



Air Land Sea Application Center

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BUILDING SITUATIONAL AWARENESS IN JOINT AND COMBINED OPERATIONS: THE CHALLENGE OF THE COMMON TACTICAL AND COMMON OPERATIONAL PICTURES

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Editor's note: This month's feature article, "The Counterfire Conundrum: Acceptable Levels of Risk in Large Scale Combat Operations," shows how the anticipated conflicts of the future will require rapid counterfire to reduce risk and create more latitude for joint maneuver. Counterfire of this speed can only be enabled through proper risk tolerance and shared understanding through command-and-control systems. In this month's installment of Blast From the Past, we look back to an article endeavoring to frame the problem of essential requirements for military C4I systems in an era of strategic uncertainty.

In 1999, the US military found itself asking the same question it does today: how do you enable commanders and staff to make timely and informed decisions in uncertain environments? While technology has dramatically changed since the time the author's article was originally published, the fundamental requirement to rapidly build and share situational awareness on the battlefield has not. Even before the year 2000, decision makers were struggling with the amount of data available through emerging sensors and how to turn this data into useful information. The development of (then known as) C4I systems was seen as part of the solution to this surge of data. The author's message of the need to properly determine essential requirements which should drive C4I system development, and more importantly not allow the reverse to happen, is as relevant today as when published two decades ago.

Joint and combined operations characterize today's operating environment. Success of these operations will be determined by the commander's ability to make accurate and timely decisions. The Chairman, Joint Chiefs of Staff has developed guidance necessary to build a common tactical picture (CTP) and common operational picture (COP) that facilitates accurate and timely decisions by the commander. This advocates

the development of a CTP within a COP using "requirements" derived from the use of a systematic functional assessment methodology further refined by the commander's intuitive reasoning. The end result is a CTP based on warfighting requirements tailored to meet the needs of commanders at all echelons of command.

Joint guidance for the CTP and COP is often misunderstood and misinterpreted. A CTP supports tactical users by providing critical and relevant information tailored for each echelon of command. In a CTP, information deemed essential to support an event or situation can be visually displayed to allow users to quickly understand critical and relevant information concerning the event or situation. For example, the CTP may be designed to reflect critical and relevant friendly and threat force information, coordinating measures, and actions that trigger key decisions by the commander. The view for each commander is contingent upon the type of information they require to better understand their situation. What is "common" about the tactical or operational pictures is the various databases that enable commanders to share the same view, when required.

The CTP feeds the Commander in Chief's (CINC's) COP, thus promoting unity of effort in the theater of operation. Ideally, each joint task force utilizes commonly understood procedures and capabilities that share information across service boundaries and uses a concept of employment that supports essential requirements for each echelon of command. The effectiveness of joint operations significantly increases if the joint community has a common understanding and interpretation of CTP and COP.

C4I as a Force Multiplier: A View from the Marine Corps

"There are two basic uses for information ... to help create situation awareness as the basis for a decision (and) to direct and coordinate actions in the execution of the decision." MCDP-6

Lieutenant General Rhodes, Commanding General, Marine Corps Combat Development Command, states that "*Command, Control, Computers, Communications and Intelligence (C4I) is a force multiplier in supporting arms.*" For the Marine Corps, this is a subtle but significant change in mindset. In the past, if it dealt with fires or maneuver, commanders deemed it important. At that time, the commander could reasonably assimilate the information influx due to relatively primitive (by today's standards) C4I capabilities. Today, C4I technologies are rapidly increasing in sophistication enabling the commander to become overwhelmed with the gross quantity of information being "pushed" to him. As a result, senior leaders are now reacting to this danger and recognizing the role of C4I in supporting decision making by providing timely information to the commander in a form that promotes understanding, thus enhancing decision making. Harnessed properly, C4I can be a force multiplier that significantly increases efficiency and reduces redundancy as we face the challenges of the 21st century.

Essential Requirements Must Drive Our C4I Systems

To realize the potential of C4I, we need to clearly identify essential requirements for each echelon of command. By understanding essential requirements and the processes that support them, we can methodically apply the proper C4I technologies, personnel, procedures, and training necessary to focus the correct information in a form that enables commanders to gain knowledge and attain understanding of their situation and event. This enhanced situational awareness promotes understanding of their battlespace, thus enhancing decision making even in the face of uncertainty. Increased situation awareness enables units to share critical and relevant information tailored to support their warfighting requirements by maintaining a CTP within a CINC's COP environment. This common understanding of requirements enables commanders to better share critical and relevant information and enhance their understanding of the battlespace.

A Recommended Common Approach

Although joint guidance exists, there are no commonly understood CTP procedures or concepts of employment embraced by all services to maintain a CTP. To attain commonly understood concepts of employment for a CTP within a COP environment, a consolidated position is recommended for consideration by all services for the following three questions:

- What is the content of the CTP and the COP?
- How accurate and timely must the CTP's locational data be for any given scenario?
- Who needs access to the CTP?

Obtaining a consolidated position on these questions is essential to effectively develop a CTP that is tailored to support the commander's essential (warfighting) requirements. Consider the following answers as a possible start point solution:

- The CTP is a subset of the COP. It contains information on the current battlespace for a single operation. The CTP and COP are not specific depictions of the same operational or tactical situations. Rather, users apply filters to the COP and CTP to build views of the situation specific to their needs. What is "common" is critical and relevant information that is maintained in "shared" database(s).
- The accuracy of the CTP location data should be based on fire support considerations. Accuracy should be specified in terms of acceptable spatial error rather than some arbitrary temporal frequency, since varying movement rates would otherwise result in wide error variations. Accuracy of capabilities must be flexible enough to adjust to the fires functional requirements that support each event or situation.
- Planners and decision makers, executors, and personnel conducting assessment at all echelons of command, from component to squad level, all need access to

the CTP. Components need to share critical and relevant information with the commander, joint task force (CJTF), and the CJTF needs to be capable of sharing critical and relevant information with the supported CINC.

Other issues that affect CTP and COP that need to be addressed by all of the services include:

- How will the CTP and COP support joint and combined operations?
- How will the Services maintain a CTP in a COP environment? Will there be a need for an information management officer (IMO) to coordinate the activities and actions required to satisfy functional requirements? Will the IMOs coordinate requirements necessary to establish commonly understood procedures that will enable forces to:
 - Share critical and relevant information through the use of effective and efficient intranet management procedures.
 - Maintain situational awareness to enhance decision making through the use of commonly understood CTP/COP track management procedures.
 - Reduce uncertainty by implementing commonly understood request for information management procedures that support all functional areas (intelligence, maneuver, fires, logistics/ sustainment, force protection, and command and control).
 - Ensure critical and relevant information is shared across all planning horizons in a timely, efficient manner through the use of commonly understood collaborative planning tools/procedures.
- To support a CTP in a COP environment, all echelons of command must be capable of passing data. In the Marine Corps, the regiment to battalion communications link is a known deficiency for passing the volume of data required to maintain a CTP, but follow-on capabilities are being developed. It is imperative to understand critical and relevant information requirements for each echelon of command. This understanding will enable each service and the joint community to establish system architectures that are capable of managing the volume of information required maintaining a CTP in a COP. Will commonly understood operational concepts for CTP be developed that articulate critical and relevant information requirements by all services so that proper capabilities can be developed effectively and efficiently?

Training is the key to success. The Marine Air-ground Task Force (MAGTF) Staff Training Program provides each Marine expeditionary force (MEF) (a corps-level organization) a C4I for the Warrior Mobile Training Team program that provides instruction on the integrated use of C4I technologies, procedures, and personnel to support MEF command element critical and relevant information requirements. Will the integration of conflict modeling and simulation (M&S) systems with C4I technologies be used to replicate real-world conditions and support functional

requirements at each echelon of command? Is there a need to incorporate procedures that enable users to develop exercise designs that facilitate the integration of C4I technologies with conflict M&S systems and the appropriate network infrastructure to support training/learning objectives? An efficient exercise design facilitates close interaction of personnel and capabilities that normally interface on a limited basis.

Conclusion: Requirements Endure; Capabilities Come and Go

Requirements are enduring, but the capabilities that satisfy those requirements change quite frequently based on the organization of forces, command relationships, and concepts of operation/ employment. Often, commonly understood procedures can overcome technological deficiencies. But that action often takes time, which could be better spent performing other critical functions. By clearly identifying "essential requirements" for each echelon of command, C4I technologies, software, procedures, training, personnel, and communications can be properly applied through a cost-effective methodology that reduces redundancy and enhances efficiency. The key to success is a common understanding of essential requirements and the priority in which those requirements need to be accomplished. Functional assessments conducted using the methodology described above are a cost-effective start point for understanding essential requirements. By understanding those requirements, tempo and unity of effort can be maintained as the Services move forward in unison to face the many challenges of the 21st century.

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