

***Leaders are the  
critical element in  
the network***

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## Leaders are the critical element in the network

### Applying the Kotter Change Model in shaping future information systems

*By MAJ Jay H. Anson*

This article uses the Kotter Change Model to analyze the Army's new vision and strategy for future information systems development as described in the Army Capstone Concept. The author describes how leadership shortfalls created the current situation, current measures being taken by our leaders to fix the system and considerations for the way ahead.

Lessons learned tracking friendly and enemy forces manually during Operation Desert Storm in Iraq or Restore Hope in Somalia, resulted in a demand for more efficient information systems on the battlefield.

Maintaining situational awareness and understanding became extremely difficult with multiple elements moving throughout the operational area and performing different tactical missions simultaneously. The lessons learned by past leaders and their recommendations were heeded. In the years since the end of the cold war, the military has leveraged different scientific innovations to deliver significantly advanced command and control platforms. However, lessons learned from today's operating environment and the uncertainty and complexity of future armed conflict call for a new approach to "network-centric warfare."

The new Army Capstone Concept for 2016 to 2028 was released 21 Dec. 2009 and titled "Operational Adaptability: Operating under Conditions of Uncertainty and Complexity in an Era of Persistent Conflict." The Army Capstone Concept provides the Army's vision and strategy for the development and acquisition of new technology. The document identifies joint interoperability, realistic training, and reducing information overload as critical capabilities for the future operating environment. The next generation of information systems should be designed with these capabilities in mind. To accomplish this, leaders must avoid the

pitfalls of poor business practices, organizational culture and interservice rivalry that have impacted the development of past and present information systems.

The Army's acquisition and funding processes have led to a vast assortment of command, control, communications, computer, intelligence, surveillance and reconnaissance systems. The functions and capabilities of each system are as diverse as they are limited, having been acquired in stovepipe fashion to serve a singular or specialized purpose.

An organizational culture supporting an influx of technology over the past two decades has resulted in an ever-increasing amount of complex technology incorporated into each new upgrade. A by-product of this is a serious training deficit due to time and resource constraints. Leaders and operators either lack the knowledge and proficiency to take full advantage of system capabilities or avoid using the system altogether. Significant time and resources have been wasted due to a lack of collaboration between the Services and misconceptions regarding the existing degree of joint interoperability.

The needed changes call for organizational reform on a grand scale. Not only must specific policies, regulations and standard operating procedures evolve, but a major shift in paradigms, attitudes and beliefs are required throughout the organization. This is easier said than done.

Although the Goldwater-Nichols Department of Defense Reorganization Act was passed into law by Congress in 1986, little actual reform has occurred. For example, a recent article published in the 12 April 2010, editions of both the Army Times and Air Force Times titled "GAO: Army, Air Force Should Have Collaborated on UAVs," identified missed deadlines, performance shortfalls and budget overruns resulting from the development of the Army Predator program and a separate Air Force Sky Warrior program (Spath, 2010). Had the two Services collaborated on their unmanned aerial system programs, the DOD would

have saved taxpayers over \$3 billion.

Large scale change requires more than just written policies and directives that pay lip service to the desired endstate. Such an endeavor requires leadership and genuine command emphasis along with an expert and proven approach for successfully transforming an organization with the U. S. Army's size and scope.

## **The Kotter Change Model**

In his book, *Leading Change*, John Kotter, Harvard business school professor, introduced a goal-oriented eight-step change model. The Kotter model concentrates on key areas of concern when transforming large organizations.

Central to the success of this model are quality leaders that facilitate change by breaking the status quo, inspiring and motivating people and institutionalizing positive changes.

The eight steps are:

- Establishing a Sense of Urgency
- Creating the Guiding Coalition
- Developing a Vision and Strategy
- Communicating the Change Vision
- Empowering a Broad Base of People to Take Action
- Generating Short Term Wins
- Consolidating Gains and Producing Even More Change
- Institutionalizing New Approaches in the Culture

### **Establishing a Sense of Urgency**

"But the proverbial wall has been brought to our back. What might have been considered a noble or worthy endeavor in the past is now a task that can no longer be denied or postponed," said Robert M. Gates, then

"Although the Army must continue to develop technology to meet future challenges, we must emphasize the integration of technology into capable formations commanded by innovative leaders who are comfortable operating under conditions of ambiguity and uncertainty."

GEN Martin E. Dempsey  
U.S. Army TRADOC Commander  
TRADOC Pam 525-3-0: Army Capstone Concept,  
December 21, 2009

U.S. Secretary of Defense. He described the urgent need for acquisition change in remarks delivered 8 May 2010, during the 65th Anniversary of World War II observance at the Eisenhower Library in Abilene, Kan. The quote is as much an admonition as it is a warning to those in both the military establishment and the defense industry wanting to maintain the status quo. Unlike past warnings from high-level government executives, Gates is backing up these words with decisive action. Demand for reform is being echoed by senior military and civilian leaders at all levels and supported by sweeping program cuts, changes to the way prototypes are funded, and a switch to performance-based logistics. Powerful messages by top brass have become the wake up call for change. Military leaders and contractors are scrambling to rethink and rework the type of technology leaders need, its delivery, and leader development necessary for effective employment.

In a 4 Mar 2010 speech delivered to the U.S. Army Command and General Staff College, ADM Mike Mullen, Chairman of the Joint Chiefs of Staff admitted that poor leadership was to blame for the current situation. He said, "... in

times of rising budgets, we lose our requirement to make tough choices. We lose our analytical capability because the money keeps flowing in."

Military leaders past and present collectively failed to keep spending under control. ADM Mullen warned, "Those days, for the foreseeable future, are gone. As you saw Secretary Gates propose, and Congress subsequently agreed, to kill an awful lot of programs... A very important message in that regard (sic). We can't afford to be wasting resources."

The importance of harnessing and leveraging technology received increased attention following the fall of the Soviet Union and victory during ODS (Cheney, 1991). During subsequent reviews of national security and military strategies, one sees the emphasis for building on the technological edge that gave the United States such a distinct advantage in the Persian Gulf (Shalikasvilli, 1995). Victory in future conflicts depended on winning the "information war" and therefore the "leverage attainable from... high-speed data processing" warranted special attention. The DOD set

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out to acquire the systems that would help them meet the mandate of the CJCS and the secretary of defense to “harness the GIG.” At the highest levels of government, investing in the right kinds of technology at the right time continues to be a top priority.

In the 2010 Quadrennial Defense Review, Secretary Gates identified the ability to “operate effectively in cyberspace” as one of the DOD’s six key missions.

Cyberspace has evolved from merely a conduit for information or a revolution in the way leaders exercise command and control. Along with land, sea, air, and space, cyberspace has become a fifth domain in which war is already being waged and the military is working feverishly to dominate. To that end, the Honorable John McHugh, secretary of the Army, in a 10 June 2010 speech delivered to the Association of the U. S. Army Institute of Land Warfare avowed that, “The Army... will take every step; make every investment to ensure our forces are the best equipped, most lethal force on earth... I have no interest in creating a so-called fair fight.” Despite the need to reform the acquisition process, the importance of information technology has not changed. As acknowledged by GEN George W. Casey, Army chief of staff, in remarks delivered on 25 June 2010 during the U.S. Army Signal Corps’ 150th Birthday Celebration at Fort Gordon, Ga., “The Army needs to be versatile and it needs to be agile. Those are two qualities that the network brings.”

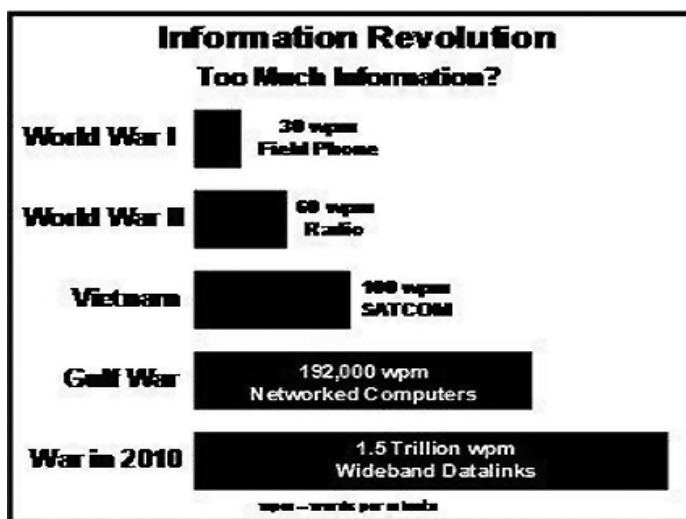


Figure 1. Information Revolution

Army leaders also acknowledge that the best technology is only as effective as a leader’s ability to employ it successfully. After nine years of continuous overseas contingency operations, the DOD has come to realize that technological superiority does not equate to information superiority. The new vision and strategy must be based on a better understanding of how leaders can apply technology effectively.

Rather than the centralized command and control architecture existing information systems have created, the new strategy should facilitate the decentralized mission command for which the use of IT was originally intended.

The resulting sense of urgency stems from a realization that the U.S. Armed Forces will soon draw down in Iraq and Afghanistan. Consequently, the nation will enter an interwar period of familiar budget cuts, social and political advocacy for avoiding future protracted wars, and closer scrutiny of required military capability. The danger of falling back into the previous patterns of stovepipe acquisition, competing over defense budget allocations, and divisive interservice rivalries is all too real. If this occurs, any gains towards reform made over the last nine years, and paid for in blood by America’s sons and daughters, will be lost.

## Creating the Guiding Coalition and Obtaining Leader Buy-in

A guiding coalition for technology reform already exists. This group of top political and military officials absolutely recognizes that a significant amount of time, taxpayer dollars, and effort is wasted on military programs each year. The overwhelming evidence of leader buy-in is manifested in recent speeches, official documents, and defense budget decisions. Senior and respected leaders across the armed forces are committed to ending interservice rivalry, changing organizational culture, and reforming acquisition.

President Barack Obama took action to curb military spending shortly after taking office. Recognizing unnecessary defense spending, he quickly moved to terminate costly projects such as the F-35 fighter jet engine and the VH-71 Presidential Helicopter.

In a February 2010 Time Magazine article, Secretary Gates stated that the “Pentagon budget will be shifting from theoretical, conventional wars to the unconventional ones the military is fighting now.” A prime example of this shift is the recent cancellation of the Future Combat Systems program, and the development, production, and delivery of the



Mine Resistant Ambush Protected vehicles. Rather than building capability against possible future threat, the MRAP targets existing threats prevalent during ongoing operations.

William J. Lynn III, deputy defense secretary stated in an article for AUSA magazine "How we integrate IT into our operations and structure its acquisition is among the most important determinant of our military power."

Meanwhile, McHugh recently called for reformed acquisition and requirements processes with more accurate information on demands from commanders in the field. A key constraint to reaching this goal is money. In the memorandum Calendar Year 2010 Objectives co-authored by McHugh and GEN Casey, the proposed need to "refine the Army for the 21st Century" is further qualified with the need for an "affordable modernization strategy."

## **Developing a Vision and a Strategy**

GEN Dempsey calls the Army Capstone Concept the "beginning of an ongoing campaign of learning." It contains the initial guidelines defining the vision and strategy for improving information systems. The type of technology the Army develops and the way it is procured will play critical roles in future armed conflicts. Army leaders have also come to realize and identify the limitations of communications technology. The over abundance and complexity of the systems developed in the last few decades gave way to new leadership challenges. Figure 1 shows how advances in technology have exponentially increased battlefield data flow ( See Figure 1 on page 22).

Enhanced IT, bandwidth, and

processing speed over the past few decades boosted the amount of information flowing freely across the current operating environment. In less than a century, the military went from field telephones to high-speed tactical Internets. The first significant leap forward came in the late 1980s with the ability to network computers. This led to a vision and strategy in the 1990s for technology-based transformation and the ability to enhance battlespace knowledge using surveillance, communications and information systems. This in turn influenced Army doctrine, training, defense spending and the perception of the future operating environment. Leaders believed that technology could overcome any uncertainty and that small network-centric organizations could win wars cheaply and quickly. The business practice of the time was to build capacity through the continuous acquisition of the latest technological trends rather than filling specific demands. For example, Figure 2 shows the significant increase in the number of available systems and infrastructure in the 12 years between ODS and Operation Iraqi Freedom. During ODS, commanders traversed the vast battlefield continuously in order to gain better situational awareness and understanding. However, limited voice and data support was available at the halt. Commanders executed the majority of communications via short-burst radio messages, while sending longer messages using satellite phones. In contrast, the tactical networks used in OIF allowed commanders to transmit and receive vast amounts of data across the globe from centralized locations.

Although information system capacity has increased significantly in a short amount of time,

human brain capacity and the cognitive abilities of the average Soldier have not. New risks from information overload and shortfalls in systems integration result from the complexity of new technology and threaten to overwhelm Army leaders. Rather than being a combat multiplier, the additional time gained from automating previous human functions is now spent processing and analyzing data and there is an increased risk that pertinent data will be lost in a vast sea of electrons.

If the majority of information is untimely, redundant, or irrelevant, then the extra time gained is immediately wasted. Leaders will perceive the new IT as a major drawback, rather than embracing it as a combat multiplier. The right systems and training are keys to mitigating information overload and achieving optimal systems integration (See Figure 2).

## **Communicating the Change Vision - Operate Effectively in Cyberspace**

Never has a strategic communications campaign for the transformation of information systems been conducted with such versatility and scope on so many different fronts and through so many different mediums. The DOD has launched an extensive campaign advocating improvements to the acquisition process, the relevancy of information systems, and the quality of leader development programs. The most glaring example is the emphasis on Cyberspace, its designation as a new war fighting domain, and the creation of the U.S. Cyber Command to dominate it.

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Leaders in the DOD acknowledge that better fusion of intelligence and operations using communications technology allows commanders to produce action plans that are executable in real time. But to be dominant in cyberspace requires decentralized mission command and a campaign strategy that goes beyond the generalizations found in the Army Capstone Concept and the theories introduced during professional military education. The two dominant schools of thought regarding systems integration and combating information overload must be considered. The commonality approach favors the standardization of systems as a means of eliminating as much training and operating friction as possible. Meanwhile, the procedural approach focuses on systems integration and developing methods for processing information.

In the Encyclopedia of Computer Science and Technology Dr. Victor H. Yngve advocated the need for commonality in systems between Service components. According to a 2010 Defense Daily article on the Army and Air Force Unmanned Aerial System programs, it would appear that the military is heading in this direction. Interoperability through platform commonality has become the focal point of much effort between the Army and Air Force. Standardized systems such as the UAS and the handheld One System Remote Video Terminal used by land forces to view live video feeds, are beginning to appear more frequently among the Services. COL Christopher Carlisle, Director of the Army UAS Center of Excellence at Fort Rucker, Ala., said in an Army Times article, "the

commonality of systems and open architecture is not only required, but it's demanded for any new equipment."

COL Carlisle's statement alludes to a stronger argument regarding future C4ISR programs that John Garing, DISA director for strategic planning, refers to as the "efficiency imperative." The efficiency imperative highlights the importance of reducing costs and overhead for systems by moving to a shared, standard system for common services. The efficiency imperative is not without merit. The net-enabled command capability program, the proposed next generation joint command and control platform, failed to meet the imperative of reducing costs and overhead. Inter-service haggling over capability requirements, shifting demands, and funding setbacks compounded the situation and led to the program's cancellation.

The counterpoint to system commonality is also the current solution to bridging commonality gaps and interoperability. The authors of Planning and Architectural Design of Modern Command Control Communications and Information Systems, a book written in 1997, offer that different systems logically integrated into the command and control construct of the organization are acceptable. The authors maintain that the effective interaction of two primary functions, data fusion and decision support, is more important than standardization of technology.

In a March-April 2010 Military Review article, BG (R) HubaWass De Czege, the founder and inaugural director of the School for Advanced Military Studies located at Fort Leavenworth, Kan., cautions leaders regarding the pitfalls

of becoming overly dependent on networks. Units tend to overemphasize IT acquisition and commonality as the primary means to become a "network-centric" organization. By attempting to replace the human dimension of system integration with system commonality, the tendency is to ignore the relationship between the information and combat power. Regardless of the systems integration method, competent leaders able to process shared information logically are absolutely critical.

## Empowering Leaders to Take Action

Despite the emphasis on shared procurement set forth in Goldwater-Nichols, the Services have often gone their separate ways in pursuing new technology (Goldwater-Nichols, 1986). In fact, one of the duties of the CJCS is to report any "unnecessary duplication of effort among the armed forces" and "changes in technology that can be applied effectively to warfare." Although the Army pursued the latter quite diligently, preventing unnecessary duplication was largely unsuccessful. This culminated at the onset of OIF when the DOD started associating the empowerment of leaders with providing more direct access to funds and suppliers.

With the military fighting two wars simultaneously, the services were encumbered by a combination of the complex bureaucracy in place, Title 10 U.S.C. obligations to defend the nation, the two-year timeline that the process takes, and a lack of oversight to ensure joint interoperability. By the time a new program had the budget, the associated technology was

| <b>C4 Infrastructure OIF vs. ODS</b>      |                |            |               |
|-------------------------------------------|----------------|------------|---------------|
| <b>System</b>                             | <b>Pre-OIF</b> | <b>OIF</b> | <b>Change</b> |
| <b>Commercial Satcom Terminals</b>        | <b>5</b>       | <b>34</b>  | <b>+560%</b>  |
| <b>Average Commercial Bandwidth (Mb)</b>  | <b>7</b>       | <b>10</b>  | <b>+47%</b>   |
| <b>Military Satcom Terminals</b>          | <b>20</b>      | <b>44</b>  | <b>+120%</b>  |
| <b>Average Military Bandwidth (Mb)</b>    | <b>2</b>       | <b>3</b>   | <b>+68%</b>   |
| <b>Terrestrial Links (aka Ground LOS)</b> | <b>11</b>      | <b>30</b>  | <b>+173%</b>  |
| <b>Average Terrestrial Bandwidth (Mb)</b> | <b>2</b>       | <b>10</b>  | <b>+444%</b>  |
| <b>Global Broadcasting System (Mb)</b>    | <b>24</b>      | <b>24</b>  | <b>0%</b>     |
| <b>Total Terminals</b>                    | <b>36</b>      | <b>107</b> | <b>+167%</b>  |
| <b>Total Bandwidth (Mb)</b>               | <b>113</b>     | <b>783</b> | <b>+596%</b>  |

Figure 2. USAF C4 Infrastructure OIF vs. ODS

either obsolete or outdated. In an effort to streamline the process, the DOD established new policies for Concept of Operations funds and Operational Needs Statements. CONOPS money was intended solely for parts, supplies, and equipment that units lack but would need to accomplish its mission during overseas contingency operations while ONS was reformed to facilitate the quick procurement of commercial-off-the-shelf solutions to equipment or capability shortfalls using the rapid acquisition system. Originally, the ONS process was originally a method for commanders to request war reserves during combat operations. Using CONOPS and ONS, commanders would opt to wait until the unit was in the “train-ready” pool of the ARFORGEN cycle just prior to a deployment. Once in this window, leaders were able to make large CONOPS purchases or submit ONS for big-ticket items not otherwise authorized.

Instead of mitigating the acquisition process, the DOD actually created the current surplus accumulation of information systems. In the July 26, 2010 edition of Army Times, LTG Jeffrey Sorenson, Army CIO-G6, remarked that in the past 10 years, the Army “nearly doubled the types of radios it owns, from 11 in 2000 to 20 today.” In that same timeframe, the Army inventory of radio systems has almost tripled, from 365,000 to 919,052. There are now almost as many radios as there are Soldiers. Many of these special purchases result in non-program of record systems being fielded to units while program-of-record systems go unused. Soldiers remain untrained on the systems procured by the DOD. Furthermore, there is no standardization from unit to unit either in the type of systems or equipment. Instead of flooding the operating force with more and more systems,

better training on the operation and integration of existing systems is needed.

Historically, systems integration issues resulted from training deficiencies. A Center for Army Lessons Learned newsletter on Army and Air Force integration published in 2008 included the initial report on a joint effort by both the CALL and the Office for Air Force Lessons Learned. In 2006, the nine-member collection and analysis team focused on Army and Air Force command and control issues during overseas contingency operations. A key finding was the need for more training on the systems of record used in theater. Anchored by past experiences with information systems, leaders wrongly believed that many information systems were not compatible or too complex and therefore opted for non-program of record systems. Training and education serves to clarify and eradicate these types of cognitive biases, misleading notions, and myths surrounding communications capabilities. The belief that Army systems can not be integrated with the information systems of other Services is a fallacy requiring a paradigm shift in the minds of leaders at all levels. Finding the time and resources to effectively train on interconnectivity methods, integration of data, and system capabilities is often the greatest challenge.

## Generating Short Term Wins with Better Collaboration

Clear command messages mandating reform and decisive action have resulted in a number of noticeable results in a short amount of time. Improved collaboration between the Services and defense industry leaders is improving the DOD’s ability to meet leader requirements. Meanwhile, cancellation of programs rife with cost and schedule overruns have made it possible to concentrate on developing existing information systems and training facilities more appropriate for developing innovative and adaptable leaders.

In an ongoing effort to improve training facilities, all major installations are establishing battle command training centers. These digital training centers allow units to train on all C4ISR systems in an integrated, joint interoperable environment. The ability to replicate complex scenarios at home station provides an affordable alternative to costly and resource intensive national training exercises.

New approaches to training in high-intensity ground conflicts as well as replicating cultural environments and non-kinetic operations can be

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achieved with simulations. The state-of-the-art programs offered by the BCTC apply the latest research and technology to give leaders much needed proficiency in information systems operation, integration, and the latest achievements in joint interoperability.

An example of improved interoperability is the Combat identification server. The CID uses service-oriented architecture to merge Link 16 and Blue Force Tracker feeds to meet the demand for a singular air-ground common operational picture. Figure 3 demonstrates how CID combines Link 16 and FBCB2 feeds. The CID server polls different graphics-oriented battlefield tracking systems and compiles all positional data into a centralized database. Units then subscribe to the server and the resulting streams of data form an integrated COP. A by-product of this interconnectivity is a reduction in vehicle and command post hardware that commanders, operators and battlespace controllers have to monitor.

## Consolidating Gains and Producing Even More Change

Nine years of continuous overseas contingency operations have contributed greatly to breaking the parochial mentality of military culture and noticeable gains in joint, interagency, and multinational interoperability. Significant progress has been made towards ending interservice rivalry, changing organizational culture, reforming the acquisition process, and identifying cost-effective methods of dealing with budget constraints and limitations. According to the 2010 QDR and 2008 National Defense Strategy, current strategic defense goals focus not only on achieving joint interdependence and interoperability, but also interagency and multinational sharing of IT. Decision superiority, the process of making decisions better and faster than an adversary, is essential to executing military campaigns and operations with speed and agility. Enhancing the interoperability of joint, interagency, and multinational IT through better systems integration and management will enhance current levels of cooperation and interdependence. Joint Publication 1 states, "The Armed Forces... are most effective when employed as a joint force." Military leaders are better aware of the benefits of Unified Action through joint interdependence. Recent advancements in interoperability between all four Services are the result of joint collaboration. Joint force commanders rely on information systems to gain situational awareness and understanding. The ability of all Services to share a COP is an important

milestone in the pursuit of joint interdependence. Acquiring future systems to maintain this level of network-centric synergy will require an equal amount of cooperative effort.

The next step involves a whole-of-government approach to overseas contingency operations. This requires synchronizing the Department of Defense activities with those of other government agencies. Doing so leverages military resources and security capability with the expertise in governance, economics, and infrastructure of other agencies. The rise of the provincial reconstruction teams and the brigade combat team-augmented is an example of the DOD's commitment to this endeavor. As interagency interdependence becomes the standard, the requirements for interoperable communications become more apparent. Successful collaboration requires finding a balance for shared access to systems, tools and bandwidth for all agencies.

Beyond intra-governmental cooperation, U.S. military actions are always a multinational effort. Unfortunately, poor interoperability has denied these coalitions adequate situational awareness through a multinational common operating picture. The majority of documented fratricide incidents thus far in Operations Enduring Freedom and Iraqi Freedom have involved military units of different nations. The inherent risk to coalition cooperation in future operations demands that U.S. military officers possess the operational adaptability to operate at degraded levels of compatibility with partner militaries.

## Institutionalizing the New Military Culture

As the Army vision becomes reality, leaders will develop tactics, techniques, and procedures that must be documented and shared with the rest of the Army. Institutionalizing these developments entails updating existing doctrine, policies, and professional education curricula. The description of the future operating environment portrayed in recently updated doctrine along with what it will take to fight, survive,

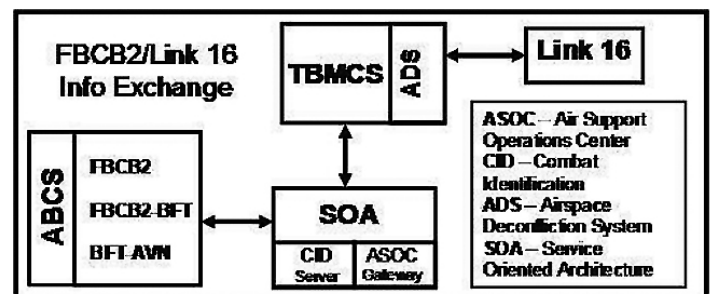


Figure 3. FBCB2-Link 16 Information Exchange

and win described in the Army Capstone Concept are only the first steps in what is still to come.

## Conclusion

Army leaders are in the process of simultaneously communicating a new vision and strategy for changing the military's approach to information systems.

Further insight into this process is gained by applying the eight-step Kotter model and the analysis generates considerations for implementing the Army Capstone Concept vision and strategy.

Senior leaders are establishing a sense of urgency and empowering leaders at all levels to take action. The on-going focus on acquisition reform and improved interoperability is already generating short term wins and the Army leadership is looking ahead to increasing gains in joint, interagency and multinational interdependence.

Many challenges lie ahead as new information systems are incorporated into organizational culture through revised doctrine, professional development, and education. Information systems

are being recognized as more than just a passing fad or luxurious commodity.

Communications systems are essential to mission command and at the heart of these systems is the leader. How leaders use the systems and the information is what matters, not the technology.

Leaders apply technology and processes to make decisions based on situational understanding, comprehension, and personal abilities. But the procedural approach to interoperability offers only a temporary fix, whereby system commonality should remain the ultimate goal.

The Army leadership is making great progress in clearly communicating its vision and strategy. A campaign that conveys the key issues at hand, the best options available, and the courses of action required to correct shortfalls will empower leaders at the lowest echelons to carry out that vision and strategy. The end result is the integration and synchronization of war fighting functions needed for mission command and decentralized mission execution. Tomorrow's systems must

support leaders who are already comfortable with uncertainty by enhancing critical thinking skills, independent operation, and clear communication of the commander's intent.

After decades concentrating on technology, Army strategists are correctly focused on leadership as key to the future information systems that will dominate cyberspace.

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## ACRONYM QuickScan

**ADS** - Airspace Deconfliction System  
**ARFORGEN** - Army Forces Generation  
**ASOC** - Air Support Operations Center  
**AUSA** - Association of the United States Army  
**BCTC** - Battle Command Training Center  
**C4** - Command, Control, Communications, Computer  
**C4ISR** - Command, Control, Communications, Computer, Intelligence, Surveillance, Reconnaissance  
**CALL** - Center for Army Lessons Learned  
**CID** - Combat Identification  
**CIO** - Chief Information Officer  
**CJCS** - Chairman of the Joint Chiefs of Staff  
**CONOPS** - Concept of Operations  
**COP** - Common Operational Picture  
**DISA** - Defense Information Systems Agency  
**DOD** - Department of Defense

**FBCB2** - Force XXI Battle Command Brigade and Below  
**GIG** - Global Information Grid  
**IT** - Information Technology  
**LOS** - Line of Sight  
**Mb** - Megabits  
**MRAP** - Mine Resistant Ambush Protected  
**ODS** - Operation Desert Storm  
**OIF** - Operation Iraqi Freedom  
**ONS** - Operational Needs Statements  
**OSRVT** - One System Remote Video Terminal  
**SATCOM** - Satellite Communications  
**SOA** - Service-Oriented Architecture  
**UAS** - Unmanned Aerial System  
**USAF** - United States Air Force