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14. ABSTRACT

Although intelligence reforms in the last decade and a half, improved the overall intelligence process, there is an increased requirement for analyzed information, creating a mismatch between supply and demand. The result is a burden on all facets of the intelligence process. However, if the target, system, or problem requiring analysis is not collected, intelligence fails. Executing collection management under the traditional tasking process, bound by the current lack of synchronizing collection plans, limits innovative and effective ISR operations and prevents timely, agile, and accurate information flow.

The US military divides the world into six distinct geographic areas with corresponding commanders managing risk and weighing resources and manpower against threats to maintain battlefield advantage. These combatant commanders must be timely, agile, and accurate in their decision making to keep up with today's fast-paced information environment. The best way to support their decisions is by providing intelligence with sufficient speed, accuracy, and quantity when requested.

Analyzing a new collection planning and management framework against relevant case studies, to include combatant commander's highest priority problems, illustrates a path to improving collection management synchronization. Additionally, comparing a more problem-centric technique against the Joint Staff's new proven Joint Strategic Capabilities Planning process builds confidence in its application.

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JOINT ADVANCED WARFIGHTING SCHOOL

CLOSING INTELLIGENCE GAPS: SYNCHRONIZING THE COLLECTION MANAGEMENT PROCESS

by

Alison L. Kamataris

Lieutenant Colonel, United States Air Force

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A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning and Strategy. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense. This paper is entirely my own work except as documented in footnotes.

Signature: Alison L Kamataris

17 April 2018

Thesis Advisor: Signature: Gregory D. Miller

Dr. Gregory D. Miller
Professor Joint Advanced
Warfighting School

Approved by: Signature: M C Bennett

Michael Bennett
Special Operations Chair

Signature: Miguel L. Peko

Miguel L. Peko, Capt, US Navy
Director, Joint Advanced
Warfighting School

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Abstract

Although intelligence reforms in the last decade and a half, improved the overall intelligence process, there is an increased requirement for analyzed information, creating a mismatch between supply and demand. The result is a burden on all facets of the intelligence process. However, if the target, system, or problem requiring analysis is not collected, intelligence fails. Executing collection management under the traditional tasking process, bound by the current lack of synchronizing collection plans, limits innovative and effective ISR operations and prevents timely, agile, and accurate information flow.

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Chapter 1: Introduction

Similar to war and strategy, the term intelligence has a lengthy history, resulting in a variety of definitions and descriptions. The National Security Act of 1947 made early attempts to codify intelligence support in time of war: "Foreign intelligence means information relating to the capabilities, intentions, or activities of foreign governments or elements thereof, foreign organizations, or foreign persons."[1] In addition to creating the Central Intelligence Agency, the 1947 legislation empowered separate intelligence bodies for multiple federal agencies, and distinct intelligence organizations inside the military services. Over the next five decades, intelligence matured and demands created collaboration to prevent development in an isolated environment geared towards solving narrow goals.

Part of the maturation involved refining the Joint Chiefs of Staff meaning of intelligence as, "The product resulting from the collection, processing, integration, analysis, evaluation and interpretation of available information concerning foreign countries or areas, and information and knowledge about an adversary obtained through observation, investigation, analysis, or understanding."[2] However, defining intelligence is more than simply emphasizing information, and the above examples fail to accentuate the importance of the process along with the information. National Intelligence Council officer Mark Lowenthal broadens the concept's definition by stating, "Intelligence is the process by which specific types of information important to national security are requested, collected, analyzed, and provided to policymakers. Intelligence also includes

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[1] Title 50, US Code 401a.
[2] Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, (Washington, DC: The Joint Staff, November 8, 2010, as amended through March 15, 2015).

the products of that process; the safeguarding of these processes and this information by counterintelligence activities; and the carrying out of operations as requested by lawful authorities."[3] Intelligence is more than just information, the people, and the sensors, it is also a process, and although reforms continue to take place to improve the intelligence process, more progress is required.

Understanding what hampers improving the progress is challenging. Everyday Airmen, Soldiers, Sailors, Marines, and Civilian professionals work with the latest technology to deliver advanced Intelligence, Surveillance, and Reconnaissance (ISR) capabilities around the globe, to deliver decision makers the most reliable intelligence available. However, the methodology governing collection management doctrine does not keep up with the dynamic nature of today's operations. Executing management of these authorities under the traditional tasking process, bound by the current lack of synchronizing collection plans, limits innovative and effective ISR operations and prevents timely, agile, and accurate information flow.

In the current collection management process, there is a lack of emphasis for combatant commands (CCMD) to bridge gaps across regions, functions, or domains, sharing data, resources, and talent to attack problems sets. It is stovepiped, allowing each CCMD to develop its own internal PIRs[4], and working its internal ISR once allocated without synchronization or coordination to the larger global problem. Additionally, there is no forced collaboration with other CCMDs to share collection strategies or ISR assets

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[3] Mark M. Lowenthal, "Intelligence: From Secrets to Policy," *Washington, DC: Congressional Quarterly Press*, 2002, [second edition]), p. 8.

[4] The DoD describes Priority Intelligence Requirements in JP 3-0 as "intelligence requirements stated as priority for intelligence support, that the commander and staff need to understand the adversary, or the environment."

as they develop Joint Intelligence Preparation of the Operational Environment (JIPOE) effecting operational environments overlapping each other's areas of responsibility. The new proposed problem-centric model along a transregional, multi-domain, and multi-dimensional (TMM) approach stresses five elements: 1)shared understanding; 2)integrated strategy; 3)integrated planning; 4)integrated operations; and 5)integrated assessments that will drive more collaboration, break down the stovepipes, force apart the service parochialism, and mitigate the rivalries between the CCMDs as they compete for resources. After September 11, the National Commission on Terrorist Attacks upon the United States--commonly known as the 9/11 Commission--reviewed the intelligence apparatus. According to R.J. Harknett and J.A Stever, the commission "determined that, in retrospect, this was a system primed to fail, and its report conspicuously and painstakingly documented the points of failure. The pervasive theme of the commission's initial 585-page report (2004) was the lack of unity among the existing intelligence agencies."[5] Although capable intelligence organizations existed in the military services and among the federal bureaucracies, they lacked synchronization and willing partnerships to share information. According to the 9/11 Commission, the current intelligence community was guilty of failures in imagination, policy, capabilities, and management.[6] Unfortunately, many of the recommendations to the intelligence process failed to materialize and meet the need to reform. Although advances in technology and

[5] R.J. Harknett, and J.A Stever, (2011), "The Struggle to Reform Intelligence after 9/11," *Public Administration Review*, 71: 700–706.
[6] 9/11 Commission, 2004, "The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks upon the United States," New York: W. W. Norton, https://www.9-11commission.gov/report/911Report_Ch11.htm, (accessed on Feb 18 2018).

the role of information continue to modernize, the process and doctrine is not keeping pace.

Since 9/11, there is an accelerated appetite for intelligence. There is also an increase in the speed, accuracy, and quantity of intelligence required to support the combatant commander's (CCDR) data-to-decision cycle. Intelligence is also more complicated due to a number of factors, including: 1)advancing technology; 2)developing new capabilities and techniques; and 3)artificial intelligence and machine learning progressing into intelligence platforms. These significant changes and advances should put pressure on reform, synchronize, and cooperate across the commands to optimize their capability and capacity and commanders' needs.

Several factors, including service parochialism and rivalries between CCMDs for resources, prevent significant improvements to the collection process, and continue to hamper the community from satisfying the CCDR's intelligence needs. Service parochialism refers to the competition between the services for manpower and which service holds more leadership positions within the CCMDs, while rivalries between the CCMDs for resources refers to which command holds the preponderance of ISR assets for a given operation. Although the rivalries and competition goes far beyond just ISR, for the purpose of this thesis, service parochialism and rivalries between the CCMDs refers to how it influences the ISR process.

The September 11, 2001 attacks on the United States demanded a relook at intelligence and this thesis reviews the collection management phase of the intelligence process, and introduces a framework to mitigate the gaps in the process. The 9/11 report specifically stated, "The DCI did not develop a management strategy for a war against

Islamic terrorism before 9/11. Such a management strategy would define the capabilities the intelligence community must acquire for such a war--from language training to collection systems to analysts."[7] The emergence of the Islamic State of Iraq and Syria (ISIS) finally caused the 9/11 Commission's recommendation to become a reality.

The United States Special Operations Command (USSOCOM) is designated the authority for transregional terrorist organizations and other threat networks. General Thomas described this authority in his posture statement before Congress as, "the responsibility to provide a coherent global framework for action and synthesize the perspectives and inputs of the geographic CCMDs into a single comprehensive military assessment of the Department of Defense's global counter terrorism efforts."[8] USSOCOM's role as the integrator for terrorist threats, also known as Violent Extremist Organizations (VEO) as in US strategic level guidance, epitomizes the problem centric model described in more detail later in this thesis.

Making collection management relevant to CCDR[9] is critical due to their central position of authority and the role they play in evolving requirements vital to mission success. Title 10 of US Code authority provides CCDRs full discretion over either the geographic region or functional area assigned.[10] They must manage risk and weigh resources and manpower against threats to maintain battlefield advantage. CCDRs today

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[7] 9/11 Commission, 2004, "The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks upon the United States," New York: W. W. Norton.
[8] Statement of General Raymond A. Thomas III, Commander, United States Special Operations Command before the House Armed Services Committee, Subcommittee on Emerging Threats and Capabilities.
[9] Per JP 1 Doctrine for the Armed Forces of the United States, (Incorporating Change 1 Dated 12 July 2017). Describes the difference between the geographic and functional combatant commanders. For the purpose of this paper, CCDR will refer to geographic combatant commanders and those functional combatant commanders (USSCOCOM, USSTRACOM etc.) who retain collection management authorities.
[10]U.S. Code, Title 10, Subtitle A, Part I, Chapter 6, 164.

require accuracy and timeliness in the intelligence to match the pace of today's dynamic battlefields.

Frequently, the approach to satisfy collection in a CCMD is stove-piped along service priorities, aligned with sensor capabilities, or limited by geographic boundaries. These restraints generate inadequate collection strategies, and curb CCDRs from receiving intelligence with the proper speed, accuracy, or quantity to make the necessary decisions. Additionally, service parochialism and rivalries between CCMDs for resources, proves an impediment to improving the process.

To address these issues, this thesis is organized as follows. Chapter Two examines the current intelligence management process. It describes present-day definitions, background, and intelligence procedural shortfalls, as well as some of the challenges to improving the system. The chapter analyzes today's collection management process, as it exists in an environment characterized by service parochialism and rivalries among the CCMDs competing for resources.

Chapter Three introduces a proposed framework to meet the CCDR's needs for collection planning and management along a more problem-centric approach. This more synchronized approach, aligned with the Joint Staff's planning model, requires shared collection plans across the CCMD focusing on global intelligence problems. It can overcome many of the challenges in today's service-oriented CCMD environment, and will likely close gaps and improve efficiencies. The problem-centric collection model may not overcome the pace of advancing technology, new capabilities and techniques, or the reality that artificial intelligence is progressing quickly in the community. It is not designed to mitigate the challenges technology poses to the process, but embrace the

innovation and utilize it with new tools to allow synchronization across the CCMDs. Because today's intelligence problems are often spread across multiple regions, functions, and domains, a model to adapt to the depth and breadth of the problems is required to provide CCDRs the best intelligence available in time to make timely decisions.

Chapter Four analyzes the proposed intelligence collection planning and management framework against three case studies to determine if it enables timely, agile, and accurate decisions for the CCDR. The three case studies evaluated are Improvised Explosive Devices, Unmanned Aircraft Systems, and Theater Ballistic Missiles. This chapter also points out challenges to the problem-centric model. For one thing, synchronizing collection plans across the CCMDs may lose specificity tying individual CCDR's priorities to larger problems sets. Second is the unique issues related to sensitive classifications of certain problem sets that may prevent full disclosure of collection plans captured in Special Access Programs.

The conclusion points out additional analysis, at both the unclassified and classified levels, is required to evaluate the standards against the case studies. It also examines discussion offered by two Air Force authors that review a similar topic, but take a slightly different approach. Finally, the thesis wraps up by reviewing the argument and covering findings.

Chapter 2: The Current Intelligence Collection Management Process: An Analysis

The basic principles of intelligence and managing collection by coordinating sensors from the air can trace its roots back to the French Revolution when soldiers used balloons to observe the adversary's operational environment. Today, technology catapults the ISR apparatus far beyond what the eighteenth century Frenchman ever imagined. Intelligence doctrine uses terms synchronize and integrate within the intelligence cycle and relationship to describe the process, but there is nothing in the guidance that directs how individual organizations should synchronize or integrate with each other. JP 1-02, Department of Defense (DOD) Dictionary of Military and Associated Terms defines ISR as, "An activity that synchronizes and integrates the planning and operations of sensors, assets, processing, exploitation, and dissemination systems in direct support of current and future operations."[1] This is an integrated and synchronized operations function within intelligence. Although ISR consists of separate elements, the distinct parts must not operate in isolation or the joint function will not behave properly. The elements must be treated as an integrated combination focused against a problem set to achieve unity of effort.

Holding targets at risk around the world is becoming more challenging as US adversaries compete technologically. Additionally, emerging domains such as space and cyber contend for intelligence resources, and compete for available funding and manpower. Simultaneously, the fight against non-state actors depleted the majority of

[1] Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms,* (Washington, DC: The Joint Staff, November 8, 2010, as amended through March 15, 2015).

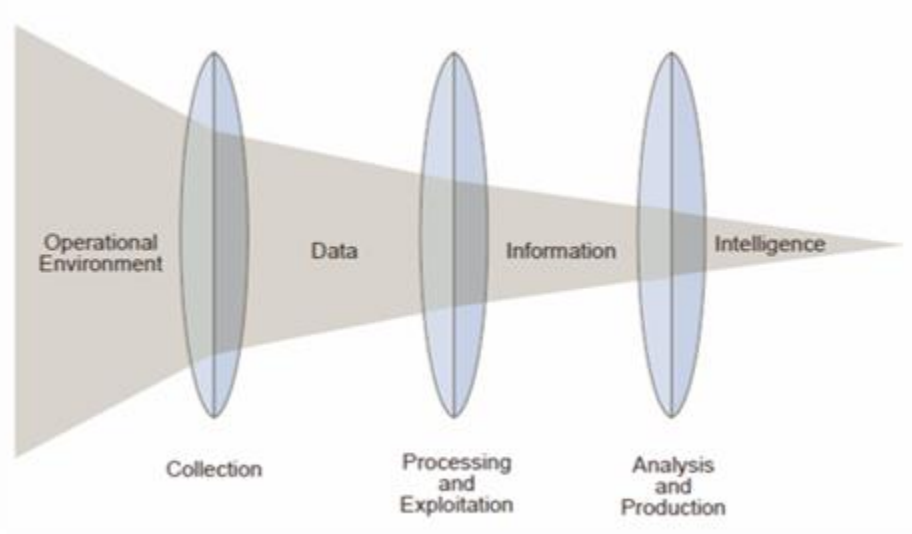
bandwidth of manpower and resources over the last two decades, leaving little training and minimal acquisition dollars to invest in advancing intelligence tradecraft. "According to data compiled by the Mercatus Center citing the Congressional Research Service, the cost of global War on Terror operations (including both Afghanistan and Iraq) since 2001 had reached about $1.6 trillion by FY2014. When war funding approved by Congress for FY2015 is taken into account, the total reaches $1.7 trillion." Due to the lack of investment in new technologies and tradecraft, and the continued burden of counterinsurgencies on the force, the US is restricted to fighting today and tomorrow's wars with yesterday's intelligence processes.

Definitions and Background

Joint Publication (JP) 2-0 describes the nature of intelligence, and its relationship with the commander's decision cycle. "Information is of greatest value when it contributes to the commander's decision making process by providing reasoned insight into future conditions or situations. Intelligence provides the commander a variety of assessments and estimates that facilitate understanding of the operational environment (OE)."[2] Emphasizing the JP characterization of intelligence and the relationship between information value and a commander's decision process is critical. This relationship has three main inputs to the intelligence process: Collection; Processing and Exploitation; and Analysis and Production (see Figure 1 below). It is imperative that the focus of the collection management strategy be adequately focused on the CCDR's PIRs.

[2] JP 2-0, "Doctrine for Intelligence Support to Joint Operations," 22 October 2013, I-2.

Figure 1. Relationship of Data, Information, and Intelligence[3]



Today's Process Versus Intelligence Advances, Service Parochialism, and Rivalries

Although the process is not evolving quickly enough to keep up with the dynamic nature of today's wars, the technology and talent is advancing. Intelligence is getting smarter. The intelligence community is investing in its future by exploiting new sensors, advancing current capabilities and techniques, and introducing artificial intelligence and machine learning into weapon systems. "Information-age technology is advancing at a stunning pace, yielding increasingly complex information architectures, data accessibility, and knowledge management—all of which have created the conditions for a leap in intelligence processes,"[4] stated Lieutenant General Robert Otto, the Air Force Deputy Chief of Staff for Intelligence, Surveillance, and Reconnaissance (ISR). The

[3] Ibid.
[4] Robert P. Otto, "Air Force ISR 2023: Delivering Decision Advantage," (Washington, DC: Headquarters Department of the U.S. Air Force. 2013).

technology is advancing, and the conditions are moving forward, but there is no momentum to develop a collection planning and management framework to minimize service parochialism, maximize technology, and cut across the CCMD lanes in the road to focus on larger problem sets.

Figure 2 (below) indicates how collection touches every facet of the operation. The joint intelligence process is purposely depicted as a model of concentric rings to demonstrate the idea of a continuous process. It begins with the commander's mission and intent, and utilizes a methodology to focus in on the problems within the operational environment. "*Planning and direction* is best understood as the development of intelligence plans and the continuous management of their execution. Planning and direction activities include, but are not limited to the identification and prioritization of intelligence requirements; the development of concepts of intelligence operations and architectures required to support the commander's mission; or tasking subordinate intelligence elements for the collection of information or the production of finished intelligence."[5] Many of these activities take place at the operational level at the combatant commands, as the staff conducts Joint Intelligence Preparation of the Operational Environment (JIPOE) analysis in support of Theater Campaign Plans and or other key command guidance.

"*Collection* management is the process of converting intelligence-related information requirements into collection requirements, establishing priorities, tasking or coordinating with appropriate collection sources or agencies, monitoring results, and retasking, as required."[6] Collection management is key to the entire cycle, since if the

[5] JP 2-0, "Doctrine for Intelligence Support to Joint Operations," 22 October 2013. I-6.
[6] Ibid. I-15.

target is not collected it never enters the circle for analysis. This thesis addresses the fact that advancing technology, developing new capabilities and techniques, AI, service parochialism, and rivalries between combatant commands, all affect improvements to the collection management process.

Figure 2. The Intelligence Process[7]

Processing and exploitation occurs when machines or intelligence professionals evaluate or analyze raw data and derive assessments or conclusions. "Processing and exploitation includes first phase imagery exploitation, data conversion and correlation, document and media translation, and signal decryption, as well as reporting the results of

[7] JP 2-0, "Doctrine for Intelligence Support to Joint Operations," 22 October 2013, I-6.

these actions to analysis and production elements. Processing and exploitation may be federated or performed by the same element that collected the data."[8] Although not addressed in detail in this thesis, many of the same issues that inhibit the collection management phase of the intelligence cycle also constrain the processing and exploitation part of the intelligence process.

Analysis and Production is the art and science of creating intelligence from the collected raw data or information. It involves satisfying the commander's prioritized intelligence requirements and ensuring the intelligence informs and/or addresses the problem statement. "Intelligence products are generally placed in one of eight production categories: warning, current, general military, target, scientific and technical, counterintelligence, identity intelligence, and estimative intelligence."[9] No matter what form the intelligence product takes, before it is accepted as final production or analysis, the intelligence requires bias testing and must meet community standards.

The consumer receives and uses the intelligence during the *dissemination and integration* phase of the intelligence process. As technology propagates new methods of practicing intelligence and new domains require support, dissemination and integration grows more complicated. Simpler and more direct paths previously connected the tasking authority, sensors, and consumers, but now as the intelligence workflow is more interconnected and complicated. Requests for information flow through the battlefield, staffs, intelligence fusion centers, and the collected intelligence flows back again creating a non-standard tangled line diagram describing today's intelligence dissemination and integration. This process currently works because quality people build relationships and

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[8] Ibid. I-15.
[9] Ibid. I-10.

workarounds, not because of functioning programs or architectures within the services or CCMDs.

The outer most ring depicted on the intelligence cycle, called *evaluations and feedback*, describes the way intelligence producers self-check their assessments through collaboration, challenge their assessments and receive customer input to improve production quality while ensuring the output satisfied the customer's needs. Evaluation and feedback requires a collaborative dialogue between intelligence planners, collection managers, collectors, single and all-source analysts, and intelligence systems architects to identify deficiencies within the intelligence process. It also requires consultation with intelligence consumers to determine if intelligence requirements are being satisfied."[10] Evaluations and feedback is one of the least practiced phases of the cycle, and hardest to measure, as assessing success and providing feedback during support to operations often falls short. "A number of studies have attempted to improve ISR assessment, yet none have significantly advanced the doctrine for assessing ISR effectiveness at the operational or tactical levels."[11]

The last century of conflict was well suited to the current intelligence process because the pace of battle, and lack of technology, allowed staffs and commanders the time and space to synchronize intelligence about the adversary or the environment in time to make critical decisions. As the operational tempo of war increases, and technology changes the way war is waged, there is a need for intelligence to close the information gaps at an increasing rate of speed. Therefore, incremental improvements, such as

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[10] Ibid. I-6.

[11] Timothy D. Haugh, and Douglas W. Leonard, "Improving Outcomes: Intelligence, Surveillance, and Reconnaissance Assessment," Air & Space Power Journal 31, no. 4 (Winter2017 2017): 4-15, International Security & Counter Terrorism Reference Center, EBSCOhost (accessed January 3, 2018).

developing a position to coordinate daily intelligence, are not the only kinds of reforms required for the intelligence community to innovate at the required pace. The position of the Office of the Director of National Intelligence was created to counterbalance the Director of the Central Intelligence Agency, or as an overreaction to intelligence failures related to 9/11 according to some critics.[12] However, the position showed attempts to fix the growing divide between today's need for timely, agile, and accurate intelligence and the aging intelligence process.

A lack of significant reforms occurred within the intelligence community from the attacks on Pearl Harbor to those on 9/11, and it took a catastrophic attack on the homeland to achieve even small rudder shifts that some argue were not effective enough to fix the endemic issues within the intelligence community. The result is a lack of innovation or ability to advance beyond minor shifts in policy. As Harknett and Stever suggest, "In the past, the intelligence community was siloed into discrete disciplines and functions. These silos often led to competition and duplication. Although the agency-centric operating model worked well during the Cold War, it cannot succeed in the current environment, which changes rapidly. We need a mission-focused operating model that is agile, lean, and flexible enough to respond to a dynamic environment."[13] Although innovation or adaptation has not occurred in intelligence doctrine, it progressed in other ways such as advancing technology, developing new capabilities and techniques,

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[12] Melvin A. Goodman, "The Colossal Failure of The Office of The Director of National Intelligence," *The Center For International Policy*, The Public Record, April 2, 2009, under, "https://www.ciponline.org/research/entry/colossal-failure-of-office-of-director-of-national-intelligence," (accessed on 15 Feb 2018).
[13] Harknett, R. J. and Stever, J. A. (2011), "The Struggle to Reform Intelligence after 9/11," *Public Administration Review*, 71: 703.

artificial intelligence, and machine learning progressing into intelligence weapon systems.

The advent of streaming feeds of full motion video (FMV) and wide-area motion imagery (WAMI) are two of many examples of advancing technologies that aid analysts in detecting patterns and movements on the battlefields today. These new technologies should drive improvements to the intelligence process, which would optimize the timely, agile, and accurate nature of the information they can provide. Advanced tools, like WAMI and FMV have the capacity to revolutionize awareness and bring the operational environment to the CCDR's doorstep. However, without a major forcing function driving doctrinal change, such as a major conflict, or budget restraints forcing efficiencies, only incremental adjustments are likely in the near future.

New capabilities and techniques are coming on line to provide intelligence support to growing domains that are brimming with adversary and competitor pursuits requiring analysis. Training and updating techniques and tradecraft are required to support intelligence's role in space, cyber, and information operations (IO). The new capabilities and techniques within the intelligence community urge changes to the basic intelligence organization doctrine and framework to keep pace with adversary and competitor activities. Additionally, U.S. operations in space, cyber, and IO domains, complicate the overall intelligence cycle, and require a synchronized strategy to coordinate a holistic approach to collection.

The Department of Defense committed generous resources to evaluating artificial intelligence (AI), machine learning, and reviewing how it potentially fits into intelligence weapon systems. For instance, "computer vision, the ability of software to understand

photos and videos, could greatly help in processing the mountains of data from surveillance systems or for "pattern-of-life" surveillance."[14] Computers undertake jobs in the military that were unimaginable a decade ago, and as the data improves, so will the AI. As sensors continue to calibrate higher, and with means that are more technical and upgraded, the data will improve and the AI will progress as well. However, AI and machine learning advancements are moving faster than the doctrine and guidance can ensure they are synchronized and integrated properly.

Advancing technology, developing new capabilities and techniques, and artificial intelligence and machine learning progressing into intelligence weapon systems, are three reasons why the collection management process needs to be better synchronized to meet the CCDR's needs. These significant factors in the warfighting environment put pressure on the intelligence collection planning and management process to transform to provide up-to-date information for the commander's decision making cycle.

Other aspects impeding improvements to the collection management process are service parochialism and rivalries between the CCMDs as they compete for resources. Whether it is trust, understanding of asset capabilities, or more likely dependence on mission tasks and objectives for success, service parochialism and resource competition[15] damages a holistic and joint approach to collection management. According to Brooks Bash, "Both organizational and individual biases during Operations Just Cause and Desert Storm affected both strategic and operational decision making. Nevertheless, at

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[14] Robert W. Button, "Artificial Intelligence and the Military," *Real Clear Defense*, February 7, 2017, under https://www.RAND.org/blog/2017/09/artificial-intelligence-and-the-military.html, (accessed 16 Feb 2018).

[15] Resource competition can support efficiencies within programs such as ISR CART, built to compete for programmatic funds outside the intelligence cycle.

the time of these conflicts, senior officers and their staffs only had served a small part of their careers in the joint environment envisioned in Goldwater-Nichols."[16] The Joint Force has come a long way since either of those operations, and over the last two decades had to integrate to manage a more complex environment with fewer resources. It will likely take a forcing function to drive the intelligence process to overcome both service parochialism and resource competition.

Recognition of this connection between the collection process and a commander's decision making in battle is not new. After the Gulf War, The House Permanent Select Committee on Intelligence, reviewed the intelligence process, captured lessons learned, and delivered a report based on observations. The report found that, "in general, the national intelligence community mobilized in support of Operation Desert Storm. Still, some agencies appeared unfamiliar with or unresponsive to the intelligence needs of the warfighting commanders."[17] It went on to depict the commanders' unfamiliarity with sensor capabilities, as well as a lack of a joint intelligence architecture to guide the build-up of collection assets as contributing problems. The result was the intelligence community's inability to meet the CCDR's needs as it related to Iraqi Scud locations. In turn, the Iraqis were successful in their use of Scuds to achieve limited political objectives. Reforming the collection management strategy to ensure the U.S. gathers intelligence with enough speed, accuracy, and quantity is critical to make sure the U.S. does not repeat past failures.

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[16] Brooks L. Bash, "Leadership and Parochialism: An Enduring Reality?" *Joint Forces Quarterly*, Summer 1999, 64.

[17] "Intelligence Successes and failures in OPERATION DESERT SHIELD/STORM," Report of the oversight and Investigations Subcommittee of the Committee on Armed Services House of Representatives, 103rd Congress, 1st Session, http://www.dtic.mil/dtic/tr/fulltext/u2/a338886.pdf., (accessed from DTIC on 10.22.2017).

Chapter 3: A New Approach

CCDRs no longer pursue only objectives tied to their specific region or their functional area. Increasingly, they address challenges straddling different regions, with disparate actors and complicated objectives. The intelligence process must adapt to the new paradigm and ensure it has enough speed, accuracy, and quantity to keep up with the environment. Kelly McCoy contends that, "Geographic CCMDs[1] have their natural limitations: geographic commands invariably demonstrate a tendency to drive down to the operational and tactical levels, the militarization of diplomacy (a very real inhibitor to interagency success), and the creation of a redundant resource-draining, top-heavy, and over-structured system in the field. Yet, under this new era, the real challenge to geographic CCMDs are their ability to tame wicked problems."[2]

The Department of Defense is trying to meet the demands of the changing environment, which Secretary of Defense James Mattis made a key tenant in the 2018 National Defense Strategy. Under a section labeled, "Organize for Innovation", the Strategy states, "Department leaders will adapt their organizational structures to best support the Joint Force. If current structures hinder substantial increases in lethality or performance, it is expected that Service Secretaries and Agency heads will consolidate, eliminate, or restructure as needed. The Department's leadership is committed to changes

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[1] The original quote from *War on the Rocks* article used COCOM abbreviation, but per JP 1-02 is now abbreviated, CCMD.
[2] Kelly McCoy, "The World the Combatant Command was Designed for is Gone," *War on the Rocks*, October 7, 2016, https://warontherocks.com/2016/10/the-world-the-combatant-command-was-designed-for-is-gone, (accessed October 13, 2017).

in authorities, granting of waivers, and securing external support for streamlining processes and organizations."[3] The direction from national guidance through tactical operations is expected to stimulate the community to meet dynamic battlefield demands.

Although doctrinal changes did not drive collection management updates, the Department of Defense attempted to modify larger joint processes to address identified shortfalls. To tackle the need for timely, agile, and accurate decision making to keep up with today's fast-paced battlefields, the Joint Staff's newly aligned Joint Strategic Capabilities Plan (JSCP) global integration framework addresses many of the same challenges[4]. This framework delivers a global campaign plan for the Nation and arranges the Joint Force in time, space, and purpose, executed to address trans-regional, multi-domain, and multi-functional (TMM) challenges.

The Joint Staff oversees the JSCP process, and they developed a global integrator position among the CCMDs to enable greater collaboration. Five elements sum up the JSCP framework: shared understanding, integrated strategy, integrated planning, integrated operations, and integrated assessments. This framework, set up by the Joint Staff, addressed many of the same challenges currently facing the intelligence community. When overlaying the JSCP's TMM perspective on a design authored by the RAND Corporation developed to shake up the current intelligence process, a model forms around global problems. This model also works for the intelligence apparatus as applied in a similar framework (see Figure 3 below). A diagram first introduced by the RAND Corporation in a 2008 report commissioned by the United States Air Force,

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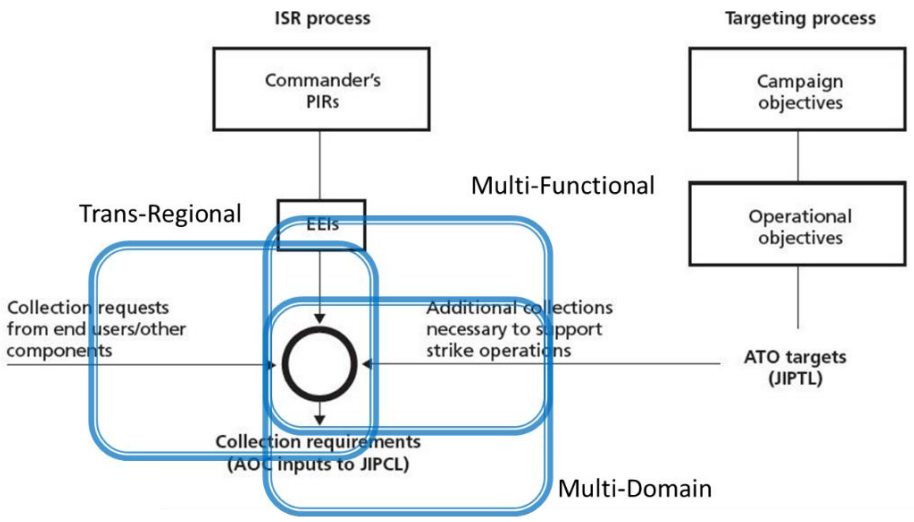
[3] Department of Defense, *Summary of the 2018 National Defense Strategy of the United States of America*, Government Printing Office, 10.
[4] Notes from Joint Forces Staff College, JAWS AY18 National Security Staff Ride, Washington, DC, Dec 10-15, 2017 Lesson JS6659-04, Pentagon, Joint Staff.

introduces the Joint Staff's ideas to address TMM problems sets.[5] Overlaying these different models offers a problem-centric approach, mitigating service parochialism, while overcoming the geography of the CCMDs.

Figure 3. The Problem-Centric Model[6]



The Problem-Centric Approach

To understand how to apply the problem-centric model, it is important to first comprehend how the Department of Defense envisions the strategic environment. "TMM will cut across multiple CCMDs, and the environment is fluid, with changing alliances,

[5] Sherrill Lingel, Carl Rhodes, Amado Cordova, Jeff Hagen, Joel Kvitky and Lance Menthe. *Methodology for Improving the Planning, Execution, and Assessment of Intelligence, Surveillance, and Reconnaissance Operations*, Santa Monica, CA: RAND Corporation, 2008, https://www.RAND.org/pubs/technical_reports/TR459.html, 26.

[6] Collaboration from Joint Staff, Lt Col Kamataris-JAWS Student and Lingel, Sherrill, Carl Rhodes, Amado Cordova, Jeff Hagen, Joel Kvitky and Lance Menthe, *Methodology for Improving the Planning, Execution, and Assessment of Intelligence, Surveillance, and Reconnaissance Operations*, Santa Monica, CA: RAND Corporation, 2008, https://www.RAND.org/pubs/technical_reports/TR459.html, 26, w/ Permission from RAND.

partnerships, and national and transnational threats that rapidly emerge, disaggregate, and reemerge. Despite the best planning and application of sound intelligence combined with the other joint functions, uncertainty and ambiguity will exist in strategic and operational environments."[7] The strategic environment's ambiguity and fluidity matches what the intelligence apparatus tackles daily on the operational battlefield.

The CCDR, working with his or her staff, creates a list of their PIRs and allocates resources to meet campaign objectives. The components all feed into their individual operational objectives to make up the Joint Integrated Prioritized Collection Lists or Joint Integrated Prioritized Targeting Lists. The distinction depends on if the target set falls within the Air Tasking Order, or whether it falls within the planning process of the intelligence development of the battlespace phase. JP 2-0 and the RAND report describe, "the pieces of information critical to addressing the PIRs are called essential elements of information (EEIs), and it may be necessary to gather a number of EEIs to answer all aspects of a given PIR. Each EEI may have specific observables tied to satisfying its requirement."[8] The most important part of the process is focusing on a command's PIRs, and then ensuring that with the collaboration of the TMM approach, the intelligence community's resources synchronize across the commands to tackle global problems while delivering decision makers timely, agile, and accurate intelligence.

One example is a Russian aircraft on a Syrian airfield would develop into the intelligence collection plan. It was formally part of the United States European

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[7] JP 3-01, *Countering Air and Missile Threats*, 21 April 2017.
[8] Lingel, Sherrill, Carl Rhodes, Amado Cordova, Jeff Hagen, Joel Kvitky and Lance Menthe, *Methodology for Improving the Planning, Execution, and Assessment of Intelligence, Surveillance, and Reconnaissance Operations*, Santa Monica, CA: RAND Corporation, 2008, https://www.RAND.org/pubs/technical_reports/TR459.html, 25.

Command's (USEUCOM) PIRs, but with Russia's involvement in countering the Islamic State of Iraq and Syria (ISIS) forces, and propping up the Syrian regime, the United States Central Command (USCENTCOM) CCDR included Russia PIRs to understand the actor's involvement in the operational environment. Now activity related to not only the Russian aircraft, but also the EEIs associated with aircraft, Russian ground forces, air defense forces, and associated equipment would trigger collection to support timely, agile, and accurate intelligence reporting.

New Approach Addresses Intelligence Advances, Service Parochialism, and Rivalries

Revising the current collection-management approach to focus on CCDR problems may not coincide with all the current challenges such as advancing technology, developing new capabilities and techniques, or AI and machine learning progressing into intelligence weapon systems. However, two issues involving service parochialism and rivalries between the CCMDs as they compete for resources will improve as collection management utilizes the problem-centric approach. Due to the synchronization between CCMDs utilizing the problem centric approach, increased number of leadership filling key positions would offset by cooperating CCMDs collecting on the same intelligence problem. Additionally, CCMDs with a similar problem set as another CCMD, but fewer allocated assets, could rely on another CCMD's collection and share intelligence to satisfy PIRs.

Although applying the problem-centric approach may not address all the issues facing the collection management phase of the intelligence process, it will significantly

improve the impediments relating to service parochialism, stagnation, and bias caused when the military branches compete for resources between CCMDs over problem sets. Using the same Russian aircraft example above, and applying it to the problem-centric model for comparison, the USCENTCOM and USEUCOM CCDR staffs utilize the five elements in the TMM framework to ensure the EEIs and collection synchronize strategies along the five elements: shared understanding; integrated strategy; integrated planning; integrated operations; and integrated assessments. This forcing function develops an approach rallying around a shared problem, and in turn applying maximum resources to deliver timely, agile, and accurate intelligence for both USCENTCOM and USEUCOM CCDRs.

Without a doctrine change to develop a better approach for synchronizing intelligence collection, technology and capability will outpace the U.S.'s ability to leverage intelligence. As John Ives suggests, "The most frustrating moment for the J2 occurs when the operations summary contains more useful intelligence-producing data than the official intelligence reporting. The common excuse, that the Counter Insurgency (COIN) environment moves too quickly and the real intel exists in the human terrain, acts like a soft landing for an unimaginative staff."[9] Ives also claims, "The intelligence infrastructure stands idly by and watches it unfold in reporting as teams conduct discovery learning at every turn."[10] He points out what other intelligence professionals and commanders contended for years--that the current process is outdated and unable to

[9] John M. Ives, "Back to Basics: Reenergizing Intelligence Operations," *Small Wars Journal*, January 16, 2013, http://smallwarsjournal.com/jrnl/art/back-to-basics-reenergizing-intelligence-operations, (accessed 31 October 2017).
[10] Ibid.

meet the demands levied by technology advances. Additionally, the current process does not acknowledge the need to bridge multiple CCMDs when competing needs arise. Adopting a new paradigm in strategy to coordinate and develop a framework to plan and collect intelligence supporting data-driven decisions in a timely, agile, and accurate manner could meet these demands.

Chapter 4: Alternative Processes and Case Studies

Measuring the potential effect of synchronizing collection planning across the CCMDs, and how it would aide data-driven decisions on the battlefield against a number of the intelligence community's toughest problem sets, is key to determining the effects. Although there are a number of difficult challenges within the intelligence organization, three stand out amongst the group. Evaluating the new model against Improvised Explosive Devices (IED), Unmanned Aircraft Systems (UAS), and Theater Ballistic Missiles (TBM) will determine if there are improvements to collection management and thus, in the overall intelligence cycle.

Together these three functional threats burden the intelligence collection planning and management processes at the tactical, operational, and strategical levels spanning multiple regions and domains, and require collection support across diverse functional areas. The rapidly changing nature of targets, coupled with the enemy's evolving battlefield tactics and competing resources, create difficult conditions for collections. The RAND report referenced in Chapter 3 describes the challenges the current collection climate poses: "Few, if any, written linkages exist between top-level priorities and individual collections. In addition, the reasoning process behind collection decisions often spreads through multiple staff organizations across multiple components. As a result, it becomes difficult to identify ties between the top-level strategies and the

collection tasks that help to enact those strategies for ISR operations."[1] The shortfalls in the current model make the intelligence gathered less relevant on the battlefield.

Improvised Explosive Devices

No other weapon changed the face of the modern battlefield as much as IEDs. As defined by JP 1-02, "IEDs are a weapon fabricated or emplaced in an unconventional manner incorporating destructive, lethal, noxious, pyrotechnic, or incendiary chemicals designed to kill, destroy, incapacitate, harass, deny mobility, or distract—covers a wide range of explosive hazards, including roadside bombs and explosive booby traps."[2] In addition to their deadly effects, they are cheap to make and hard to find. According to Jason Shell, "60 percent of all American fatalities in Iraq and half of all American fatalities in Afghanistan, more than 3,500 in total, were caused by IEDs. The same proportion holds for Americans who were wounded, totaling more than 30,000 service members."[3] There is no doubt that despite millions of dollars dedicated to counter the IED problem, they continue to affect how the U.S. plans for and executes joint operations. Operating in an IED-rich environment creates additional challenges for U.S. Forces, just as operating in a chemical warfare environment would.[4] They are not

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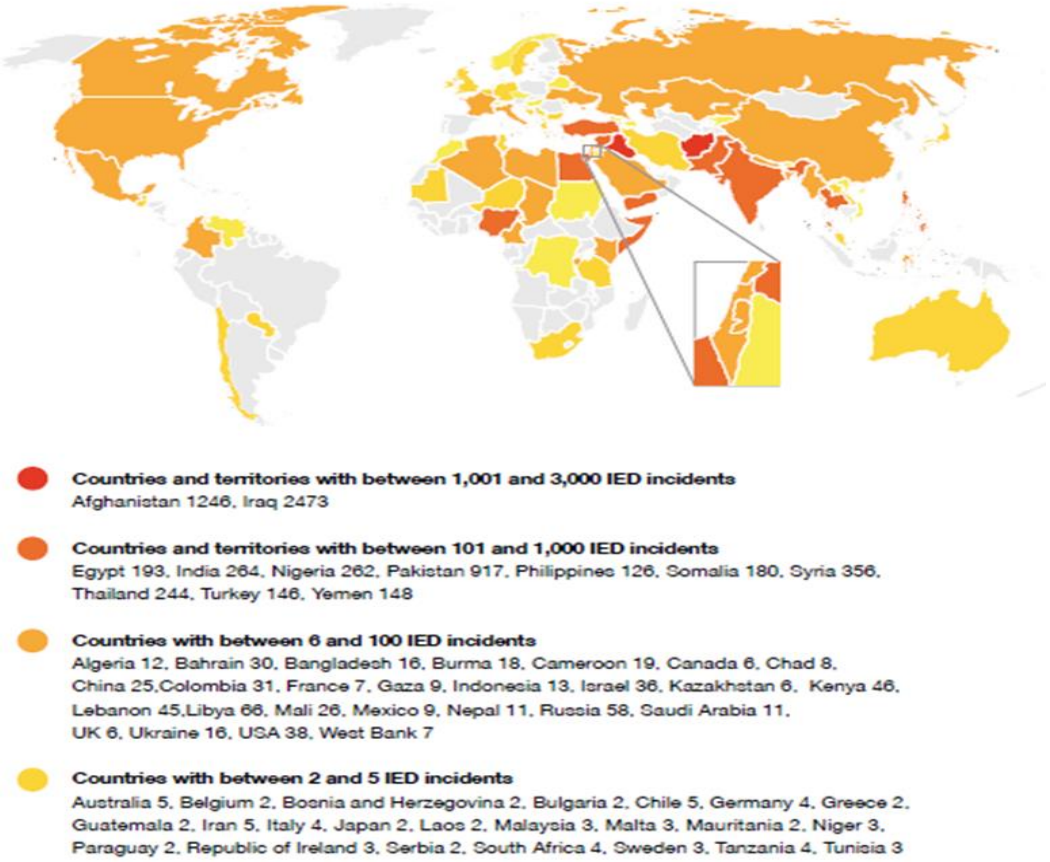
[1] Lingel, Sherrill, Carl Rhodes, Amado Cordova, Jeff Hagen, Joel Kvitky and Lance Menthe. *Methodology for Improving the Planning, Execution, and Assessment of Intelligence, Surveillance, and Reconnaissance Operations*, Santa Monica, CA: RAND Corporation, 2008, https://www.RAND.org/pubs/technical_reports/TR459.html, 28.
[2] Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, (Washington, DC: The Joint Staff, November 8, 2010, as amended through March 15, 2015).
[3] Jason Shell, "How the IED Won: Dispelling the Myth of Tactical Success and Innovation," *War on the Rocks*, May 1, 2017, https://warontherocks.com/2017/05/how-the-ied-won-dispelling-the-myth-of-tactical-success-and-innovation/, (accessed 31 October 2017).
[4] Marc Tranchemontagne, "The Enduring IED Problem: Why We Need Doctrine," *National Defense University Press*, http://ndupress.ndu.edu/Media/News/Article/643235/the-enduring-ied-problem-why-we-need-doctrine/, (accessed October 24, 2017).

sophisticated, so defeating the system, once found, is not the issue. The challenge is finding the IEDs and dealing with the massive quantity of targets.

The IED problem set is the perfect conundrum to study the problem-centric model's effect on collection management, due its pervasiveness throughout the world (see Figure 4 below.). If left alone, every CCMD, other than United States Northern Command (USNORTHCOM), would develop a collection strategy to analyze and support IED EEIs in their specific theaters, due to the nature of the problem creating hazards against their operational objectives.

Figure 4. Deaths and Injuries from IEDs: 2011-2016[5]



[5] Iain Overton, Jennifer Dathan, Charlie Winter, Joe Whittaker, "Improvised Explosive Device Monitor," *Action on Armed Violence,* October 2017, 5.

Rarely are theater collection strategies be synchronized, except at certain agencies working on countering IED techniques and capabilities. This takes time, and goes through multiple layers of bureaucracies--often losing details and specificity before it gets back to the CCDR. With the new problem-centric model, one of the CCMDs with the most significant IED problem would be identified as the Global Integrator and synchronize efforts across the commands for the five elements in the TMM approach.

Using the problem-centric model against IEDs would enable sharing adversary techniques, tactics, and procedures across CCMDs where technology assured enemies can spread their IED best practices faster than tradecraft uncovers the changes in methods. In this case, USCENTCOM would likely act as the Global Integrator based on the volume of activity in its AOR. The new model would also provide duplication only where required within collection operations, but would otherwise minimize redundancy amongst the CCMDs. Currently, there is a challenge of multiple CCMDs tasking sensors against the same targets due to not coordinating EEIs, or not coordinating their collection strategies on similar problem sets. This creates an unnecessary duplication of effort and stress on the system, already short on resources that would be relieved with the proposed problem-centric model.

The biggest challenge with the problem-centric model, as it applies to IEDs (and the other case studies as well), becomes apparent when coordinating the EEIs and tying them to PIRs across the different CCMDs. As the RAND report discussed, there is not a thread one can pull between top-level priorities and individual collections.[6] This lack of

[6] Sherrill Lingel, Carl Rhodes, Amado Cordova, Jeff Hagen, Joel Kvitky and Lance Menthe. *Methodology for Improving the Planning, Execution, and Assessment of Intelligence, Surveillance, and Reconnaissance Operations*, Santa Monica, CA: RAND Corporation, 2008, https://www.RAND.org/pubs/technical_reports/TR459.html, 28.

direction could challenge the proposed model to ensure CCMD staffs account for their CCDR's PIRs all the way down to the collection plan as they synchronize efforts with other CCMD problem sets.

Unmanned Aircraft Systems (UAS)

The U.S. did not anticipate the challenges related to the UAS problem set and commanders at all levels never predicted ISIS's ability to weaponize UASs to attack forces using off-the-shelf technology. According to the New York Times, **"**The Pentagon has rushed dozens of technical specialists to Iraq, Syria and Afghanistan to help protect American troops and to train and, in some cases, equip local allies against the drone threat, which has killed more than a dozen Iraqi soldiers and wounded more than 50. The aircraft, some as small as model airplanes, conduct reconnaissance missions to help Islamic State fighters attack American-backed ground forces."[7] Although the U.S. and western allies forge ahead with unmanned aerial technology in the area of ISR, non-state actors and near-pear competitors are close behind thanks to the commercial market and easy to find exports. "Although the United States has been the most prolific user of combat drones, several other countries have employed them as well, including Iraq, Israel, Nigeria, Pakistan, and the United Kingdom. Almost a dozen states, including China, Iran, and Saudi Arabia, reportedly now possess armed drones, and many others

[7] Eric Schmitt, "Pentagon Tests Lasers and Nets to Combat a Vexing Foe: ISIS Drones," *The New York Times*, September 23, 2017, https://www.nytimes.com/2017/09/23/world/middleeast/isis-drones-pentagon-experiments.html, (accessed 10 October 2017).

including India—are racing to acquire them."[8] Due to the acquisition in technology, the collection issue is global.

It is no longer limited to one theater, one signature, or one data set. Instead, it becomes a larger problem spread across multiple domains, multiple regions, and requiring additional joint functions. The realistic scenario of a Russian UAS deployed to the Iraqi theater of operations in Syria in the counter ISIS fight, engaged in close proximity to U.S. Forces, describes why global integration is required to address not just Joint operations planning functions, but also today's hardest intelligence collections problems. Left alone seven geographical or functional commands would develop parallel UAS or drone[9] collection plans to attack this problem including USCENTCOM and USSOCOM. They should all have a strategy and a theater campaign plan, or the functional equivalent that discusses how UASs influence their environment and may be a threat. However, due to service parochialism and rivalries between commands for resources, a problem-centric approach to address UASs across all the relevant commands is required to synchronize and focus the efforts.

The UAS intelligence challenge is not one that the CCMDs should attack individually because UASs are prevalent around the world and are widely importing from off-the-shelf technology. **"**Indeed, the drone threat is going global. Iranian drones have buzzed United States Navy ships more than a dozen times in the Persian Gulf this year. In Europe, American and allied soldiers accustomed to operating from large, secure bases in

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[8] Michael C. Horowitz, Sarah E. Kreps, and Matthew Fuhrmann. 2016. "Separating Fact from Fiction in the Debate over Drone Proliferation." *International Security* 41, no. 2: 7-42.

[9] Drones and UASs are used interchangeably, although the US Military prefers UAS to underscore the idea that although the airframe is unmanned, it is still a system of systems, and requires a backend framework to provide additional flying support, imagery exploitation support etc.

Iraq and Afghanistan now practice using camouflage netting to disguise their positions and dispersing into smaller groups to avoid sophisticated Russian surveillance drones."[10] This makes the problem-centric collection model more applicable. Once the five tenets of the model are applied, it can also integrate a whole of government approach and share amongst the rest of the intelligence community to leverage additional assets against the problem.

The strength of using the problem-centric model for collection management against drones and UASs is that the technology regarding this threat is changing so rapidly, output of the model would provide more timely, agile, and accurate intelligence to keep up with the pace of the threat. Therefore, the intelligence flowing to the CCDR would be more timely, agile, and accurate in line with the PIRs that tie back to the operation and objectives. One drawback to the TMM approach may be failing to capture the unique nature and character of drones and UASs in the different regions, so as not to overlay bias in the collection plans.

Theater Ballistic Missiles

Theater Ballistic Missiles are a challenging collection problem because their mobility makes them hard to detect, and if undefeated they can impose catastrophic damage against U.S. Forces. Adversaries will be able to challenge the U.S.'s ability to operate freely and support its allies around the world. Lessons learned from the Gulf War continue to echo in threat summaries as the ability for adversaries to utilize the TBMs or

[10] Eric Schmitt, "Pentagon Tests Lasers and Nets to Combat a Vexing Foe: ISIS Drones," *The New York Times*, September 23, 2017, https://www.nytimes.com/2017/09/23/world/middleeast/isis-drones-pentagon-experiments.html, (accessed 10 October 2017).

the threat of launching them, endures as a critical intelligence problem. “Of the eighty-eight Scud missiles launched, forty-two launches were observed by Coalition forces; however, in only eight cases were Coalition aircraft able to get within range to release weapons, and there were no confirmed kills of Scud TELs.”[11] Technology, expertise, and equipment for TBMs is available on the world market to state and non-state actors, similar to UASs and IEDs making the intelligence dilemma as tricky, but unlike IEDs and UASs, TBMs threaten the U.S. and allies on a much larger scale.

Collecting against and countering the ballistic missile threat will drive large intense resource requirements based on the scope and scale of the threat. Since Iran, North Korea, and Russia continue to share TMB technology and doctrine, the intelligence community and the CCMDs need to coordinate collection. In the past, “locating and destroying mobile missiles proved very difficult and required substantially more resources than planned. This could be a more serious problem in the future against an enemy with more accurate missiles or one who uses weapons of mass destruction.”[12] Because of the stakes at risk with the threat of TBMs against the U.S. and its allies, the problem-centric model creates a framework to ensure collaboration using the types of national technical means and exquisite resources optimized against TBMs.

The challenges with utilizing the problem-centric model against the TBM problem set is that due to the intricate nature of the threat system, there are sensitive and highly classified or compartmented vulnerabilities within the threat system that are accounted for in the collection plan. These individual country TBM capabilities and

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[11] A. Vick, R Moore, B. Pirnie, and J. Sillion, *Aerospace Operations Against Elusive Ground Targets* (Santa Monica, CA: RAND, 2001 Ch 3.

[12] Kipphut, Mark, "Theater Missile Defense," *Airpower Journal 10*, no. 4, (Winter 96 1996): 35. Military & Government Collection, EBSCOhost, (accessed February 18, 2018).

limitations may not easily fall into the TMM approach based on the sensitivity and inability to share information. However, it is worth exploring if the intelligence community can assign common TBM force structure EEIs within the associated infrastructure, such as mobile launchers or command and control systems across the CCMDs against the problem-centric model for collection management.

IEDs, UASs, and TBMs are all intense intelligence challenges. There is likely more than one model that can address complicated problems. However, the Joint Staff reviewed multiple planning processes, and determined applying a global integrator across several theaters to bring together trans-regional, multi-domain, multi-functional parties to address challenges was a best practice. Overlaying this same model against the collection planning management process will break down similar parochial barriers, and force prioritization in a budget-constrained environment. Based on using the Joint Staff's new proven Joint Strategic Capabilities Planning there is some confidence in overlaying it against future intelligence models for consistency in the operational environment.

Chapter 5: Conclusion

There is a rapid growth in technology and significant challenges burdening the intelligence community. One of the heaviest weights on the intelligence community, and its inability to meet the demands of the current collection requirements, is the overwhelming mismatch between supply and demand of ISR assets. Although the entire intelligence process needs review, revision to the collection planning and management process would greatly enhance operational success. Tying a new model to a framework against the Joint Staff's JSCP rubric, with a global integrator addressing intelligence problems with the same trans-regional, multi-domain, multi-functional overlay, is a great fit.

Based on review of the three case studies and how they interacted with the problem-centric model, there is evidence the model would improve intelligence support for commanders. The model may not overcome the pace of advancing technology, developing new capabilities and techniques, or the reality that artificial intelligence is progressing quickly in the community. The model's goal is not to overcome technology, but to support cooperation and synchronization amongst the CCMDs to best utilize the advances in innovation. Because today's intelligence problems are often spread across multiple regions, functions, and domains, a model to adapt to the depth and breadth of the problems is required to provide CCDRs timely, agile, and accurate intelligence.

The next phase requires study and closer evaluation of the proposed model against the three case studies to evaluate its performance. Unfortunately, data is unavailable in the unclassified format to generate any quantitative analysis, therefore drawing on the concept of the problem-centric model to display potential outcomes. A recommendation

for further consideration would require data analytics with classified information on each of the case studies in different theaters for further review. Utilizing various collection platforms, and generating values using standards for timeliness of intelligence, agility of intelligence, and accuracy of intelligence would provide additional metrics to study satisfying a commander's PIRs.

A number of other authors are exploring similar topics and there seems to be a consensus among their research. Timothy Haugh and Douglas Leonard argue the increasing need for CCMDs to better synchronize planning, resourcing, and operations in recent research and continue to study the topic. Their focus is more on the ISR Assessments role in the process, versus how collection plays a part. The shift in emphasis may be a worthy approach and provide similar results. Haugh and Leonard use data from the Special Operations community, and specifically the fusion models that attempt to effect change in time and space. "Concepts such as special operations forces (SOF) find, fix, finish, exploit, and analyze, mission type orders and time-dominant fusion show great promise, but have not yet approached the scale necessary to reform theater collection and analysis."[1] The authors insist that although the doctrine is antiquated, the ownership is on the service leadership to provide the innovation to coordinate outside the lines and make the system work.

That is likely true, but in the meantime a forcing function must exist. In the past, doctrine developed when war forced its hand. The last two decades have not forced change, but the next conflict with a near-peer competitor may not allow enough time to adapt. The

[1] Haugh, Timothy D., and Douglas W. Leonard, "Improving Outcomes: Intelligence, Surveillance, and Reconnaissance Assessment," *Air & Space Power Journal* 31, no. 4, (Winter2017 2017): 4-15, International Security & Counter Terrorism Reference Center, EBSCOhost, (accessed January 3, 2018).

community must work together to ensure CCDRs receive the timely, agile, and accurate intelligence they require, allowing them to make data-driven decisions on the battlefield.

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Vita

Lieutenant Colonel Alison "Babs" Kamataris, USAF. Commissioned in May 1998, from the ROTC program at Norwich University with a Bachelor's of Science Degree in Political Science, a Masters in Strategic Intelligence in 2009, and went on to graduate from Georgetown's Congressional Affairs Certificate Program. Colonel Kamataris contributed to intelligence support at the squadron, wing and national levels. She held senior collection manager positions in two distinct areas of responsibility, and her overseas and deployed time includes three short remote tours, as well as six deployments to Iraq, Kuwait and Afghanistan, to include Assistant Director of Field Operations/J2 Liaison for the USF-Iraq J2 Document and Media Exploitation Team while deployed to Camp Slayer, Iraq from 2010-2011. Colonel Kamataris was selected to serve as the Aide de Camp for the 7 AF/CC, and chosen as a 2012 USAF Legislative Defense Fellow, where she was later assigned to Senator Kelly Ayotte's National Security Staff on Capitol Hill. Colonel Kamataris' most recent assignments include a tour as a Speechwriter on the USAF Chief of Staff's CAG, Squadron Command at NASIC, and her last assignment was at Langley AFB, where she served as the Deputy Group Commander for DGS-1, supporting CENTCOM CCDR's counter-ISIS fight.