

KNOWLEDGE MANAGEMENT by the Generating Force

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THE COLD WAR lulled the Army into the complacency of a deliberate, methodical, and time-consuming doctrinal process. Today, however, the accelerated operational tempo of the War on Terrorism has forced us to take an honest, in-depth look at how we collect, analyze, debate, codify, write, and disseminate doctrine. We now find that we must alter our approach to provide timely, accurate, and relevant doctrine to the field and the schoolhouses.

As the proponent for the generating force, the U.S. Army Training and Doctrine Command (TRADOC) must be proactive and innovative in its approach to knowledge management to provide the best possible support to the operating force—those units deployed, preparing for deployment, or returning from deployment. The current wars exacerbate the challenges of knowledge management, and as the demand to do more with less increases, the job gets even tougher. However, the history of doctrine reveals that the community has faced significant adversity in the past. Today's challenges are nothing new.

Historical Perspective

Field Manual (FM) 3-0, *Operations*, defines Army doctrine as “a body of thought on how Army forces intend to operate as an integral part of a joint force. Doctrine focuses on how to think—not what to think.”¹ Army doctrine complements joint doctrine. It describes the Army's approach and contributions to full-spectrum operations on land. Army doctrine is authoritative but not prescriptive. Where conflicts between Army and joint doctrine arise, joint doctrine takes precedence. Doctrine shapes the way the Army thinks, prepares, and conducts warfare. “Think” and “prepare” equate to “educate” and “train.” Doctrine is the heart of our professional competence. FM 3-0 explains that doctrine establishes common approaches to military tasks, promotes mutual understanding, facilitates communication among Soldiers, and serves as the basis for training and leader development.² Useful doctrine must be widely known and easily understood. It must have a philosophical and intellectual foundation as well as a practical purpose.

Although this sophisticated view of doctrine dates from the 1960s, the Army only recently began to give it credence. For a long time, “doctrine” had a different meaning to the Army. From the time of the American Revolution to the late 19th century, “doctrine” meant “drill.” Up through the Civil War, the U.S. Army used Baron von Steuben's revised Prussian manual (“the Blue Book”) and Winfield Scott's *Infantry Tactics* to train troops to move and maneuver on the battlefield. These works were valuable in their day,

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but became obsolete when the era of Napoleonic warfare ended.

Until the beginning of the twentieth century, doctrine was an individual endeavor, as there were few published doctrinal manuscripts to facilitate training either the individual or the unit. In 1905 the War Department published its first Field Service Regulations, outlining the organization of the division and how it operated. “Doctrine” now meant “organization and tactics” rather than “drill.” It stayed that way until the 1962 version of FM 100-5, *Operations*, moved away from discussing arms and services to discussing the nature of war and the operational environment.

In 1973, as the U.S. Army completed its withdrawal from Vietnam, TRADOC emerged from the break-up of the old Continental Army Command. For the first time in its history, the Army had an organization dedicated to the formulation of doctrine. TRADOC soon made its mark. The next versions of FM 100-5 refocused on the operational level of war and brought us AirLand Battle, a doctrine aimed at defeating massed Soviet armor formations. The Soviet Union fell in 1991, but that same year the Army employed AirLand Battle doctrine masterfully in Iraq, during Operation Desert Storm.

Unfortunately, the end of the Soviet Union and the successful conclusion of the Gulf War did not usher in an era of peace and stability. Terrorist attacks on U.S. embassies, barracks, and naval vessels overseas, as well as an attack on the Pentagon and two attacks on the World Trade Center, made it evident that the United States faced a deadly enemy that it could only defeat with a combination of conventional and counterinsurgency operations. Doctrine had to change to reflect the new situation.

The Army’s concept of doctrine has thus changed from “drill” to “organization and tactics” to an overview for worldwide operations; but this process has not been a smooth one. Doctrine based solely on theory seldom works. Only with experimentation and constant study of actual operations can the Army expect to keep abreast of developments in a world threatened by an increasingly lethal, decentralized, and unconventional enemy.

Some would say, “We are too busy for doctrine.” The facts on the ground argue otherwise. Leaders preparing for missions or actively involved in current missions thirst for information and relevant,

up-to-date doctrine. One of our clear challenges is to be able to gather, process, and disseminate knowledge fast enough to make it useable and readily available to those leaders. We must strive for efficiencies without compromising effectiveness, yet still produce accurate, useable, and reliable knowledge products.

Doctrine as the Driving Force

Doctrine enables the Army to operate as part of a joint or multinational team. It applies to all operations across the spectrum of conflict in the present, and it will continue to do so in the near future. Doctrine tells us *how* to think about training and operations as opposed to *what* to think. Effective doctrine fosters initiative and creative thinking among our Soldiers and their leaders.

Doctrine also establishes a foundation for thinking that allows our Soldiers and leaders to solve complex problems. It offers a menu of choices based on experiences, and it provides standards and measures to accomplish military tasks across the full spectrum of operations. Doctrine provides a common language for military professionals that enables clear, succinct, and articulate communications. Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, states that doctrine constitutes the “fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative, but requires judgment in application.”³ The Army definition is similar to the joint one. Finally, and quite possibly most important, doctrine forms the basis for military curricula in the formal education process and establishes standards for training. Doctrine is a result of our analysis of linkages between history, theory, experimentation, and practice.

TRADOC will continue to develop the Army’s doctrinal theories in its 525 series of pamphlets, which forecast land-power requirements up to 20 years in the future. The command will also

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continue to validate theory with experimentation. Once TRADOC validates and codifies information gleaned from experiments, it derives the fundamental, enduring principles that comprise doctrine and guide forces to achieve national objectives. These principles reflect the Army's collective wisdom regarding past, present, and future operations. Contained in the apex of Army doctrinal FMs, these principles are the philosophical underpinning of all we do and are. By themselves, however, the principles are not sufficient to guide successful operations. Tactics, techniques, and procedures (TTP) provide more specific guidance, including both descriptive and prescriptive methods to support implementation of the principles of higher level doctrine.

JP 1-02 defines "tactics" as "the employment and ordered arrangement of forces in relation to each other."⁴ Army doctrine concurs, but adds that tactics are "primarily descriptive; tactics vary with terrain and other circumstances; they change frequently as the enemy reacts and friendly forces explore new approaches."⁵ Normally, tactics require the application of techniques and procedures, which vary according to the situation.

Both joint and Army doctrine state that techniques are "non-prescriptive ways or methods used to perform assigned missions and functions or tasks."⁶ Techniques are the primary method of conveying the wisdom that successful units accumulate in operations. More than one technique may be applicable to accomplishing a specific mission or task. Commanders may use the techniques they deem necessary based on their assessment of the current situation.

Joint and Army doctrine also agree that procedures are "standard, detailed steps that prescribe how to perform specific tasks."⁷ They are prescriptive and normally consist of a series of steps to be accomplished in a set order. Checklists are a good example of procedures: Soldiers execute them the same way at all times, regardless of circumstances. Techniques and procedures make up the lowest level of our doctrinal hierarchy. They often depend on the type of unit, equipment, mission, geographical location, and numerous other factors.

There is another body of knowledge as well. "Best practices" are not doctrinal concepts, but Soldiers use them throughout the Army. They are similar to techniques, except that proponents have

not formally vetted them and codified them into doctrine. The Army must understand and define best practices and publish them. They bring clarity to the field, and they give leaders' access to potentially useful information, even if that information has not been fully validated.

The publication of doctrine and best practices—common knowledge—establishes a common philosophy and language for Army operations. In doing so, it facilitates unity of effort and joint interoperability. The philosophy appears in fundamental principles that apply across a broad spectrum of operations. The language consists of doctrinal terms describing how the Army operates and the symbols it uses to portray its operations. Well-understood doctrine facilitates the rapid team building, tailoring, and task organizing among units and Soldiers required for today's fast-paced operations. It aids readiness by establishing common ways of accomplishing military tasks. Well-established terms and symbols and commonly accepted practices allow for shorter orders and their rapid production, dissemination, and understanding.

The Army is a learning organization. Its doctrine cannot afford to be static. The Army must continuously revise its doctrine based on history, evolving theory, experimentation, and an ever-changing security environment.

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Doctrine Hierarchy

We have clear echelons of knowledge in the Army, and they have joint counterparts. As figure 1 depicts, tier-1 manuals correspond to above-the-line joint publications and tier-2 manuals correspond to below-the-line publications in the joint library. Tier 1 has three categories of knowledge: capstone, keystone, and supporting doctrine.

Capstone doctrine contains the fundamental principles from which keystone doctrine derives tactics and techniques, and tier-2 manuals establish techniques and procedures. FM 1, *The Army*, and FM 3-0, *Operations*, are the two capstone field

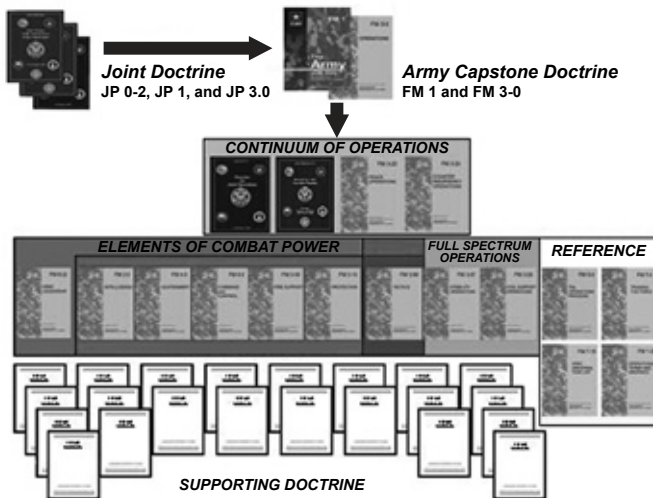


Figure 1. Army doctrine hierarchy.

manuals. They link Army doctrine with the National Security Strategy and the National Military Strategy and serve as the primary links between joint and Army doctrine.

Keystone doctrine is organized around the fundamental principles outlined in FM 1 and FM 3-0. Keystone manuals address the subjects that form the framework for conducting full-spectrum operations. The themes and subjects described in keystone manuals link to joint and Army capstone doctrine. Many keystone manuals establish the doctrinal base for a series of subordinate manuals. In many cases, these subordinate manuals comprise supporting doctrine.

Supporting doctrine addresses subjects that significantly affect the conduct of full-spectrum operations. Doctrine at this level focuses on coordinating and synchronizing forces across the full spectrum of conflict. Like keystone doctrine, supporting doctrine can establish the foundation for an entire series of subordinate FMs.

Tier-2 publications include FMs not designated as tier 1 due to the nature or narrow focus of their content. Because tier-2 manuals are concerned only with techniques and procedures, they can be much more descriptive and prescriptive than the higher echelon documents. We normally associate tier-2 FMs with specific Army branches and functional areas.

The process used to produce capstone and keystone doctrine is adequate, but it would be more efficient if TRADOC used collaborative forums for staffing the manuals. Because the manuals establish

the foundation from which all else emanates, it is critical that their development remain formal and rigorous enough to infuse the proper intellectual energy in operations, both present and future. The capstone manuals must continue to tie theory, experimentation, history, and practice together. While doctrine must be up-to-date for the current fight—it cannot afford to be mired down and must remain forward thinking—doctrine production continues to require the involvement of seasoned, experienced senior Army leaders.

Those who are involved in the current fight are thinking about the close fight; they do not necessarily have the time or inclination to think about the distant warfighting future—that is TRADOC’s responsibility. The Combined Arms Center (CAC) at Fort Leavenworth continues to lead this effort for TRADOC and the Army by staffing and coordinating doctrinal and best-practices publications throughout the Army and with the sister services. TRADOC will continue to host quarterly doctrine and concepts conferences for Army senior leaders to develop the contents of these publications further. (Unfortunately, supporting and tier-2 manuals, which emanate from and nest in the capstone and keystone manuals, are lagging far behind as the higher echelons of doctrine undergo major change.)

An entire echelon of publications seeks to capture what we deem best practices. The Center for Army Lessons Learned (CALL) is at the forefront of this effort for the Army, while the Air Land Sea Application Center conducts a similar function for the joint force. A plethora of handbooks, smart cards, bulletins, circulars, digital newsletters, and other products produce a quick return on information before it is rendered irrelevant.

The Only Constant is Change

The ever-changing security environment and the greater speed with which the Army transmits information absolutely require that we change how we manage the knowledge at our disposal. The Army’s interim FMs have a shelf life of two years, but best practices and lessons learned are replacing some of our TTP documents. The number of forums and sources for best practices and lessons learned is staggering. This is not necessarily a bad

thing because Soldiers and leaders actively engaged in different missions throughout the world have a thirst for the knowledge these forums provide. In fact, the forums have been critical to mission success, and Army leaders should continue to encourage them. But, how do we manage the avalanche of knowledge that advancing global technologies bring us?

Information, regardless of its source, can translate into an advantage on the battlefield. We believe that the tools of the information age are key to tactical or operational adaptation on today's battlefield. These tools, however, can also be dangerous. They can misinform us or overload our ability to synthesize available data. Therefore, Army leaders must ensure that the best practices available are accurate and vetted.

Many factors affect how we manage knowledge. Nearly every leader in the Army has an information-rich database readily available. Unfortunately, much of that information becomes dated and obsolete quickly. The question arises, "Who is managing this data to ensure that the obsolete is discarded and the useful is captured and integrated into the doctrinal hierarchy?" As the target in figure 2 depicts,

TRADOC's charge is to extract and distill what is important from collected data and inject it into the doctrinal hierarchy to help shape current and future operations. In many cases, this mission has become very difficult. While TRADOC endures cutbacks in personnel and resources, technology floods its systems with increased information.

Information about best practices is emerging from many joint, Army, sister-service, and civilian sources. Much of it comes from the bottom up. Blogs posted on the Internet convey unfiltered information quickly. Communities of practice such as *PlatoonLeader Net*, *CompanyCommand Net*, *S3-XO Net*, and *CAVNET* are just a few of the sites that allow operators in the field to contribute immediate information and knowledge to the system.

The Center for Army Lessons Learned heads the TRADOC initiative to collect best practices through their observations-insights-lessons (OIL) program. In conjunction with other Army proponents, CALL examines OILs and determines their validity, relevance, and implications for Army doctrine. Many OILs eventually find their way into a CALL product of one type or another. With its added filters,

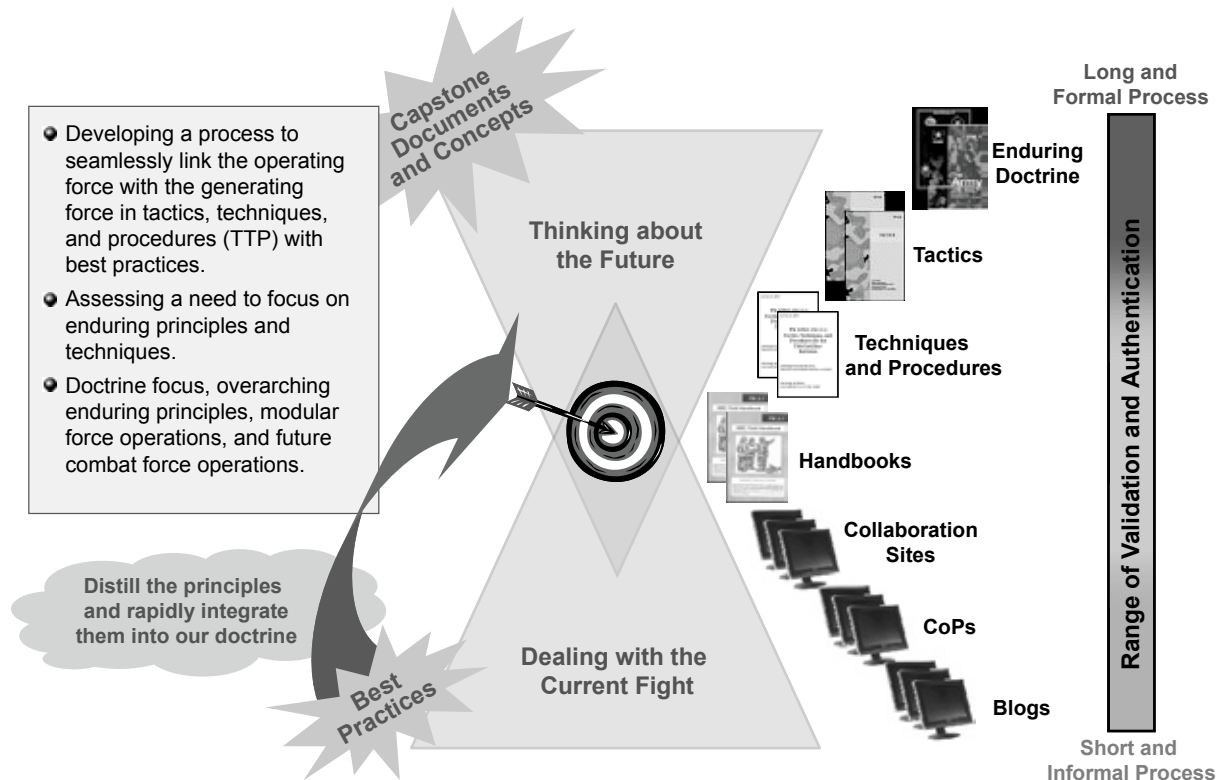


Figure 2. The challenge to validate.

this more formal process makes the information more reliable than that appearing in communities of practice.

The fast pace of operations, the enemy’s constant adaptation, and the speed with which information moves from one point to another make it imperative that TRADOC evaluate its best practices and optimize them to support the operating force. What was good enough during the Cold War may not meet today’s requirements or tomorrow’s.

Knowledge Management and Improving Efficiencies

TRADOC faces a major knowledge management challenge. An abundance of best-practice information is floating around that may or may not be useful to the supporting manuals, but TRADOC has only limited resources to gather, process, validate and codify it, let alone write it into doctrine and disseminate it to the user in a timely fashion.

TRADOC must take advantage of knowledge initiatives to increase its efficiency and effectiveness in knowledge management. Multi-service projects like those that the U.S. Army Field Artillery Center

has co-produced with the Marines are fine examples of leveraging the knowledge and resources of both services for the good of all.⁸ While co-producing a higher level manual such as FM 3-0 in a multi-service forum would not be practicable (the Army’s fundamental operating principles and Title 10 responsibilities differ from the Marines’), producing a multi-service manual of TTP on “Attacking a Built-up Area” makes good sense. Every TRADOC component should explore multi-service collaboration where logical and feasible.

CALL’s Lessons-Learned Integration (L2I) initiative is a start. Although it currently does nothing to codify information and formulate it into doctrine, L2I can help improve the efficiency and effectiveness of collection and validation. A collaborative process, L2I places liaisons in nearly all agencies that have a hand in the doctrine process. (See figure 3.) For implementation, the program depends on command emphasis at Army schools and centers and in field units. Besides enhancing collection and validation, L2I has another superb benefit: it *pushes* data to TRADOC as opposed to TRADOC having to *pull* data from its points of origin. With L2I, the abundance of sources producing

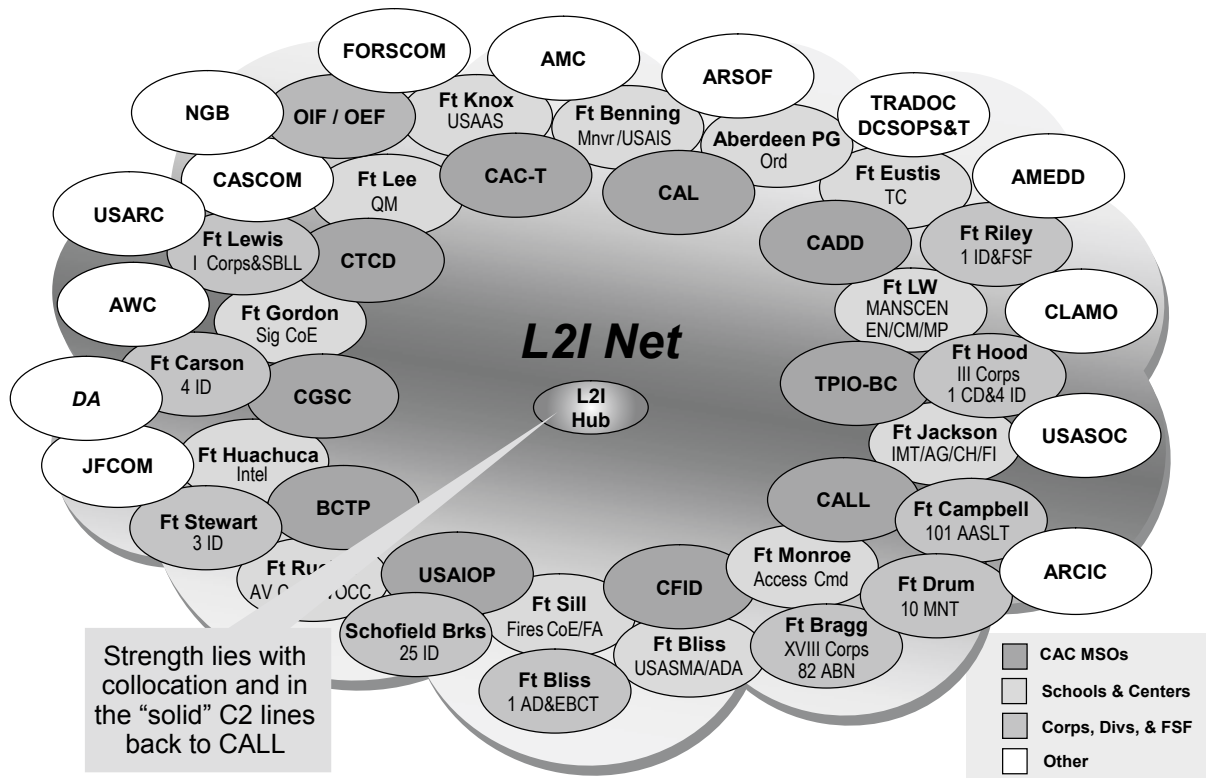


Figure 3. CAC L2I collaboration network.

and posting data critical to knowledge-management will ensure that we capture enduring knowledge in our publications.

The Army's centers of excellence (COEs) and its branch schools now have standardized doctrine and training divisions that are better prepared to update best-practices knowledge in Army classrooms and manuals. CALL will establish an L2I liaison in these cells. Each COE commander should remember that the reward is fleeting if he only solves the warfighter's immediate need without documenting appropriate changes for future doctrine. Only a cell robust enough to process knowledge and include it in the doctrinal staffing process can capture changes that will endure.

As the modular force evolves with its Strykers and Future Combat System (FCS), so will doctrine—if the Army continues to leverage the capabilities of the organizations that support the force. The Warrior Training and Leader Development Center at Fort Lewis, Washington, is a great resource for developing the requirements for Stryker units and helping Army schools and agencies develop doctrine to support these new formations. Forces Command may soon follow with similar efforts for the infantry brigade combat team and the heavy brigade combat team. The involvement of the COEs, the Combined Arms Center, and TRADOC Capability Manager-Stryker are critical to ensuring that Stryker doctrine is sound and nested in present principles. To ensure uniformity and compliance across the force, the COEs and CAC must maintain approval authority over the doctrine produced by these efforts.

The emerging Future Force Integration Division and Army Evaluation Task Force at Fort Bliss, Texas, can gain great efficiencies by mirroring the Stryker efforts as the Army introduces FCS into the force. Early unified efforts will save valuable time in developing doctrinal principles to integrate FCS formations rapidly into the operating force. They will prevent the formation of stovepipes in concept development.

Building Synergy

While many organizations across TRADOC and the Army are working hard to manage knowledge more efficiently and facilitate the rapid, effective production and dissemination of doctrine, many of them or the systems they employ are not mature

enough, and their efforts are unsynchronized. General (Retired) Frederick M. Franks once observed, "Our approach to doctrine is still mired in an industrial approach."⁹ His words resonate today. We should heed General Franks, take the next step, and embrace the many initiatives that could help pull the Army into the information age.

L2I shows great promise. But the program still must depend on command emphasis; the raw information it collects must be reviewed and validated before it can enter Army doctrine, and it is personnel-intensive with 37 analysts and liaisons in position now, and the number due to increase to 46 in the near future.

The Battle Command Knowledge System (BCKS) (figure 4) is another initiative that supports generating, applying, managing, and exploiting Army knowledge online. BCKS fosters collaboration between the field and the Army's institutional base and among the institutions in the base. Although virtual, BCKS offers targeted, personalized forums that can greatly enhance the speed with which TRADOC codifies and validates information. Initial results of BCKS's electronic staffing process are very promising. Using the process, TRADOC cut several months off the production of a keystone document that normally would have taken two years to complete. This process will only become more efficient as the force becomes more aware of its capabilities and more comfortable employing them. By using electronic notifications to concerned parties via Army Knowledge Online (AKO), the Army could nearly eliminate mailing all draft documents and greatly decrease the time between the collection and dissemination of knowledge. As with L2I, however, we can only realize the promise of this collaborative tool if the chain of command requires, utilizes, and monitors it.

Object-based publishing (OBP) is another new knowledge-management initiative. OBP breaks knowledge into stand-alone objects (called "chunks"), tags and classifies them for easy retrieval, and stores them in a repository of knowledge the generating or operating force can easily access. Not only is the data simple to retrieve, but the user can tailor his query to get as much or as little as he needs. If required, the user can extract and print an entire manual. OBP postures these chunks of knowledge for the next generation of

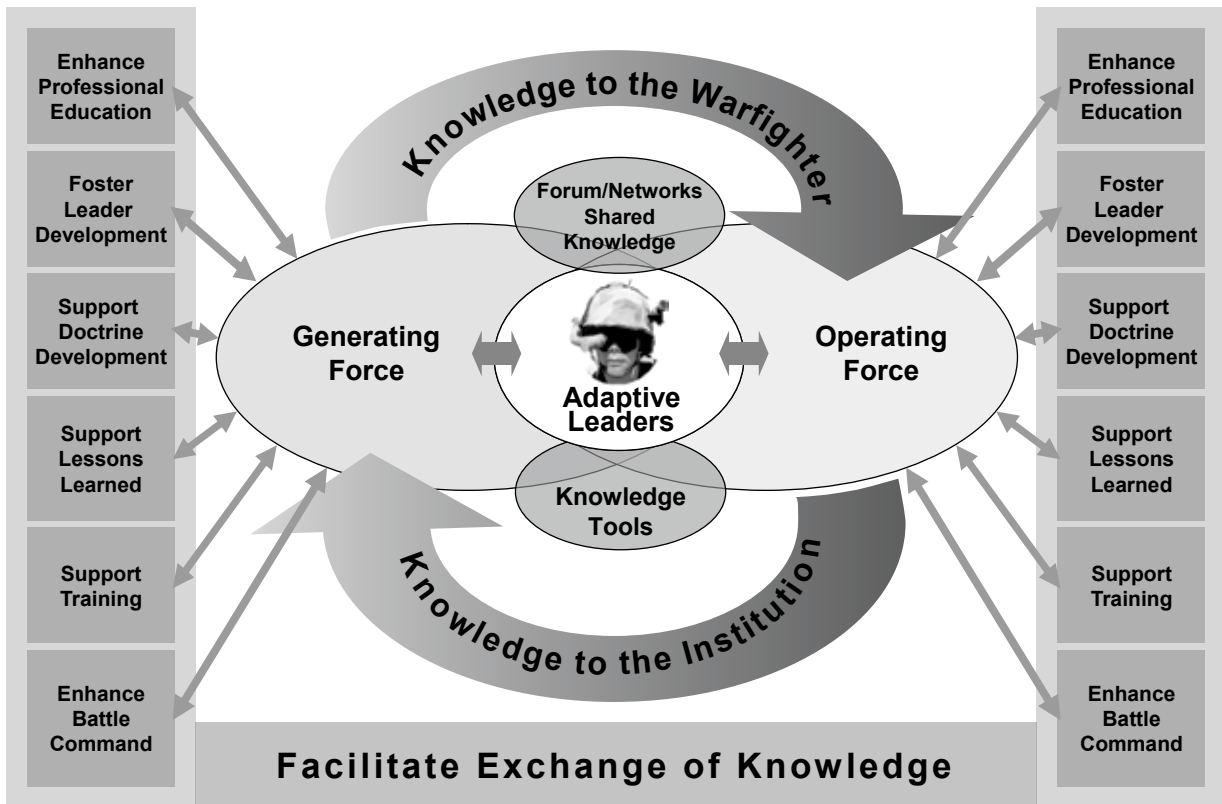


Figure 4. KM/BCKS concept and objectives.

technology and allows for rapid staffing and updating via a collaborative process, such as BCKS. After a proponent updates a knowledge chunk, it becomes published doctrine stored in the digital repository. There is no lengthy staffing and publication process, thus saving critical time. OBP already resides behind the AKO portal, and it benefits from existing search and information-security technology.

The Army has nested OBP concepts in the Army Knowledge Management Strategy, which is transforming the Army into a network-centric, knowledge-based force. The future vision is to have a force with agile capabilities and adaptive processes powered by world-class network-centric access to knowledge, systems, and services—all interoperable in the joint environment. OBP has great potential for tier-2 issues, and possibly even supporting doctrine, but it may be of limited use for capstone and keystone documents because of the intertwined themes that spread from start to finish through these documents.

In the near future, Army leaders will be able to empower the entire doctrinal system, from capstone

through tier 2, by putting it all into an interactive, linked environment similar to TRADOC’s “Road to Deployment” site (Secret Internet Protocol Router Net access only). The site could contain the doctrinal principles in chunks, complete digital manuals, links to after-action reviews, footage of actual operations or training, interviews, training aides, historical vignettes, and more. Right now, this data is spread across numerous sites. The synergy we build will enable us to improve our products and our timelines.

To ensure reliability and security and to keep the repository current, an appropriate proponent should control each piece of doctrinal information. Collecting data simply to have a large repository will not help the warfighter or the trainer. The great work that CALL does now on the restricted side of its Non-classified Internet Protocol Router site is an example of how this can work: experts in each topic area ensure the quality and validity of information contained within the site.

Program Executive Office-Soldier has fielded the first installment of Land Warrior to a unit that will

actually deploy with it to a theater of war. We should all take notice of this event and study the potential this system has for the future of information gathering and dissemination. Although the Army has not funded Land Warrior, we will eventually see the Soldier tied continuously to a network. Not only will this increase situational understanding on the battlefield, but it will also grant the leader nearly instantaneous access to knowledge anywhere and anytime.

Someday leaders may have a commander's digital assistant (CDA) in their hands that ties them to the network and can draw on information databases to better prepare them for missions. Interactive video and virtual scenarios built into this repository of knowledge will also be instantaneously accessible. Information overload will not be a concern because the leader can set filters on his CDA to access and receive only what he needs at any given time. The continuous network connectivity Soldiers have will help disseminate data to the warfighter, and it should aid collectors of best practices. As our Soldiers use the CDA for after action reviews, collaborative planning sessions, and information exchanges, the collectors can also reap this data for study.

We must also consider human factors. Leaders at all levels should discuss, debate, write about, and publish their thoughts on warfighting, especially after they return from a mission with their experiences still fresh in their minds. The Command and General Staff College at Fort Leavenworth, Kansas, does a great job assigning meaningful monograph topics to students in graduate programs. The Army should implement the practice from the ranks of captain through colonel. Just as we choose advanced education programs that develop the Soldier and thereby help the Army, we should never let a Soldier write a meaningless monograph or thesis for educational credit in an Army program. We must challenge leaders to study and write in ways that help their profession and challenge our military faculties to review, edit, debate, and write about knowledge and doctrine. This is too important to leave to only a few people in doctrine and training cells within our schools.

Conclusion

The challenges we face today in knowledge management pale in comparison to those we will face

in the future if we do not adapt our systems and our practices to take advantage of existing technologies. TRADOC will have to continue to do more with less, and it will only be successful if it casts away its old methods of doctrine generation, especially at the tier-2 level. Optimizing current information technologies and continuing to develop future ones is a clear way to improve. Challenging established timelines by employing collaborative tools for the staffing and approving process shows great promise. Object-based publishing enhances this effort to speed a quality product to the operating force.

As the "architect of the Army," TRADOC must ensure that doctrine remains relevant and is responsive to the needs of the warfighter. It must support the operating force with responsive processes that provide the knowledge our operators need to overcome an adaptive enemy. The training baseline begins with doctrine, and the proper implementation of the Soldier in the operating force depends on it.

History has demonstrated repeatedly that success now and in the next war may depend on how well we capture the best practices from the current fight, harvest the durable knowledge, and integrate it into our doctrine. TRADOC is studying all of our knowledge systems to improve its ability to serve the operating force now and in the future. To paraphrase S.L.A. Marshall, knowledge does not do much good when we hold it to ourselves. TRADOC must work to improve its knowledge management skills, and in that vein, it is proactively seeking to make the great work it does even better in the future. Victory Starts Here! **MR**

NOTES

1. Field Manual 3-0, *Operations* (Washington, DC: U.S. Government Printing Office [GPO], February 2008), D-1.

2. *Ibid.*

3. JP 1-02, *Department of Defense Dictionary of Military and Associated Terms* (Washington, DC: GPO, 2001), 169.

4. *Ibid.*, 534.

5. FM 3-0, D-2.

6. JP 1-02, 541.

7. *Ibid.*, 432.

8. FM 3-09.31, Marine Corps Reference Publication (MCRP) 3-16C, *Tactics, Techniques and Procedures for Fire Support for Combined Arms Commander*, dated October 2002 and FM 9-09.12, MCRP 3-16.1A, *Tactics, Techniques and Procedures for Field Artillery Target Acquisition*, published in June 2002, are just two fine examples of service coordination and doctrine of mutual interest.

9. Interview via email with General (Retired) Frederick M. Franks Jr., 22 September 2006. General Franks was the eighth TRADOC commander (August 1991 to October 1994). He has stayed involved with Army and joint operations and concepts since his retirement.