internal meetings.

4-41. A key action that would provide a foundation for further development included expanding upon the concept map and knowledge map with the inclusion of projected unified action partners. This identifies

where knowledge resides among these disparate organizations and enables building the stabilization knowledge network.

4-42. The knowledge management working group began by displaying the stakeholders who were expected to be part of the community of purpose; together with their areas of responsibility and expertise. It showed what was known to-date on their lines of communication and collaboration. To augment this, the knowledge management working group displayed those organizations whose location was known on a map of the expected area of operations and area of interest.

4-43. The knowledge map also included the mission command information system (MCIS) that would be used and how they would be used to share information and knowledge among the unified action partners. It also showed the gaps where information systems were not available.

4-44. As they continued building the maps, the knowledge management working group members also identified gaps in knowledge and shortfalls in collaboration. Continued communication with the Black Cat knowledge management officer was important to the continued development of the concept map in particular.

4-45. In addition to the above, the knowledge management working group took the following actions in building the solution:

- Developed classes for BCT officer and noncommissioned officer professional development for ongoing stabilization efforts in the area of operations and the role of the different unified action partners.
- Developed training on SharePoint and other systems that would help all commands interact and receive the same informational processes quickly.
- Created a “common language” site on the BCT portal to help cross-train military and civilian in terminology and other important information. The information on this site could later be used for the CJTF and the stabilization knowledge network.
- Built the stabilization knowledge network to be piloted at the mission rehearsal exercise and incorporated the characteristics described in the bullets:
 - Provide a user friendly, common platform that is always online, once fielded.
 - Have an unclassified, collaborative teaming portal site available to the stabilization knowledge network (community of purpose).
 - Feature chat and discussion boards.
 - Connect multiple unclassified knowledge sources/databases.
- Set up the stabilization knowledge network in the area of operations.
- Provide information to all stakeholders about the stabilization community of purpose knowledge network.

4-46. The pre-deployment site survey determines which network the stabilization community of purpose knowledge network would use. Options were the World-Wide Web, which includes Pashmakan security forces and civilian nongovernmental organizations or the Pashmako mission network, which excludes Pashmakan security forces and nongovernmental organizations.

4-47. To enhance the BCT’s interaction with other multinational forces, the solution would also integrate the Pashmako mission network SharePoint portal for the CJTF with NATO’s document handling system and the NATO intelligence toolbox to allow a forum for storage, retrieval, and dissemination of finished products representing the synthesis and analysis of all partners.

4-48. For deliberate collaboration and information sharing with partners who only have access to unclassified networks the BCT knowledge management working group will work with the CJTF staff to identify internet sites with complementary structures and customers. Captain Smith identified potential sites to accommodate this requirement. The working group coordinates with organizations to ensure content on these sites are replicated networks, as appropriate.

4-49. The complete solution would be built after deployment, and made ready for piloting.

DEVELOPING THE SOLUTION TO IMPROVE REPORTING AND FLATTEN THE NETWORK

4-50. The steps to developing the solution to improve reporting and flatten the network are in paragraphs 4-51-4-66.

Step 1 - Confirm Unit Priorities for Development, Commanders Critical Information Requirements, and Unit Status

4-51. The knowledge management officer confirmed that improving reporting procedures; thus improving information flow by flattening the network was the commander's next most important priority. The commander's guidance had also been emphatic about flattening the network to speed information flow and improve communication among disparate elements in general. The proposed solutions would broaden including ways to do this.

4-52. No design had been performed for flattening the network. Rapid assessment revealed problems requiring quick response. Design and developing would have to be combined and compressed.

4-53. The current unit status is that the knowledge management representatives reported that all subordinate units had the new knowledge management SOPs, to include reporting standards and formats for all required reports. During collective training, there were very few problems with reports rendered incorrectly.

4-54. The commander emphasized reporting during all the collective training events. Training for individual operators had been developed but not completed. Classes on system capabilities and how they interfaced were not yet developed. Systems were not used to take advantage of their full capabilities. Information reported on CPOF often did not get recorded on CIDNE database.

4-55. During the combat training center rotation, the knowledge management working group had assessed how well information and knowledge flowed through the BCT using its usual networks. They determined that the BCT's network was very hierarchical, with little horizontal interface.

Step 2 – Outline Each Action Required

4-56. The knowledge management working group determined the following actions were required:

- Complete individual operator training on TIGR, CPOF, and CIDNE.
- Develop the classes on system capabilities and interfaces for all personnel. The signal staff section is responsible for operator training and the assistant knowledge management officer is responsible for system capabilities and interfaces. Training is provided before pilot step.
- Develop an annex to the SOPs with detailed information about the information systems in use.
- Develop ways to improve communication and information sharing across the BCT.
- Develop way to test the improved horizontal network before deployment.

4-57. Captain Smith staffed the actions required, updated the action plan, and briefed the BCT XO. The XO's guidance was that the solution had to start at the lowest echelons. She would start work on the U.S. systems and networks but start thinking about how to incorporate the changes into the other systems and networks they might be using after the BCT deploys. The solution needed to be holistic. It involved the S-2 because this needs to empower the intelligence warfighting function. Flattening the network must be done with an aggressive mindset of attacking the enemy's network.

Step 3 - Build the Solution

4-58. Based on the XO's guidance, the knowledge management working group built the following solution:

- Prepared detailed, illustrated guides to the use and capabilities of information systems and made them part of the annex to all SOPs to company level.
- Coordinated for a mobile training team to provide additional training on: TIGR, CPOF, and CIDNE.

- Coordinated for select BCT and battalion staff to attend the Mission Command Digital Master Gunners Course and Mission Command Systems Integration Course on the capabilities, purposes, and interfaces of the different systems.
- Established interface between information systems. (
- Developed command post exercise injects and a plan to test how much time it takes to move selected information. It included a plan for an after action review to look specifically at this aspect.
- Developed mechanisms for flattening the network through CoIST cross-talk with adjacent units.
- Developed mechanisms for company intelligence support teams (CoIST) to collaborate with different intelligence staff section echelons.

4-59. The established interface between information systems is shown in Figure 4-1 on page 4-13.

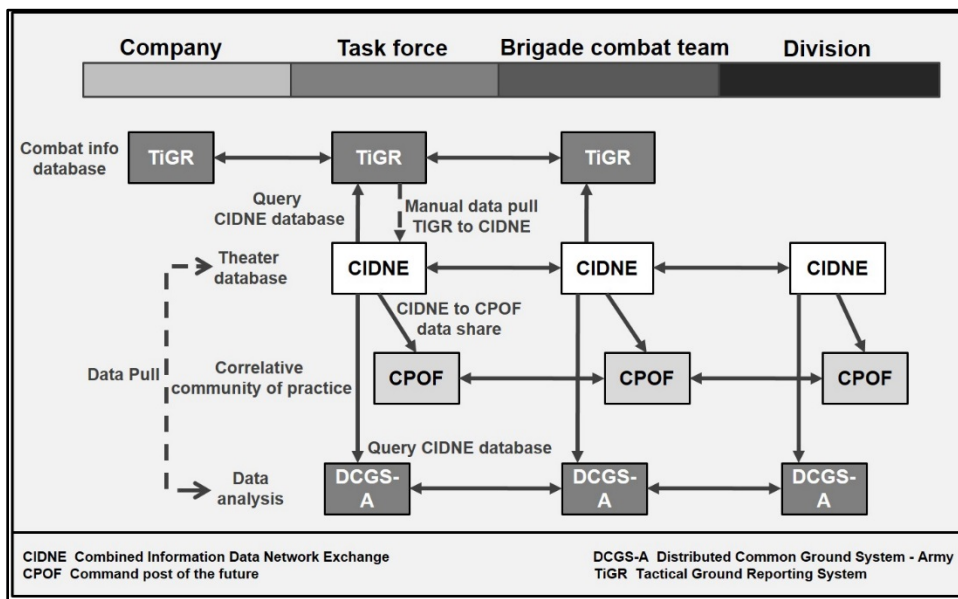


Figure 4-1. Information system interface

4-60. Figure 4-2 shows CoIST cross-talk used to flatten the network.

4-62. The flatter network was set up to feed the targeting process and targeted along all lines of effort and lethal and nonlethal targets. It also employed all enablers with an offensive mindset to assist targeting along all lines of effort. This included:

- Reachback to subject matter experts and centers of excellence.
- Integration of enablers into targeting.
- Requests for support to higher.
- Better use of biometrics, signals intelligence, and human intelligence.

4-63. The flatter network was set up to exploit all opportunities with information and to set conditions, shape operations, influence and inform the population which exploits success and diminishes the negative. The flatter network also enables attacking along all lines of effort.

4-64. The flatter network empowered and energized the intelligence warfighting function by providing:

- Focused collaboration.
- Shared understanding.
- Organizational agility.
- Focused collection.

4-65. The knowledge management working group studied the current reporting procedures in the area of operations, based on information provided by the knowledge management officer in the Black Cat BCT. The knowledge management officer recommended some changes to facilitate more efficient reporting (excerpt of recommended changes is shown in Table 4-3 on page 4-15).

4-66. The working group prepared to pilot the developed solution at the next collective training event to make required adjustments for implementation after deploying to the operational area.

Table 4-3. Current division reports and proposed changes

<i>Topic</i>	<i>Data collector</i>	<i>Staff section with oversight</i>	<i>Tool</i>	<i>Network</i>	<i>Proposed network</i>
Commanders critical information requirements	G-2 and G3	G-5	CPOF	SIPR	No change
SIGACT reports	Brigades and battalions	G-3	CPOF	SIPR	No change
Engagement reports	All units	Key Leader Engagement Element	CIDNE	SIPR	CIDNE / CENTRIXS
IED reports	EOD teams	G-2	CIDNE	SIPR	CIDNE / CENTRIXS
Unexploded ordnance reports	EOD teams	G-2	CIDNE	SIPR	CIDNE / CENTRIXS
IED cache reports	EOD teams	G-2	CIDNE	SIPR	CIDNE / CENTRIXS
Task organization	G-3	G-3	CPOF	SIPR	No change
Organization folder (friendly)	G-3	G-3	CIDNE	SIPR	No change
Organization folder (enemy)	G-2	G-2	CIDNE	SIPR	No change
Person folder (friendly)	G-1	G-1	CIDNE	SIPR	No change
Person folder (enemy)	G-2	G-2	CIDNE	SIPR	No change
Pilot debriefs	Aviation organizations	Combat Aviation Brigade	CIDNE	SIPR	CIDNE / CENTRIXS
Facility reports	PRTs	G-9	CIDNE	SIPR	TBD / NIPR
Civil-military operations	PRTs	G-9	CIDNE	SIPR	TBD / NIPR
Medical reports	Medical units	Division surgeon	CIDNE	SIPR	TBD / NIPR
Medical facility	Medical units	Division surgeon	CIDNE	SIPR	SharePoint /

<i>Topic</i>	<i>Data collector</i>	<i>Staff section with oversight</i>	<i>Tool</i>	<i>Network</i>	<i>Proposed network</i>
assessment					NIPR
Project tracker (CERP)	Battalions and PRTs	G-9	CIDNE	SIPR	SharePoint / NIPR
Facility assessments	All units	G-9	CIDNE	SIPR	CIDNE / CENTRIXS
CENTRIXS – Combined Enterprise Regional Information Exchange System CERP - Commander's emergency response Program CIDNE – Combined Information Data Network Exchange CPOF – Command post of the future EOD – Explosive ordnance disposal IED – Improvised explosive device NIPR – Non-classified internet protocol router PRT – Personnel recovery team SIPR – Secret internet protocol router SIGACT – Significant activities report					

Chapter 5

Piloting Knowledge Management Solutions

Piloting the knowledge management solution is a necessary learning step in the knowledge management process performed before full-scale implementation of a solution. This chapter explains the role of piloting in the knowledge management process and describes the four main steps in knowledge management piloting. It also offers consideration for planning, preparing, executing, and evaluating a knowledge management pilot.

PILOTING OVERVIEW

5-1. In general, piloting refers to the performance of a small scale preliminary test to evaluate and validate the feasibility, time, cost, and effects of a designed knowledge management solution. Pilot tests are performed before full-scale implementation and are often an incremental test of a modification to an existing process and/or procedure.

5-2. A knowledge management pilot uses the walk-before-you-run method of deploying the potential knowledge management solution and testing it in application within the unit context to validate it. Piloting a knowledge management solution can be a single event or a series of pilots consisting of the same solution applied to different organizations or echelons.

5-3. Piloting is a key learning phase of the knowledge management process. A pilot is carefully observed to gauge its effectiveness in delivering measurable results. A pilot serves as a proving ground for a knowledge management solution that was designed to address a gap, but may have broader applicability within or outside the organization.

KNOWLEDGE MANAGEMENT PILOTING TECHNIQUES

5-4. Once a solution addresses an identified knowledge gap in the alignment of people, processes, tools, or organization, in the application of a process, or use of a tool or tools, the first step in validating the efficacy of the solution is to pilot the knowledge management solution by implementing it on a small scale and testing it with the people, process, and tools that will use it on a larger scale. Piloting a knowledge management solution is the same whether the solution is a standards solution, a time management solution, a meeting management solution, a reporting solution, a technical solution, a content management solution, or any other solution dealing with the alignment of the people, processes, tools, and/or organization.

5-5. The pilot of a knowledge management solution will enable the knowledge management professional to identify and correct problems and prepare it for full implementation in the organization. A limited pilot run can be performed, modifying the proposed solution as needed, based on qualitative and quantitative analysis, participant feedback, and knowledge management professional judgment. Knowledge management pilot activities act as a seed for the culture and behaviors and spreads into other activities in the organization.

5-6. Piloting and implementing knowledge management based changes and establishing a training program to support these changes requires careful consideration. The main objective is to capitalize on the trust built during the previous phases to start building improved capability and capacity within the organization. Before piloting a solution, the knowledge management working group assesses, designs, and develops initial solutions for many of the gaps in the organization. Now will be the time to pilot many of the solutions to ascertain the feasibility of the solution. Piloting is an incremental test intended to validate the usefulness of the solutions. This is the stage where many of the solutions will need to be modified based on testing them. This is critical to ensure solutions are suitable, feasible, and acceptable.

5-7. The steps to an effective knowledge management pilot effort are plan, prepare, execute, and evaluate. Each step is discussed in Table 5-1.

Table 5-1. Pilot steps and key inputs and outputs

Key inputs	Step 4: Pilot	Key outputs
Purpose: To validate approved the knowledge management solutions on a small scale prior to implementation across the enterprise <ul style="list-style-type: none"> Inputs for pilot derived largely from outputs develop Outputs from pilot form the basis of inputs from implement 		
<ul style="list-style-type: none"> Fully built knowledge management solutions ready to be piloted Examples include new standard operating procedures, a revised content management plan, a restructured working group, and a new significant activity reporting process 	Plan Plan the details of the pilot	Piloting approach consisting of: <ul style="list-style-type: none"> Objectives Communication plan Timeframe Required resources and training Sample size/scale and scope Measurements and evaluation methodology
<ul style="list-style-type: none"> Completed pilot approach Feedback from participants Rehearsal schedule 	Prepare Prepare all elements of people, processes, technology, and organization for the pilot	After action review from rehearsals
<ul style="list-style-type: none"> Piloting approach (informed by after action reviews) 	Execute Execute the pilot as briefed	<ul style="list-style-type: none"> Collected data After action review from execution
<ul style="list-style-type: none"> Analyzed monitoring and evaluation data which indicates the efficacy of the piloted solution 	Evaluate Evaluate the pilot to determine if ready for implementation	<ul style="list-style-type: none"> Brief chain-of-command and knowledge management working group Approval from chief of staff to implement knowledge management solution on an enterprise level

Plan

5-8. Planning the pilot of a knowledge management solution is the critical first step upon which all effort that follows is dependent. Planning for a pilot requires the same level of detailed preparation as a full-scale implementation of a solution.

5-9. The pilot plan should be based upon a discrete knowledge management solution designed to address an identified knowledge management gap. The solution’s functioning should be isolatable in application.

5-10. Important considerations of the pilot step include communicating the proposed knowledge management solution to the commander and staff and ensuring acceptance or discussing alternatives as needed. The knowledge management working group, knowledge management representatives (and knowledge management section, when assigned) train and coach unit personnel as needed in to deploy and test the solution. Key activities of the pilot step are collaborative assistance and team-peer assistance.

5-11. The pilot plan contains at a minimum:

- Pilot project objective.
- Communication plan or something similar.
- Pilot timeframe.
- Training.
- Resource requirements.
- Sample size/scale and scope.

- Assessment measures.

5-12. Establish an observation, collection, and analysis of methodology and tool set designed to carefully monitor, collect, and analyze the results derived from the pilot.

5-13. Establish a framework for in-stride analysis of improvement and include feedback mechanism for people to share their input about the pilot.

5-14. Identify the variables necessary to evaluate and develop assessment measures. Good assessment measures include measures of effectiveness, measures of performance, and indicators. The collection of relevant data will allow verification and validation of the original solution proposed by the pilot project. These variables are discussed in Table 5-2. Plan to measure both quantitative and qualitative aspects of performance if possible. The development of meaningful assessment measures and indicators is a critical component in effective pilot projects.

- A *measure of effectiveness* is 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). Measures of effectiveness are quantitative measures that give some insight into how effectively a unit is performing a function or activity.
- A *measure of performance* is a criterion used to assess friendly actions that is tied to measuring task accomplishment (JP 3-0). Several measures of performance may be related to the achievement of a particular measure of effectiveness.
- Indicators inform measures of effectiveness to provide a mechanism to assess progress toward a desired end state. They should include both quantitative (observation-based) and qualitative (opinion or judgment-based) indicators.

Table 5-2. Assessment measures and variables

Measure of effectiveness	Measure of performance	Indicator
Used to measure attainment of an end state condition, achievement of an objective, or creation of an effect.	Used to measure task accomplishment.	Used to provide insight into a measure of effectiveness or measure of performance.
Answers the question: are we doing the right things?	Answers the question: are we doing things right?	Answers the question: What is the status of this measure of effectiveness or measure of performance?
Measures why (purpose) in the mission statement.	Measures what (task completion) in the mission statement.	Information used to make measuring what or why possible.
No direct hierarchical relationship to measurements of performance.	No direct hierarchical relationship to measures of effectiveness.	Subordinate to measures of effectiveness and measures of performance.
Often formally tracked in formal assessment plans.	Often formally tracked in execution matrices.	Often formally tracked in formal assessment plans.
Typically challenging to choose the appropriate ones.	Typically simple to choose the appropriate ones.	Typically as challenging to select appropriately as the supported measure of effectiveness or measure of performance.

5-15. It is essential to consider the resources, including time available for the pilot effort and carefully consider the potential impact the pilot may have on other ongoing processes within the organization – at a minimum, consider the people, processes, tools, and organization. Wherever possible, use existing networks and systems for the pilot run. Knowledge management is human-centric. Remember the importance of the human factor.

Prepare

5-16. Communicate the designed solution and develop buy-in from key participants. Explain the steps needed to prepare for the pilot, execute it, and how to wind down the pilot or roll it into a more permanent program should it be successful. Pay special attention to communicating the feedback mechanisms to all participants. It is essential that people understand their feedback is necessary, valued and used.

5-17. Communicate the desired outcome of the pilot effort to those directly involved, and ensure shared understanding of their roles and expectations. The knowledge management working group, knowledge management representatives (and knowledge management section, when assigned) are prepared to train and coach unit personnel as needed to deploy and test the solution. Key activities of the pilot step are collaborative assistance and team-peer assistance.

5-18. The preparation phase of the pilot run general includes:

- Set-up.
- Presentation of pilot project to participants.
- User/participant training, as required.
- Rehearsal.

Execute

5-19. The execution phase of the pilot is the heart of this step. During execution of the knowledge management pilot project, knowledge management practitioners put the designed solution into operation and monitor its proper execution.

- The pilot is executed and observed. The evaluation measures are populated while the pilot is in progress.
- The execution phase of the pilot run includes the execution component and an after action review.

Evaluate

5-20. Evaluation of the pilot project results is the crucial final step in the piloting process. This evaluation allows the knowledge management team to gauge the progress toward accomplishing the task, creating an effect, or achieving an objective as intended for the designed knowledge management pilot solution.

5-21. Four types of data collection are typically employed in evaluating a knowledge management pilot. A blend of these techniques is considered the best approach.

- Automatic: Automatic tools can be designed to collect numeric data (e.g. hours a system was in use, when used, and by whom). This data does not have to be collected from users directly.
- External: One or several knowledge management observers can be present and observe during the pilot run.
- Subjective: Participants are asked to document their impressions and experiences through several tools like blogs, chats, questionnaires, surveys, or forms. The frequency of participant documenting must be pre-defined.
- Environmental: Data is gathered by questioning participants about the pilot results and their perceptions both during and after the pilot run.

5-22. Careful analysis of the collected quantitative and qualitative data from the assessment measures helps determine the efficacy of the piloted solution. The personnel designated to perform the pilot assessment provide the results to the knowledge management working group. The knowledge management officer will present the findings to the chain-of-command. The chain of command elects to:

- Refine or adjust the knowledge management solution as needed, based upon the data gathered during the pilot run.
- Execute the transition plan to institute the solution on a larger scale.
- Shut down the pilot and pursue alternative solutions.

5-23. The assessment of the knowledge management pilot results in a proposed approach to implementing, refining, or abandoning the knowledge management pilot solution.

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Chapter 6

Implementing Knowledge Management Solutions

This chapter provides the guidelines for effective implementation of validated knowledge management solutions. The chapter provides an overview of the implementation step of the knowledge management process and then outlines the steps to implement a knowledge management solution. The chapter then describes the implementation plan and documenting the implemented solutions. The chapter concludes with assessing the implemented solutions.

IMPLEMENTATION OVERVIEW

6-1. Implementation, or the execution of a plan, is the culminating step in the knowledge management process and focuses on functional improvements. Implementation is the step where the solution is finalized, presented for acceptance, and applied on a large scale. Implementation puts a plan into action and relies on shared understanding to assess progress and make execution and adjustment decisions. This step takes the user validated knowledge management solution or refinements and implements them into existing organizational processes and systems. In the implementation step of the knowledge management process, the knowledge management professional will use the knowledge management working group to facilitate and focus the organization's efforts on the knowledge management solution put into place.

6-2. Before organizations consider investing time and resources into an enterprise-level knowledge management initiative, they will have performed a detailed analysis of a particular issue through the lens of the people, process, tools, and organization.

6-3. Once a pilot run of a knowledge management solution has demonstrated the value of the designed solution, the next step is to fully implement the solution. Full implementation of a solution requires both user involvement and management support. Implementation of a validated solution across multiple organizations or echelons must be carefully synchronized.

IMPLEMENTATION STEPS

6-4. The implementation steps of the knowledge management process are:

- Produce an implementation plan that addresses all elements of people, processes, tools, and organization.
- Synchronize to ensure all elements of the enterprise (are implemented as intended, at the time intended, and according to the original intent. This means the solution addresses all four knowledge management components of people, processes, tools, and organization.
- Assess the implemented solution (Table 6-1 on page 6-2 shows the implement steps and its key inputs and outputs).

Table 6-1. Implement

Key inputs	Step 5: Implement	Key outputs
Purpose: To close known knowledge management gaps to enable mission command <ul style="list-style-type: none"> Inputs for implement derived largely from outputs of pilot Continual assessment 		
Results of piloting	Produce Produce a thorough implementation plan that addresses all elements of people, processes, technology, and organization	
<ul style="list-style-type: none"> Approved implementation plan Unit standard operating procedures Unit battle rhythm Note: Depending on unit requirements and/or the operational environment, the implementation plan may be expressed in the form of a knowledge management annex to an operation order.	Synchronize Ensure all elements of the enterprise implement as intended, at the time intended, and in accordance with the original intent	<ul style="list-style-type: none"> The knowledge management officer (and knowledge management representatives) assist and synchronize the implementation plan across the enterprise Update the knowledge management working group Update the chief of staff (as required)
	Assess Monitor, evaluate, and recommend	<ul style="list-style-type: none"> Periodic informal monitoring of the knowledge management solution to evaluate effectiveness Update to the chief of staff (as required) Note: The knowledge management officer now re-enters the knowledge management assessment process at step 1 (assessment) to continuously monitor and assess.

6-5. During the implementation step of the knowledge management process, the chief of staff (COS) or executive officer (XO) integrates the efforts of the whole staff by synchronizing their activities toward the achievement of the planned knowledge management process improvement and placing a high priority on the achievement of shared understanding through better knowledge management.

IMPLEMENTATION PLAN

6-6. The implementation plan is the roadmap used by the knowledge management working group, and others, to deliver a validated knowledge management solution. The plan outlines the responsibilities of the working group and key organizational stakeholders. The document articulates the planned knowledge management implementation and enables those completing the knowledge management tasks and activities in the project to deliver the expected results, as per the validated knowledge management solution. The implementation plan focuses on scaling up the pilot validated knowledge management solution and includes considerations for the day-to-day management and control activities to be undertaken by the working group and the unit members. The fully developed knowledge management solution implementation plan contains a timeline, quality control plans, resource scheduling, and risk management. *Risk management* is the process of identifying, assessing, and controlling risks arising from operational factors and making decisions that balance risk cost with mission benefits. (JP 3-0). The implementation plan is issued under the COS's signature.

6-7. When planning for implementation of a knowledge management solution, consider that the solution is a strategic process and needs careful expectation management, condition setting, and continuous review. Careful change management of all implementation efforts is essential to persuade users and stakeholders to accept and embrace changes. Lastly, the knowledge management officer considers what documentation is required for management of the implementation step.

DOCUMENTING SOLUTIONS DURING IMPLEMENTATION

6-8. Although the implementation plan provides the roadmap for delivering knowledge management solutions, the knowledge management officer finds it helpful for the knowledge management section to develop a means by which the multiple solutions pursued over the course of a deployment are tracked and documented. This tool may take the form of an annex in the implementation plan or may be a stand-alone tool that will capture the solutions that flow from either an abbreviated or rapid assessment (Table 6-2 shows a potential way to track the implementation of knowledge management solutions).

Table 6-2. Gaps to solutions tracker

Gap description	People, processes, technology, and organization				Date validated	Proposed solution	Date approved	Status	Status date
	P	P	T	O					
Unit has no knowledge management standard operating procedures	All				4/2/13	Develop, staff, publish, and approve knowledge management standard operating procedure	4/10/13	In progress	4/25/13
G1 cannot access communities of practice			X		4/13/13	Lateral transfer 1 each command post of the future from G3 plans to G1	4/22/13	Complete	5/1/13
G4 needs a knowledge management representative	X				4/13/13	Schedule a G4 soldier for training	4/15/13	Schedule	4/18/13
Civil affairs does not participate in the military decisionmaking process		X			4/26/13	S3 revises military decisionmaking process standard operating procedure	4/27/13	Complete	5/15/13
Unit web page does not meet commander's intent			X		5/1/13	G6 webmaster revises and briefs the chief of staff	5/4/13	In progress	5/6/13

6-9. Critical elements to develop a tool for tracking implementation of knowledge management solutions might be:

- A short title to describe the knowledge management gap.
- Identification of which component of knowledge management is impacted (e.g. people, process, tools, and organization) along with the date identified.
- A short title to describe the proposed solution together with the date that the implementation of that solution was approved.
- A status of the solution (i.e. completed, in process, delayed, etc.).

IMPLEMENTATION TO ASSESSMENT

6-10. The implementation step involves continuous evaluation of the applied solution and refinement through objective monitoring of the performance against predetermined objectives. The knowledge management process is a recursive functional loop. Once a solution is in steady-state execution, it is monitored and its impacts are assessed to ensure it meets the established process improvement (Figure 6-1 shows an example of the complete five step knowledge management process and key products developed in each phase).

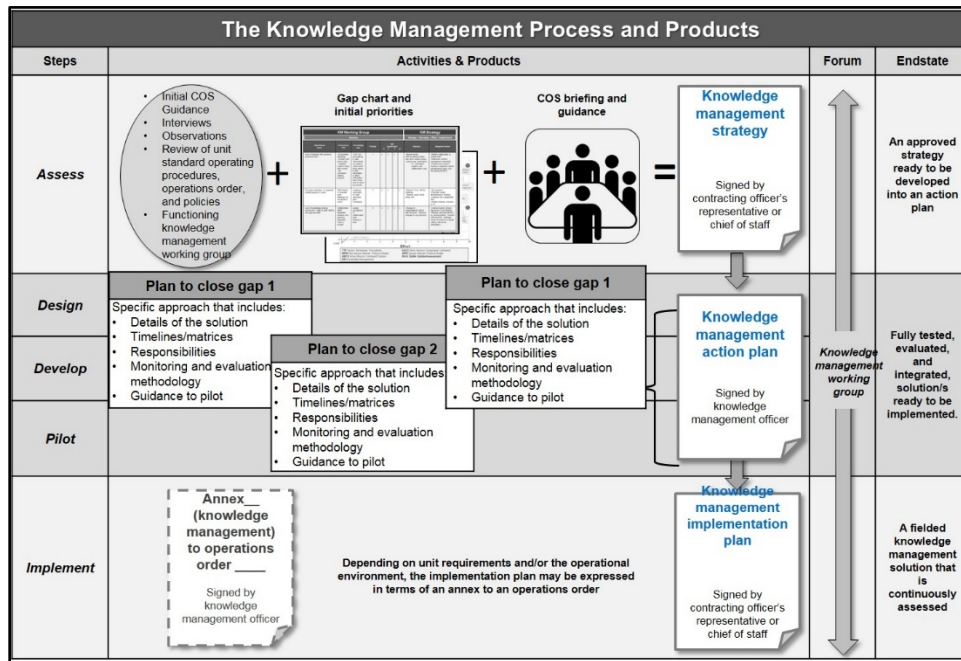


Figure 6-1. Knowledge management process cycle

Appendix A

Knowledge Management Annex Format for an Operations Order

A knowledge management annex is included in operation plans and orders for brigade or higher units assigned an area of operations. Annex Q, knowledge management (see FM 6-0), provides guidance on how to share, integrate, and enable effective decisionmaking to provide an operational advantage to perform actions according to commander's intent, priorities, concept of operations. It provides direction for units specific to the mission and not intended to replicate what is already addressed in the unit SOP.

[CLASSIFICATION]

Place the classification at the top and bottom of every page of the attachments. Place the classification marking at the front of each paragraph and subparagraph in parentheses. Refer to AR 380-5 for classification and release marking instructions.

Copy ## of ## copies
Issuing headquarters
Place of issue
Date-time group of signature
Message reference number

Include the full heading if attachment is distributed separately from the base order or higher level attachment.

ANNEX Q (KNOWLEDGE MANAGEMENT) TO OPERATION PLAN/ORDER [number] [(code name)]—[issuing headquarters] [(classification of title)]

(U) References: *List documents essential to understanding the attachment.*

a. *List maps and charts first. Map entries include series number, country, sheet names or numbers, edition, and scale.*

b. *List other references in subparagraphs labeled as shown.*

c. *Doctrinal References for this annex include the following: ADRP 3-0, ADRP 5-0, ADRP 6-0, and FM 6-0.*

(U) Time Zone Used Throughout the Plan/Order: *Write the time zone established in the base plan or order.*

1. (U) Situation. *Include information affecting the functional area that paragraph 1 of the operations plan or Operations order does not cover or needs to be expanded.*

a. *(U) Area of Interest. Describe the area of interest as it relates to knowledge management. Refer to Annex B (Intelligence) as required.*

b. (U) Area of Operations. *Refer to Appendix 2 (Operation Overlay) to Annex C (Operations) as required.*

c. (U) Enemy Forces. *Refer to Annex B (Intelligence) as required.*

d. (U) Friendly Forces. *Outline the knowledge management and information management structure, including higher headquarters. This will include the joint force commander involved with the operation.*

e. (U) Interagency, Intergovernmental, and Nongovernmental Organizations. *Identify and describe other organizations in the area of operations that may impact knowledge management (data sharing and collaboration capabilities). Refer to Annex V (Interagency Coordination) as required.*

f. (U) Civil Considerations. *Refer to Annex K (Civil Affairs Operations) as required.*

g. (U) Attachments and Detachments. *List units and capabilities attached or detached only as necessary to clarify task organization and knowledge management and information management. Refer to Annex A (Task Organization) as required.*

h. (U) Assumptions. *List any knowledge management integration assumptions that support the annex development.*

2. (U) Mission. *State the mission of knowledge management to support the base plan or order.*

3. (U) Execution.

a. (U) Scheme of Knowledge Management Support. *Describe how knowledge management supports the commander's intent and concept of operations. Describe how knowledge management will create shared understanding through the alignment of people, processes, and tools within the organizational structure and culture to increase collaboration and interaction between leaders and subordinates, enabling decisions through improved flexibility, adaptability, integration, and synchronization. Describe how knowledge management enhances shared understanding, learning, and decisionmaking during the phases of the operation. Specify the authority exercised at each echelon for each phase of the operation. Describe the roles and relationships between knowledge management elements in the organization and how they will coordinate with joint, combined, and intergovernmental knowledge management elements. Describe how units' knowledge management elements and assets are integrated into the unit battle rhythm, operations process, and during execution.*

b. (U) Tasks to Subordinate Units. *List knowledge management critical tasks assigned to subordinate units not contained in the base plan or order. This may include tasks to combat units and other functional organizations.*

c. (U) Coordinating Instructions. *List only instructions applicable to two or more subordinate units not covered in the base order that affect knowledge management procedures (for example, commander's critical information requirements).*

4. (U) Sustainment. *Identify and list sustainment priorities for knowledge management key tasks and specify additional sustainment instructions as necessary, including contractor support. Refer to Annex F (Sustainment) as required.*

a. (U) Logistics. *Identify sustainment requirements, procedures, and guidance to support knowledge management. Specify procedures for specialized technical logistic support from external organizations as necessary. Use subparagraphs to identify priorities and instructions for knowledge management logistic support. Refer to Annex F (Sustainment) and Annex P (Host-Nation Support) as required.*

b. (U) Personnel. *Identify knowledge management personnel requirements and concerns,*

including global sourcing support and contracted linguist requirements. Use subparagraphs to identify priorities and instructions for human resources support, financial management, legal support, and religious support. Refer to Annex F (Sustainment) as required.

c. (U) Health Service Support. *Identify availability, priorities, and instructions for medical care. Identify medical-unique automation requirements for medical records and other medical documentation and support requirements for medical units. Refer to Annex F (Sustainment) as required.*

5. (U) Command and Signal.

a. (U) Command.

(1) (U) Location of the Commander and Key Leaders. *State the location of the commander and key knowledge management leaders. Identify who is authorized to make knowledge management decisions for the commander.*

(2) (U) Succession of Command. *State the succession of command if not covered in the unit's standard operating procedures.*

(3) (U) Liaison Requirements. *State the knowledge management liaison requirements not covered in the base order.*

b. (U) Control.

(1) (U) Command Posts. *Describe the employment of knowledge management-specific command posts, including the location of each command post and its time of opening and closing.*

(2) (U) Reports. *List knowledge management support- reports not covered in SOPs. Refer to Annex R (Reports) as required.*

c. (U) Signal. *Address any knowledge management support-specific communications requirements or reports. Refer to Annex H (Signal) as required.*

ACKNOWLEDGE: *Include only if attachment is distributed separately from the base order.*

[Commander's last name]
[Commander's rank]

The commander or authorized representative signs the original copy of the attachment. If the representative signs the original, add the phrase "For the Commander." The signed copy is the historical copy and remains in the headquarters' files.

OFFICIAL:

[Authenticator's name]
[Authenticator's position]

Use only if the commander does not sign the original attachment. If the commander signs the original, no further authentication is required. If the commander does not sign, the signature of the preparing staff officer requires authentication and only the last name and rank of the commander appear in the signature block.

ATTACHMENTS: *List lower level attachment (appendixes, tabs, and exhibits).*

Appendix 1–Knowledge Management Decision Support Matrix
Appendix 2–Common Operational Picture Configuration Matrix
Appendix 3–Mission Command Information Systems Integration Matrix

Appendix 4–Content Management
Appendix 5–Battle Rhythm

DISTRIBUTION: *Show only if distributed separately from the base order or higher level attachments.*

Appendix B

Knowledge Management Standard Operating Procedures

This appendix provides a recommendation for content that can be used as a basis for the development of unit-specific knowledge management standard operating procedures (SOP). This appendix discusses Army doctrine and policy to support SOP content development.

STANDARD OPERATING PROCEDURES DEVELOPMENT

B-1. An operating procedure is the approved process to complete a complex, recurring task. A procedure consists of a series of detailed steps—or subordinate tasks—and carrying out those steps ensures a desired result. SOPs provide the instructions to perform an operating procedure. Writing down instructions for operating procedures is essential for units to achieve the desired result easily and repeatedly.

B-2. Authoring SOPs involves three general stages of development. In the first stage, the author determines the optimal product expected from establishing or revising a procedure. This becomes the objective—it could be anything from a rapidly assembled piece of equipment, to synchronizing of schedules, to a complex intelligence product. In the second stage, the author establishes an optimal process for achieving the objective. This becomes the operating procedure. This hands-on stage involves research, collaboration, and synthesis. In the third stage, the author explains in how to carry out the operating procedure, usually in a computer generated document. The commander's approval makes this document the SOP. This stage involves formulating and writing down instructions consistent with appropriate writing processes and style requirements (ATP 3-90.90).

B-3. SOPs help with mission command. These procedures serve two purposes. Internal SOPs standardize each command post's internal operations and administration. External SOPs developed for the entire force leverage best practices and standardize interactions among command posts and between subordinate units and command posts. For effective procedures, all Soldiers must know their provisions and train to their standards. The overall goal for SOPs is to facilitate mission accomplishment and warfighting functions integration.

B-4. The creation of unit knowledge management SOPs involves creating or modifying a set of instructions covering those tasks and functions that lend themselves to a definite or standing procedure without a loss of effectiveness; the standing operating procedures is effective unless ordered otherwise to meet altered conditions.

B-5. Knowledge management professionals should refer to ATP 3-90.90 for additional resources when developing the unit knowledge management SOPs. Knowledge management Net is also a potential good source for examples. Soldiers may use the portal as a resource when developing unit SOPs to support operations. Soldiers refer to ATP 3-90.90 to improve processes for establishing and revising SOPs and for discussing best practices in general.

B-6. Regardless of SOP type, authors use the format required by their command, which must be consistent with appropriate military doctrine and regulations. Unit SOPs normally contain the following categories of information (ATP 3-90.90):

- Name of the SOP, activity, unit, and classification.
- Subject of the SOP (this is the overall topic).
- References pertinent to the procedure. Citations must be accurate and thorough (title, type, number, and date of publication for formal publications), online links if appropriate; and information for correspondence or meetings.
- Purpose of the SOP (to ensure result X by giving instructions for performing task Y).

- Short summary of the SOPs (a few sentences, placed near the beginning but composed last).
- Scope (to whom the procedures apply and possibly under what conditions or circumstances).
- Definitions (sometimes needed to explain terms new to readers or to interpret acronyms).
- Responsibilities (brief, descriptive sentences telling exactly who is responsible to ensure what outcomes or provide what resources).
- Detailed instructions for the procedure, explaining:
 - Who performs exactly what tasks and why.
 - When/where to perform the tasks: such as under what conditions (i.e tactical vs. garrison), in what sequence, how often or how many times, at what time of day, and before or after what other event or procedure.
 - How to perform the tasks such as using what equipment or supplies, alone or together with whom, to whom or upon what, according to what security and safety requirements, and in what manner or at what pace.
 - A reason to perform the tasks (if this information aids comprehension, execution, or compliance).
 - What the result is as each subordinate task is completed (if this information is concrete and factual, and it aids comprehension, execution, or compliance).
 - Alternating actions to take in likely changes of circumstances.
 - How or to whom Soldiers report completion of the procedure.
 - Recordkeeping requirements.
 - Enclosures.

B-7. Additionally there are considerations that may or may not be suitable for inclusion in the unit knowledge management SOPs. Some of these are:

- Applicability and interoperability considerations with unified action partners.
- Organization and setup of the section and working group.
- Staffing and shifts plans for the section.
- Eating and sleeping plans for the section.
- Section-specific physical security and operations security concerns.
- Section priorities of work.
- Orders production and dissemination procedures.
- Section journals and log maintenance.
- Section internal battle drills.
- Section shift-change briefings, reports, and returns.
- Battle rhythm and the working group meetings.
- Individual and collective responsibilities including roles and duties of the knowledge management officer, information management officer, and knowledge management section.
- Responsibilities and procedures for the working group and knowledge management representatives.
- Unit battle rhythm and meeting procedures.
- Information systems integration. Primary, alternate, contingency, and emergency (PACE) plan.
- Knowledge products, content management, file taxonomy, and meta-data requirements.
- Knowledge management tools including use of SharePoint, other collaboration methods, and digital systems.
- Responsibility for sharing best practices (internally and externally with the Army and centers of excellence).

Appendix C

Knowledge Management Tools

This appendix deals with knowledge management tools. Knowledge management tools are one of the four components of knowledge management alongside people, processes, and organization. The appendix begins with a brief discussion of the role knowledge management tools play in relation to the other knowledge management components. The appendix concludes with a discussion of digital, non-digital, and mission command tools.

KNOWLEDGE MANAGEMENT TOOLS SELECTION

C-1. Knowledge management tools include the primary mission command information systems and various software tools used to put knowledge products and services into organized frameworks. It is essential to understand that these tools include anything used to share and preserve information, whether digital or non-digital. Remember that the mission dictates the appropriate tools.

C-2. Selecting the appropriate knowledge management tool or mix of tools for an organization is complex. There are a variety of approaches and situations that different tools are most suitable for. These can be a SharePoint portal that allows all unit members to add information to a shared database or a carefully curated and approved set of knowledge managed by individual subject matter experts, units, or staff sections. It is always a question of what works with the tools you have available, what types of knowledge you need to capture and flow, and what resources are available.

C-3. In selecting a mix of knowledge management tools to address an organization's knowledge needs, the knowledge management officer considers the mission, activities, and tools in use internally, and by higher, subordinate, lateral, and unified action partners for similar purposes. Under all circumstances, the knowledge manager considers the time and tools available, their ease of use, the degree of specialized skill needed by the users to apply the tool, and any digital or non-digital support requirements needed to employ the selected tools.

C-4. Knowledge management includes anything used to share and preserve information. These may be digital/technical or may require little or no technology. Knowledge management tools do not have a clear division between those used for knowledge transfer, learning, or other purposes. They all contribute to learning to some degree. Learning tools are anything; activity, technology, system—that supports individual or organizational learning. To maximize the value of the particular learning tool or activity, leaders ensure that knowledge gained from their use is shared across the organization.

NON-DIGITAL KNOWLEDGE MANAGEMENT TOOLS

C-5. Meaningful knowledge management does not depend upon technological means to function. The capture and flow of knowledge needed to gain shared understanding can often be best accomplished by human interaction not supported by digital means.

C-6. Some examples of non-digital knowledge management tools are:

- Rehearsals and rock drills.
- Sand tables.
- Storytelling (as a means of transferring tacit knowledge).
- Hot washes and after action reviews.
- Map boards, wing boards, status boards, and unit message boards.
- White boards/dry erase boards.

- Overlays and graphics.
- Strip maps.
- Post-it drills.
- Battle drills.
- Terrain walks.

DIGITAL KNOWLEDGE MANAGEMENT TOOLS

C-7. There is a wide array of digital tools available for knowledge capture and flow. Today's Soldiers are familiar with digital professional and social forums, chat programs, blogs, social networking sites, tele/video conferencing systems, and Army Knowledge Online (Figure C-1 shows examples of Army professional forums). These forums are evolving and leaders are aware of these networks.



Figure C-1. Examples of Army professional forums

C-8. Digital knowledge management tools take many forms. Some examples of digital knowledge management tools are:

- Mission command information systems (MCIS). MCIS and their software, storage, inputs, processing, outputs, formats, content, software, and capabilities provide tools knowledge managers employ to manage knowledge. Knowledge management helps guide the use of MCIS to fuse information to support a more effective and relevant common operational picture.
- Collaboration tools: These tools are information systems including online capabilities that make team development and collaboration possible. Examples include chat, white-boarding, professional forums, communities of interest, communities of purpose and practice, and virtual teaming.
- Data-analysis tools: These tools support data synthesis that identifies patterns and establishes relationships among data elements - knowledge management's data-analysis tools support data synthesis that identifies patterns and establishes relationships among data elements. Data analysis tools can be used to perform data mining (sometimes called data or knowledge discovery) to discover previously unknown, valid patterns and relationships in large data sets. Data mining analyzes data from different perspectives and summarizes it into useful information. It finds correlations or patterns among multiple fields in other large relational

databases. Data mining consists of more than collecting and managing data; it also includes analysis and prediction. Data analysis tools can include:

- Statistical models.
- Mathematical algorithms.
- Machine learning methods (algorithms that improve their performance automatically through experience, such as neural networks or decision trees).
- Search-and-discover tools: These tools include search engines that look for topics, recommend similar topics or authors, and show relationships to other topics (metadata).
- Expertise-development tools: These tools use simulations and experiential learning to support developing experience, expertise, and judgment. These tools use simulations and experiential learning to support developing experience, expertise, and judgment. Examples of expertise development tools include computer generated constructive simulations such as One Semi-Automated Force and the Call-For-Fire Trainer; military gaming, such as Virtual Battle Space, and other three-dimensional experiential knowledge-based unit tactical scenarios. Expertise development tools enable units to:
 - Interview or debrief small tactical units that have experienced tactical events worth replicating in sufficient detail to provide a military gaming scenario.
 - Design and develop playable scenarios based on what was experienced and learned.
 - Disseminate playable scenarios to friendly forces throughout operational area to rapidly and effectively transfer the knowledge of the engaged unit.
 - Expertise-location tools support finding subject matter experts. Expertise location tools are often directories or databases of people listing their areas of expertise. Expertise location refers to a group of techniques and tools that help knowledge seekers find those with relevant knowledge. It emphasizes the importance of putting people in contact with one another.

MISSION COMMAND INFORMATION SYSTEMS AND COLLABORATION TOOLS

C-9. The Army has multiple digital information systems. These systems integrate and synchronize all aspects of doctrine, organization, training, materiel, leadership and education, personnel, and facilities for designated systems and the associated capabilities. Army commanders and their staff have access to a vast array of human-centered digital systems that offer collaborative capability.

C-10. Collaboration tools enable commanders, staff, and others at various echelons and disparate locations to perform the collaboration and dialogue essential to successful mission command. Important collaboration tools include Defense Connect Online [DCO].

C-11. DCO is the Department of Defense (DOD) chat and web conferencing service. DCO allows DOD personnel to collaborate with staff, external participants such as non-governmental organizations, civilians, spouses and other mission partners. DCO is available to all military services, to anyone with a common access card, and to individuals sponsored by a common access card holder who is also a registered DCO user. Non- common access card holders can be invited to join a DCO connect session.

C-12. Jabber. Jabber is enterprise instant messaging application that provides real-time group chat, online text conference rooms, web conferencing, application sharing and white boarding.

C-13. MilSuite. MilSuite is a collection of online tools that promote workforce collaboration and secure information sharing behind the DOD firewall. These secure capabilities include MilWiki, a living military encyclopedia editable by the experts who know each subject best; MilBook, a professional networking tool providing communities of practice; milBlog, the place to share and comment on internal news and events; and MilTube, a video-sharing platform for the military workforce.

C-14. Reporting provides information. Accurate and timely reporting enables situational awareness and an accurate common operational picture. Reports are transmitted by radio or through computer systems. The knowledge management role in reporting is based on the objective (see FM 6.01-1) of getting the right information, to the right people, in the right format, at the right time to arrive at the right decision.

Knowledge management personnel teach and train others how to use the reporting tools; therefore, they must know the tools' capability and the reporting procedures.

C-15. Some of the primary MCIS the Army uses that knowledge management professionals consider are described in paragraphs C-16 – C-27.

INTEGRATED VOICE OVER INTERNET PROTOCOL

C-16. Voice over internet protocol refers to the communication protocols, technologies, methodologies, and transmission techniques involved in the delivery of voice communications and multimedia sessions over networks such as the Internet.

THE MISSION COMMAND WORKSTATION

C-17. The mission command workstation tactical mission command client software is referred to as command post of the future (CPOF). CPOF is a digital mission command system used for planning, monitoring, and controlling tactical operations and collaboration between tactical operation centers. It supports parallel, synchronous and asynchronous planning among and between echelons. CPOF is currently fielded to battalions and above but can be found as low as company level. CPOF is the primary common operational picture viewer used by the Army in all theaters, combining feeds from different mission command systems to provide a broad spectrum of information that commanders and Soldiers can use to collaborate. CPOF provides collaboration and visualization capability to commanders and staff for planning, monitoring, and controlling tactical operations. It supports parallel, synchronous, and asynchronous planning. It provides voice over internet protocol, graphical user interface, and enhanced briefing capabilities. CPOF allows commanders to receive real-time situational awareness from the system and have that information in text and graphic representation available to other commanders and operations officers at all levels. Its tools allow users to unobtrusively view other's workspace, copy and track information requirements and begin parallel planning without having to request information. CPOF is currently an "on-the-halt" system (stationary and assessable to the repository); new improvement to the software and network are being tested to provide "on-the-move" capabilities. It is important to ensure the battle captains, battle staff noncommissioned officers, and a knowledge management representative have had CPOF training and preferably have attended either the Mission Command Digital Master Gunner's Course, or the Mission Command Systems Integrator Course.

C-18. Force XXI Battle Command Brigade-and-Below joint capabilities release (JCR is the Army's next generation friendly force tracking system currently fielding to Afghanistan. This upgrade builds on the situational awareness tool Force XXI Battle Command Brigade and Below/Blue Force Tracking (Force XXI Battle Command Brigade-and-Below/Blue Force Tracking), which is integrated on more than 120,000 platforms and fielded to every brigade combat team (BCT) in the Army. Force XXI Battle Command Brigade-and-Below is a digital mission command information system providing integrated, timely, relevant information to tactical combat leaders and Soldiers from brigade to platform and across platforms within the brigade task force. Force XXI Battle Command Brigade-and-Below has both "on-the-halt" and "on-the-move" over the horizon capability. It allows warfighters to pass orders and graphics to visualize the commander's intent and scheme of maneuver. Force XXI Battle Command Brigade-and-Below is a key component of the Army Battle Command System. Operational graphics must be loaded, and operators must understand graphic symbology and standardization across all platforms. Force XXI Battle Command Brigade-and-Below provides near real time, platform level friendly situational awareness and provides the ability to exercise small-unit battle command. JCR update speeds information updates through the Blue Force Tracking 2 satellite network, which handles significantly more data than the first Blue Force Tracking. JCR also premieres JCR - Logistics, providing a seamless, two-way situational awareness and message exchange between convoys and the maneuver formations to which they are delivering goods.

DISTRIBUTED COMMON GROUND SYSTEM – ARMY (DCGS-A)

C-19. DCGS-A is a system that automates intelligence and electronic warfare operations at all levels and allows analysts to transform volumes of raw data into finished intelligence products needed for developing and publishing correlated Red (enemy) situational awareness. DCGS-A supports the planning and execution of Army operations at the strategic, operational, and tactical levels of mission command. The

system operates at a Secret classification level and is used at Army installations and deployed locations around the world and uses cloud computing and lightweight applications to run analytics. The DGCS-A enables commanders to task operational environment sensors and receive intelligence information from multiple sources. It facilitates operational environment visualization and is responsible for publishing correlated enemy situational awareness. DGCS-A has a laptop capability and a redundant capability to store information with a web-based function. DGCS-A can only be used while stationary. At the operational and tactical levels, DGCS-A provides the following functions:

- Planning military operations based on force and resource data and to maintain plans for military operations.
- Situational awareness throughout the area of operations, by facilitating data exchange between joint and tactical Army systems.
- Distribution of messages and data among users.
- Modern mission command hardware, software, and communications for the Army and Army-supported commands worldwide.

ADVANCED FIELD ARTILLERY TACTICAL DATA SYSTEM (AFATDS)

C-20. Advanced Field Artillery Tactical Data System (AFATDS) provides automated decision support for fire support and supports the planning, coordination, and execution of close support and counterfire. It supports weapon systems such as mortars, field artillery cannons, rockets, close air support, attack helicopters, and Naval Surface Fire Support systems. AFATDS also acts as a fire support "server" to LAN-based and Tactical Internet-based clients, including AFATDS Effects Management Tool, and the U, S, Marine Corps Command and Control Personal Computer. AFATDS publishes fire support unit locations, target data, and fire support control measures. Its operators, all field artillery, are trained at echelon in its use. It is fielded down to platoon level can be used on-the-move or at-the-halt. This system publishes fire support unit locations, target data and fire support control measures.

AIR AND MISSILE DEFENSE WORKSTATION (AMDWS)

C-21. Air and Missile Defense Workstation (AMDWS) provides a common air and missile defense planning, staff planning and situational awareness tool to air defense and army units at all echelons. It is the air/missile defense component of Army Battle Command Systems and is used for posting air threat warnings. Its coverage includes friendly and hostile fixed and rotary wing aircraft, unmanned systems, and cruise missiles. Through digital linkages with the various air defense weapon systems and the joint air surveillance net, the AMDWS provides the Army Battle Command Systems with the air component of the common operational picture. AMDWS provides interoperability between all components of the air/missile defense force and the AMDWS. It receives the real-time Air and Missile Defense situational awareness from the Forward Area Air Defense Command and Control, the Air and Missile Defense engagement operations system. In addition, it provides Joint interoperability with the air planning components of the U. S. Air Force/U. S. Navy Theatre Battle Management Core Systems.

TACTICAL AIRSPACE INTEGRATION SYSTEM (TAIS)

C-22. Tactical Airspace Integration System (TAIS) is a digitized, integrated battlefield management and decision support system designed to facilitate the BCT commander's role in the air battle. TAIS supports the BCT by automating Army Airspace Control planning and operations, and Air Traffic Services. TAIS also provides the vital link to the theater battle management core systems. It helps the Brigade Aviation Element build BCT input for the joint Air Tasking Order and Airspace Control Order and distributes the approved airspace control overlay. TAIS is one of the primary battlefield automation systems of the Army Battle Command Systems. TAIS can display Airspace Control Measures in two or three dimensions, while monitoring the real-time airspace situation. TAIS provides the commander with battlefield visualization, two, three or four dimensions by providing near-real-time airspace information that displays the location and movement of aircraft transiting the operational environment overlaid against current Airspace Control Measures and other graphics as desired.

BATTLE COMMAND SUSTAINMENT SUPPORT SYSTEM

C-23. Battle Command Sustainment Support System (BCS3) is a digital sustainment management system that provides logistical information to commanders. The BCS3 provides logistical decision support information to commanders. The BCS3 ties all logistic systems into one system. It operates in an unclassified and/or classified environment. BCS3 provides a logistic common operational picture of assets across the land area of operations, from echelons above corps to battalion and below. BCS3 is part of the Army Battle Command Systems. It provides a near-real-time, continuous graphical representation of the current situation in the area of operations including all friendly and enemy (known and suspected) locations and identification, logistic overlays, supply status and combat power. The situation is displayed over topographic details selected by the user from a menu of available mapping features. The system operates in an unclassified and/or classified environment and displays a common operating picture and/or a user defined operating picture.

JOINT AUTOMATED DEEP OPERATIONS COORDINATION SYSTEM

C-24. The Joint Automated Deep Operations Coordination System (JADOCS) is at the corps and above. It is the commander's tool for controlling and de-conflicting fires. JADOCS provides a suite of tools and interfaces for horizontal and vertical integration across warfighting functional areas, making the same information available to all users regardless of echelon and allowing them to filter the information to their mission environment. JADOCS is a distributed system, supporting multiple workstations at different levels of command and enabling horizontal and vertical coordination in and between headquarters. It streamlines coordination for time sensitive targets and offers an integrated fires common operational picture.

COMBINED INFORMATION DATA NETWORK EXCHANGE

C-25. Combined Information Data Network Exchange (CIDNE) is a multinational database that provides an information bridge between Army Battle Command Systems and non-U.S. command, control, computers, and intelligence systems. CIDNE provides an information bridge between Army Battle Command Systems and non-U.S. command, control, computers, and intelligence systems. It is the U. S. Central Command directed reporting tool for the majority of operational reporting in Afghanistan and Iraq. CIDNE was created to collect and analyze critical battlefield data to provide daily operational and intelligence community reporting relevant to a commander's daily decisionmaking processes. CIDNE contains an engagement tool for tracking people, facilities, and organizations. It is web-based, contains powerful network analysis tools, and can be used on any network. Its system administrator resides in division or above.

TACTICAL GROUND REPORTING SYSTEM

C-26. Tactical Ground Reporting System (TIGR) is a multimedia reporting system for Soldiers at the patrol level that allows them to collect and share information to improve situational awareness and to facilitate collaboration and information analysis among junior officers. It is a web-based tool that offers multimedia views of the battlefield to Soldiers. TIGR supports reporting and collaboration, and populates the common operational picture via a server to the Publish and Subscribe Service. TIGR is the only digital tool available at the company level. The system does not require extensive user training and does not require large bandwidth. TIGR is a web based tool offering multimedia views of the battlefield to Soldiers. It allows patrol leaders to conduct mission planning and intelligence preparation of the battlefield. TIGR supports reporting and collaboration from the lowest levels by populating the common operational picture.

PUBLISH AND SUBSCRIBE SERVER

C-27. Publish and subscribe service is an information routing system that delivers data from publishers to subscribers. Publishers publish data to a topic without knowledge of which subscribers are subscribing to that topic. Subscribers subscribe to information topics without knowledge of which publishers are publishing information to that topic.

Appendix D

Content Management

Content management focuses on how content is managed throughout the five knowledge management process steps (assess, design, develop, pilot and implement), whether digital or non-digital media. Effective content management provides users with access to knowledge products. It contains content management techniques for individuals, teams, and organizations.

CONTENT MANAGEMENT TASKS

D-1. Content management begins with an assessment of how knowledge products are created, stored, and used. Responsibility for updating, deleting, and archiving content, content format (structured or unstructured), and file types (as defined by their file extension). Who uses the content and for what purpose should also be assessed. Content managers interview the commanders, subordinate leaders, primary and special staff, noncommissioned officers, and functional area subject matter experts. Content managers identify what and how content is managed on the SECRET Internet Protocol Router Network or Non-secure Internet Protocol. They use surveys, a detailed audit, or a content map to perform inventory (Table D-1 on page D-2 lists content management tasks).

D-2. Content management organizes knowledge products for efficient storage and transfer. It also makes content available for collaborative knowledge creation. Implementing content management involves the following four task areas: create, organize, apply, and transfer. Content managers use content management systems—the collection of procedures used to manage work flow in a collaborative environment—typically using Army standardized and approved digital systems or software.

CREATE

D-3. Knowledge products move through several stages during their lifecycle. Initially, one or more authors create a knowledge product. Over time others change that product's content. One or more individuals oversee and approve the content for transfer or storage. Creation 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.

D-4. Content management provides procedures for identifying content in newly created knowledge. It also facilitates collaboration by broadening file availability. This makes it easier to share knowledge files. 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 occurs because of 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.

D-5. Input for products under development is obtained in two ways; the product can be sent individually to others for review or the product can be posted to a web-based application.

D-6. Upon approval, the product is disseminated. Dissemination takes many forms. Products are sent electronically or by some form of messenger or messenger service. Alternatively, the product is stored on an information system and a group of people are granted access to it. The method is determined by the unit's primary, alternate, contingency, and emergency (PACE) plan.

Table D-1. Content management table

<p>Determine essential sources of knowledge including those located outside the unit. Identify required content, when it is needed, the desired format and how it must be made available for the unit to accomplish its mission.</p> <p>Develop taxonomy or structure for storing and managing content.</p> <p>Determine where and how content will be created, organized, applied, and transferred.</p> <p>Develop a process for organizing content so it can be discovered and managed throughout its life cycle. This includes adding identifying features in the content to allow discovery and retrieval by users, and tracking by managers.</p> <ul style="list-style-type: none">• Determine who manages the documents.• Determine what technology is available for content management.• 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. <p>Determine workflow for content.</p> <ul style="list-style-type: none">• Determine if documents are needed by a larger audience (i.e. centers of excellence).• Place appropriate documents on the mission command 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. <p>Confirm control measures for physical security, operations security, classified documents, and dissemination with the operations security officer.</p>
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ORGANIZE

D-7. 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. Moving content no longer relevant and archiving it keeps it separate from current knowledge products.
- Labeling assigns files a metadata tag. A non-hierarchical keyword or term is assigned to a piece of information based on the use, creation, and knowledge characteristics of files and 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.

D-8. 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 AR 25-1 and AR 25-400-2).

APPLY

D-9. Making content accessible by applying knowledge management strategies and enabling knowledge flow 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 properly managing content for ease of retrieval by multiple users, content management further allows collaboration.

D-10. To assist the staff, the knowledge management section could adjust the architecture to identify the commander's critical information requirements for an operation. They develop collaborative communities focused on answering requirements.

TRANSFER

D-11. 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 knowledge management section 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 effective and efficient transfer of knowledge.

D-12. Content is organized or modified in a manner amenable for transfer and effective application. In operations, content management focuses on organizing knowledge to answer information requirements. Knowledge management section members identify requirements, make adjustments as needed to knowledge products that answer them, and ensure transfer of the content to requesters.

CONTENT MANAGEMENT COMMON PHRASES

D-13. 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.

D-14. 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. Taxonomy may be thought of as a table of contents.

D-15. Metadata is generally defined as "data about data." In content management, it is structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource. Information resources include documents, images, video, audio, links 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.

D-16. A metric is a shorthand term for 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 knowledge management 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. On the technical side, metrics can be developed to analyze server usage and data flow.

D-17. The evolutionary life cycle describes the posting, dissemination, and archiving of knowledge. 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

D-18. The following principles represent the most important factors affecting 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

D-19. Establish a repository where cleared users have 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.

D-20. 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.

D-21. Perform 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. This may be addressed in the unit SOP.

MAKE KNOWLEDGE PRODUCTS ACCESSIBLE

D-22. Balance accessibility with providing security. An area that provides security allows access to those who need the information. Most organizations have a public and a private web site. Much of what the knowledge management section provides relates to operations and needs to be protected on the private site.

D-23. 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.

D-24. 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

D-25. Structure 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. 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 users determine the instructions for using the product as too complicated, they will not use it. An understandable format is important to a usable data asset.

MAKE KNOWLEDGE PRODUCTS RELIABLE

D-26. Reliability depends in part on cybersecurity. The repository should provide secure storage while allowing access by authorized users with a user name and password or common access card access. Secure storage protects products from corruption by electronic attack. It also reduces the chance of compromising classified information.

D-27. Assign source data to each data asset in the repository and enforce its use by all those who create files in the network. 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.

D-28. 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

D-29. 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

D-30. 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 physically located. Develop processes to match user needs to repository content. Categorizing objects aids in achieving this principle.

D-31. 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, include the number of users, feedback, and participation in discussions.

D-32. Provide a feedback mechanism to involve users in improving the knowledge strategy. Techniques include periodic surveys, feedback forms, after action reviews, and Soldiers engagement.

CONTENT MANAGEMENT TECHNIQUES

D-33. Tables D-2 through D-4 list content management techniques for individuals, teams, and organizations.

Table D-2. Content management techniques for individuals

- Use only Army storage and backup services on respective networks.
- Compile a point of contact list.
- Master user techniques for unit approved web-based groupware, e-mail, mailing lists, word processor, spreadsheets, or presentation applications.
- Design a personal file structure using a simple taxonomy consistent with team or organization taxonomy. Create files and a folder on every task, project, or topic on the user's primary digital device (desktop).
- Take relevant written notes. Share analysis of meetings with teammates and encourage them to do the same. Capture the "so what?"
- Develop personal learning objectives for every meeting or conference and maximize the use of use of seven-minute drills and quad-charts describing the objectives.
- Build smart books, such as continuity books, for tasks. Publish these to the team's collaborative workspace.
- Develop descriptions and checklists for each duty.
- Send e-mail with links to internal portal storage location or folders, websites, and personal folders.
- Do not send e-mails with attached documents.

Table D-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. Create files and a folder on every task, project, or topic on primary team/unit portal (SharePoint, intranet).
- Develop content management processes and roles. Record each one in the content management annex of the knowledge management plan and train to teach them to the entire team.
- Determine who tracks where everything is stored and record who is responsible for managing a shared space.
- 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.
- Identify other sources of information for use by the team and identify how to access them (i.e. centers of excellence and digital master gunners).

Table D-4. Content management techniques for organizations

- Develop standard operating procedures (SOP) and best practices to standardize all techniques for individuals and teams.
- Establish a network of knowledge management representatives to manage section content.
- Use content management mark-up language conversion tools or similar metadata tagging techniques and tools to identify and manage content.
- Determine content validity timelines.

Appendix E

Interviewing Techniques for Knowledge Management Assessments

Effective interviewing techniques are as essential to knowledge management assessments as they are in identifying lessons after operations. This appendix provides interviewing techniques to use in these situations.

PURPOSE

E-1. The objective of an interview is to capture and record their knowledge, perspective, judgment, concerning aspects of the organization's knowledge management program. The goal is to acquire and record this information to identify knowledge gaps and potential solutions.

ROLE OF THE INTERVIEWER

E-2. Interviewers accurately record the results of their interview and put it to effective use. Skilled interviewers able to fulfill this responsibility have the following characteristics:

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

E-3. To those being interviewed, an interviewer owes trust and respect. Interviewers look for each Soldier's experiences and what has been learned from his or her mistakes. Gaining this information requires gaining the Soldier's trust. Gaining that trust begins with showing the Soldier respect.

E-4. 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 the interviewer and Soldier. Productive interviews are more than just a brain dump. An interview allows sharing of experiences that lead to more effective operations.

E-5. Interviewers owe their leaders information that is relevant, accurate, and in context. Meeting this obligation begins with thorough preparation. Before the interview, interviewers determine the information they need 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 subjects (Table E-1 on page E-2 lists examples of questions interviewers may use to do this. Table E-2 on page E-2 lists some things to avoid).

Table E-1. Example interview questions

- Why do you think you were so successful (unsuccessful)?
- What would be your most important pieces of advice for the next person facing this mission?
- 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 E-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 inadequate 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?"

PREPARE FOR THE INTERVIEW

E-6. Successful interviews require careful preparation. Steps to prepare for the interview include the following:

- Prepare interview questions in advance, but be prepared to deviate to explore new information presented.
- Set the stage to foster comfort for the interviewee (select a location to limit distractions; arrange a time most appropriate for the interviewee; and determine whether a group or individual interview is most appropriate).
- Provide time for a brief introduction of yourself and the interviewee. This sets the stage and allows a feeling of comfort to develop.
- Explain the purpose of the interview and the uses of the information collected from the interview (i.e. unit specific or use for a larger audience outside the unit).
- Explain the general agenda for the interview.
- Discuss confidentiality and anonymity as applicable to the interview.
- Request permission to record the interview and explain how the data will be safeguarded.
- Inform the interviewee that he or she will have time at the end of the interview to ask questions of the interviewer.

THE INTERVIEW

E-7. An interview is more than a one-time conversation. Each interview is a project that includes the following steps:

- Prepare for the interview.
- Perform 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 the 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 to incorporate into a report or publish (Table E-3 contains some tips on how to produce a useful interview product.)

Table E-3. Tips for a successful interview

- | |
|--|
| <ul style="list-style-type: none">• Record the interview electronically or in writing. 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 context to a Web site or compact disc.• For a crucial interview, use an assistant. |
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Appendix F

Facilitating a Professional Forum

This appendix provides best practices for professional forums. Professional forums advance the conversation and ideas within a given profession. Army professional forums are moderated forums that have a structure consistent with Army organizational objectives and contain numerous subordinate communities. They are communities of leaders and Soldiers who share a common set of problems, a passion for a topic, and are dedicated to deepening their knowledge and expertise as a lifelong learner.

ARMY PROFESSIONAL FORUMS

F-1. The Army calls its supported and structured communities of practice professional forums. These forums consist of Army leaders who share a common set of problems, a common interest in a topic, or a common need for topical solutions. Forums are about people, enabled by technology, set on improving their own knowledge, the knowledge of their community, and ultimately the readiness of their unit and the Army.

F-2. Forums are venues where communities of interest, communities of practice, or communities of purpose interact. Individuals deepen their knowledge and expertise through forums by regularly interacting with each other. These forums are virtual communities enabled by technology to form without regard to members' locations.

F-3. Army professional forums provide the means:

- To connect widely separated military personnel or Department of Defense (DOD) civilians who might not otherwise have the opportunity to interact.
- To provide a shared context for military personnel or DOD civilians to communicate and share information and content, stories, and personal experiences in a way that builds understanding and insight.
- To enable professional dialogue between military personnel or DOD civilians who come together online to explore new possibilities, solve challenging problems, and create new, mutually beneficial opportunities.
- To stimulate learning by serving as a vehicle for authentic communication, mentoring, coaching, and self-reflection.
- To capture and diffuse existing knowledge to help military personnel or DOD civilians improve their practice by providing a central online location to identify solutions to common problems and a process to collect and evaluate best practices and experience.
- To help military personnel or DOD civilians organize around purposeful actions that deliver insight and tangible results.
- To create new knowledge to help military personnel or DOD civilians transform their practice to accommodate changes in needs and technologies.

GUIDING PRINCIPLES FOR ARMY PROFESSIONAL FORUMS

F-4. Focus on the practice - members of an Army professional forum support their community through coaching and mentoring others in the community. They focus on both how to and what to do in their domains.

- Passionate about quality – Members of an Army professional forum look for quality and quantity in the knowledge exchanged.

- Secure and stable – Army forums meet the functional needs of the community while ensuring continuous reliability and access within the larger organization’s enterprise architecture.
- Grounded in trust – Army professional forums are about the members they serve. The members of each forum are the owners and stewards of the community’s body of knowledge. The trust members place in their peers to uphold standards, professional focus, and respect one another’s opinions is central to success.
- Connects members with knowledge – Army professional forums facilitate the community’s ability to connect members in search of knowledge with expertise through conversation and content in a professional context.
- Innovation – Army professional forums are flexible and adapt to the needs of the members. These forums build and maintain a learning culture to create knowledge through sharing and dialogue about new ideas and approaches.
- Focus on solutions – Army professional forums focus on practical issues and solutions relevant to the community.
- Committed to the Army – Professional forums are about the Soldiers and leaders who adhere to Army values and serve as dedicated stewards of their profession. Professional forms support the strategic goals and vision of the Army while serving their community.
- Common look and feel – All Army professional forums are unique but a common look and feel will reduce the learning curve from forum to forum as a member develops throughout his or her career. It also provides a common language members can use.
- Share horizontally – Army professional forums provide the ability to share relevant knowledge horizontally across an organization and link diverse professionals around problems and solutions.

DEVELOPING AN ARMY PROFESSIONAL FORUM

F-5. Developing a productive Army professional forum requires a compelling need, the work of multiple participants, and time to mature and grow. Professional facilitators expect six to nine months development followed by an additional three to six months before organizational value becomes apparent (in some cases longer depending on the culture and/or the tool being used, i.e. Milwiki).

F-6. The five step developmental processes ensures all elements are present that lead to an active and productive Army professional forum. These steps are cyclic and ongoing through the life of the forum and are not linear and terminal.

- Analysis – perform a needs analysis and an organizational analysis.
- Planning – a forum development group performs a development workshop and produces a project plan.
- Build – develop and test the forum structure, taxonomy, software, and initial content. Train the team and test the system.
- Deploy – perform a pilot run, modifying the forum as need based on participant feedback and train the participants on the tools. Market the forum.
- Operate and sustain – implement and assess the forum as the facilitator. Participants determine what topics and tools are relevant then modify or improve the way knowledge and items are presented and discussed, as needed.

F-7. Knowledge management forum support establishes and maintains the technical and administrative conditions for a structured, professionally facilitated forum to succeed throughout its entire life-cycle and is provided by a host of individuals including information technology professionals, knowledge management professionals, and facilitators.

FACILITATING A KNOWLEDGE MANAGEMENT FORUM

F-8. Facilitating a knowledge management forum enables members to work more effectively, connect, collaborate, and achieve synergy online or offline.

F-9. Facilitators use a variety techniques and tools to enable that collaboration to occur. They push out information to individuals or to the entire forum and encourage forum members to participate in discussion, and they pull information from forums that forum members need or are looking for or need.

F-10. Each professional forum differs from one another. The activities of each forum facilitator differ to meet community needs and requirements. Some functions are universal to facilitation of all Army forums. Forum facilitators:

- Approve or disapprove forum membership requests depending on the forum.
- Review all posts, threads, and replies for content.
- Review all content for operations security and enforce operations security safeguards.
- Track contributions and contact members when needed.
- Produce a forum newsletter.
- Answer member queries.
- Encourage and reward participation and acknowledge members contributions.

F-11. On a recurring basis forum facilitators:

- Interface with topic leads.
- Review and manage forum membership.
- Recruit subject matter experts, mentors, and special guests to participate.
- Market the forum through various media.
- Update the forum front page.
- Initiate a new discussion or highlight a priority topic.
- Develop and publish the forum newsletter.
- Feature members or topics in the forum newsletter.
- Identify and highlight forum success stories.
- Track and understand the performance of the forum through metrics.
- Recruit, monitor, and manage volunteers and members.
- Follow up on discussion threads that have been unanswered.
- Develop and distribute questionnaires.
- Perform a forum facilitation team meeting.

F-12. These recommended duties guide forum facilitators, however, each forum is unique so facilitators determine, based on the needs of purpose of membership, the frequency and amount of time that given to each duty. Tables F-1 through F-4 provide examples (and a quick reference) of possible daily, weekly, monthly, and quarterly duties.

Table F-1. Daily tasks

1	Approve/disapprove membership requests
2	Answer member e-mails and address telephone inquiries
3	Thank members who participate
4	Review newly posted discussion threads and replies
5	Review, approve or disapprove and edit suggested contributions (content)
6	Contact membership
7	Track contributors
8	Manage content
9	Share content with other forums and knowledge networks (when identified)
10	Upload content on the workbook (when identified)

Table F-2. Weekly tasks

1	Contact several topic leads
2	Update front page highlights
3	Work on newsletter
4	Identify and feature a member/group on the front page
5	Review and metrics and track forum performance
6	Identify and recruit topic leaders
7	Follow up on unanswered questions posted in discussions
8	Seek feedback on the forum from members
9	Identify and report knowledge management success stories

Table F-3. Monthly tasks

1	Publish monthly newsletter
2	Launch or identify and highlight a priority discussion
3	Review and report metrics
4	Perform a forum team meeting
5	Review site content and topics
6	Perform a forum pro reading challenge
7	Perform professional development

Table F-4. Quarterly tasks

1	Review and manage memberships
2	Recruit subject matter experts
3	Market the forum

FORUM PERFORMANCE METRICS

F-13. The establishment and collection of quantitative and qualitative metrics linked to knowledge management measures of effectiveness is critical to a forum's ability to assess the value of the activities to the individual, community, and sponsor organization. The collection and analysis of metric measurements help secure and apply the resources required to maintain the forum. These metrics as measures of potential to guide the forum. Members visiting the site does not indicate that knowledge is shared but that the greater the number of members and page visits, the greater the potential for sharing of knowledge. Performance metrics for forums are shown in Table F-5 on page F-5.

Table F-5. Performance metrics

<i>Key system measures</i>	<i>Key output measures</i>	<i>Key outcome measures</i>
<ul style="list-style-type: none"> • Latency (response times) • Number of downloads • Number of site accesses • Dwell time per page or section • Usability survey • Frequency of use • Navigation path analysis • Number of help desk calls • Number of users • Frequency of use • Percentage of total employees using system. • Number of contributions • Frequency of update • Number of members • Ratio of the number of members to the number of contributors (conversion rate) • Number of downloads by name • Number of uploads • Repeat visitors 	<ul style="list-style-type: none"> • Usefulness surveys where users evaluate how useful initiatives have been in helping them accomplish their objectives • Usage anecdotes where users describe (in quantitative terms) how the initiative has contributed to business • Number of “apprentices” mentored by colleagues • Number of problems solved 	<ul style="list-style-type: none"> • Time, money, or personnel time saved because of implementing initiative • Percentage of successful programs compared to those before knowledge management implementation • Savings or improvement in organizational quality and efficiency • Captured organizational memory • Attrition rate of community members versus nonmember cohort • Time to competency reduced

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Appendix G

Focus Areas for Knowledge Management Assessment

This appendix discusses the focus areas for knowledge management assessment. It first discusses the standards analysis and time management. It then discusses meeting and report analysis. Finally this appendix discusses technical systems and content management analysis.

STANDARDS ANALYSIS

G-1. A standards analysis helps a unit determine how the unit follows standard knowledge management practices and what needs improvement. The intent is to achieve standardization in knowledge management practices across the force. Using standard knowledge management practices enables units to share knowledge efficiently and make managing knowledge routine and efficient. Commander's guidance, policy letters, and standard operating procedures (SOP) for individual elements in the organization contribute to establishing and adhering to knowledge management standard practices. The standards analysis asks the questions:

- Does the organization's SOP establish standards for knowledge management practices?
- Do subordinate units follow a common standard?
- Are the standards included in the organization's SOPs?
- Are the standards being followed?
- What is the purpose behind the standards?
- Are the SOPs current?

TIME MANAGEMENT

G-2. The purpose of time management analysis is to determine if an organization is using time efficiently, how it can reduce wasted time, and how it can make the best use of available time. This analysis focuses on the unit's battle rhythm. Battle rhythm is a continuing focus area for most headquarters that must operate in their own decision cycle and interface with higher headquarters, stakeholders, and adjacent headquarters while supporting their subordinate units with timely direction and information.

G-3. *Battle rhythm* is a deliberate cycle of command, staff, and unit activities intended to synchronize current and future operations (FM 6-0). An organization's battle rhythm consists of meetings, briefings, and other events synchronized by time and purpose. The battle rhythm is the primary means for the unit to synchronize the collection, analysis, and presentation of information for decisionmaking. A battle rhythm that does not provide critical decisionmaking information in a timely and presentable manner is not contributing to mission command in that organization.

G-4. Battle rhythms must be nested with their higher headquarters. The battle rhythm changes during execution as the operation progresses. It must be flexible and adaptable to remain current and up-to-date. The knowledge management staff analyzes the unit's battle rhythm to determine its efficiency. Figure G-1 on page G-2 shows an example battle rhythm analysis.

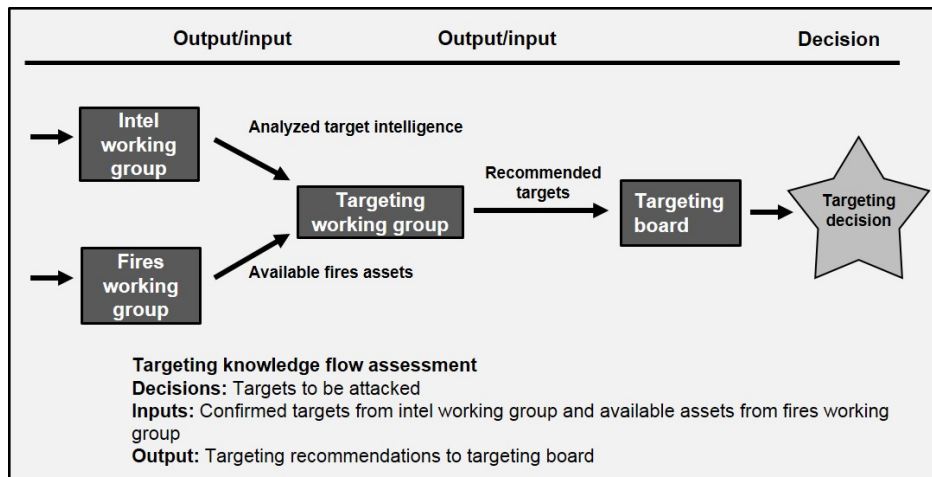


Figure G-1. Example battle rhythm analysis

G-5. In figure G-1, the intelligence and fires working groups meet before the targeting working group, which in turn must meet before the battle update brief for the commander to make timely targeting decisions. Any other sequence of events will not produce the required decisions.

G-6. The battle rhythm is understood and managed to ensure that temporal events are nested and the meetings flow in a logical manner. The flow of information from meeting to meeting produces knowledge staffs use to plan and execute and leaders use to make decisions.

G-7. Key questions to answer when analyzing the organization's battle rhythm include:

- Is the battle rhythm nested with higher events?
- Does the battle rhythm allow subordinate units to establish their routine?
- Does the battle rhythm match the events happening on the ground and the intensity of the engagement? Does it adjust to do so without major disruptions?
- Is there time between routine events to allow for leaders and staffs to plan and consider information and knowledge garnered?

G-8. A good technique to begin battle rhythm analysis is to analyze one sequence at a time of knowledge movement through the organization (such as the counterimprovised explosive device working group), instead of the entire organizational battle rhythm. This involves identifying working group inputs and outputs and resulting decisions and requires sitting in on that working group's meetings to analyze how efficiently the information and knowledge is shared during and subsequently to those meetings. The purpose is to determine if that working group is meeting its information objectives in the most efficient manner. This sequential analysis of the different battle rhythm activities provides better insight into how improvements can be made during the design step of the knowledge management process.

MEETING ANALYSIS

G-9. Meeting analysis helps units determine the efficiency of the meetings performed from the perspective of efficient use of time and whether the meetings serve the purpose intended. The purpose is to enable organizations to manage meetings effectively. Army headquarters organize their staff into command posts (main command post and tactical command post), each with a purpose. Command posts consist of cells (functional and integrating) and staff sections, including the knowledge management staff section. Cells and staff sections perform meetings which must be coordinated as part of a unit's battle rhythm.

G-10. Meeting management ensures meetings are nested in the battle rhythm and duplicative efforts are eliminated unless redundancy is required. Without proper management, meetings have the potential to be the biggest consumer of time in an organization. Meetings require participants to attend who provide key inputs that result in outputs that enable further synchronization by the staff or ultimately require command

decisions. The decision points are tied to the commander's critical information requirements, which focus the knowledge management staff's integrated efforts to create shared understanding.

G-11. Efficient meetings are essential to ensuring that information presented becomes knowledge that leads to shared understanding. In order for the knowledge to flow, participants take ownership of the inputs and outputs they are responsible for. The following considerations apply:

- Is there a clear purpose to the meeting (analyze for context and purpose)?
- Do meetings feed each other and ultimately lead to timely decisions?
- Are the inputs and outputs of meetings identified and synchronized?
- Are the meeting deliverables identified in advance?
- Is there sufficient time for those involved to prepare?
- Are meetings structured and performed to support each other (information flow)?
- Are there duplicative meetings that can be eliminated?
- Are the proper attendees at the meeting?

G-12. Every meeting includes the following five critical elements to ensure it is well organized and achieves what was intended:

- Have a clear purpose.
- Have a meeting agenda.
- Identify personnel required to attend.
- Identify required inputs.
- Identify expected deliverables or outputs.

G-13. Meeting assessments can be performed with a simple checklist with comments:

- Did the meeting take place?
- Were notifications sent to attendees?
- Did the meeting occur as scheduled?
- Were collaborative tools prepared in advance and used?
- Did it include the five critical elements?
- Were all designated attendees present?
- Were all key tasks achieved?
- Were all input products available?
- Were all output products templated and provided to follow on meetings as required?

G-14. Proven techniques for managing meetings include:

- The use of the meeting agenda quad chart, depicting inputs, outputs, and required attendees, which keeps the meeting focused and ensures the right people attend (Table G-1 on page G-4 depicts an example of a quad chart for a meeting).
- Specified formats for inputs and outputs (to ensure the right information is available, and required information is forwarded, as required).
- An executive summary forwarded to the leadership and other meeting leaders (keeping everyone informed).
- All staff work is completed before the meeting.

G-15. Some staffs use what is often referred to as a "seven-minute drill" (borrowing a term from sports) to ensure meetings are needed and useful. The seven-minute drill provides a format by which the staff proponent summarizes the purpose for a prospective meeting. Each meeting lead presents a quad chart to the chief of staff (COS)/executive officer (XO), which explains the meeting's purpose, attendees, and how it supports decisionmaking in seven minutes. The approved quad charts are used later to assess meeting effectiveness and ensure it accomplishes its intended purpose. Effective use of the seven minute drill facilitates synchronized meetings, and prevents arbitrary changes.

G-16. Working groups and boards are common battle rhythm meetings. A working group includes pre-determined staff representatives who meet to provide analysis, coordinate, and provide recommendations

for a particular purpose or function. Working groups integrate members from across the staff to help break down stovepipes and synchronize information. The knowledge management working group provides an excellent means to assess knowledge gaps and implement solutions. An example working group agenda is shown in Table G-1.

Table G-1. Example working group agenda

<p>General Information</p> <p>Purpose: to ensure knowledge flow throughout the organization by identifying the knowledge management needs, trends, and issues; establishing priorities and processes; providing training and technical support; and resolving issues</p> <p>Meeting type: working group</p> <p>Frequency: biweekly on Thursday at 1500</p> <p>Duration: 60 minutes</p> <p>Location: G-6 (S-6) conference room</p>	<p>Participants</p> <p>Staff proponent: knowledge management officer</p> <p>Chair: LTC John Smith</p> <p>Members:</p> <ul style="list-style-type: none"> • Knowledge management representatives from coordinating, special, and personal staff sections • Unit knowledge management officers • Web master
<p>Ongoing requirements</p> <p>Inputs:</p> <ul style="list-style-type: none"> • All members: recommended changes to knowledge management processes (including training), tools, and organization; knowledge management issues. • Signal staff section, G-6 (S-6): planned network outages; technical and portal capabilities. <p>Outputs:</p> <ul style="list-style-type: none"> • Updates to knowledge management standard operating procedures • Changes to processes • Recommendation to chief of staff for battle rhythm <p>Feeds:</p> <ul style="list-style-type: none"> • The command's collaborative process • Portal design • Information sharing and the military decisionmaking process cycle • Knowledge documentation and creation 	<p>Portal exploitation</p> <p>Products:</p> <ul style="list-style-type: none"> • Knowledge management working group battle rhythm site URL • Standards: battle rhythm, slide master, logo URL <p>Techniques:</p> <ul style="list-style-type: none"> • Portal change request and discussion board <p>Weekly agenda items:</p> <ul style="list-style-type: none"> • Roll call, due outs from last meeting, and minutes of last meeting • Review of upcoming suspense(s) and issues • New action items (people, processes, tools, and organization) • Staff and task force briefings • Due outs from today's meeting
<p>URL uniform resource locator</p>	

G-17. Each working group and board has information requirements (inputs) and results (outputs) which contribute to the organization's mission command process. Analyze each working group and board to determine what the required inputs and outputs are, and how well they are synchronized with other working groups and boards. The knowledge management staff considers the following when assessing groups and boards:

- Outputs and inputs of each working group should be clearly identified at each meeting.
- Each working group and board should produce an executive summary for each meeting, to share results and to assess effectiveness (issue, discussion and recommendations).
- Assess parallel planning between cross-functional cells (if everything has to stop to wait on the results of a core planning group, there is no parallel planning occurring).
- Analyze information stovepipes to mitigate or eliminate them.

REPORT ANALYSIS

G-18. Report analysis examines how reports are created, organized, and transferred. It identifies who uses the information reports and contains how to make that information available to the most people, consistent with security requirements (i.e. primary, alternate, contingency, and emergency [PACE] plan).

G-19. To perform effective report analysis, knowledge management personnel must be knowledgeable in the tools and reporting procedures. The knowledge management staff and information managers collaborate to perform report analysis. Factors that affect reporting include, but are not limited to the following:

- Physical factors include size and topography of the area of operations; distances and terrain that masks radio communications, infrastructure, and the ability of mounted or dismounted elements to carry communications equipment.
- Equipment factors include such things as availability of systems, support, connectivity, bandwidth, and maintenance.
- Mission command factors include decentralized operations, level of understanding of task, purpose, and commander's intent; collection focus; standardization; and efficient information movement and analysis.
- Training factors are related to Soldiers' understanding of the equipment and systems and ability to use them to their potential; proper use of reporting procedures; and understanding what needs to be reported.

G-20. Observations at national training center rotations indicate these reporting deficiencies:

- Unit knowledge management standard operating procedures (SOP) are not understood or executed by subordinate units.
- Reporting requirements are not understood.
- Enforcement mechanisms are not in place to enforce reporting, format, filing, and file naming conventions. This causes critical information to be lost from the system.
- Units lack mission command systems training. Mechanisms to facilitate the "flattening" of networks are not developed.
- Units do not appreciate the power of databases such as the Tactical Ground Reporting System (TIGR) and the Combined Information Data Network Exchange (CIDNE) and do not populate with additional reporting (i.e., key leader engagements).
- Units do not understand the uses and capabilities of portals versus databases.
- Units are not focused or nested at echelon with a collection focus (commander's critical information requirements, other information requirements).
- Knowledge management is not tied to the unit's targeting battle rhythm's inputs/outputs. Units struggle to move information but fail to perform analysis on the information collected and disseminated.

G-21. As in all assessments, in performing report analysis, the knowledge management staff considers:

- What information requirements leaders need to make decisions (focusing on the commander's critical information requirements).
- How the unit provides information to leaders.
- What gaps there are in the process?
- Possible solutions to the gaps.

TECHNICAL SYSTEMS ANALYSIS

G-22. Technical systems analysis provides operational and functional analysis of the technical systems supporting knowledge management. The knowledge management staff uses the results to prepare customized digital status charts (often called "digital dashboards") to display key knowledge management performance indicators. These indicators show an organization's knowledge management 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 knowledge management performance.

G-23. Examples of key performance indicators for technical systems analysis include:

- Reduction or increase in extent (i.e. number of nodes) in a technical system.
- Reduction or increase in number of users on a technical system.
- Reduction or increase in number of queries on a technical system.
- Reduction or increase in downtime or system outages of a technical system.
- Reduction or increase in processing time or production turnaround time on digital requests for information.
- Reduction or increase in flow on certain information systems.

G-24. The knowledge management staff may be tasked to determine knowledge management requirements for new information systems before those requirements are given to the signal staff section for connection to the technical network. The knowledge management officer, operations officer, and signal staff officer work together to meet user requirements and ensure the confidentiality, integrity, and availability of the technical network are not jeopardized.

CONTENT MANAGEMENT ANALYSIS

G-25. Content management is an activity that focuses on managing digital and non-digital 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 knowledge management today has a wider focus. Content managers consider when and how to apply information and knowledge to help a unit accomplish its mission. They also consider how the visibility and accessibility of digital and non-digital knowledge products in and outside the organization affect mission accomplishment. This assessment includes how data is managed throughout its life cycle.

G-26. Content management analysis begins with a review of current practices, the commander's guidance, and existing content management standards including applicable:

- ADPs, ADRPs, /FMs, and ATPs.
- Army regulations (AR).
- Policies.

G-27. Other considerations for content management analysis include:

- Networks used.
- Information systems used.
- Compatibility of systems and networks.
- Classification of information and data.
- Foreign disclosure restrictions for information and data when dealing with foreign nationals.
- People and culture of the organization.

G-28. Analyzing the content management standard requires verifying the applicable components. Assess all applicable components outlined in the bullets to identify gaps. These include:

- A specified location of all types of content that the organization uses.
- Identification of the content creator.
- Identification of the person, office, or proponent responsible for updating or deleting content.
- Identification of file types.
- Identification of the content purpose.
- Description of how the taxonomy or structure facilitates content discovery and content retrieval.

G-29. The content management analysis verifies if the taxonomy or structure facilitates user understanding by:

- Being easy to read and understand.
- Using common language and terms when determining categories for organizing content.
- Using doctrinal terms where applicable.

- Using doctrinal language where applicable.
- Being relevant to users in the organization.

G-30. The content management analysis verifies methods to ensure proper access to content. These include:

- User roles.
- User controls.
- Permissions.
- Different requirements for garrison, field training, deployment.

G-31. The content management analysis verifies rules on file size to protect networks or information systems (Examples: e-mail attachments, messages for meetings, working groups, and boards and documents posted to web portal). It verifies that there is a cybersecurity policy to secure content while allowing access by authorized users.

G-32. Content management analysis verifies that methods for using metadata:

- Effectively tag content to allow discovery.
- Effectively tag content to allow for retrieval.

G-33. Content management analysis verifies that methods for using metadata provides users confidence in the accuracy and trustworthiness of content by:

- Identifying the creator.
- Identifying contributors.
- Identifying creation date.
- Identifying content expiration date.

G-34. Content management analysis verifies that security classifications are assigned according to AR 380-5 and AR 25-2. It also verifies:

- Spillage procedures.
- Procedures to standardize content to support interoperability (technical and procedural).
- Naming convention standards to support data identification or retrieval (example: file name supports search tool).
- Compatibility procedures for maximizing the availability of content for users regardless of location, access to networks, or information systems.
- Access procedures for maximizing the availability of content for users regardless of location, access to networks, or information systems.

G-35. Standards for the unit's web portals include:

- A categorization system that sorts content based on relevancy and importance;
- After login, a policy requiring no more than one click from the unit's homepage to access information identified as the most relevant and important ("one-click rule" which is sometimes called "tier 1" information). Under this category are:
 - All unit SOPs and battle drills.
 - Current battle rhythm is identified as one-click or "tier 1 information and requires no more than one click to access from unit's homepage.
 - Links to web based services required to support the unit's operations (e.g. Tactical Ground Reporting System (TIGR) Net, CIDNE, Army Knowledge Online, and other web portals).
 - Most recent or current order or fragmentary order.
 - The commander's critical information requirements.
- Current contact information for key personnel is considered one level below the most relevant and important. It should be no more than two clicks away from the unit's home page (known as "tier 2" information). This must be included on each staff section and subordinate unit page.

G-36. All battle rhythm events and meetings have a "digital home" on the web portal that includes:

- Critical information regarding meetings or events such as the purpose, who chairs, attendees required, and agenda (e.g. quad charts).

- Current inputs and outputs.
- Archive of past meetings.
- Meeting notes or executive summary of most recent meeting, when applicable.

G-37. All subordinate unit portal sites will follow the structure established by higher headquarters to streamline access to information. The standard for the unit's web portals provide the commander with an enforcement mechanism and a method for review to ensure the standard is current and incorporates emerging technologies and operational terms. Web portals must be reviewed and monitored for operations security.

G-38. Unit portal sites should support social networking (e.g. Facebook, Twitter, LinkedIn) and other informal networks to support the public domain (for example, family support group).

G-39. Content management assessment includes verifying that the content management standards are suitable and developing a plan of action, with milestones, to close the gaps.

Appendix H

Knowledge Management Strategy Format (Example)

This appendix provides an example of the knowledge management strategy format.

AFDH-COS

7 May 2014

MEMORANDUM FOR 24th DIVISION STAFF

SUBJECT: Knowledge Management Strategy

1. **Purpose.** This knowledge management strategy presents an initial effort to identify knowledge management related operational issues, identification of related performance gaps, proposal of recommended solutions to address those gaps and the required actions associated with the implementation of the proposed solutions. This strategy provides a framework on how the division headquarters will enable knowledge flow and practices to enhance shared understanding throughout the Division staff. The final overarching purpose for all knowledge created and maintained by this division is to the commanding general, to make timely and informed decisions.

2. **Concept.** This initial strategy focuses on operational issues from a recent knowledge management assessment that impact the division's operations including identified organization knowledge and performance gaps. The relationship of these operational issues to the four knowledge management components (process, people, tools, and organization) provides the knowledge management linkage for the proposed solution and specification of required actions necessary to implement the recommended solution. The knowledge assessment identified several gaps that are prioritized according to the following framework.

Immediate Priority (IP) - 7 to 30 Days - Projects that can be completed in 90 days, at minimal cost and considered to be "highly value added" to the command.

High Priority (HP) - 90 to 180 Days - Projects that can be completed in 30 to 180 days, at moderate cost considered to be "significantly value added" to the command but not mission critical.

Long-Term (LT) - 180 Days to 1 Year - Long term projects that can be completed in one year, at a maximum cost considered to be "highly value added" to the command.

Priority	Operational Issue	Performance Gap	Solution	Required Action
IP #1	Lack of synchronization of battle rhythm	Currently battle rhythm is not synchronized so that meetings/key events are sequenced in order of occurrence	Evaluate battle rhythm and ensure meetings and recurring events inputs/outputs are synchronized to facilitate information flow and sharing	Identify staff elements that provide support to/participate in battle rhythm development and meetings with the COS, develop process map of battle rhythm. Analyze data and develop report of the battle rhythm assessment. Brief COS on findings, identify knowledge and performance gaps and provide recommendations

Priority	Operational Issue	Performance Gap	Solution	Required Action
				of battle rhythm improvement. Receive COS approval to implement proposed changes to battle rhythm. Support battle rhythm staff on findings approved recommendations and implement.
IP #2	Improve organizational calendar	Calendar needs to incorporate requirements of command trifold and synchronize with other organizations	Redesign of division calendar so that it synchronizes common operational picture/battle rhythm requirements with other organizations	<p>Relook/review calendar requirements with key stakeholders.</p> <p>Have G-6 and support providers, review functional requirements and recommend proposed technical solution.</p> <p>Calendar must integrate with and be able to filter data to/from other organizations.</p>
Priority	Operational Issue	Performance Gap	Solution	Required Action
HP #1	Timeliness of awards process	Time to process awards exceeds acceptable timeframe	Integrate awards process into the command correspondence tracker capability in SharePoint	<p>Ensure awards process is documented by functional proponent/G-1.</p> <p>Ensure G-1 validates staffing/approval requirements with other organizations.</p> <p>Build in required suspense requirements and tracking capability in final solution</p>
HP #2	Meeting management process	Meetings need purpose and organization with well-defined deliverables	Employ best practice meeting principles and techniques	<p>All meetings must have an agenda.</p> <p>Meetings must have a predefined purpose/intent.</p> <p>COS meeting – request agenda topics in advance that focus on organizational/ staff improvement.</p>
HP #3	E-mail use and etiquette process	E-mail use lacks well defined processes and purpose including the specification of communication etiquette.	Provide staff training and implement and enforce E-mail SOP that provides guidance on e-mail best practices and etiquette	<p>Develop division e-mail SOP.</p> <p>COS has primary staff call and provides brief to workforce on e-mail usage and best practice.</p> <p>Recruit and train e-mail best practice training</p>

Priority	Operational Issue	Performance Gap	Solution	Required Action
				teams from each staff section. Provide training to workforce at major staff section levels. Publish and implement division e-mail standard operating procedures.

Priority	Operational Issue	Performance Gap	Solution	Required Action
LT #1	Mission command information systems with trained operators are not integrated and battle rostered for the division TAC and MAIN command posts.	Operator training and battle rostering for division TAC and MAIN command posts	Obtain approval of staff battle roster, Schedule training for mission command systems operators in preparation for the upcoming division warfighter exercise	Complete training and successfully complete the division warfighting exercise including integration of mission command systems between the TAC and MAIN command posts

3. **Recommendations** – Based on the findings of knowledge management assessment and strategy, the following recommendations for command approval, resourcing and implementation are provided:

1. Implement both knowledge management solutions designated as “Immediate” in this strategy.
2. Implement the listed “high priority solutions” to obtain maximum efficiency in the division staff
3. Begin an immediate effort to address the “long term” solution based on availability of personnel and training time.

3. **Conclusion.** A detailed action plan to support this knowledge management strategy that includes approved and resourced knowledge management Strategy initiatives along with the timeline and milestones will be developed, published and implemented following approval by the Chief of Staff, 24th Infantry Division.

4. Point of Contact for this Memorandum is the Division Knowledge Management Officer, LTC K.M. Enabler. Phone number is 253-966-xxxx. E-mail is km.enabler@ us.army.mil.

Don C. Smith

COL, GS

Chief of Staff

Enclosures

Enclosure 1 - Operational Assessment dated 2 May 2014

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Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

AFATDS	Advanced Field Artillery Tactical Data System
AMDWS	Air and Missile Defense Workstation
ARFORGEN	Army force generation
BCS3	Battle Command Sustainment Support System
BCT	brigade combat team
CENTRIXS	Combined Enterprise Regional Information Exchange System
CIDNE	Combined Information Data Network Exchange
CJTF	Combined Joint Task Force
COS	chief of staff
CPOF	command post of the future
DCO	Defense Connect Online
DCGS-A	Distributed Common Ground System - Army
DOD	Department of Defense
FM	field manual
G-1	assistant chief of staff, personnel
G-2	assistant chief of staff, intelligence
G-3	assistant chief of staff, operations
G-4	assistant chief of staff, logistics
G-5	assistant chief of staff, plans
G-6	assistant chief of staff, signal
JCR	joint capabilities release
JADOCs	Joint Automated Deep Operations Coordination System
MISO	military information support operations
NATO	North Atlantic Treaty Organization
PACE	primary, alternate, contingency, and emergency
S-2	battalion or brigade intelligence staff officer
S-3	battalion or brigade operations staff officer
SIGACT	significant activities report
SITREP	situation report
SOP	standard operating procedure
TAIS	Tactical Airspace Integration System
TIGR	Tactical Ground Reporting System
XO	executive officer

SECTION II – TERMS

assessment (DOD-2)

Determination of the progress toward accomplishing a task, creating a condition, or achieving an objective. (JP 3-0).

battle rhythm

A deliberate daily cycle of command, staff, and unit activities intended to synchronize current and future operations (FM 6-0).

***explicit knowledge**

Codified or formally documented knowledge organized and transferred to others through digital or non-digital means.

knowledge management

The process of enabling knowledge flow to enhance shared understanding, learning, and decisionmaking (ADRP 6-0).

measure of effectiveness

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

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

military decisionmaking process

An iterative planning methodology to understand the situation and mission, develop a course of action, and produce an operation plan or order. (ADP 5-0).

risk management

The process of identifying, assessing, and controlling risks arising from operational factors and making decisions that balance risk cost with mission benefits (JP 3-0).

***tacit knowledge**

What individuals know; a unique, personal store of knowledge gained from life experiences, training, and networks of friends, acquaintances, and professional colleagues.

troop leading procedures

A dynamic process used by small-unit leaders to analyze a mission, develop a plan, and prepare for an operation (ADP 5-0).

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ATP 6-01.1 (FM 6-01.1)
6 March 2015

By Order of the Secretary of the Army

RAYMOND T. ODIERNO
General, United States Army
Chief of Staff

Official:

A handwritten signature in black ink, appearing to read "Gerald B. O'Keefe". The signature is written in a cursive style with a large initial "G" and "O".

GERALD B. O'KEEFE
Administrative Assistant to the
Secretary of the Army
1505503

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