Leveraging Knowledge and Information Management (K/IM) to Improve MOC Efficiency and Effectiveness

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Over the last four years the MOC Training Team (MOC TT) observed knowledge and information management (K/IM) shortfalls at every MOC during both “real-world” operations as well as exercises. These shortfalls, which negatively impacted decision making at various levels within the MOC, included issues such as incomplete information sharing, ineffective collaboration, and inadequate battle rhythm development. However, while MOC warfighters almost always concurred with MOC Training Team findings and readily acknowledged their detrimental impact, they rarely viewed identified deficiencies as theirs to remedy! This article provides insight into what K/IM is, why it is important, who is responsible for it, and strategies to mitigate the inherent challenges to establishing effective K/IM at the maritime Operational Level of War (OLW).

The Commander’s Decision Cycle and the Battle Rhythm

In its most basic form, knowledge and information management (K/IM) is simply the way in which a command deliberately manages its mission critical information activities. In order to provide an operational context for this discussion, the following is a quick overview of the commander’s decision cycle and how a battle rhythm facilitates decision making.

As depicted in Figure 1, a commander’s decision cycle includes four functions: Plan, Direct, Monitor, and Assess integrated by communication. This cycle results in three critical aspects of command:

1. A common understanding of the commander’s intent,
2. A shared situational awareness, and
3. The ability to make well-informed decisions made in a timely manner.

Contrary to popular belief, the integrating process of communication within the decision cycle is not dependent on networks and applications. Rather, it is a well-designed communications process to ensure both knowledge and information flows rapidly across the staff and echelons.

At the OLW, there are three planning event time horizons: “near-term” which is typically 24-48 hours out, “mid-term” which is 48-96 hours out, and “far-term” which is beyond 96 hours out. Each of these event horizons has its own commander’s decision cycle and each cycle spins at a different rate. The far-term, deliberate planning decision cycle is the slowest of the three event horizons because the amount of information exchanged is typically fixed and the pace of events can be controlled. However, as the planning horizon draws nearer and the operational pace quickens, the amount of data and information exchanged increases exponentially and the need to make rapid decisions becomes even more critical.
Figure 2 depicts the three decision cycles spinning simultaneously. Imagine the center cycle (near-term) spinning very fast, the middle cycle (mid-term) somewhat slower and the outer cycle (far-term) slower still. While each planning event horizon has its own commander’s decision cycle it is critical to remember that each of the cycles are simultaneously supported by the same MOC staff.

Within the joint community, constructs have emerged that facilitate staff functioning at the pace OIW demands. At the maritime OIW the MOC construct, which includes centers, cells, and cross-functional teams (CFTs), provides a cross-functional approach designed to enable the commander, supported by limited staff, to make timely and well-informed decisions across all three planning horizons. To manage collaboration and information exchanges within and across the various MOC organizational elements, staffs use a battle rhythm to sequence and synchronize their activities. The battle rhythm should be constructed so as to facilitate efficient and effective commander’s decision cycles for each event horizon. The sequencing of individual battle rhythm events should be based on underlying information flow dependencies. For example, target nominations may drive intelligence, surveillance, and reconnaissance (ISR) collection requirements. As such, the Maritime Targeting Working Group (MTWG) should convene before and convey critical inputs to, the Collection Management Working Group (CMWG).

The timing of battle rhythm events is driven by higher headquarters’ (HHQ) battle rhythm requirements. Indeed, the entire battle rhythm scheduling process can get quite complicated when trying to achieve alignment between upper and lower echelons in the chain of command as well across components. See Figure 3.

The battle rhythm is a critical K/IM process. MOC operators, particularly center, cell, and CFT leads, need to know how information flows across the battle rhythm to understand the process by which their recommendations
eventually get converted into decisions that are then disseminated via orders that ultimately result in action. For example, Figure 4 outlines the information flow related to maritime targeting. The MOC TT has observed that, while most experienced Fires Cell leads possess a general understanding of the information flow depicted below, other key staff members often fail to fully grasp how the information generated by their planning team or working group flows up, down, and across the staff and other echelons and how that flow might impact their own battle rhythm events, battle rhythm scheduling, or other planning activities. The challenge every MOC thus faces is how to develop an effective, collaborative information environment that supports timely and informed decision making across the three event planning horizons.

![Figure 4. Maritime Targeting Information Flow](image)

### Developing a Collaborative Information Environment

The ability to articulate what are known as information exchange requirements (IERs) is critical in the development of an effective collaborative information environment (CIE) that supports timely and informed decision making. Most people rarely think about what information they require to perform their job, how they obtain that information, or how they disseminate information.

Beyond developing an understanding of IERs, there are other K/IM processes that can promote common understanding and shared situational awareness. As previously discussed, a well-scheduled battle rhythm, informed by a keen awareness of IERs, can be constructed to assist staffs manage their support to the commander’s decision cycles. Figure 5 depicts the IERs across the BR to display the flow of recommendations-to-orders process. Figure 6 provides an example of a BR schedule which maps the events against a time table based on the underlying information flow dependencies depicted in Figure 5. Developing standard operating procedures (SOPs) is another K/IM process that can assist newly reporting personnel (due to PCS or rapid augmentation in crisis) understand job requirements and the IERs associated with their responsibilities.
A significant events log that the entire staff has ready access to can be another effective K/IM process that promotes shared situational awareness. Frequently, the MOC TT has observed that such logs are maintained either via point-to-point email or on a PowerPoint slide at the Battle Watch Captain’s (BWC’s) workstation. While such methods may suffice during routine operations, they often fail to meet the heightened demand for information during fast paced contingency operations. Maintaining a significant event log available for remote access (e.g., maintain it on a website) can dramatically reduce the number of interruptions the watch floor will experience. Additionally, some MOCs have effectively implemented a documented watch turnover brief in which each watch position provides a simple quad slide depicting the highlights of the last watch and what to expect on the next watch. Making that brief
remotely accessible and displaying it on the Watch’s knowledge wall (in a scrolling fashion) may diminish the number of staff interruptions even further.

A “Plans Matrix” posted to a web site for remote access and on the COPS knowledge wall is an effective K/IM process that allows all staff members to track the status of plans in development. When there are multiple planning efforts underway across all three event horizons, maintaining shared understanding of the status of the various planning teams helps facilitate rapid and effective decision making by ensuring that the commander and/or his key confidants are able to provide timely planning guidance as required after each step in the Navy Planning Process (NPP) is completed. Such a matrix also facilitates scheduling the internal transitioning of plans from Future Plans, to Future Operations, and ultimately to Current Operations to monitor and direct. See Figure 7.

![Plan Management Matrix](image)

**Transitioning from Steady State to Crisis Operations**

During steady state operations, plans are developed, orders and guidance are issued, and operations are directed and monitored. In a normal environment, the majority of operational information is exchanged over SIPRNet using well-known methods such as chat, email, VTC, record message traffic, and Defense Connect On Line (DCO). The processes by which mission critical information flows are well established. However, during surge/crisis operations these routine processes may change…and rapidly.

At the onset of high-tempo operations, the amount of critical operational information that is exchanged typically spikes, the number of information producers and users grows at every echelon, decision cycles get compressed, the classification level of information may dictate information requirements, and the availability of SIPRNet could be threatened. Additionally, the forces and stakeholders involved become less homogeneous as coalition, inter-agency, and other governmental organizations may participate in the event. Alternatives to SIPRNet for classified and unclassified (but controlled) collaboration and information sharing may be required to promote unity of action across the operation. Without a means to deliberately create and manage the resulting information exchange requirements, bedlam will ensue (at least initially).

**K/IM: Whose Responsibility is It?**

While K/IM can pay big dividends during steady state operations, it can be a command and control game changer during surge, crisis, and sustained conflicts. The challenge for MOC staffs is to develop a steady state K/IM approach that can rapidly and seamlessly scale to the demand of large-scale collaboration and information exchange in crisis. Such a deliberate K/IM management approach requires:

1. The identification of information exchange requirements (IERs); center, cell, and CTF interaction points; and external interaction points,
2. An analysis of the means available to collaborate, exchange, store, and access information to include the means of transport (JWICS, SIPRNet, CENTRIXS, NIPRNet, Unclassified internet, Radio) and tools (email, chat, websites, VTC, message, phone),
3. The selection of optimal means to meet exchange requirements for each probable scenario – considering potential participant and stakeholder opportunities and constraints,
4. The configuration of tools and development of management processes,
5. A plan for transitioning to non-steady state processes,
6. Frequent training.

Unfortunately, the task of completing all six steps to implement a deliberate process to manage knowledge and information does not fall neatly under a single office of primary responsibility (OPR). For example, the identification of IERs is the responsibility of center, cell, and CFT leads. The analysis of the available means to collaborate is done by N6 supported by the Knowledge Management Officer (KMO). Selection of optimal means (the actual collaborative information environment to be used) to meet requirements is the combined responsibility of the N6, KMO, and leads. And, while the configuration of tools and process development may look like an N6 task, it is not. The actual configuration of tools may be done by N6, but the tools’ functionality and the process developed for use of the tool is the shared responsibility of the leads and KMO. For example, the N6 would provide a tool on Collaboration at Sea (CAS) or a portal for submitting and managing requests for information (RFIs). However, the N6 should not be the OPR for how RFIs actually get managed or what the preferred/requisite data fields should be in the RFI tool. Then, development of a deliberate plan regarding how and when the staff will shift to an expanded organization (increased capacity and capability) and battle rhythm to accommodate higher intensity operations is the responsibility of the MOC Director supported by leads, N6, and the KMO. Finally, training ends up being everyone’s responsibility to some degree. As a result, establishing and sustaining an effective knowledge and information management approach crosses multiple OPRs. The challenge may be mitigated by an empowered KMO -- actively support by the MOC Director – to lead the effort to achieve the six steps required and develop processes that can scale to the increased demand during crisis operations.

When information exchange and collaboration fails to result in a common understanding of the commander’s intent, a shared situational awareness, and responsive decision making, who gets the blame and who gets tasked to fix the problem? If the problem was due to communication network issues, the N6 often receives the tasking. However, if problems are due to poor management of the battle rhythm, ineffective collaboration meeting management, failure to astutely manage operational tasking, insufficient inclusion of coalition partners, or lack of appropriate planning/instructure to exchange information with all stakeholders, who gets the task to fix all of that? It is recommended that every MOC have an empowered KMO charged with facilitating fixes to these types of problems with the active support of N6 and the MOC organizational element leads. An empowered KMO can facilitate the completion of the six requirements listed above to develop a deliberate knowledge and information management approach and can facilitate identifying and solving K/IM problems as they arise.

Another challenge that makes it hard to attain and maintain an effective K/IM approach is that there is very little formal training available for personnel being assigned the KMO role. While there are commercial courses that result in a “KM” certification, such courses tend to be theoretical and very academic. It is recommended that all MOC KMO’s attend the excellent “Afloat Knowledge Management” course offered by Tactical Training Group Pacific (TTGP). While this course provides a solid practical understanding of K/IM it is only offered a few times a year. As such, the unfortunately reality is that the majority of MOC KMOs tend to learn “on the job.” Moreover, because personnel typically only remain in KMO billets for two years or less, and those assigned as KMOs are not apt to have repeat assignments, there is little-to-no development of KM expertise occurring in the Navy today.

**Strategies to Mitigate K/IM Challenges**

There are strategies for mitigating the challenges to effective K/IM at the O/LW. Some are briefly outlined below:

1. MOC operators need to understand that K/IM is not the sole responsibility of the KMO. The KMO doesn’t “own” any operational information and doesn’t directly control the processes employed in the various centers and cells to gather, process, and produce operational products. However, the KMO can facilitate the development of K/IM processes that can be consistently employed across the MOC to maximize the utilization of information technology in a common, interoperable manner.

2. Center, cell and CFT leads must get actively engaged in identifying their IERs, their collaboration partners, and key stakeholders as well as how they might change from steady state to crisis operations. They must also support the development and implementation of K/IM processes to effectively meet requirements across the possible range of operations.

3. Developing steady state processes (process and any tools) that are similar to those that will be employed in surge environments reduces the amount of "learning" a staff member must do upon transition to higher tempo operations.

4. Involving center, cell, and CFT leads in the validation of a proposed battle rhythm can build mutual understanding of information flows across the MOC. Conducting a murder board of a proposed battle rhythm with all the leads in attendance is an effective practice.

5. Conducting battle rhythm rehearsals in advance of surge operations will facilitate participant understanding of the battle rhythm events they are to attend and what they are required to provide the event. An effective battle rhythm rehearsal walks through each of the battle rhythm events with the lead meeting with each event’s participants to explain the purpose and processes of the event and the requisite inputs from the members to produce the necessary results.

6. To mitigate the lack of K/IM training, leverage the experience and insights gained by the MOC TT’s K/IM functional subject matter experts. To preclude that all too frequent practice of re-inventing the wheel, start with them when you need information, understanding, templates, examples, or just a sounding board.4

**Conclusion**

Between the Gulf Wars (1990-91) and 2010, the rate at which mankind could transmit information increased from nearly 200,000 words per minute (wpm) to over 1.5 trillion wpm! However, while this incredible rate increase enabled advances in command and control and enhanced situational awareness, it also resulted in a dramatically compressed commander’s decision cycle. Whereas in the past commander’s might have had days to make decisions and still remain inside an adversary’s decision making loop, now they might have minutes or even seconds. With more information to process and less time to do it, MOC staffs struggle to efficiently and effectively support commander’s decision cycles. K/IM is not a new concept. But, with a 10-year increase in the rate of data transmission by an exponential factor of seven (or 10 million times), the impetus to implement K/IM effectively has become paramount and may well be the difference between victory and defeat.
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References:
1 The MOC Training Team (MOC TT) is comprised of subject matter experts from U.S. Fleet Forces Command and the U.S. Naval War College.
2 The specific time frame that is aligned to near, mid, and far-term planning horizons varies between MOCs and may vary between specific events.
3 Centers, cells, and CFTs were formerly referred to as bureaus, boards, centers, cells, and working groups or B2C2WG).
4 You can contact a MOC TT K/IM subject matter expert at the Naval War College Assist and Assess Team

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