Transforming the Core Function of Military Intelligence to Knowledge Management

A Monograph
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MONOGRAPH APPROVAL

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Abstract

TRANSFORMING THE CORE FUNCTION OF MILITARY INTELLIGENCE TO KNOWLEDGE MANAGEMENT by MAJ David P. Jewell, US Army, 58 pages.

The Army's transformation to the Objective Force presents significant challenges to the Military Intelligence (MI) Battlefield Operating System (BOS) that fulfills the mission of providing Army commanders understanding of threats and portions of the environment that are crucial to decision making for military operations. The Objective Force will leverage advanced technologies to proliferate a myriad of sensors capable of collecting data and information to a vastly wider array of echelons, types of units, and weapons platforms than the Army has ever enjoyed before. The near monopoly for providing valuable collection to Army commanders that MI historically possessed will dissolve as sensors capable of collecting accurate and timely information from enemy signal, visible, thermal, acoustic, seismic, and radar signatures become ubiquitous across the Objective Force. As a result, the relative importance of conducting the actual collection of information will reduce for MI. Instead, the potential threat of inundation with massive quantities of disparate bits of data this increased sensor capability will present the Army will require MI to commit the majority of its efforts and resources to making sense of this information. The fusion of increasingly massive amounts of data into intelligence that is relative to Army operations and the creation of knowledge Army commanders need to make decisions will become the function at which MI cannot fail. MI should identify the function that enables it to sufficiently inform commanders' understanding of the threat and environment, as its core function, while relegating its historic collection function to a subordinate and supporting role.

The concept of Knowledge Management presents a solution to this challenge. Commercial companies that have successfully navigated the tides of the information revolution of the last decade became astute at Knowledge Management. They developed cultures, implemented policies, designed organizations, and trained workers to operate collaboratively in a business environment in which information became the most precious commodity. MI is responsible to the Army for transforming the commodities of information concerning threats and portions of the environment into knowledge capital that provides the Army information superiority in operations. MI should transform its core function to Knowledge Management (processing and analyzing the myriad of sensor inputs) as its historic functions migrate to substantially to the Army's other BOS.

MI must overcome its current culture wrought with the obstacles of compartmentalization and isolation of analytic agencies to create a collaborative culture that executes Knowledge Management as its core function. It can begin to ensure that cultural transformation by immediately embarking to change its doctrine, organizations and officer education system. The greatest benefit of this effort will emerge if MI focuses first at the operational level of Units of Employment in the Objective Force. Transforming these components with a view toward Knowledge Management will result in MI organizations being able to provide increasingly well-tailored knowledge relevant to commanders' decisions.

This study suggests ways in which MI can direct its transformation to a Knowledge Management focused force along three critical vectors. Doctrine will establish and promulgate a vision that informs both organizations and education across the force. Organizations will emphasize collaboration and interoperability in their knowledge management functions. MI officer education will create leaders who understand the culture envisioned in doctrine and be experts at Knowledge Management. The resulting MI force will be able to make sense of the Objective Force's ability to "see first" and create knowledge enabling commanders to "understand first" which will empower Army units to maintain information superiority so crucial to victory in future operations.

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INTRODUCTION

Military Intelligence (MI) represents the Army's organizational capacity to manage and execute the functions of the Intelligence Battlefield Operating System (BOS)[1]. For Army commanders at all echelons, it aims to reduce the friction uncertainty causes in military operations. MI provides assets that collect information concerning the threat and environment for military operations. MI organizations analyze and process that information to produce intelligence relevant to the needs of the supported commander. It disseminates intelligence to commanders and soldiers with the greatest possible fidelity and timeliness to enable better decision-making. According to the current draft of FM 2-0, Intelligence, "Individually and collectively, these assets provide commanders with the intelligence required to visualize the battlefield, assess the situation, and direct military actions."[2] As the Army transforms to the Objective Force, MI faces the challenge of fulfilling its role for increasingly agile Army forces that will strive for dominance across the full spectrum of operations. The future will not change the fundamental role of MI. It will, however, demand that MI produce a greater fidelity of understanding, more rapidly and with greater relevance than the Cold War and previous environments required.

In their discussion of the conceptual foundations of Army transformation, Huba Wass de Czege and Richard Sinnreich contend that understanding the increasingly fluid nature of future threats and operational environments " . . .presents a force design dilemma all its own. Solving it requires above all a comprehensive understanding of the environment in which future U.S. military operations are likely to take place, an analysis of its implications for their conduct, and a

[1] The noun "Military Intelligence" and its abbreviation "MI" represent the community of intelligence professionals that support the Army at all echelons. It includes soldiers, civilians, units, and organizations that might appear in other locations under the terms "Military Intelligence Corps", "The intelligence force", "The Army Intelligence Community (AIC)", or the "Intelligence Battlefield Operating System (IBOS)". Any nuances between the meanings of these terms do not impact the scope of this study.

clear-headed appraisal of the ability of today's Army to cope with them"[3] MI must also address its conceptual foundations and culture. MI should also undergo an appraisal of its ability to fulfill its role within the Objective Force and transform its doctrine, organizational design and education of leaders. The key to this transformation is a move away from a primary focus of gathering information to one of producing understanding for military operations. Knowledge Management (KM) with regard to the threat and the environment should become MI's core function while many of its historic collection functions migrate to weapons platform sensors.

Transforming MI's core function to KM does not imply that MI abandons all interest in collection and sensors. MI must continue to influence the development and fielding of sensors even if maneuver, fire support, air defense, or other BOS elements will employ and actually operate the systems. Additionally MI will retain such specific collection functions as Human Intelligence (HUMINT) and counter intelligence since these are ill suited for migration to weapon platforms. MI must develop its doctrine, organize its units, and educate professionals with the primary aim of fusing distinct data bits and disparate items of information into that is relevant to the operations of friendly commanders. MI doctrine it should emphasize production and presentation of intelligence and knowledge to decision makers. This timely production and clear presentation of knowledge will provide the capability to "Understand First" which empowers commanders of Army forces to make better decisions and "Act First" to achieve victory.

The model that emerges is one of MI in which KM is its main effort. Sensors that provide unique collection to MI with collection conducted by other Army, Joint, and national organizations and agencies to form an important supporting effort. This model outlines the intellectual framework from which MI can best support the Objective Force. An organizational

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[2] Field Manual (FM) 2-0 *Intelligence* (Directorate of Combat Developments, US Army Intelligence Center and Fort Huachuca. Fort Huachuca, Arizona: US Army Intelligence Center and Fort Huachuca. Initial Coordinating Draft, 25 October 2002), para 1-29.

[3] Huba Wass de Czege and Richard Sinnreich, *Conceptual Foundations of a Transformed U.S. Army*. The Land Warfare Papers, No. 40, March 2002. (The Institute of Land Warfare, Association of the United States Army. Arlington, Virginia.) , 3.

approach will illustrate what specific KM functions MI organizations must accomplish. It will discuss where sensor/collection functions will likely migrate and which collection functions will remain within the unique scope of MI. Examples from emerging Unit of Action (UA) concepts provide some insight into how this transformation serves the Army at the tactical level. This study focuses on the organization of MI at the Unit of Employment (UE) command as the key component of MI at the operational level.

The argument reviews the tasks MI fulfills for the Army. It details some key fundamentals for educating MI leaders to serve with KM as MI's core function. It identifies specific operational requirements for MI at the UE level and presents a model for how MI should organize at that level. In so doing, a model that transforms the core function of MI to that of KM emerges. This model processes threat and environmental relevant intelligence (RI) and produces accurate and timely knowledge the commander needs. When successful, MI presents this knowledge in ways that inform the commander's situational understanding and provide an advantage over adversaries. The resultant information superiority will go far toward ensuring victory across the full spectrum of operations.

REVIEW OF LITERATURE

A request for research distributed by the office of the current Army G2 included the following question: should Military Intelligence transition its core function to knowledge management (processing and analyzing the myriad of sensor inputs) as its historic collection functions migrate to weapons platform systems? This question provided the impetus for this research. Initial inquiry into this study revealed three primary sources. These primary sources were *The Army Intelligence Transformation Plan*, *The New Craft of Intelligence: Achieving Asymmetric Advantage in the Face of Nontraditional Threats*, and *Business @ the Speed of Thought: Using a Digital Nervous System*.

The *Army Intelligence Transformation Plan (AI-TCP)* is a pamphlet and accompanying compact disk that "lays out a vision for Army Intelligence Transformation in support of Army Transformation . . . [and] establishes a common framework for understanding and guiding Army Intelligence Transformation"[4] The pamphlet outlines concepts and visions for the future of MI concerning its core competencies for the Objective Force. It discusses material, organizational, and human components of transforming MI in concert with the Army's transformation in fairly broad terms and serves as a point of departure from which the Army's intelligence community can advance toward transformation. The long-range planning objectives this document describes for transforming Army Intelligence are central to the matter of this study. "The overall program objective is to provide timely, accurate, all source intelligence required by the Army leadership at all levels, the unified commanders, and the National Command Authority to deter, prepare for, and if required, wage warfare in support of the National strategy." To accomplish this objective the pamphlet states, "the Army must maintain a capability to protect, collect, integrate, analyze, and present all source intelligence."[5] This study proposes a way in which MI can develop this capability at the operational with a core function of knowledge management (KM). These objectives include establishing a "Knowledge Projection Force" "focused on the needs of tactical commanders and capable of anticipating the needs of policy makers"; equipping the future MI force to achieve "Dominant Knowledge" and mission success across the full spectrum of conflict; training and educating "the future intelligence force to thrive in the information dimension of the battlespace"; developing "intelligence doctrine and policy to support joint intelligence operations in the information domain"; transforming higher echelon intelligence forces' organization and interoperability to "project the right knowledge at the Point of Decision"; and producing "ground forces intelligence that supports ground component force development on a full time basis and

[4] *Army Intelligence Transformation Campaign Plan (AI-TCP)*. August 2001. (Department of the Army Deputy Chief of Staff for Intelligence (DA-DCSINT), Washington, DC), 1-2.

[5] Ibid., 55.

warfighting in a complex, international environment."[6] Of these six objectives, this study focuses primarily on those of organizing to focus on the needs of commanders, training and educating the force, and developing doctrine. The objectives of material force development and equipping the force are outside the scope of this study.

The second primary source is Robert D. Steele's monograph published in 2002 as part of the Strategic Studies Institute's *Studies in Asymmetry* series entitled *The New Craft of Intelligence: Achieving Asymmetric Advantage in the Face of Nontraditional Threats.* This source examines paradigm shifts in relation to threat and intelligence methods and proposes "new models for threat analysis and for intelligence operations in support of policy". Essentially it is a call for a Revolution in Intelligence Affairs in light of the possible current Revolution in Military Affairs. In the second part of the monograph the author proposes a new model for more effective intelligence methods at the strategic level. With some modifications, his proposals are adaptable to the operational level. His proposals for a Global Information Technology Architecture and the All-Source Fusion Workstation which include increased capability to process intelligence from multiple sources – including open sources – and deliver tailored intelligence to decision makers at all levels from tactical to strategic are particularly informative to transforming the core function of MI to knowledge management. His models are generic enough that they could serve well as foundations for future MI organizations at all levels that can help tailor effective MI organizations focused on KM at the operational level.[7]

The third primary source for this study comes from the world of commerce. In *Business @ the Speed of Thought: Using a Digital Nervous System*, Bill Gates explored how Microsoft and other major companies leveraged information technology to dramatically improve their efficiencies. Much of the book is anecdotal. The fact that Microsoft and most of the companies

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[6] Ibid., 55-60.

[7] Robert D Steele. Studies in Asymmetry: The New Craft of Intelligence: Achieving Asymmetric Advantage in the Face of Nontraditional Threats. (Strategic Studies Institute, U.S Army War College, Carlisle, Pennsylvania. February 2002.), 34-35.

Gates discussed have maintained dominant market shares in their industries makes these anecdotes persuasive. Gates delved deeper into descriptions of actual systems and architectures than are the focus of this study. However the organization and integration of "knowledge workers" into "digital nervous systems" offer compelling arguments for how organizations that deal in information as a primary capital – which MI certainly does – significantly enhance mission success. Digital nervous systems under the models Gates described empower decision makers to access the discriminated and tailored knowledge they need rapidly and with great fidelity. Crucial to this capability are both the organization of the entire system and the training and education of the workers who populate and operate it. Gates attributed the ability of companies like Microsoft, Dell and Wal-Mart to outperform competitors in their markets to their adoption of knowledge management systems that enable them to make better decisions quicker than their opponents. It is less the superiority of particular products brought to market than the ability of decision makers to market the right products to the right consumers at the right times and places that has given these companies their edge. Since it is central to the success of MI to help commanders make decisions better and quicker than enemies, this comparison is particularly illustrative. If one can infer that Army transformation seeks to provide the capability to employ the right mix of forces at the right time and place to be decisive against any adversary rather than rely on massive amounts of material and troops for decision in warfare, the conclusion that applying KM models that have been successful in achieving the same effects in the business world provide valuable lessons for MI transformation.

Other sources from the corporate world provide varying degrees of insight into applying knowledge management to produce increased productivity. This study cites a variety of these sources for specific references to the organizational, theoretical, and functional implications of KM on business practices. The general trend among most of these forces other than their emphasis on designing adequately robust and permeable technical architectures for KM is that making the most of KM requires organizations to transform their cultures. Educational and policy

initiatives make cultural transformation possible. Essentially, KM enables people to process and deliver an increased richness of information and knowledge. "What we must remember is that this new information technology is only the pipeline and storage system for knowledge exchange. It does not create knowledge and cannot guarantee or even promote knowledge generation or knowledge sharing in a corporate culture that doesn't favor those activities."[8]

Military sources and references also comprised a significant body of research for this study. Current doctrine and emerging concepts embodied in Field Manuals, pamphlets, and white papers in varying stages of publication provide both the operational context in which a transformed MI must operate and some defined requirements MI must fulfill. Determining the tasks MI must accomplish is an important step to take in transforming its core function to KM. FM 7-15, *The Army Universal Task List (AUTL)* describes the Army tasks for which the intelligence BOS is responsible. The 2002 draft of FM 7-15 lists what MI should provide the force along with some measures of effectiveness for doing so. It was obvious that the study would benefit from comparing the AUTL to the capstone MI doctrinal publication to evaluate the relevance of MI functions to Army Operations. The most recent approved capstone MI manual, FM 34-1, does not reflect transformation concepts and is limited in its applicability due to its 1994 publication date. Therefore, the initial coordinating draft of FM 2-0 (2002), *Intelligence*, informs this comparison. It was also interesting to compare FM 2-0 to the AI-TCP to discover what consistencies and discrepancies appear between vision statements and concepts and emerging doctrine. The TRADOC Pamphlet 525-3 series of publications concerning Army transformation also provide good information concerning requirements. TRADOC Pam 525-3-100, *The United States Army Objective Force: Operational and Organizational Concept for Units of Employment*, discusses Units of Employment in its revised draft form from 2001 TRADOC Pam 525-3-90, *The United States Army Objective Force: Operational and Organizational*

[8] Thomas H. Davenport and Lawrence Prusak. "Working Knowledge: How Organizations Manage What They Know." Ubiquity online magazine, n.d., <

Concept for Units of Action, is the core requirements document for the tactical Units of Action that will comprise the primary consumers of a KM based MI at the operational level. TRADOC Pam 525-3-0.1, *The United States Army Objective Force Battle Command (C4ISR) Concept*, in its coordinating draft form is instructive in the cultural, organizational, and educational implications of the Objective Force on staffs and their functions including those of intelligence organizations supporting decision makers. Various other military sources and publications provided specific insights and appear in citations and the bibliography where appropriate.

CURRENT AND EMERGING MILITARY INTELLIGENCE FUNCTION AND ORGANIZATION

The functions of MI should be consistent with the tasks it claims comprise its role and responsibilities within the force. Prior to the current efforts at transformation achieving momentum, the Military Intelligence Tasks appeared in FM 34-1, Intelligence, 1994. The DRAG version of FM 7-15, The Army Universal Task List includes intelligence tasks that support the conduct of Army operations. The initial draft of the replacement for FM 34-1, FM 2-0, Intelligence, includes the emerging doctrinal statement of Army MI tasks. FM 34-1 identifies MI tasks as: provide indications and warnings (I&W), perform Intelligence Preparation of the Battlefield (IPB), perform situation development, perform target development and support to targeting, support force protection, and perform battle damage assessment (BDA). Figures 1 and 2 below show the intelligence tasks expressed in the new FM 2-0 and FM 7-15:

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http://www.acm.org/ubiquity/book/t_davenport_1.html> (10 January 2003)

FM 2-0 Intelligence Tasks (Coord Draft October 2002)

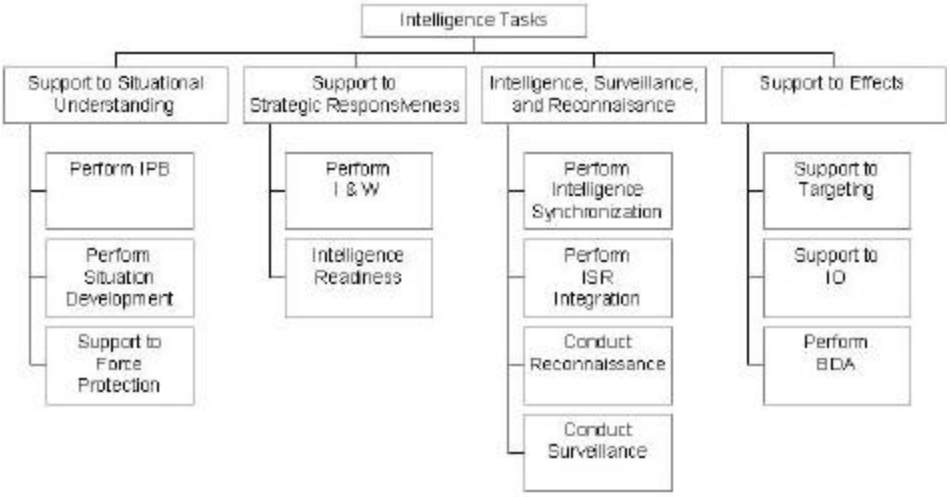
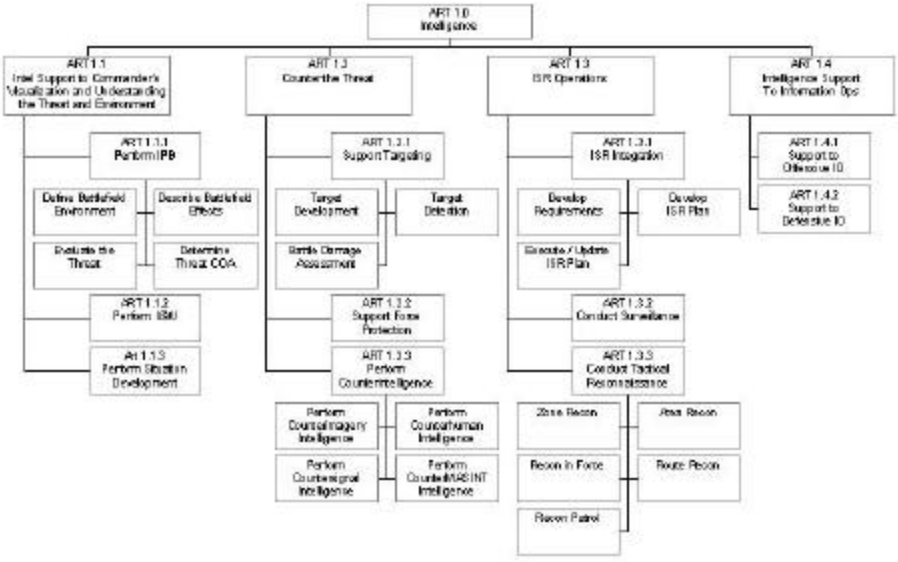


Figure 1 FM 2-0 Intelligence Tasks

AUTL ART 1.0 The Intelligence BOS



From FM 7-15, DRAG 2002, paras 1-1 thru 1-24

Figure 2 AUTL Intelligence Tasks

FM 2-0 and FM 7-15 portray MI tasks differently. This is troubling for a knowledge manager because two documents that purport to proclaim the MI tasks do so without clarity or consistency. Wading through the tasks though, reveals that these different sources do not contradict each other. The inconsistent articulations of MI tasks appear to be differences without distinctions – different words for the same sorts of ideas. A distillation of the underlying meaning that generated these task lists appears in FM 7-15: "The intelligence battlefield operating system (BOS) is the activity to generate knowledge of and products portraying the enemy and the environmental features required by a command planning, preparing, executing, and assessing operations."[9] Robert Steele's depiction of intelligence in *The New Craft of Intelligence* follows from this examination to define intelligence as "information that has been deliberately discovered, discriminated, distilled, and delivered to meet a specific decision-making requirement."[10] What is the process then, by which MI accomplishes this task of delivering intelligence to decision makers? What are the functions that comprise this process? Understanding the process of the "intelligence craft"[11] enables identification of which of its functions deserve a place as the core function – the one without which all the others become irrelevant. KM emerges as the function that actually fuses the information – through distillation and discrimination – into intelligence and delivers it as knowledge to the commander

The Functions of MI

FM 2-0 defines a five-step intelligence process: plan, prepare, collect, process, produce. It adds the three functions of analyze, disseminate, and assess as common to all steps of the process.[12] Adding the six intelligence disciplines to the discussion makes it increasingly complex for the uninitiated to understand: Human Intelligence (HUMINT), Imagery Intelligence (IMINT),

[9] Field Manual (FM) 7-15 *The Army Universal Task List*, (, (U.S. Army Training and Doctrine Command, Fort Monroe, Virginia, 2002) Introduction to Chapter 1.
[10] Steele, The New Craft of Intel, 26.
[11] Ibid., 26.
[12] FM 2-0, para 1-23.

Signals Intelligence (SIGINT), Measurement and Signature Intelligence (MASINT), Technical Intelligence (TECHINT) and Counterintelligence.[13] All these process steps should be continuous, interconnected and continuous. The role of a focus on KM here becomes essential because KM concerns the connections between items of information, the transmission of information, and increased understanding of information throughout the process. These process steps and disciplines fall into two general and knowledge functions: one that gathers data and another that creates knowledge and delivers it to inform the understanding of decision-makers. The data gathering function comprises MI's historic collection function. The function that produces understanding is knowledge management (KM).

The collection function of MI generally involves the gathering of discrete bits of data from any source or MI discipline. It is a primarily mechanistic and scientific function that relies on the skillful application of collection means against collection targets. Much of this function already occurs in forces outside of the Army's intelligence community even when Army forces comprise the key consumers of any given set of collection. Other services, national agencies, civilian resources, and even other nations provide varying degrees of collection of all types. The identification of collection requirements and managing of collection assets is also a function of MI. Collection Management – Intelligence, Surveillance, and Reconnaissance (ISR) Integration – then is a critical component of MI KM that provides the link to operational organizations that execute the collection missions.

The Objective Force includes many weapon platforms with increasingly capable collection capabilities. An increasing degree of collection functions will migrate outside the MI community

[13] The discussion of intelligence disciplines becomes increasingly complex if we dare to consider Open Source Intelligence (OSINT) as a discipline unto itself. A key component in Robert Steele's argument in *The New Craft of Intelligence* is that our intelligence community fails to commit adequate resources to OSINT. This is a compelling argument with many implications on how we design, educate, and deploy our intelligence forces especially in joint, inter-agency, and coalition operations. For the purposes of this study though, adding the discipline of OSINT or increasing OSINT's contribution to our collection function only increases the degree of the complexity of our KM challenge, not the nature of the challenge.

through the course of transformation. The enhanced networking communications capabilities the Objective Force promises will enable the Army to shift the majority of tactical collection to combat helicopters, tanks, counter-fire radar, air defense, and other systems that populate BOS other than the MI. This dynamic should not have a negative effect upon MI. It should allow MI to better focus efforts on the KM functions of its craft. It should influence interoperability policies that make the collected bits of data more readily accessible and digestible by analysis, processing and dissemination.

MI KM and Fusion

The increased quantity of collection capabilities in the Objective Force brings with it significant challenges. With an increasing number of collection assets deployed under all the BOS, MI will face even more data from which to create knowledge. In this sense, the Objective Force will indeed "see first." MI must develop ways to process these increasingly large quantities of discrete data bits successfully. Successful processing fuses data from all possible sources to produce intelligence that is relevant to the needs of the commander. MI at every level must accomplish this fusion rapidly enough to provide commanders understanding of the environment before and with better fidelity than adversaries can gain understanding. Therefore this significant challenge is to be able to "understand first." MI must tailor knowledge products to decision-makers that are relevant and digestible in the context of operations. This clear presentation provides information superiority. It empowers commanders to "understand first." KM is more important because it provides relevance and timeliness of understanding to the commander regardless of what forces conduct the collection function. This means that the KM function is more important for MI than the collection function and should merit a place as the core function of MI.

In the struggle to produce relevant knowledge, MI knowledge workers need to drill down to the most relevant and compelling bits of data and information. Many collected bits of data will

be lost either by design or accident in this process because the details are less important to the decision makers than the fused knowledge. Good KM processes result in MI losing less data due to accidental failures to correlate it. Dismissing irrelevant and unimportant data is a necessary and productive aspect of fusion. The fused knowledge garnered from the bits of data that are relevant will matter. Fusion appears here as the key component of KM for MI.

A white paper on Objective Force Fusion published in January 2003 by the Directorate of Combat Developments at Fort Huachuca reinforced the concept that KM should be the core focus of MI. This paper defined fusion as: "a series of processes performed to transform observational data into more detailed and refined information, knowledge, and understanding. These processes, by their very nature involve both automation and human cognition."[14] Juxtaposing this definition of fusion with two business definitions of Knowledge Management reveals a similarity between the concepts:

> "Knowledge Management caters to the critical issues of organizational adaption, survival and competence in face of increasingly discontinuous environmental change.... Essentially, it embodies organizational processes that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings."[15]

> "Knowledge management is the way that organizations **create, capture and reuse** knowledge to achieve organizational objectives." It is a "process with four parts that comprise a loop." The four parts are that knowledge is "created. . .in the heads of people", "captured", "classified and modified" to add context and relevance to enhance how people in the organization use the information, and "shared".[16]

Three concepts are common to all of these definitions. First, they describe a process. Second, this process modifies the information into usable knowledge. Third, the role of humans is

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[14] *Objective Force Fusion White Paper* (Directorate of Combat Developments, US Army Intelligence Center and Fort Huachuca. Fort Huachuca, Arizona: US Army Intelligence Center and Fort Huachuca. Initial Coordinating Draft, 25 October 2002), 2.

[15] Yogesh Malhotra. "Tools@work: Deciphering the Knowledge Management Hype", *Journal for Quality and Participation*; Jul/Aug 1998, 21(4), 58-60. available online at: http://www.brint.com/km/whatis.htm; Internet

[16] Wally Block. "Knowledge Management 101" available online at: http://www.intranetjournal.com/articles/200011/ic_11_29_00a.html; Internet. Bolds are Mr. Block's.

essential to the process. Fusion then is a concept close enough to KM that both functions describe essentially the same idea: a process by which people create usable knowledge.

The Objective Force Fusion white paper also discussed how fusion occurs at multiple echelons in the Objective Force while becoming increasingly complex at higher echelons. It cited the increased number and capability of sensors the Objective Force offers and indicated how that dynamic makes the function of fusion even more complex. "The unprecedented number of sensors in the Objective Force will generate a significant increase in the stream of discrete data that, unaltered will be meaningless."[17]

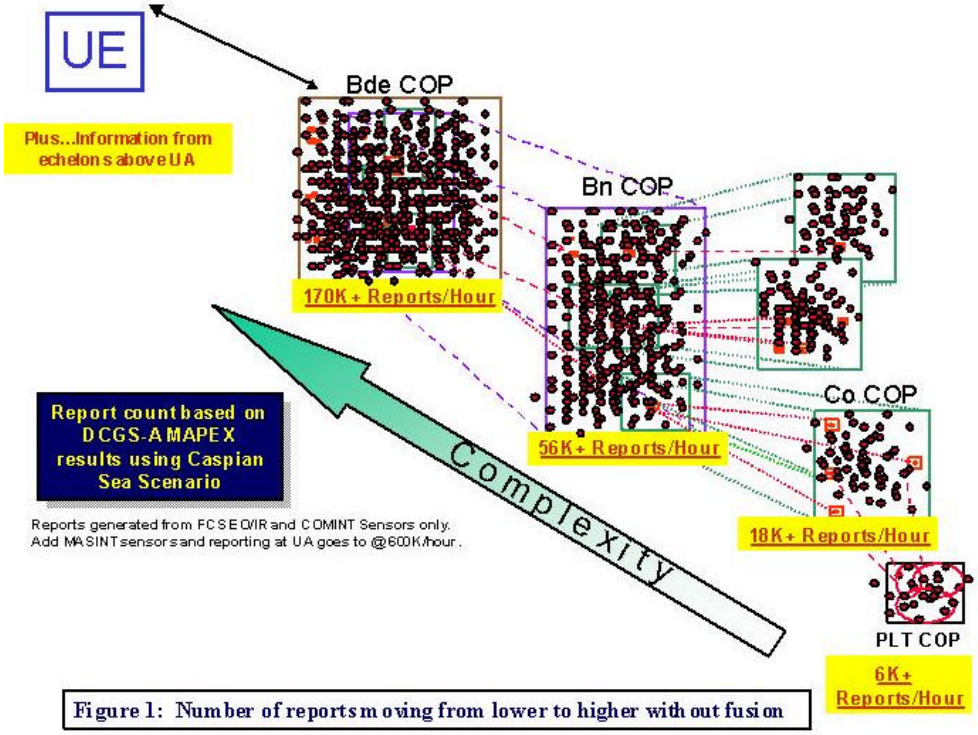

Figure 3 COP without good Fusion

"The ability to gain and maintain information superiority depends on our ability to generate knowledge"[18] Figure 3 above illustrates that the Objective Force promises to bring with it an

[17] Objective Force Fusion White Paper, 3.
[18] Ibid., 3

increased collection function while presenting a significant challenge to providing the decision maker understanding from which to make decisions.

The concept of the Common Operating Picture (COP) is prevalent in Objective Force literature. The COP refers to a single automated display that informs the organization's situational understanding. MI at each echelon bears the bulk of the responsibility for providing the input to the COP concerning the threat and many aspects of the environment. KM or fusion is the function that provides efficiency in populating the COP. It prevents overwhelming the COP with too much data that is not relevant to the commander's decision.

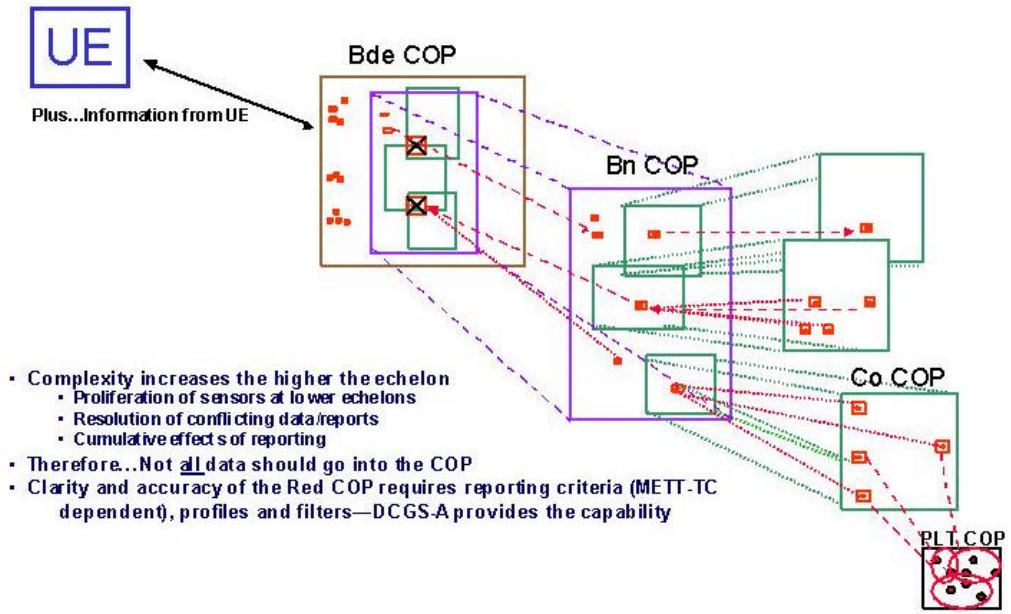

Figure 2: Number of reports moving from lower to higher with fusion

Figure 4 COP with good fusion

Figure 4, also from the Objective Force Fusion white paper, graphically illustrates how fusion – or good KM – produces a much more digestible and actionable COP at the UA echelon of command given the same specific situation. At the UE echelon this challenge of producing a

digestible COP increases by several orders of magnitude. Multiple UA units will operate under the umbrella of the UE while other services, coalition, inter-agency, and even civilian inputs will provide data to the UE MI organization which must make sense of this information and provide the commander the knowledge needed to make the right decisions.

The Current State of MI Doctrine and KM

FM 2-0 provides little insight into how MI doctrine will address the need for an increased focus -- even if not adopting as core – on the function of KM. In its chapter on Intelligence and Unified Action, this capstone manual commits four paragraphs to Operational Level Intelligence. These paragraphs list the sorts of things MI provides a JFC commander and essentially outline the nature of information a JFC commander will expect from the supporting MI organization, some of the types of agencies with which that MI organization must coordinate, and the general purpose for intelligence at the operational level. These factors include such comments as "the continuous refinement of the OBs (Orders of Battle) for the entire array of the adversary's available joint and multinational forces in the battlespace." They are essentially guides to collection and production. The closest it comes to describing KM is proclaiming that a supporting MI staff "provides the relevant, timely, and accurate intelligence the JFC requires to execute the campaign plan."[19] While accurate and useful on a general level, this provides little guidance as to how MI is supposed to do this.

FM 2-0 does describe an organization of a Joint Intelligence Center (JIC) that supports a combatant commander and the provision for augmenting it with a Joint Intelligence Support Element (JISE). A JISE brings a "capability for all-source analysis and ISR management" that can be very valuable to the Joint Force Commander.[20] The discussion of the architecture for MI support to joint commanders includes formats for JTF J2 organizations to supportJFCs that lay a framework within which MI provides its knowledge management function to the JFC. This

[19] FM 2-0, para 2-4

organization includes sections concerned with plans, operations, HUMINT (J2X), disclosure and special security. It also includes provisions for the JISE and the capabilities it can bring. From that point the doctrine proceeds to discuss the importance of augmentation when necessary from a variety of agencies. The main thrust of this emphasis though is on techniques to enable reach to the required collection and production resources that may offer beneficial capabilities to the JTF. It fails to adequately address the details of the functions for creating the knowledge that is the responsibility of an MI organization at this echelon. It neither makes clear the specific activities that occur once data is collected nor addresses the educational, training, and cultural requirements for the knowledge workers that populate and empower MI.

A more detailed discussion of how the MI staff operates as part of an Objective Force command's staff interoperates appears in the concept coordinating draft on Battle Command and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) in TRADOC Pamphlet 525-3-0.1. In describing how the Army can meet the challenges that accompany the capabilities the Objective Force promises, this document charts a good course that MI would benefit from following to become a system with KM as its core function. It proposes "10 Big Ideas . . . [of the] organizational and operational concept for future Battle Command" that will "allow humans to do what humans do best in what is an intensely human business, while realizing the enormous potential of 21st Century technologies."[21] It divides these ideas into three tiers.

The first tier includes three ideas that concern "changing the way we think about and organize to command combined arms operations." This is similar to MI changing its core function to KM and can inform that transformation. The second tier includes five "ideas that depend principally upon the development and fielding of improved technology to realize the benefit of this concept."

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[20] Ibid., para 2-12

[21] TRADOC Pamphlet (TP) 525-3-0.1. *The United States Army Objective Force Battle Command (C4ISR) Concept* (U.S. Army Training and Doctrine Command: Fort Monroe, Virginia. Concept Coordinating Draft, 31 October 2002), 10.

The Battle Command experts in the Army are committing much of their transformational effort to the technology realm along with other force developers. This is evidence that the Army continues to invest adequate effort to work responsibly to ensure the Army acquires and deploys the technology that will enable the information superiority the Objective Force promises. The third tier, like the first, of these ideas, is more relevant to this study because it "depends upon the achievement of both cultural and technological advances" that will help MI realize the Objective Force vision.[22]

The first "big idea" in tier one calls for "Commander Driven – Purpose Oriented – Knowledge Based – Mission Orders" that provide the purpose for which MI provides intelligence to decision makers. Commanders must adopt the philosophy that their decisions rely on the steadfast production of knowledge that matters to their understanding of the situation. They play the central role in the creation of that knowledge by asking for and demanding knowledge that is relevant to their decisions. MI at the UE echelon likely will face challenges that include requirements to provide different knowledge products to the UE commander, subordinate commands, and strategic level commands.

The second big idea claims "Echelonment of Command is not the same as Echelonment of Unit Formation". Just as complex tactical situations will require tailoring of Objective Force units, the organizations of these units will require MI to tailor the knowledge it produces and presents to them. Echelonment of intelligence might be nearly completely distinct from either echelonment of command or of unit formations. It is entirely probable that a tactical Unit of Action may be in a situation in which its commander needs intelligence knowledge that only exists at the UE or higher echelon intelligence organizations at a given time. The UA may need that knowledge with a rapidity that precludes the linear, hierarchical structure of moving through multiple levels of intelligence echelons. The expansion of this idea is that the UE's intelligence organization should organize to facilitate direct coordination with specific subordinate UAs when

[22] Ibid., 10.

the specific situation merits it. It should be ready to facilitate the rapid interface between that consumer at the UA level and intelligence nodes at higher echelons or even in the civilian sector. Under industrial age models of management this might appear to become a crisis of control.[23] It will not be a crisis if the organization of MI forces prepares for this. The key to this preparation is nurturing a trust among organizations that welcomes virtual peer-to-peer relationships when necessary.[24] Given that the technological solutions will exist, the understanding by knowledge workers of their role in this system and their ability to participate in knowledge creation with the fewest possible barriers to creativity is essential. This understanding within the MI force can add to providing decision-makers at all levels superior understanding of the situation in which they operate.

The third first-tier idea is "Battle Command for Sustained Operations". This applies to MI to mean means that MI forces must establish and maintain the community of knowledge creation throughout the spectrum of conflict and peace. This capacity will benefit intelligence readiness as well as continued intelligence support when operations of all sorts endure for extended durations of time and over extended geographic dispersion.

The final two ideas that comprise the third tier of big ideas here concern the design of MI organizations. "Modular, Scaleable, Tailored Battle Command" and "Dramatically Smaller Deployed Footprint" refer to the ability transformed technologies will offer to tailor the sizes and population of MI organizations without committing more personnel or material resources to them than necessary. The implication here that merits more attention is that when the amount of personnel at any particular node in the KM system decreases, the workers who populate it bear an increased requirement to better understand both their consumers and the business of KM within

[23] "Crisis of Control" used here in reference to the ideas expressed in James R. Beniger's discussion of how organizations can deal with the challenges new technologies can present them in The Control Revolution.

[24] Peer-to-peer relationships involve users at different echelons collaborating directly when necessary regardless of any established hierarchical relationship. It might allow a battalion S2 to collaborate directly with an office in a national agency for a specific intelligence need.

the MI system. This demands a cultural change and a long-term commitment to educating, training, and assigning MI soldiers and officers so they will have sufficient capabilities to provide UEs adequate expertise. A JTF or UE will require the collection of data from across the MI disciplines and other forces to inform its commander's decisions. It will need workers who can fuse that information into relevant knowledge. To do this they must possess sufficient multi-disciplined and multi dimensional understanding of both the environment and the friendly forces. It is with this understanding – even expertise – that they will be able to provide the commander the knowledge needed to make the right decisions.

Emerging MI Concepts

The Army Intelligence Transformation Vision addresses these challenges in the concepts expressed in its Transformation Campaign Plan (AI-TCP). The importance of building an Army Intelligence force with people prepared to provide advantage to consumers in a KM environment is clear.

> "Army Intelligence in the Objective Force Era is a globally focused, rapidly deployable, *knowledge-based*, force composed of expert personnel harnessing the collaborative, analytical, communications, and presentation power of modern information technology to support leaders at the point of decision. It operates within a national, joint, and combined context and leverages the capabilities and expertise of the US Intelligence Community, friends and allies, academia, media, and industry to provide commanders focused, "near-certain" knowledge."[25]

To do this, the intelligence force has five core competencies. Figure 5, from the AI-TCP illustrates these competencies and how they depend on the foundation of collaboration among members of the MI community and MI organizations to deliver dominant intelligence to the Army.

[25] AI-TCP, 21.

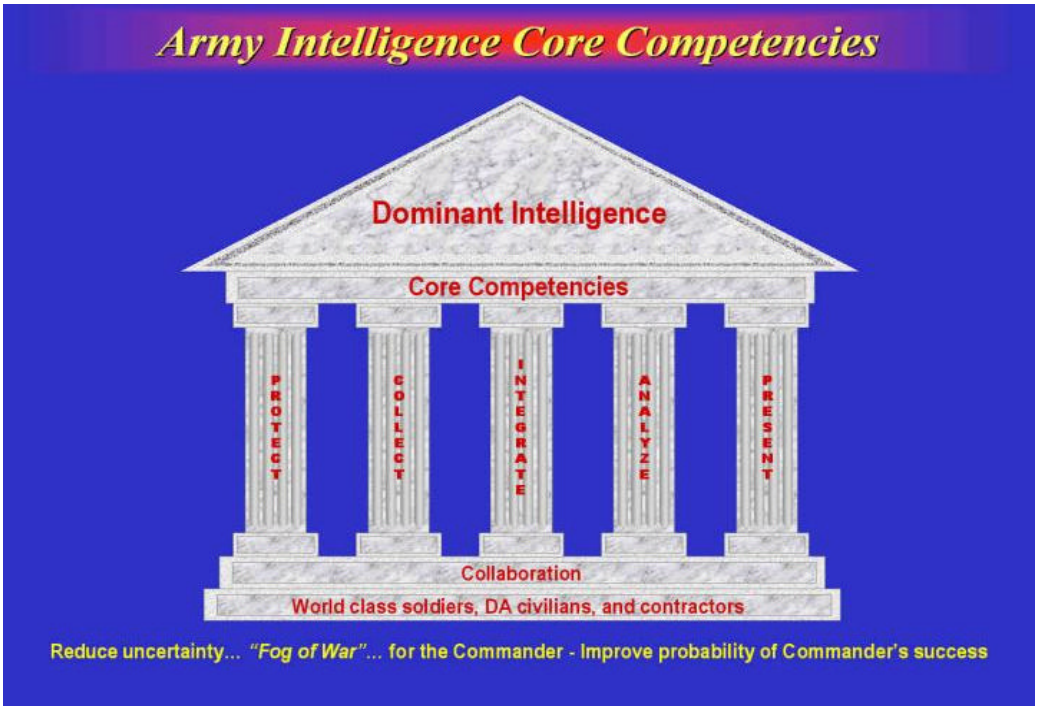

Figure 5 MI Core Competencies

One of these, "Unique Collection", comprises MI's historic collection function. The naming of it as "unique collection" and the description of this competency "to cover information gaps" also implies that collection of significant merit occurs outside of the Intelligence BOS. The competency of "Full Dimension protection [of] physical and cyber domains" represents the essential factor of information assurance that will always be a critical component to any institution or organization that requires information security. The remaining three competencies all fit under the KM function this study argues should be the core function of MI. "Integration of all intelligence and non-intelligence sensors to build the relevant RED and GRAY picture" represents a first step in creating knowledge from data as well as the first step in fusion. "Analysis to transform data into information and information into knowledge" represents the intellectual processing function of MI that adds relevance to the commander's requirements for knowledge about the threat and environment. The final competency of "presentation of knowledge in a format and manner that imparts immediate understanding" is the delivery component of KM that relies upon the other competencies being done well and the skill of the

knowledge workers at applying their expertise to the information they manage and the needs of the supported decision maker.[26]

The collaboration among MI personnel "organized into intelligence formations at the tactical, operational, and strategic levels" is the key to achieving the goal of dominant intelligence. Elevating KM to MI's core function empowers the force to develop organizations of the right size, right expertise, and right capability to serve their supported commanders. It enables reach to other intelligence formations when the situation presents requirements beyond the capability resident at each echelon. The AI-TCP envisions a system comprised of knowledge centers arrayed across what it calls the "infosphere" that acquire data, transform it to information and produce intelligence and knowledge. MI Knowledge Centers (KC) can be either traditional organizations at specific locations or virtual centers that operate across a collaborative communications network. The foundations for many of these knowledge centers already exist within such organizations as the Defense Intelligence Agency (DIA), National Security Agency (NSA) and the combatant commands' Regional Security Operations Centers (RSOCs). Each of these, and the new knowledge centers the force may need to produce, are "centers of excellence in a specific intelligence discipline or intelligence process" that provide "expert capabilities" to the nation's military forces. In the Objective Force, MI will strive to effectively leverage these knowledge centers "by a combination of reorienting a subset of Army personnel already assigned to these organizations, and assigning additional personnel specifically to create a tactically focused capability." At the operational level, the G/S/J2 at the UE and the MI organization supporting the UE will be a "the ultimate integrator and presenter of threat and environmental information for the commander."[27]

To facilitate the collaboration among all echelons of intelligence in the Objective Force, virtual or actual Integration Centers will provide a means by which different intelligence

[26] Ibid., 22.
[27] Ibid., 23.

Knowledge Centers can cooperate to provide the timely and relevant knowledge commanders need. In this sense the concept of KM for MI in the Objective Force must "be true to its roots, including expert personnel; increased resident knowledge in databases; data, information and knowledge mining; virtual reality wargaming and rehearsal; and enhanced presentation" that enables commanders to "understand rather than merely see the battlespace."[28] This obvious emphasis on KM from the very expression of the vision the Army has for the future of MI suggests that the culture and mind-set of the MI force must transform to adopt KM as its core function while sustaining its historic collection functions as a subordinate capability and function that other BOS share.

Figure 6 MI and the Tactical Infoshpere

[28] Ibid., 24.

The primary consumers of MI's products in the Army are the decision-makers at the tactical level that execute military operations. This concept must remain the motivating force for transforming MI doctrine, organization and education. Figure 6 from the AI-TCP illustrates a model for MI supporting decisions in the tactical infosphere. Decision-makers at the operational and strategic levels will always be important consumers, but it is the tactical level commander that MI cannot afford to fail. Providing the right knowledge to tactical UAs and creating an increased fidelity of knowledge gathered from the subordinate UAs account for the bulk of intelligence support the operational level commander needs for making decisions with confidence. MI fulfills its responsibilities at the strategic level as part of the larger Intelligence Community by achieving its missions to support Army decision makers while integrating active and meaningful collaboration MI knowledge centers and joint and national agencies.

The core competencies in the vernacular of the AI-TCP demonstrate how MI functions to support commanders in the tactical infosphere. It tailors the knowledge it presents to the commander's decision-making requirements. KM assumes the central role to provide decision-makers the situational understanding needed to dominate their battlespace. It also adds credence to the Army Intelligence Vision of a "transformed Army Intelligence Team projecting knowledge at the point of decision empowering the Objective Force to see first, understand first, act first, and finish decisively!" [29]

KNOWLEDGE MANAGEMENT BASED MILITARY INTELLIGENCE

Since Units of Employment will employ tactical units to attain operational and portions of strategic objectives in future operations, MI should direct its priority of transformation efforts to supporting the UE echelon. UE MI represents the cornerstone capability for the entire MI force in the future. The fate of many collection assets that will exist as part of the Future Combat

[29] Ibid., 25. Illustration from AI-TCP page 24.

System (FCS) appear in available UA requirements. MI for Units of Leverage at the strategic echelon will be inexorably joint and interagency formations and therefore fall outside the scope of this study. Fusion of the greatest diversity of data and information from multiple disciplines, multiple intelligence functions and multiple echelons of command will occur in the UE MI organization – knowledge center. This organization must be capable of managing and understanding tactical, operational, and strategic military matters of interest. It must be able to integrate political, economic, demographic, and cultural factors of military forces and civilian populations. As the key advisors to commanders at the joint point of decision, UE MI organizations and the G2s who lead them must leverage the entire power of the intelligence community and tailor products precisely to meet the requirements of the JTF or UE commander. They must also inform strategic and tactical decisions meaningfully in the process. Organizationally this means that UE MI organizations should be enough like tactical and strategic organizations that personnel can transition from one to the other – and visa versa -- effectively throughout their careers. Doctrinally this means that the unifying concepts for how different echelons of MI formations collaborate and cooperate while still supporting their unique commands must be consistent. The educational, training, and personnel implications of this for MI officers include the idea that the culture of MI should view service at a UE MI organization as the crucial event in a successful career.

Transforming Collection to a Supporting Role

The integration of sensor inputs is the cogent challenge that overshadows the actual employment of the sensors. Units of Action will have the organic capabilities to employ Unmanned Ariel Vehicles (UAVs), Unmanned Ground Sensors, vehicle warning and defensive aids, and a series of soldier systems to provide them sensor data.[30] Other weapons platform sensors will include counter-fire radar systems with fire support units, sensors in air and missile

defense units, and various sources of human reporting available in combat, combat support, civil affairs and combat service support units. The MI Company in the UA will field some of these sensors and a limited processing capability. ISR Integration efforts at each echelon coordinate specific sensors and sensor types against specific collection targets. The UA S/G2 houses the expertise for tactical ISR Integration and the coordination with the S/G3 necessary to ensure subordinate units execute the right collection. Whether it is an MI organization or another BOS organization that actually conducts the collection is irrelevant to the necessity for MI to manage the information that enables synchronization and makes sense of the collected information. ISR Integration appears as the critical component to the efficiency of collections. While the actual operation of sensors is a part of the collection function, ISR Integration – formerly called Collection Management -- is a KM function. It is a critical part of MI KM that ensures the collection function effectively supports the needs of the commander.

MI has historically focused much of its effort on collection because the vast majority of collection systems were unique to MI. When ground based signal interceptors, ground surveillance radars, tactical counter intelligence and access to imagery intelligence represented capabilities that only existed in the purview of MI, this argument for a collection focus of MI may have been merited. In addition to a wider array of collection sensors deployed across the Objective Force, soldiers at an increasingly wider array of echelons and formations will have access to information systems that afford even platoon leaders in Future Combat System (FCS) fighting vehicles the capability to view intelligence information broadcast from higher echelons. It is this potential for the availability of information and the threat that it might overload decision makers that KM must address. Overloads of irrelevant information will obscure understanding. KM provides MI the ability to integrate this massive array of data and information and create knowledge rather than just collecting even more information with questionable relevance. It

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[30] *Operational Requirements Document for the Future Combat Systems* as of 30 August 2002. Unit of Action Maneuver BattleLab, Fort Knox, Kentucky, 13

provides knowledge relevant to the specific military operation or impending decision. This need to provide relevance further supports the proposal that KM become the core function of MI.

Operators of the various FCS weapons platforms will need to employ the improved networking and sensor capabilities to make sense of their advanced information systems provide. Their training should develop the skills necessary to provide the inputs to the information system their sensors can empower. Employing their sensor capabilities must become a component of their battle drills on par with employing their lethal weapons. The Objective Force promises to bring with it battlefield video and still imagery collected by robotic and human operators' sensors. It promises signals and MASINT collectors employed by tactical soldiers. It also continues to rely in large part on collection from all disciplines executed by operational and strategic resources. This combination of "Space to Mud" collection will be a key component in the success of the Objective Force.[31]

Tactical HUMINT and counterintelligence will remain distinctly personnel intensive and generally unchanged by the fielding of new technologies. The soldiers who conduct tactical HUMINT and counterintelligence will necessarily remain a part of the MI BOS because the skills they need as experts in these disciplines are well established within the MI community. Language skills, source operation, interrogation techniques and liaison operations require intricate and specified training in methods and techniques that are not common to other combat, combat support, or combat service support functions. The actual act of sensing meaningful HUMINT information defies reduction to a few button presses during a battle drill. While they are in some ways similar to Military Police Investigation (MPI) and Criminal Investigation Division (CID) skills, they are distinct even from them in that the nature of the targets are not always suspected criminals endeavoring in violations of laws and regulations – they are most often enemy or neutral soldiers and civilians. MI must prepare to export sufficient training and organizational

incentives to other BOS to ensure the Army maintains a pool of operators of all systems sufficiently versed in collection and reporting to adequately populate the data and information that MI uses to create knowledge for the commander. Many of the sensor capabilities that will migrate to weapons platforms require operators to consider a wide variety of threat signatures. Essentially this is the same as teaching all soldiers the fundamentals of observing activities and submitting spot reports. The Objective Force will empower all soldiers with abilities to provide richer content to their spot reports – including data from embedded sensors -- more quickly than a written or voice report. The key and critical organizational and educational emphasis of MI's transition to a KM based force emerges here. The Army must develop a common capability and culture that encourages every soldier to be a knowledge worker of each discrete part of the KM system even when the KM function is secondary to a combat function for BOS other than MI. A large part of this includes the technological solution for transmitting and parsing of data and information to prepare it for data mining and processing in the knowledge and integration centers. Regardless of how effectively those technological solutions accomplish this though, soldiers must understand their role and actively participate in the process at every level.

The benefit of applying a model like the "digital nervous system" Bill Gates discussed becomes evident in the transformation to a KM based MI. The training and education of people who operate the dispersed nodes of a KM system are paramount to the whole system functioning effectively. Databases are necessary to enable the correlation and processing of the vast amounts of data and information with which a UE MI organization will deal. The value added only emerges from the ability to create knowledge from these vast piles of information. Integral to populating these databases is populating them with the richest possible content. Knowledge workers – soldiers – who input data, with the help of their information technology system, into knowledge centers benefit the KM system when the data they enter already holds some value as

[31] Steven L. Salazar. "Transforming the Intelligence Community", Transformation Concepts for national Security in the 21st Century. (Carlisle, Pennsylvania: Strategic Studies Institute, September 2002,

information. When Gates explained shifting people to "thinking work" he meant doing just that.[32] The ways to ensure people input rich data is to educate them to understand that important decisions depend on them reporting with the greatest fidelity their information system and situation allows every time.

The Dilution of Unfocused MI

Why should MI adopt one core function at all? If MI attempts to proceed without focusing on KM as its core function it risks diluting intellectual, human, and material resources without adding the value it should to the Army. As increasingly capable sensors proliferate throughout the Army, the need for one BOS to maintain collection as its primary or one of its primary functions reduces. Collection becomes a ubiquitous component of all operations. The Objective Force will rarely face a shortage of data available concerning its threat or environment. The more likely risk is that an Objective Force formation will face an inundation of data. In fact, since the Objective Force demands information superiority, if a formation lacks adequate quantities of information, then the primary mission of the force should be to collect that information it needs before conducting further operations. In such a case, MI would still contribute its unique collection capabilities. In either situation though, it is the creation of relevant knowledge that commanders will require to make the best decisions. A KM focused MI will be able to provide that knowledge better than if its efforts are more diluted.

Knowledge Management is the process that MI can apply to produce relevant knowledge that commanders need. Determining what information the commander does not know and needs to know generally precedes actual collection in any situation. After collection operations gather information, MI can then fuse disparate bits of information into answers to the commander's questions. As collection fills some gaps in knowledge other requirements emerge or become higher priorities. These are KM functions, that if not accomplishes adequately, will make the

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258.

execution of further collection irrelevant to operations. Because robust collection capabilities exist beyond MI, MI can relegate collection to the role of a supporting function. MI must focus on the core function of KM precisely because producing relevant knowledge about the threat and environment is so critical a requirement that no other BOS fulfills as its primary function.

Creating a KM Culture

KM influenced education and training will help foster a culture of sharing knowledge under all circumstances that is a critical component of knowledge centric organizations. A crew of a future anti-tank system may only need to know that a threat tank in their sights is in fact an enemy and within the range of their attack system to accomplish their mission to deliver lethal effects. An FCS platform may well be able to collect and report such information as the unit of assignment, echelon of formation, type of communication system, and the content of voice or data transmissions from the enemy tank. If the crew executes the collection portion of their battle drill properly. This increased richness of data might provide key insights into the understanding of what capabilities that enemy force will have in the subsequent few days of the operation. Such discrete bits of data as a thermal image profile of the threat piece of equipment or intercept of subtle electronic emissions may provide the pieces to a puzzle that could reveal a great deal about the intentions or remaining capability of the enemy in that operation. The technology of the FCS and training of the soldiers on that crew will enable the transmission of information into the knowledge centers. There, MI knowledge workers will be able to process it with other bits of data to create the knowledge relevant to the decision needs of the commander.

The migration of collection functions to weapons systems does not imply that anti-tank gunners will need to be signals analysts. It does mean though that they must know how to report all that data they collect and that some of it may be critical to solving knowledge problems at other locations regardless of the immediate impact on themselves. In one of Bill Gates'

[32] Bill Gates. Business @ the Speed of Thought. (New York, NY: Warner Books, 1999), 222.

examples, he referred to targeted marketing as a way to manage knowledge to produce more efficient and profitable results. Sales data including demographic factors, locations of purchases, dates of purchase, and the life expectancy of particular products became particularly rich and useful to the marketing of future products. By understanding what portion of consumers find particular products more relevant to their needs, companies can avoid often prohibitively expensive mass marketing campaigns and focus marketing more specifically and efficiently. Without the processing power of the digital nervous system and the culture that demands knowledge workers dutifully input all potentially relevant data in structured formats, these distinct piles of data might appear disparate and irrelevant to each other or any decision. Therefore, even if these piles of data appear before a decision maker containing some crucial piece of knowledge, the task of making sense of it may be too ominous and time consuming to attempt. It was the diligence of the knowledge workers at each node inputting the data their organization required that enabled the fusion of apparently unrelated data into knowledge that revealed new opportunities to exploit. Knowledge workers created this knowledge and informed understanding by decision makers as a result of their culture to share information across the digital nervous system.[33]

The Objective Force that relies on rapid deployment and smaller footprints seeks this same sort of economy and efficiency. This efficiency results from manifesting a collaborative culture in a KM focused context. In a military operation, in which rich data populates the infosphere a similar opportunity to create dominant intelligence emerges. The UE MI knowledge center could rapidly discover the relevance and importance of information that otherwise might have gone unnoticed and enable the UE to adjust a course of action to capitalize on potential for victory that would not have appeared possible without the focus on KM.

The culture of sharing information and discovering relationships to decisions is the goal of a KM focused MI. The current culture of MI suffers from its place in the broader Intelligence

[33] Ibid., 231

Community. "Cultural problems in the intelligence community are serious."[34] The lack of a collaborative organizational culture with streamlined processes for sharing information for analysis and intelligence between agencies supporting decision makers cripples the intelligence community's. Indications of this at the strategic level appeared in comments by the Director of the CIA, John Deutch when he noted the importance of transforming the culture of the intelligence community. "The Director of Operations [of the CIA] 'jealously guards its information holdings, including those that could be of use to the analytic community'"[35].

As a key consumer of that analytic community, the military faces several obstacles that Lieutenant Colonel Steven L. Salazar identified in his argument for the necessity of a major transformation in the intelligence community. He discussed the need for creating a hierarchical and integrated organization instead of the community of disparate agencies. He noted that the separation between elements of tactical intelligence conducted by the military and political [strategic] intelligence conducted by other organizations has created obstacles to providing commanders the knowledge they need. In the context of the transformation of MI, the separation of intelligence operations in the Army between tactical, operational, and strategic issues has also become increasingly awkward. When a historically tactically focused brigade or division sized force becomes a Unit of Employment or a JTF, its tactically focused intelligence capabilities are hamstrung in providing the operational and strategic levels of relevant intelligence the commander needs unless they receive significant, ad hoc, augmentation from other agencies. Though this augmentation is included in doctrine, the mention of National Intelligence Support Teams (NISTs) in a Field Manual does little to bridge the cultural gap that appears when this augmentation shows up.

A culture of sharing knowledge and analysis across organizations seems to be absent from MI. Overcoming the cultural gap that obstructs collaboration when an ad hoc intelligence

[34] Salazar, 263.
[35] Ibid., 263.

cell forms consumes time and effort. That is time and effort better spent addressing the intelligence needs of the commander. Despite the claims in the AI-TCP to create an Army Intelligence capability that bridges these gaps to operate as a seamless part of the intelligence community, "the intelligence community is not on course to meet the Army's requirements."[36] Instead when faced with emerging intelligence requirements that are far more complex than twenty years ago, the Army resorts to intelligence organizations that are "a conglomeration of ad hoc committees, cells, centers and studies that attempt to pull together a myriad of intelligence functions and issues."[37] These efforts represent current attempts to create an integration of intelligence that the Army Deputy Chief of Staff for Intelligence, Lieutenant General Robert Noonan, calls "'space to mud,' which is an architecture that can leverage everything that pertains to the commander's requirements . . .[through] a collaborative environment that allows [the commander] to grab information that resides within the intelligence community." However, the intelligence community has not organized to provide the "fused" intelligence in this way because the current culture imposes barriers to collaboration that isolate the multiple agencies that produce intelligence.[38] While many of these barriers result from collection, processing, and archiving automation systems that are not interoperable, many more of them stem from a combination of bureaucratic procedures and cultural aversions to sharing what has been collected and analyzed.

A Vision for Cultural Transformation

Sharing between intelligence organizations supporting commanders and decision makers at all levels is crucial to a KM focused MI. Collaboration implies as free as possible a flow of information, knowledge and ideas among people working in every intelligence organization that

[36] Ibid., 249.
[37] Ibid., 250.
[38] Ibid., 258.

has access to some portion of knowledge applicable to a commander's decisions.[39] Figure 7 below illustrates how compartmentalized and "stove piped" intelligence functions that currently exist make collaboration difficult. To collaborate with theater or strategic level resources, a tactical S2 must deliberately navigate the successive levels of command and intelligence echelons unless the particular bit of information needed happens to be broadcast. If the tactical level S2 has clearly defined requirements prior to an operation, this process might normally be successful. If the S2 somehow failed to foresee a requirement or if new requirements emerge this process is difficult and cumbersome. Given the expected complexity and fluidity of Objective Force operations, it is very likely that requirements will emerge during the conduct of operations. Therefore, that S2 should be able to collaborate with as few obstacles as possible when these new requirements emerge. A KM focused MI will remove many of those obstacles.

[39] The argument for compartmentalization often rests on information security. This is the "green door" phenomenon of intelligence organizations refusing to disseminate information because a consumer might not have appropriate access or a "need to know". However, if each of our intelligence organization ensures the personnel and information security mandated by layers of regulations, then the risk of unauthorized disclosure is really not a threat. The culture that precludes sharing is evidence of a lack of trust within our own forces with which we must dispense to achieve better collaboration.

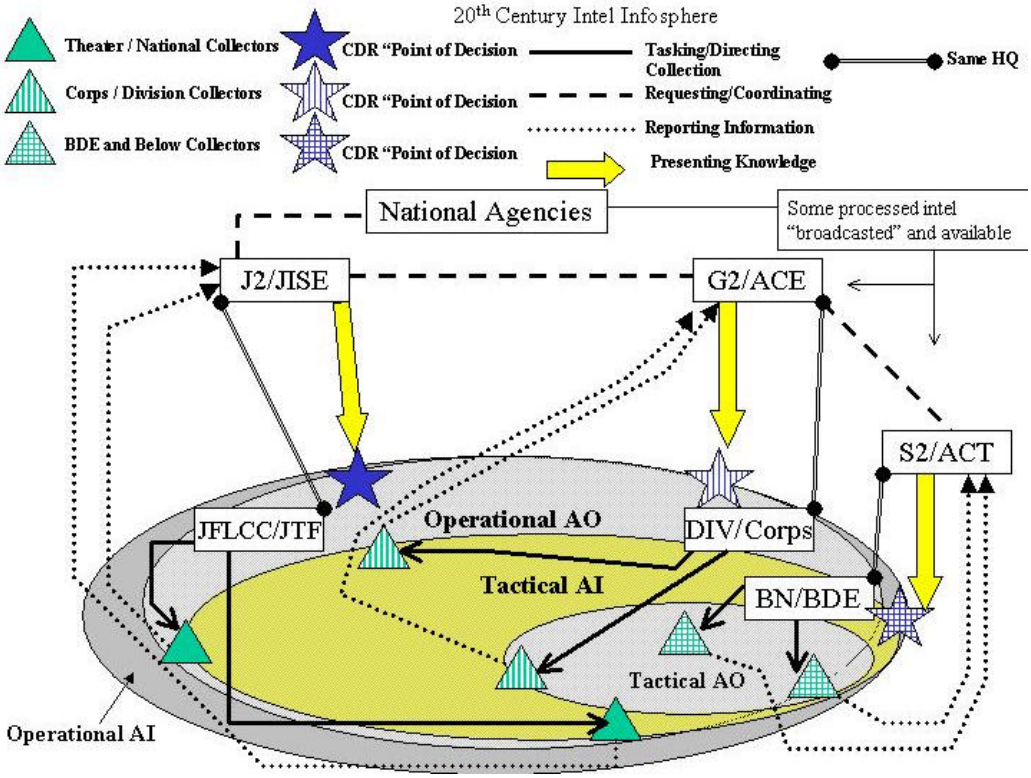

Figure 7 Stove piped Intelligence

Fostering that culture of sharing as opposed to a culture of compartmentalization presents a challenge in transforming MI to better meet the challenges of the 21st century environment. This emerging environment includes as a critical component the modular deployment of Units of Action and Units of Employment with increased rapidity and flexibility. This will require MI to develop processes that empower its organizations and soldiers with similarly increased flexibility. Changing a culture though is difficult and seldom rapid. A change in culture flows from other changes in organizations fueled by a vision of the transformed culture. Probably the best aspect to the Army Intelligence Transformation Campaign Plan is that it provides a vision that articulates the culture. In describing the vision of Army Intelligence in the Objective Force, the AI-TCP states:

> "Army intelligence in the Objective Force era is a globally focused, rapidly deployable, knowledge-based force composed of expert personnel

> harnessing the collaborative, analytical, communications, and presentation power of modern information technology to support leaders at the point of decision. It operates within a national, joint, and combined context and leverages the capabilities and expertise of the US Intelligence Community, friends and allies, academia, media, and industry to provide commanders focused, "near certain" knowledge.[40]

The terms in this vision that infer that MI should adopt KM as its core function are: Knowledge-based force; expert personnel; collaborative, analytical; within a national, joint and combined context; and provide commanders focused "near certain" knowledge.

[40] AI-TCP, 21.

"Knowledge-based force" clearly implies a cultural shift away from compartmentalization. Making sense of data and information in relation to commanders' needs is the key function MI provides more importantly than collecting and shuttling the data itself. MI must be able to understand commanders' needs and prioritize the intelligence knowledge it produces. This implies that ISR Integration – not so much the actual collection – is critical and deserves a prominent place in the development of MI leaders' training and education. It also implies that analyzing collected data and synthesizing knowledge from often-disparate disciplines and sources including classified and open sources. Most of all, it implies that organizations across this force are capable and willing to reach to other organization both to gain information needed in producing the knowledge for supported commanders and to provide information other organizations need. Figure 8 illustrates a modification of the model presented to illustrate a current stove piped organization of intelligence in the force. It adds the concept of integration centers that will emerge as MI knowledge centers become more comfortable working collaboratively. The concept of knowledge integration makes information, intelligence, and knowledge collected, fused, and created at all echelons available to consumers at each echelon.

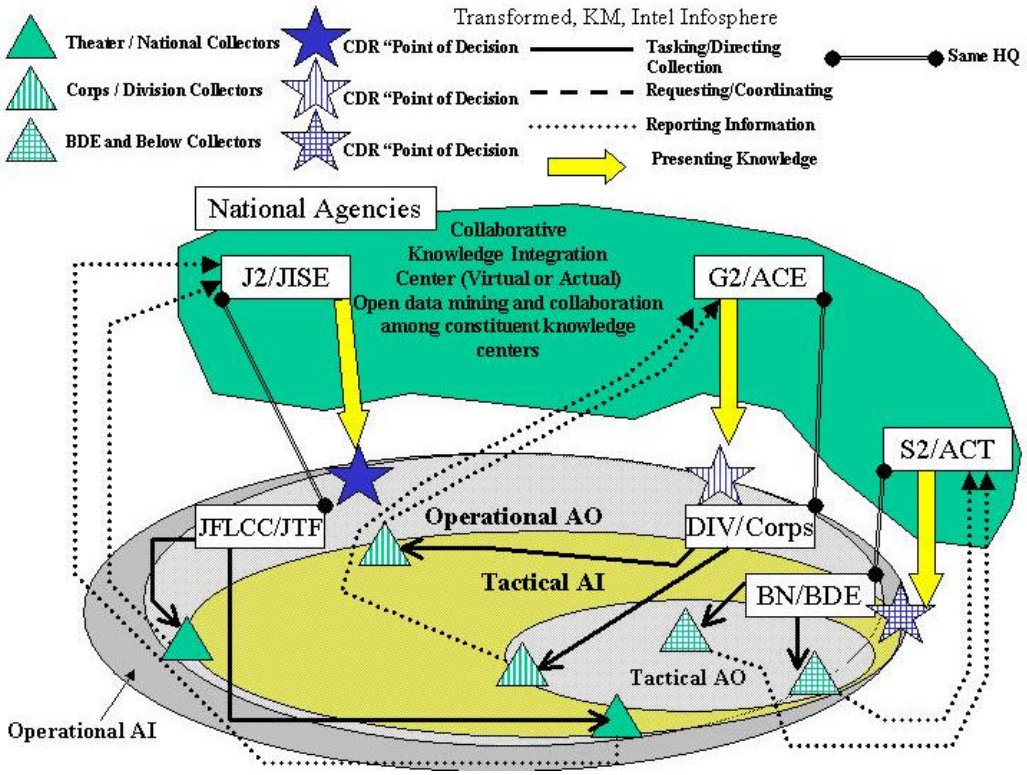

Figure 8 Collaborative Knowledge Integration Centers

MI's education and training systems for soldiers, civilians, officers, non-commissioned officers and warrant officers must develop "expert personnel." These experts must be experts at analyzing information, fusing intelligence and producing knowledge. While sensor operation functions on the battlefield of the Objective Force migrate to weapons platforms, a KM culture must trust the operators of those sensors. Whether these operators are MI or combat arms soldiers – the force must trust them to operate their sensors with adequate skill just as commanders trust combat arms soldiers to employ their weapons today with adequate skill. Meanwhile, expert MI soldiers must develop skills more akin to Library Science specialists who are able to conduct multi-sourced research within the military and intelligence context.

"Collaborative, analytical . . . within a national, joint and combined context," implies that members of the MI force must be familiar with the intelligence community as a whole. The

operations of MI organizations must include regular collaboration with other intelligence organizations in the Army, other services, national agencies, and non-governmental sources of information and knowledge. Common operating procedures and information archiving protocols across the intelligence community will enhance collaboration. As the technology supporting the Objective Force matures, interoperability protocols should become authoritative doctrinal procedures. Common, authoritative TT&Ps will ensure that every MI Knowledge Center establishes essential collaboration paths. Short of the realization of common intelligence community protocols, MI organizations and their personnel must understand how to access whatever resources they need to satisfy their commander's requirements. MI should seek to influence the Director of Central Intelligence – and the Department of Defense -- to implement policy that requires universal intelligence interoperability to ensure this transformation benefits the nation's entire intelligence community. Short of such policy guidance, this capability will emerge from repetitive cooperation among varied intelligence agencies, doctrine that emphasizes the importance of collaboration to produce fusion, and training and education of MI personnel that empowers them to operate effectively within a joint and combined context.

TRANSFORMATION VECTORS

The three critical vectors MI should follow as it transforms its core function to KM are doctrine, organization, and education. Training and operations in units offer the opportunities apply the changes that occur in these vectors. The operational level should be the focus of MI's capstone doctrinal manual FM 2-0. MI should place the priority of effort for designing organizations at the Unit of Employment. To produce the knowledge required by the UE commander, the UE MI organization will necessarily have to work in harmony with strategic and tactical level MI efforts. MI organizations at tactical and strategic echelons should then key their organizations toward operating in concert with the UE MI knowledge center. Education applies to all members of the MI force but the initial focus of its transformation should be the officer corps.

MI officers will fill the key leadership and managerial roles that orchestrate the harmonious operations of MI organizations guided by a doctrine based on Knowledge Management to satisfy the commander's needs. MI officers educated to adequately apply KM to MI will serve as agents of change implementing the effects of doctrinal and organizational changes as they populate the force.

Doctrine

MI doctrine consists of at least twelve field manuals, most of which are due for revision due to their age. The majority of these are full of encyclopedic information concerning the capabilities of MI assets and resources and procedures for employing them within the context of intelligence disciplines. The transformation of these has begun with the October 2002 draft of FM 2-0, Intelligence. FM 2-0 will serve as the next capstone MI doctrinal publication. The current draft does a fair job of describing the context in which MI supports the commander. It describes the intelligence process, intelligence organizations, and the intelligence disciplines. It does not provide a clear articulation of the vision for MI that the MI-ATC articulates so well. It describes much of how MI operates without articulating how the MI force should think about performing its mission. The detailed listing of how MI performs its functions is valuable, but the capstone manual should begin with and emphasize throughout how to think about conducting MI to support commanders.

One major weakness of FM 2-0 is that it fails to propose a vision for the conduct of prominently. FM 2-0 begins with a description of the operational environment. It provides a concise overview of the nature of threats in the 21st century. The text of the FM does not even mention MI until paragraph 1-27. There it describes the role of intelligence:

> "The commander needs intelligence about the enemy and the environment in order to execute battles, engagements, and other missions across the full spectrum of operations. Intelligence supports force protection by alerting the commander to emerging threats and assisting in security operations. Intelligence assists the commander in visualizing his battlespace, organizing his

> forces, and controlling operations to achieve the desired tactical objectives or end state."[41]

This hardly seems a worthy proclamation concerning how the MI force should think about fulfilling its mission. It does not even define the mission of MI, much lessarticulate any sort of unifying vision. At the least, this is a dubious way to introduce the capstone doctrine for a Battlefield Operating System that is absolutely crucial to the success of Army forces. The manual then proceeds to provide useful and relevant descriptions of functions MI performs and disciplines in which it performs them. A comparison of the description of the role of MI in FM 2-0 with the beginning of FM 3-0, the Army's capstone operational doctrinal publication reveals a clear difference in how doctrine can immediately provide some sort of unity and vision to the force:

> "Army forces are the decisive component of land warfare in joint and multinational operations. The Army organizes, trains, and equips its forces to fight and win the nation's wars and achieve directed national objectives. Fighting and winning the nation's wars is the foundation of Army service – the Army's non-negotiable contract with the American people and its enduring obligation to the nation."[42]

FM 3-0 goes much further toward emphasizing to the Army how to think about its operations and laying a framework upon which forces can build their operations than the current draft of FM 2-0 does for MI. MI should begin the presentation of its doctrine in much the same light as FM 3-0. It should set the standard for MI as FM 3-0 sets the standard for the Army in general. Additionally, if it is one of the key goals of MI is to present knowledge clearly and in ways that are easily and rapidly understandable, the fundamental ideas of MI doctrine should be clear and prominent in doctrinal literature. FM 2-0 would do better to borrow from the AI-TCP to craft the "bottom line up front" of this key manual. Army Intelligence has already committed a great deal of intellectual effort in the AI-TCP vision of Army Intelligence and the Objective

[41] FM 2-0, para 1-27.
[42] FM 3-0, para 1-1.

Force, and that vision can inform the words with which the capstone MI doctrinal manual should begin.

FM 2-0 should begin, "Military Intelligence projects knowledge of the threat and the environment at the point of decision empowering commanders and their units in the joint and combined environment to see first, understand first, act first, and finish decisively. MI provides a globally focused, rapidly deployable, knowledge-based force composed of expert personnel harnessing advanced collaborative, analytical, communications, and presentation power to support leaders at the point of decision. MI operates within a national, joint, and combined context and leverages the capabilities and expertise of the US Intelligence Community, friends and allies, academia, media, and industry to provide commanders focused, "near-certain," knowledge in a timely fashion. MI increases the probability of commanders' success by skillfully applying its core competencies to reduce uncertainty across the full spectrum of operations. These competencies are: Full Dimension Protection of physical and cyber domains; Unique Collection to cover information gaps; Integration of all intelligence and non-intelligence sensors to build the relevant RED and GRAY picture; Analysis to transform data into information and information into knowledge; and Presentation of knowledge in formats and manners that produce immediate understanding."[43]

The capstone doctrinal publication should then proceed from this unifying idea to describe how the force leverages its core competencies while emphasizing the importance of creating and maintaining a culture of collaboration with a view towards satisfying commanders' intelligence requirements. It should introduce and describe the intelligence process, intelligence functions and the nature of the intelligence disciplines.

Encyclopedic references for conducting MI operations and tactics, techniques and procedures should not consume much space in this capstone document. Subordinate publications

[43] This is a combination of the key components of the Army Intelligence Vision for the Objective Force articulated in the AI-TCP pages 17-22.

of MI doctrine should be the venues where MI articulates the more detailed methods, procedures, tools, and tactics, techniques and procedures. However, the brief introductions of various ideas, components, types of operations, organizations, and disciplines FM 2-0 would provide should serve as the foundation for the subordinate manuals. Subordinate manuals nested in FM 2-0 should include: Intelligence Preparation of the Battlefield; Support to Targeting; Intelligence, Surveillance, and Reconnaissance (ISR) Integration; Applying Signals Intelligence; and Human Intelligence Operations. Regardless of the specific documents that populate MI doctrine, they should all nest vertically with the concepts expressed in FM 2-0 and horizontally with relevant documents articulating doctrine for other BOS as much as possible. In addition to the benefit of reducing the confusion a soldier studying these documents might encounter, this nesting will go far to emphasizing the collaborative and knowledge based culture MI ought to strive to produce.

Organizations

MI organizations will look to doctrine to guide their operations. Doctrine will also contribute to cultural changes in these organizations. Transforming MI to a knowledge management focus ought to elevate the prominence of organizations that conduct KM over those that conduct collection. MI organizations that provide knowledge management for intelligence information will become the most critical MI units. Similar to the Analysis and Control Elements (ACEs) at divisions and corps and Regional Security Centers (RSCs) that support theater commanders, they will form the Knowledge Centers in which the fusion of intelligence and creation of relevant knowledge occurs.

The command and control of operational units and the command and control of the Knowledge Centers should be distinct from one another due to the differing requirements for equipping, deploying, and training the forces. Whereas at the division and corps echelon today, ACEs exist on the Table of Organization and Equipment of Military Intelligence Battalions and operate under the operational control of the supported commander's G2, future UE Knowledge

Centers should reside in the organization for the UE battle command unit as part of the G2. This will provide the G2 – who remains the commander's primary advisor for intelligence – the authority to manage intelligence information and knowledge with the greatest possible flexibility and responsiveness.

The current baseline organization of an Analysis and Control Element (ACE) appears in FM 34-25-3 (1996). Figure 11, below, illustrates that organization. The critical KM weakness of this organization is that it follows a logic prescribed by the MI disciplines of collection capabilities.

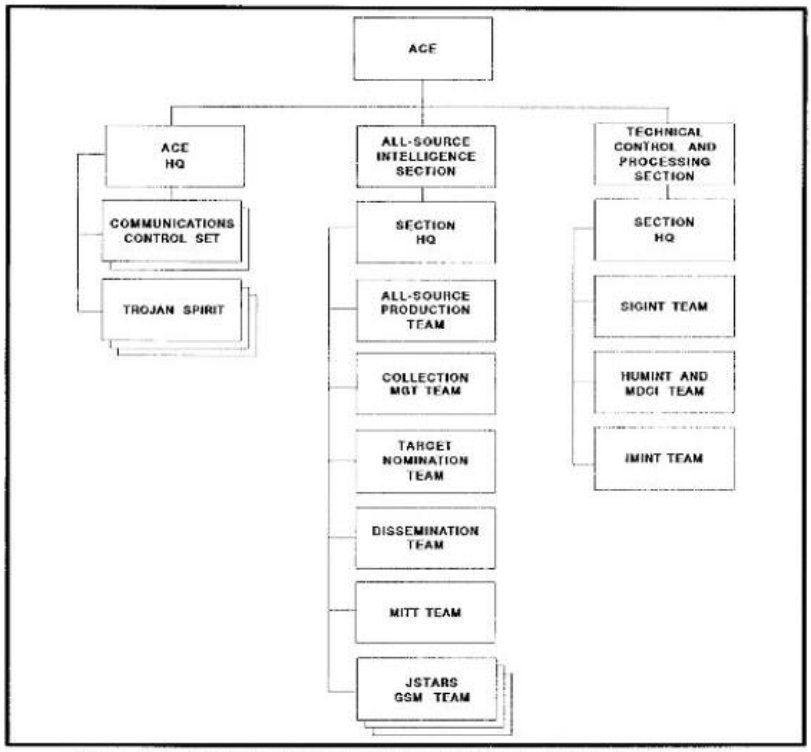

Figure 2-1. Analysis and Control Element (division, A-series base TO&E).

Figure 9 Analysis and Control Element Organization

The UE KC will better serve the commander if it organizes around the logic of the MI core competencies so it can best produce the knowledge the commander will need for decisions. The figure below illustrates a potential organization for the UE MI KC.

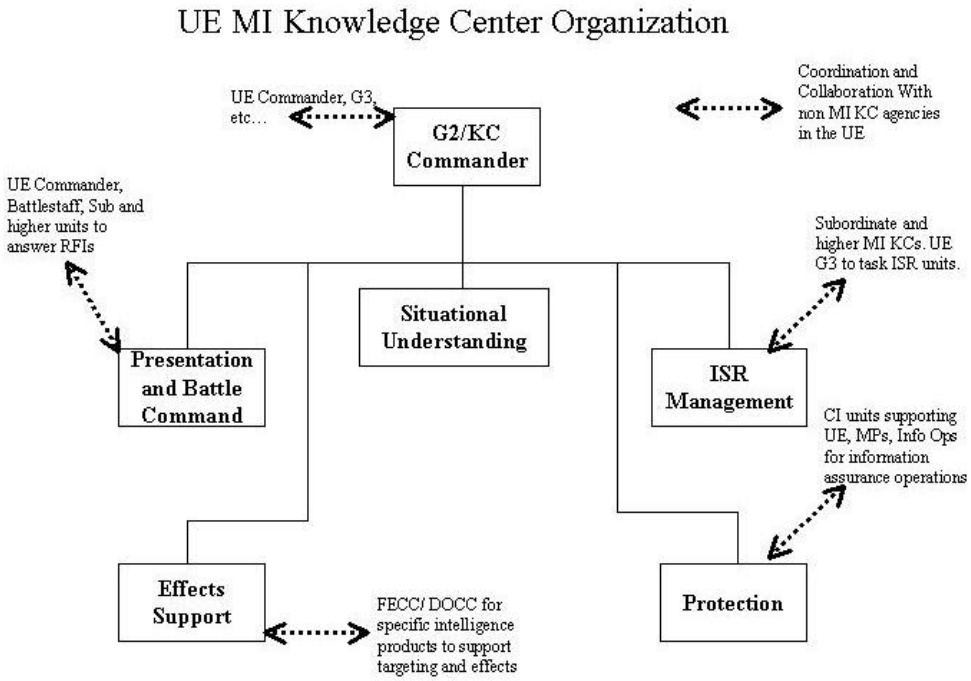

Figure 10 UE MI Knowledge Center

With the G2 serving as both the UE commander's primary intelligence staff officer and the commander of the Knowledge Center, this ensures that the link between the commander, his staff, and the knowledge center responsible for providing knowledge of the environment and threat is secure. This arrangement frees the commander(s) of any operational MI units to employ their collection assets as directed by the commander without having to provide administrative, logistical, or supervisory support to the analysts working at the UE headquarters. MI knowledge centers at subordinate Units of Action will collaborate with the UE MI Knowledge Center according to the priorities the G2 establishes. The UE MI Knowledge Kenter will likewise

establish collaboration links in the infosphere with higher and adjacent echelon MI knowledge centers.

The integration of knowledge to support the UE commander will be the key responsibility of the UE MI knowledge center. Tactical and strategic level intelligence issues and requirements converge at the operational level in the UE. The UE MI is the most important in organizing MI forces because all levels of intelligence are important and inexorably related to UE operations. The UE MI knowledge center will have access to information relevant to any part of the UE commander's battlespace. Its leaders and soldiers will understand their supporting role and ensure maintenance of collaboration networks supporting the UE. They will also understand their role with the priorities of the theater level command.

The actual organization of the UE MI knowledge center could begin with the current model of a corps ACE with its Collection Management, Single Source Analysis, Liaison, All Source Analysis and Production, and Dissemination cells by modifying those cells into core competency cells. These cells will accomplish KM functions in concert with the MI core competencies and MI tasks expressed in FM 2-0 and the AUTL. They include:

- Situational Understanding. This cell fulfills the majority of the competencies of integration and analysis to combine data and information from across the infosphere into knowledge relevant to the commander's needs.

- Effects Support – This cell also conducts integration and analysis as well as presentation by working in close coordination with the lethal and non-lethal effects elements of the command. It answers questions about the threat developed in the effects targeting process and detects and tracks potential targets to ensure the effects delivery components of the force can attack with the greatest precision. This cell also provides the bulk of the effort in assessing measures of effectiveness and battle damage assessment for both lethal attacks and offensive information operations.

- ISR Management – This cell accomplishes essentially all of the historic roles of a Collection Management cell by conducting requirements management and providing direction to organizations that execute collection.

- Protection Cell – This cell includes both the information assurance aspects of physical, personnel and information security for the UE MI Knowledge Center itself and manages requirements and assessments of counterintelligence forces supporting the command.

- Presentation and Battle Command Cell – This cell is essentially the "face" of the Knowledge Center to the supported command. It ensures all products from the Knowledge Center are as timely and relevant to the needs of the consumer as possible. It also manages the information flow of requests for information to the Knowledge Centers from non-MI elements of the force. Obviously time-sensitive combat information of immediate need to a consumer will often bypass this cell in its initial presentation, but this cell must be diligent in keeping track of all products the Knowledge Center presents to ensure its efforts remain focused on the needs of the supported commander as its top priority.

This organization will require soldiers, NCOs and Warrant Officers who are experts in specific intelligence disciplines and functions as well as various environmental issues. It will also require officers with the proven capability to lead this organization of expert personnel and manage immense quantities of information while understanding the knowledge requirements of the commander. The G2 should be a senior officer who has had previous experience at Unit of Action, Unit of Employment, and strategic level positions and understands the operations of the Unit of Employment and its supporting UAs. The chief of each cell should be a field grade officer with a strong understanding of all facets of Army and joint operations and an expert grasp of both military and environmental issues likely to be relevant to commander's decisions. These cell chiefs should have previous experience in either UA knowledge centers or strategic level knowledge centers so they understand and can perpetuate a culture of collaboration among intelligence echelons. They should also have a solid working knowledge of the functions of all the MI disciplines so they can effectively understand the impact of sources and methods on the reliability and relevance of information they are integrating.

Education

The discussion of education for a KM focused MI in this study concerns the education and training of MI officers. NCOs, Warrant Officers, and civilians will require significant investments of training and education to produce the expert specialists MI will need. At the UE level, commissioned officers are most likely to be the individuals required to have the depth of general knowledge to make the most sense out of massive amounts information their

organizations will transform into knowledge for the commanders. The challenge MI officers educated under the current MI officer education system will face is that the bulk of what they learn in the MI Officer Basic Course and the MI Captains Career Course focuses on tools and procedures for collecting information and general Army staff officer training. Understanding the capabilities of specific MI collection and developing the skills to operate data processing systems consume most of the training time at both these courses. Despite a good effort to expose students to threat weapons systems and tactics, these courses do little to provide future MI officers a solid foundation in understanding the complex future operational environment. Specific courses in each of the MI disciplines available to some officers enhance their skills at employing signals, imagery, or human intelligence at the tactical level add some depth to officers fortunate enough to receive this training. These efforts still fall short of providing the research and fusion skills a leader needs to effectively translate massive amounts of apparently disparate data into trends and patterns and create relevant intelligence from that. Missing from the formalized training system are studies in economics, geography, demographics, and history sufficient to empower an officer to rapidly synthesize data into credible and reliable knowledge. MI officer education should continue to provide its officers credible and usable technical skills in the processing and presentation of intelligence but should add significant educational opportunities that empower officers to understand how adversaries might apply all the potential expressions of power in the current operational environment anywhere in the world.

There are four specific modules of instruction that are essential to add to the curriculum of MI officer education. The first of these is research skills in the military and defense context of information systems. Second, history and military history of regions in which conflict is likely in the next twenty years to include the cultural influences upon each region comprise another pair of mutually supporting modules. Third, MI officers should undergo some survey of macroeconomics because military operations are often inexorably linked to issues of economics.

The fourth of these essential educational modules should be the study of ethnic and religious motivations in areas of potential conflict.

The educational foundation a transformed curriculum of MI officer education builds will empower officers to understand information and knowledge in the Objective Force. Officers must continue their education with studies of specific doctrines, tactics and personalities in potential adversary nations and organizations. MI leaders will formalize monitoring of officers' continuing education. Approaches to providing the Army MI officers with this broad base of understanding might include establishing academic undergraduate pre-requisites for accession into MI. The Army MI Education system might authorize MI officers to attend a civilian graduate education program that meets the criteria the force requires prior to leadership assignments in certain positions like the Army provides for Foreign Area Officers today. The distance learning initiatives on which the Army has embarked also hold some good promise for the continuation of professional development and education of officers.

The vision for MI should guide MI officer education. Transformed MI doctrine should express this vision in the capstone doctrinal publication. From this guidance, the MI schools can develop the specific areas of study that will create the expert personnel who will populate the MI force. This vision should also guide MI branch to establish policies that ensure officers have the right educational background and experiences that will assist them at providing their commander's the right knowledge in an increasingly complex world.

RECOMMENDATIONS

Starting with the current draft generation of MI doctrinal manuals the Army should adopt the vision expressed in the AI-TCP as the unifying theme to MI doctrine. Transformational doctrine should focus its priority on knowledge management rather than on tactics, techniques and procedures for particular systems or functions. Doctrine tied to current technological capabilities is certain to become outdated and unlikely to keep pace with the rapid advances

technology promises in the 21st century. While MI doctrine is changing to reflect the how to think about MI in the Objective Force, leaders must be able to trust MI personnel at all levels to apply the skills they already have to accomplish specific tasks within specific disciplines. The next priority in doctrine should be to developing requirement and collection management doctrine that is consistent with both the operational doctrine of the rest of the Army and the procedures of joint and national intelligence functions,

Organizationally, current ACE organizations should fall under the authority of the Division or Corps Headquarters, G2, while the sensor operating units should release the fusion function and focus on the business of executing collection. These organizations should then internally organize subordinate cells with a collaborative focus. These reorganizations will generate user level initiative that the force should capture and share throughout the MI force in a series of lessons learned publications following exercises and operations. Commanders of supported units should provide input to the reorganization process by providing structured feed back to the AI-TCP team expressing how well organizations satisfy their intelligence needs.

The MI officer education system should restructure its curriculum toprovide officers a broader based understanding of potential environments and training in managing information based organizations. The professional development paths for MI officers and soldiers should similarly chart the course for assignments as intelligence knowledge managers at increasingly complex echelons of intelligence.

To unify this transformation effort, the Army's Deputy Chief of Staff for Intelligence, G2, should initiate and sustain the propagation of the vision embodied in the AI-TCP, which should also soon appear in doctrine. The synergistic effect of this emphasis, doctrinal revision, reorganization and education and professional development reforms will, over time, affect the cultural shift in MI to a force that identifies itself with collaborative knowledge management as its core function.

CONCLUSIONS

Creating knowledge to inform decisions will be the single most important function of MI.KM encompasses all the activities that create knowledge from information through analysis, fusion, dissemination and presentation. Current MI doctrine; organization and education programs focus on the collection of data more than the analysis of the information and creation of knowledge. Organizations and the information systems that support them are currently mired in a culture of compartmentalization that makes collaboration difficult in spite of the genuine efforts of personnel to collaborate effectively. The transformation of this culture is critical to transforming the core function of MI. More importantly creating and maintaining an MI culture in which the collaborative sharing of information and intelligence provides operational commanders the knowledge they need enhances the Army's ability to achieve and maintain information superiority in the Objective Force.

Some collection functions and sensors currently under the auspice of MI will migrate to weapons platforms. Whether UAVs, Ground Based Tactical SIGINT (Prophet), and Ground Surveillance Radars and other Sensors remain under the aegis of the Intel BOS is matter of force development that is irrelevant to the adoption of KM as a core function. Collection remains an important, but supporting, part of the MI mission. The proliferation of collection assets across the army combines with the vision for MI expressed in the AI-TCP to lay the context for the future of MI in which the force identifies its core function as Knowledge Management.

Operational level MI at the UE is the nexus for the creation of intelligence and knowledge drawing from the widest array of sources from across disciplines and levels of military operations. The main effort of MI force design should focus on the UE MI organization and follow lines of operation from there to develop other KM and collection organizations. While current Division and Corps ACE organizations can serve as a starting point for designing the UE MI Knowledge Centers their discipline based organization lends to compartmentalization that a

KM based MI would seek to overcome. Therefore a more functionally based design with more opportunities for fusion in the knowledge center and integrating cooperation with external knowledge centers should be the aim.

MI doctrine must focus on the ideas of how members of the MI force think about creating knowledge from disparate disciplines and sources and how to best present tailored relevant knowledge to decision makers. Additionally the organization of MI doctrine should demonstrate a vertical and horizontal nesting within concepts in the Army and the US Intelligence Community.

MI officer education must prepare MI leaders to integrate the widest possible array of sources and disciplines while accomplishing specific knowledge management at whatever echelon assigned in accordance with the KM focused doctrine. The goal of MI education should be to produce expert analysts and leaders at each level that understand and can apply KM functions to make sense of information about the threat and environment. MI officers should have educational and/or work experience in tactical and operational military operations of both friendly and significant array of potential adversary forces; political science, history, sociology, economics, civil engineering/urban planning, agriculture, communications and a solid foundation in the sciences of information technologies and weapons systems. Some degree of this education should be pre-requisite for accession into MI and a further degree should be pre-requisite to assignment at varying knowledge centers at each MI formation echelon.

As long as the Army maintains an adequate commitment of resources to sensor development and the training of sensor operators regardless of their branch or assignment, transforming the core function of MI to Knowledge Management will have no negative effect on the Army. The benefit of transforming the core function to KM will reveal itself increasingly over time as the emergent organizations put personnel in positions where collaboration and fusion are easier because the barriers of compartmentalization will be reduced. A culture of knowledge creation from sharing and collaborating will grow in these organizations where reaching to various and multiple knowledge centers is the expected norm. Doctrine must clearly define the

core function of MI as KM to produce the knowledge and understanding that commanders need. This KM focused doctrine informs the design of KM focused organizations. The personnel in these organizations will develop a culture more conducive to creating knowledge from information regardless of the collection source. A sound educational basis that emphasizes understanding the complexity of future conflicts and research and collaboration skills that are essential to revealing the richness of information and intelligence only good fusion can produce. MI will best serve the Objective Force by producing fused knowledge for commanders through its core function of Knowledge Management.

APPENDIX 1 – TRANSFORMING MI DOCTRINE

The Army has begun the doctrinal revision aspects of its transformation. This includes not only updating manuals that no longer apply to the operational environment the interim and objective forces will face. This process also includes restructuring the naming and hierarchical organization of these publications. A proposed revision of AR 25-30, which mandates the numbering of doctrinal publications, will implement changes "to align Army doctrine numbering system with Joint system numbering conventions." This is a start to adding unity and clarity to the massive body of doctrine that can appear confusing in its organization. The linkages these changes provide will assist in Army planning occurring in better concert with Joint operations as well as better preparing Army officers for increasing service with Joint organizations. They will allow the Army to better embrace the 21st Century focus that a Joint hierarchical doctrine structure is already providing elements of the Joint Community, Navy, and Marine Corps. These changes also correct a series of shortcomings in the previous numbering system that produces a variety of obstacles to fluidity of operations and interoperability as the Objective Force matures in the 21st Century as a force committed to excellence in Joint and combined communities.[44]

While renaming, renumbering, and updating some MI publications will benefit this transformation process, MI leaders must also seriously consider where in doctrine MI emphasizes concepts and tactics, techniques and procedures that emerge from the MI core competencies and MI tasks transformation promises to offer the Objective Force. Below is a listing of current and currently proposed doctrinal publications for which MI is the lead proponent or has significant influence. The "Red, Amber, Green" Status color codes indicate the status of the manual relative to an expected "shelf life" of five years. "Red" indicates the proponent has determined that revision is required. "Amber" indicates the proponent has not assessed to determine if it is current

[44] Implementing Instructions – Army doctrine numbering systems memorandum.

and relevant and that it is more than five years old. "Green" indicates that the manual is less than five years old and the proponent assesses it to be current and relevant.[45]

OLD NUMBER	NEW NUMBER	FM Titles (Date modified: February 2003)	Status (G/A/R)
FM 34-10-6	2-40.1/ST	JCF INTELLIGENCE OPERATIONS	NEW
FM 34-1	**2-0**	**INTELLIGENCE OPERATIONS**	**R**
FM 34-40-13	*2-00.13*	*ELECTRONIC INTELLIGENCE (ELINT) OPERATIONS (U)*	*A*
FM 34-2-1	2-00.21	TTP FOR RECONN & SURV & INTEL SUPPORT TO COUNTERRECONNAISSANCE	R
FM 34-45	2-00.45	TTP FOR ELECTRONIC ATTACK	R
FM 34-2	2-01	COLLECTION MANAGEMENT NEW NAME INTELLIGENCE SYNCHRONIZATION	R
FM 34-60	*2-01.2*	*COUNTERINTELLIGENCE*	*R*
FM 34-130	2-01.3	INTELLIGENCE PREPARATION OF THE BATTLEFIELD	R
FM 34-37	2-19.1	EAC INTELL OPNS	R
FM 34-25	2-19.2	CORPS INTELL OPERATIONS	R
FM 34-10	2-19.3	DIVISION INTELLIGENCE OPERATIONS	R
FM 34-10-5	2-19.301/ST	DIGITAL DIV INTELLIGENCE	NEW
FM 34-80	2-19.4	BN/BDE IEW OPNS	R
FM 34-80-1	2-19.401/ST	DIGITAL BDE INTELLIGENCE	NEW
34-80-2/ST	2-19.402/ST	IBCT INTEL OPS (SBCT INTEL OPS)	NEW
FM 34-35	2-19.5	ACR/SEP BDE IEW OPNS	R
	2-19.501/ST	SEPARATE BRIGADE INTELLIGENCE OPERATIONS	NEW
NEW	2-19/602	SBCT SURVEILLANCE TROOP	NEW
FM 34-5	2-22.2	HUMAN INTELLIGENCE AND RELATED COUNTERINTELLIGENCE OPERATIONS	R
FM 34-52	2-22.3	INTELLIGENCE INTERROGATION	R
FM 34-54	2-22.4	TECHNICAL INTELLIGENCE	G
FM 34-56	2-22.5	IMAGERY INTELLIGENCE	NEW
FM 34-44	2-22.6	SIGNAL INTELLIGENCE	NEW
NEW	2-22.7/ST	Tactical Human Intelligence and Counter Intelligence Operations	NEW
FM 34-81	2-33.2	WEATHER SPPT FOR ARMY TACTICAL OPERATIONS (AFM 105-4)	R
FM 34-81-1	2-33.201	BATTLEFIELD WEATHER EFFECTS	A
FM 34-3	2-33.4	INTELLIGENCE ANALYSIS	R
	2-33.5/ST	INTELLIGENCE REACH OPERATIONS	NEW
NEW	2-33.6/ST	MILITARY INTEL COMMAND AND CONTROL	NEW
FM 34-8	2-50.4	COMBAT COMMANDER'S HANDBOOK ON INTELLIGENCE	R
FM 34-8-2	2-50.5	INTELLIGENCE OFFICER'S HANDBOOK	G
NEW	2-50/ST	INTELLIGENCE SYSTEMS	NEW
FM 34-7	2-91.1	INTEL SUP TO SUPPORT OPS AND STABILITY OPS	R
FM 34-40	2-91.3	INTEL SUP TO IO OPS	NEW
FM34-25-1A	3-55.2	JOINT SURVEILLANCE TARGET ATTACK RADAR SYSTEM (U)	R
FM 90-2A	3-58.1	ELECTRONIC DECEPTION (U)	A

Figure 11 List of Current MI Doctrinal Publications

The preponderance of these manuals that the Joint and Army Doctrine Directorate (JADD) identifies as "Red" is clear evidence that MI is in need of significant doctrinal

[45] *The Army Concepts Doctrine Master Literature Plan*

reformation. Since the need for a wholesale change in MI doctrine is clear, the opportunity to make these changes significant and meaningful is here in the current transformation. The numbering procedures directed to produce doctrine upon a framework of intellectually organized tiers can apply to transforming MI doctrine. The top tier should include the keystone manual that describes the vision for the MI force and emphasizes the culture and way of thinking about its mission. This tier should horizontally integrate with keystone manuals for the other BOS. The second tier should address the general aspects and concepts required by the MI tasks as expressed in FM 2-0 and the AUTL. The structure of these manuals should reflect the MI core competencies of protect, collect, integrate, analyze, and produce. In fact, these core competencies can serve well the intellectual organizational structure for all MI doctrinal publications. These should nest into the concepts of FM 2-0; provide guidance as to how these tasks relate to other aspects of Army operations that MI supports; and establish the context in which the MI disciplines and MI organizations at various echelons of intelligence operate. The third tier is the first one in which TT&P begin to appear. This tier describes the functions, actions, and interoperability requirements for the various MI disciplines. A fourth tier emerges as necessary to develop TT&P specific MI organizations apply to effectively provide intelligence support to commanders. An intellectual model that restates the purpose of these tiers includes Unifying Concepts, Themes, Functions and Applications, and Actions. Figure 10, below, illustrates a possible organization for this hierarchy of MI doctrine.

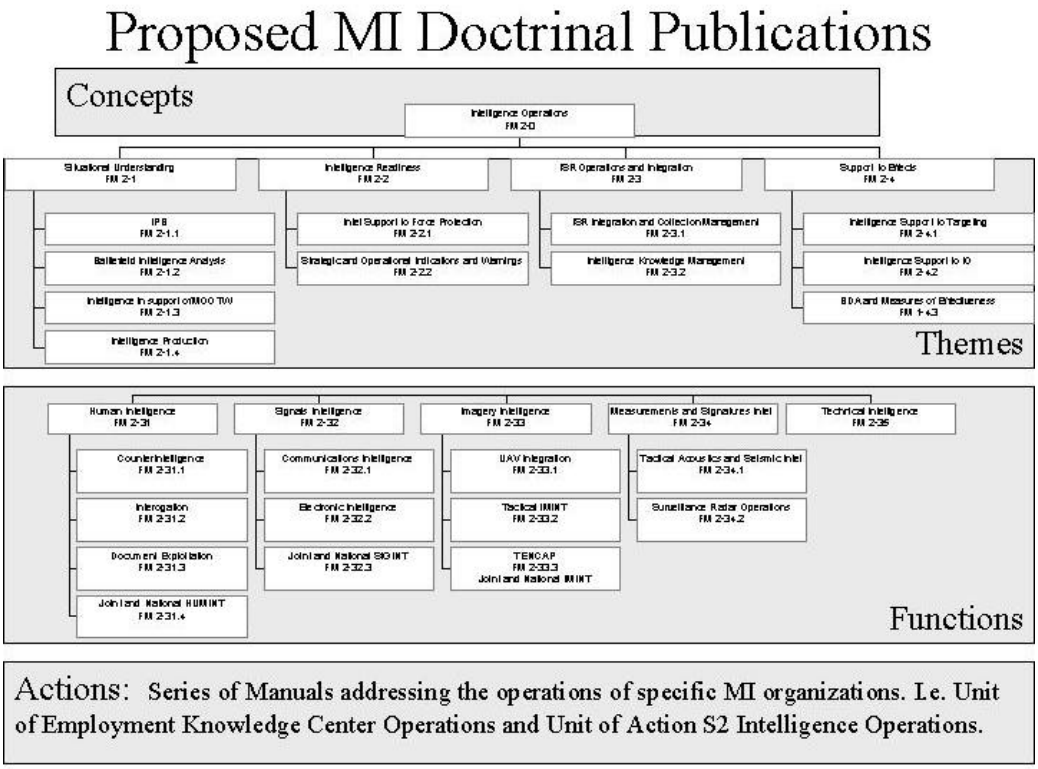

Figure 12 Proposed MI Doctrine Hierarchies

FM 2-0 will define the overarching concepts for MI and inform the force how it unifies its intellectual approach to providing understanding the threat and portions of the environment. It should include a description of the contemporary operating environment as its current draft does though this portion should not appear as the initial chapter. The initial chapter should clearly articulate the vision the AI-TCP currently proposes.

The manuals in the "themes" tier should each address more detailed concepts as applied to the general MI tasks they explore. These manuals should be sufficient to form the backbone of any soldier's library on MI. Within each of these the organizational framework should also be the core competencies of protect, collect, integrate, analyze and produce. A good deal of encyclopedic data will be appropriate in this tier, such as in the Intelligence Preparation of the Battlefield manual. This proposed organization of doctrine does not preclude the inclusion of

additional publications that will serve as references to which MI soldiers can refer while training and operating.

The functions tier is the realm in which publications will expand upon the craft of intelligence by articulating the particular roles of the MI disciplines and their value and relationship to Army operations. On the one hand they should be sufficiently detailed to serve as the core of military occupational specialty training. They will illustrate precisely what capabilities MI offers to the force and should consistently focus on the primacy of collaborative knowledge management and interoperability among the various disciplines of MI and with the rest of the Army.

The tasks tier may contain the largest quantity of publications as they address TT&P for the operations of specific organizations. This tier should also include manuals that more resemble unit standard operating procedures at all echelons of intelligence. While individual units will surely develop specific procedures unique to their own situations, the more commonality these doctrinal publications can inspire, the better they can positively impact on the culture of collaboration across the force. Eventually, as the transformed doctrine matures, common interoperability protocols will become authoritative. The greater the commonality of these procedures across the Army, the greater the efficiency with which MI Knowledge Centers and MI soldiers can support various commands as the Objective Force deploys in an increasingly modular fashion. Ideally, the design of the MI knowledge center supporting any UE commander should be transparent to the commander, because regardless of whatever tailoring of forces an operation requires, MI doctrine will ensure MI Knowledge Centers are capable of focusing their operations on fulfilling the commander's knowledge requirements.

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