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TRANSFORMING COMMAND CENTER OPERATIONS
Operational Knowledge Production in a Net Centric Environment

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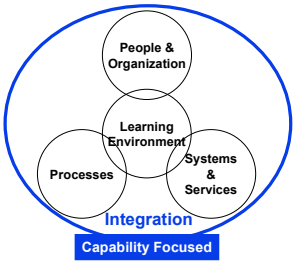
TRANSFORMING COMMAND CENTER OPERATIONS
Operational Knowledge Production in a Net Centric Environment

ABSTRACT

"Transformation within the Department of Defense is change in the way we fight, in the way we train, in the way we exercise, but especially, it's change in the way we think and how we approach our jobs." Yet, arguably, approaches to transformation continue to focus on systems-centric solutions and efforts subsequently perpetuating processes that perpetuate stovepiped development associated with, if not appropriate to, the industrial age. Clearly, the challenge in achieving transformational objectives is to reconstitute cultural, organizational, and technological paradigms with an unambiguous integration of processes, people and organizations, as well as systems and system services. The resultant environment encourages and cultivates innovation and leverages legacy capabilities to ultimately enable mission objectives with a capabilities-based construct focusing on an integrated end-to-end capability set, not just systems.



Desired Transformation End State

Correspondingly, Command Center transformation confronts increased operational demands with the number and simultaneity of missions categorically requiring agile command and control functions, robust planning and execution processes, conformable organizations, and a responsive information and knowledge management disposition and arrangement. A number of command center transformation projects aimed at countering stovepiped conventions unwittingly continue to protract them. Prevailing processes and procedures and its associated ontology are disproportionately assumed as given, universally understood, or imbued rather than explicitly articulated or reengineered to achieve a comprehensive transformative solution.

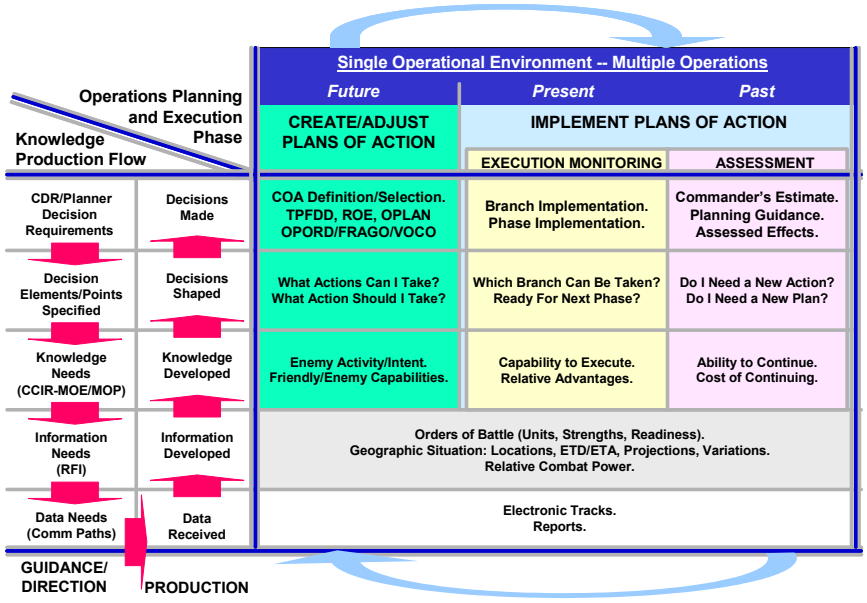
This paper presents the results of a study undertaken to support Pacific Command Joint Operations Center transformation efforts. Its genesis was the observation, during an effort that focused on watch position standing operating procedures, that basic principles of command center operations were not universally understood or appreciated, in particular, transformative information and knowledge management principles. The study approach was compatible with, but not restricted to, DOD Architecture Framework methodologies.

PROCESSES: The detailed examination of command center processes did not (and probably could not) break entirely new ground. Rather it derived a basic, underlying core of principles, functions, and requirements from time-honored and proven models including the Joint Operations Planning and Execution System (JOPES) crisis action planning model, the Universal Joint Task List (UJTL), the observe-orient-decide-act (OODA) loop, and sensor-to-shooter concepts and as implemented in joint and service operations centers (army tactical operations centers, air force air operations centers, naval command information centers, and marine combat

operations centers). The result was a Generalized Operations Planning and Execution Model applicable to existing command center concepts and providing the conceptual structure to integrate emerging knowledge-centric, information/knowledge management (IM/KM), and net-centric operations and warfare (NCOW) concepts.

Implementing net-centric concepts requires a focused, dedicated, and knowledge-centric view of command and control. The whole purpose of a command center is to deal with information--receive it, ensure it is valid and meaningful, produce meaningful knowledge for planners and decision makers, and ensure C2 information is effectively relayed to forces in the field. Knowledge Production has focused on taking data, collating and distilling to develop information, and integrating information with context to produce knowledge and understanding. This study provided additional focus on the "front end"—that part that dynamically establishes knowledge needs and the knowledge and information management structure.

The culmination of process analysis is the Integrated Process Model. This model integrates the general planning and execution and the knowledge-centric command center functional models.



Integrated Operations and Knowledge Production Process Model

PEOPLE AND ORGANIZATIONS: The integrated process model enables the logical depiction (and alignment) of organizational elements and responsibilities. The generalized nature of the model reveals its applicability to all organizations at all levels. Within a single organization, this applies to individual staff sections (e.g., the J2 and J4). The model facilitates the examination of appropriate linkages between command centers and supporting staff and other external organizations. This in turn establishes the underlying structure of information exchange linkages that form the basis for establishing collaborative environments.

SYSTEMS AND SYSTEMS SERVICES: Introduction of systems that implement "real-time" collaboration has suffered from the impacts on and requirements for change within command centers. It is not that system providers do not have a concept of functions and processes, it is that these functions are not clearly articulated (understood?) or congruent with the organizations into which the systems are being introduced. The capabilities approach establishes the essential groundwork for agile, flexible, and adaptive command center organization.

ESTABLISH THE CONCEPT OF OPERATIONS FOR KM/IM IN USPACOM

Knowledge Management is gradually, fitfully, and painfully moving from the rarified reaches of academia and the research centers "inside the beltway" of Washington, DC and the Pentagon to the organizations that must make it work. Within the U.S. Pacific Command, the Commander has initiated efforts to transform the tools, processes, and organization to realize the promises of knowledge management in a net-centric environment.

Making it work is, unfortunately, a much more difficult thing to do than preparing a paper such as this one. Yet papers like this remain necessary. Despite the significant amount of writing and work done, and made available by organizations such as Command and Control Research Program (CCRP), and a significant amount of transformation effort by joint and Service elements, we still don't know for sure either what a transformed military will look like, or how it will work.

On the other hand, the situation is complicated by a "tower of babel" at work. The language is not truly and firmly established. Like the joke about what "secure a building" means to the army, navy, air force, and marines, the meaning of critical transformational terms information management, knowledge management, net-centricity, and horizontal fusion (or integration) varies among leaders within an organization, among references, and sometimes within the same reference document.

As USPACOM sets out to create an Information Management Plan, it is clear that despite a sense of urgency and even specific guidance given to move forward, there remains much to be done to achieve a common understanding of what is to be done, and motivate the organization to discard the known but increasingly dysfunctional ways of doing things and adopt sometimes radical—but mostly incremental changes in organization and operations.

Getting people to change is what is referred to as the "cultural" issue. Well yes, it is cultural. But these things have been done before. Those old enough to remember when "Air-Land Battle" was brand new, may also remember how it was implemented. It took several years of training, retraining, and education conducted by the Army at every level and type of schooling and every training opportunity. The effort was led by the Army's Training and Doctrine Command. And the effort began with developing and publishing an authoritative set of documents that fixed and promulgated terminology, definitions, and processes. One had to integrate these concepts, but didn't have to deal with competing versions of the air-land battle vision.

Within the Joint world, there is no fully developed equivalent to a TRADOC, nor a fully developed, authoritative set of doctrinal statements on transformation. Perhaps that is to be expected, but it is not a reason to forgo the attempt. This paper is one more small and limited attempt to attack the problem of creating a doctrine. Its purpose is to attempt to construct a vision of transformation that can serve as a guide to implementing organizational and process changes that support transformation with USPACOM—and within DOD as a whole.

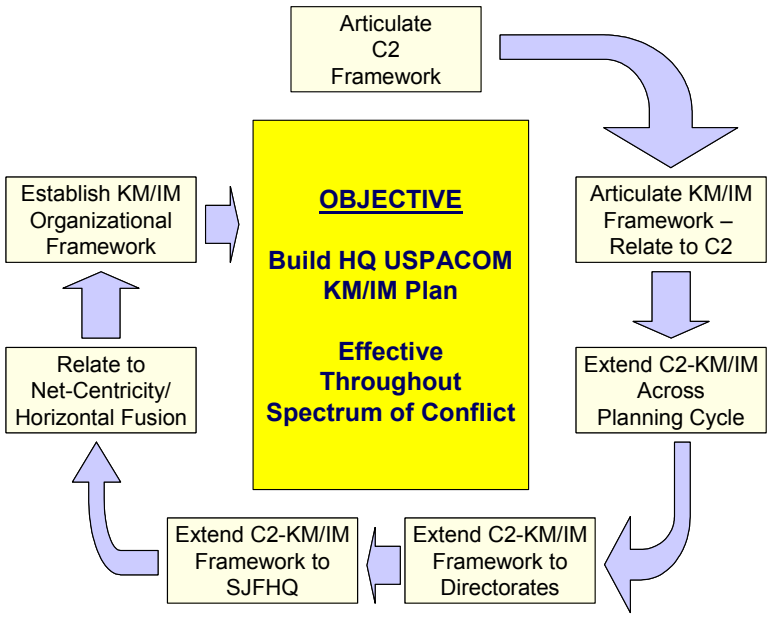
The goals of this paper are

- Establish a concept of operations for knowledge/information management (KM/IM)
- Establish a framework for constructing a workable KM/IM plan, and
- Clearly map KM/IM responsibilities to organizational structures.

Achieving the first goal starts with establishing clear operating definitions of IM and KM including eliminating multiple definitions; clearly (from an operator's viewpoint) depicting the relationships among IM, KM, and Command and Control (C2) including the applicability of C2-IM/KM concepts and constructs across Command directorates, Components, Subordinates, and Supporting Commands; and finally relating KM/IM to Net-Centric and Horizontal Fusion Concepts.

Achieving the second goal starts with establish relating KM/IM Concepts to the Command's C2 Organizational Structure and proceeding to relate the result to the directorates and other commands.
Achieving the third goal---

Frankly, we're not there yet. We've made some beginnings and certainly the first two goals help point the way. But the third step involves shifting actual resources. The paper will present some of the steps that may be taken, and in some cases have already been taken by enterprising organizations and individual organizational elements.

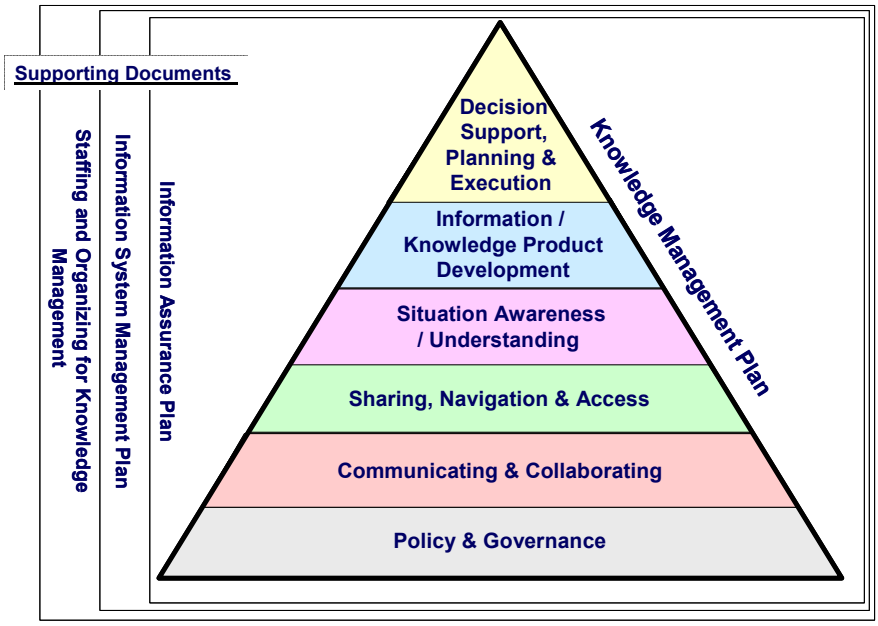


Building An Effective Command IM Plan

USPACOM CIO's Construct for a Headquarters KM/IM Plan

The USPACOM CIO's approach for creating a command IM plan is depicted in the following graphic. Much of this paper was initially prepared to serve as the introduction.

The current organization for building and implementing this plan is an IM Working Group (IMWG) Chaired by the CIO and under the overall supervision of the USPACOM Chief of Staff. It is the contention of this paper that the semi-formal IMWG organization must evolve into a formal cross directorate and cross command organization with clear elements of responsibility and appropriate authorities.



USPACOM CIO IM Planning Outline

As I prepared this introduction, I came to a number of conclusions that I think are important to relate up front.

- **KM/IM is Integral to C2.** That is, core C2 principles are *ENDURING,* C2 *REQUIRES* handling and use of information, yet data, information, knowledge, and understanding needs continue to overwhelm "business as usual"
- **KM/IM Concepts *ARE NOT NEW*.** Concepts, in some form and some terminology, were long incorporated into command operational procedures. But these processes were implicit, lacked distinct organizations to execute/implement the concepts, and did not deal with elements outside the headquarters. Clear articulation of KM/IM concepts will facilitate restructuring, KM/IM technology introduction, and process improvement.
- **KM/IM Requires Clear *Working Definition.*** There exist multiple Definitions for IM, even within single references. In general, IM can be associated with information handling (**Efficiency**) and KM as Knowledge Production (**Effectiveness**). There are "political" issues involved with this terminology. But I believe these definitions to be fair. Further, the two areas must be addressed together. Pure IM is "Uninformed." Providing more information faster creates another problem, not a SOLUTION. Bureaucrats Aim for Efficiency, Professionals Aim for Effectiveness (Chief of Staff of the Army, 2003). On the other hand, KM may provide substance, but requires IM in order to be timely.
- **C2-KM/IM Principles Apply Across Time and Space.** With regard to time, they apply to all 0perational phases: planning, execution, assessment. With regard to space, they apply to all staff Directorates, as well as subordinate and supporting commands. A clear illustration of this is the U.S. Joint Forces Command's Standing Joint Force Headquarters (SJFHQ) concept. The SJFHQ organization/functional model clearly reflects and attempts to organizationally embody KM/IM principles.

A Word About References

As I stated in the abstract, this paper is a result of study undertaken to support Pacific Command Joint Operations Center transformation efforts. I used my own background and experience, readily available command documents about existing C2 procedures used to implement the Joint Operations Planning and Execution System (JOPES), and the Universal Joint Task List (UJTL). Later I discovered CCRP and a number of IM and KM-related documents. The latter have allowed me to refine and better articulate what this and other papers have presented, and reinforced my belief that there is nothing truly new under the sun, but only (possibly) new ways to combine, organize, and relate that information to achieve better understanding. With that, here are the references I found to be useful in my effort:

- Multi-Service Tactics, Techniques, and Procedures (TTP) For Joint Task Force Information Management (FM 6-02.85 (FM 101-4), MCRP 3-40.2A, NTTP 3-13.1.16, AFTTP(I) 3-2.22), Sep 03
- Understanding Information Age Warfare, CCRP, Aug 01. David S. Alberts John J. Garstka Richard E. Hayes David A. Signori, CCRP, August 2001
- USPACOM Emergency Action Procedures Volume V, Aug 98
- USPACOM Joint Operations Center Process Architecture, Operations Planning & Execution Overview & Functional Breakdown, USPACOM CIO/J36, August 2003
- Understanding Commander's Information Needs, U.S. Army (Rand), 1989
- USPACOM IM Plan (Draft), USPACOM Operations Planning Team, Oct 2003
- USPACOM Joint Mission Force Standard Operating Procedures, Chapter 13
- IM C4I Challenges Briefing, LCDR Hesham D. Oubari, USN, JWFC Deployable Training Team Dec 2003
- IM Training Briefing, JW Joint Warfighting Center C Training Team, Dec 03
- Common JTF Headquarters Standard Operating Procedures, Joint Warfighting Center, 2003
- Draft 12th Air Force IM Plan, V 6.2
- Observations on the Emergence of Network Centric Warfare, Fred P. Stein, Evidence Based Research, Inc., 1595 Spring Hill Road, Suite 250, Vienna, VA 22182-2228
- Network-Centric Warfare: Its Origin and Future, By Vice Admiral Arthur K. Cebrowski, U.S. Navy, and John J. Garstka, Proceedings, January 1998, As Posted on the CCRP Web Site, http://www.usni.org/Proceedings/Articles98/PROcebrowski.htm
- Transforming Organizations—Changing the Culture Carriers Briefing, Jacobs (NFI), Industrial College of the Armed Forces, 1991

Key Definitions

From Joint Vision 2020:

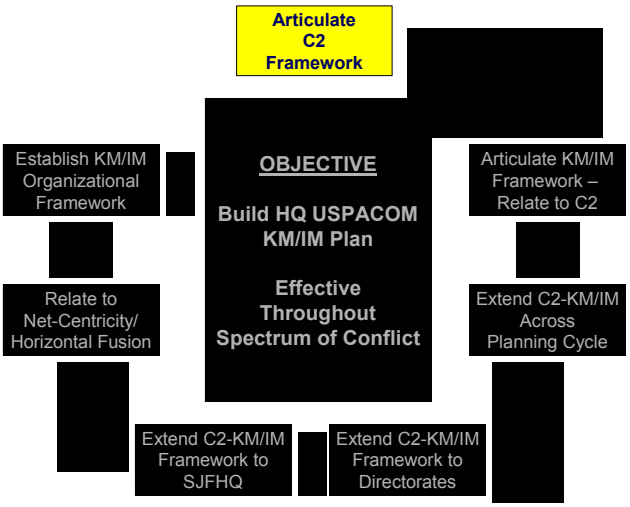
- **Information Superiority**. The capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same. Information superiority is achieved in a non-combat situation or one in which there are no clearly defined adversaries when friendly forces have the information necessary to achieve operational objectives.

From JWC IM/C4I Challenges Briefing

- **Decision Superiority**: Better decisions arrived at and implemented faster than an opponent can react, or in a non-combat situation, at a tempo that allows the force to shape the situation or react to changes and accomplish its mission. ***Decision superiority does not automatically result from information superiority.***
    - IM must support the commander's decision-making process
    - Decision-making, supported by the flow of accurate information, is at the heart of C2
    - There is more information available than Commanders can possibly assess or effectively use
- **Information** is the message that resolves uncertainty for the receiver and causes the receiver to change state.
- **Information Management** is the required discipline to store and process information in known and predictable ways within an organization. What this implies is that you have well defined and understood processes mapped out, and any member of your organization can locate and retrieve any information they need to do their job. It also implies that the processes used across the staff have had their interrelationships spelled out.
- **Knowledge** results from the message being placed in proper context based on facts and an ascribed meaning (human experience, etc.).
- **Knowledge Management** is the ability to put information into the context of the organization's collective experience. If information management is the required discipline in processing and storing information, then knowledge management is the next step beyond, where the experiences of those within the organization are managed.

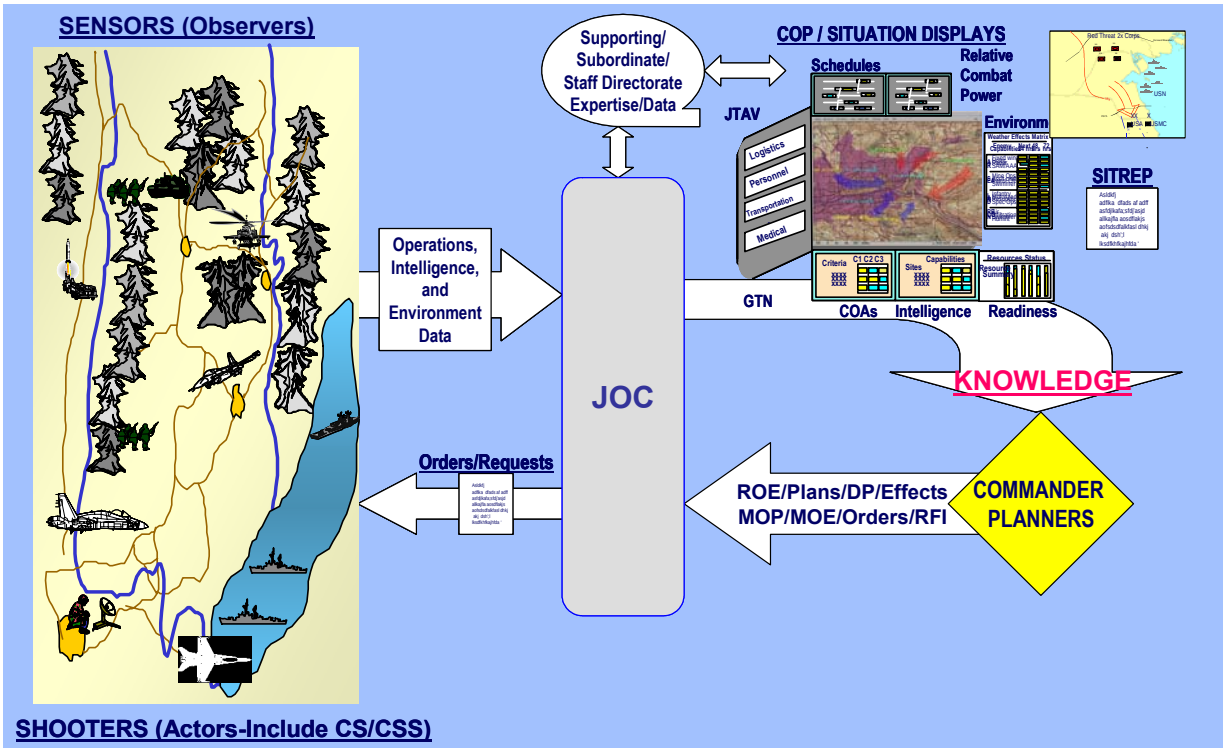
BEGINNING IN EARNEST, STEP ONE: ARTICULATE THE C2 FRAMEWORK

It all begins here. Everybody understands C2. Yet I believe it is still necessary to ensure that everybody understands it in the same way and with the same degree of comprehensiveness.



Articulate C2 Framework

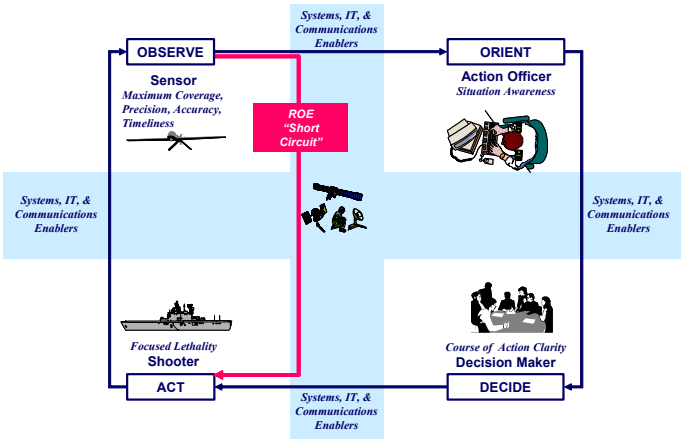
The following diagram is a high level operational concept drawing of what, from a headquarters view, command and control involves. In terms of the DOD Architecture Framework, it is an OV-1 drawing.



The "REAL WORLD" is Distilled-Assessed Against the Plan, and Depicted by the JOC FLOOR for PLANNER and DECISION-MAKER Use.

C2 High Level Operations Concept

This is an important representation, because much of what follows is reasonably clearly illustrated here. A good drawing of this type should generate a lot of "yes, of course" comments. Regardless of Service or echelon, anyone in a headquarters should recognize what is going on and agree that it fairly represents what goes on in a heaquarters. Yet it took a while to get to this point. And it took refinement in order to ensure that virtually anyone's prior conception of C2 fit. It should not take much to see Colonel Boyd's Observe, Orient, Decide, Act (OODA) loop in the illustration. It further embeds the "Sensor-to-Shooter" concept both as a corollary to OODA and C2 in general.

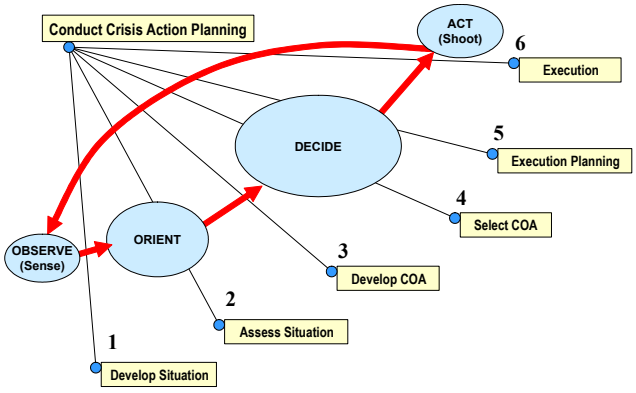


OODA, Sensor-to-Shooter, ROE

The illustration above shows how OODA, Sensor to Shooter, and Rules of Engagement are interrelated with each other and, by extension, with C2. Sensor to Shooter is Observe-Act, but requires predetermined ROE to substitute for Orient and Decide. Note that some ROE can be embedded in sensor/processors/weapon systems—not just prepared in written form. ROE result from "known knowns," information that is absolutely UNAMBIGUOUS—requiring no further processing to gain understanding. Constructing ROE requires much work up front work, as well as an escape clause. If ROE don't cover an event or situation, then full OODA is executed.

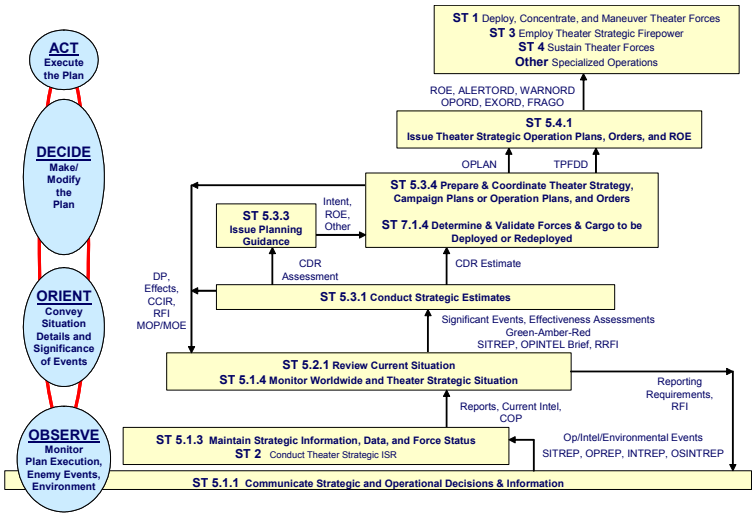
I am aware that some transformation theorists believe OODA is too simple, limited, and perhaps even restrictive for today's requirements. Yet I believe that the simplicity of OODA describes a basic building block for any more developed construct, and is so widely understood at a "gut" level that it remains an essential component of any explanation of transformational C2.

I illustrated this by relating OODA to two other constructs that are very familiar to joint operators: the JOPES crisis action process and the UJTL.



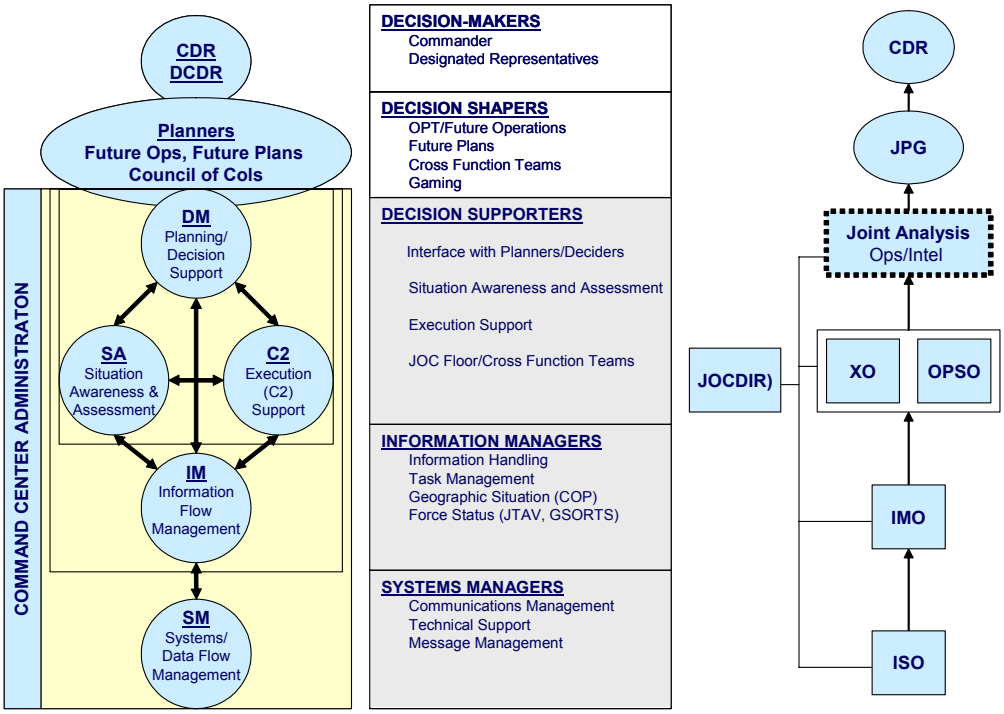
JOPES and OODA

The diagram above depicts the 6-phased JOPES crisis action process with OODA clearly a fit. The diagram below depicts a model of planning and execution constructed from the UJTL. Again, there is clearly a fit among JOPES, the UJTL, and OODA. And all are clearly relatable to the high level picture of C2 presented earlier.



UJTL, JOPES, and OODA

Any discussion presented to joint operators that attempts to dismiss these concepts, rather than accepting them and building on them, or perhaps "tweaking" them, will face much skepticism. I have found that, when operators see these illustrations, they say "of course". As such, they present a comfortable base of departure that can be used to present less familiar concepts.

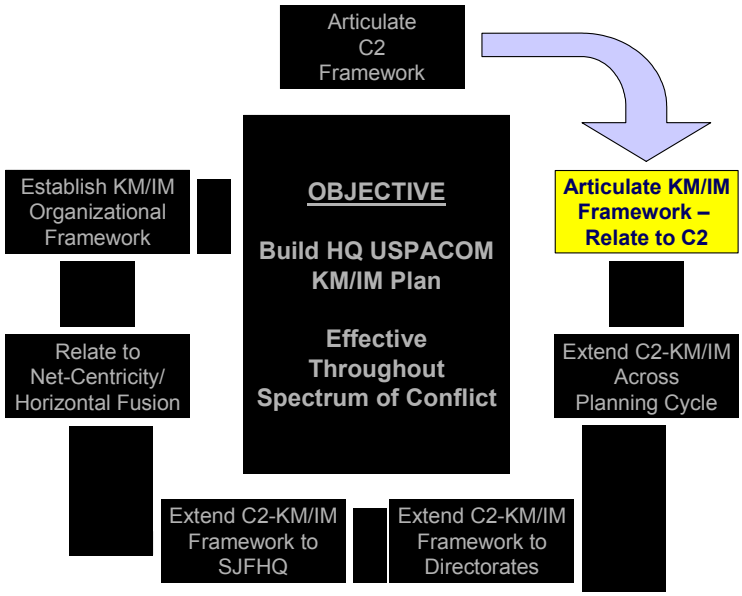


Command Center Functions, Organization, and Information Functions

Such as are presented in the diagram above. This is a culmination of several steps that took what command center personnel described as their tasks and worked them into a construct that begins to integrate traditional C2 constructs with KM/IM constructs. Note also, getting a little ahead of myself, that it also begins to point toward an organizational structure. This will be approached again later in the paper.

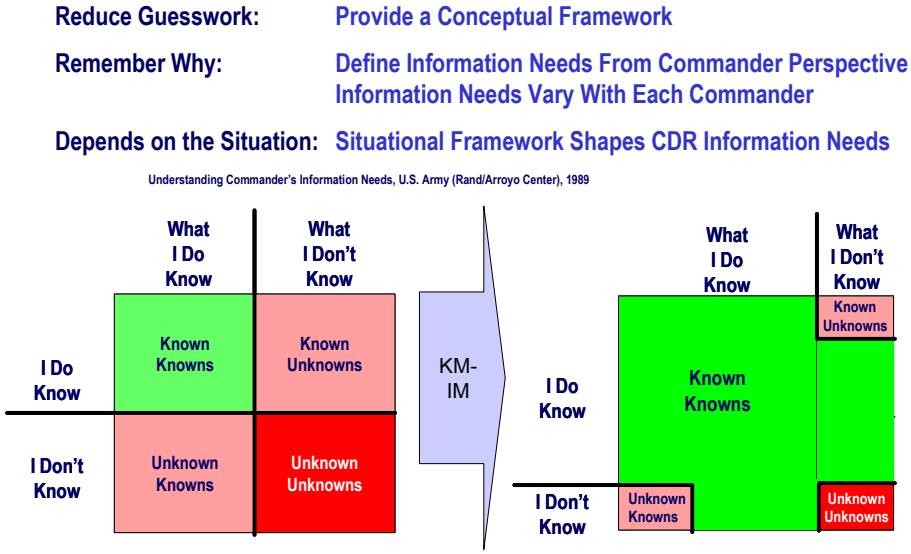
STEP TWO: C2 and KM/IM

With a fairly comprehensive and understandable C2 construct available, the next step undertaken is to articulate a KM/IM framework that relates to the C2 construct.



Articulate KM/IM Framework – Relate to C2

What follows owes much to Understanding Commander's Information Needs, and the Multi-Service TTP for IM (with a little bit of Secretary of Defense Rumsfield thrown in for good measure.) The diagram below depicts three knowledge production concepts along with an illustration of what we are trying to achieve. I think it remains important to see that, in my opinion, we will never eliminate the "unknown-unknowns." They will always exist and no one urging greater reliance on KM/IM techniques and technology should skip over this fact. The operators are fully aware that here is where they, the command, and the country are most at risk. KM/IM seeks to help minimize those risks.



Knowledge Production Concepts

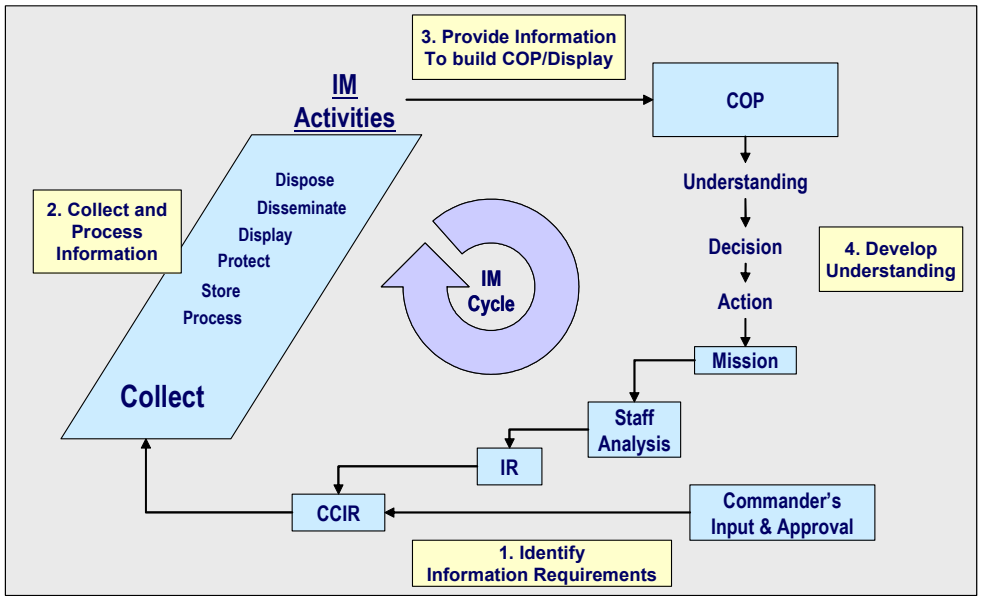
The authors of Understanding Commander's Information Needs stressed that information needs must be defined from the perspective of the commander. Unfortunately for those who would develop a checklist of information needs, these need vary somewhat idiosyncratically with each commander. And if that were not enough of a problem, each commander's information needs are shaped by the situation over time. In other words, there is no easy out. Every command center must work to get what each commander needs at that particular time in the planning and execution cycle.

This reinforced several concepts that seemed to be missing in how transformation was being approached. And it is not a military-only problem. William Ives of Accenture Corporation presented similar civilian-world issues in an article entitled "Maximizing the Movement (Lessons Learned in the KM Movement Apply to Portals), in Portals Magazine, Volume 4, Issue 24, December 2003. He summarized several KM/IM implementation errors:

- Error 1: KM/IM Viewed As An Add-On
  - Not Grounded in Specific … Functions
  - KM/IM Treated as Infrastructure (Collaborative Tools, Knowledge Repository)
- Error 2: KM/IM Isolated Instead of Being Considered as Always Part of a Bigger Function
  - "…it is no longer acceptable to tolerate rampant inefficiencies in accessing the information, knowledge, and expertise to accomplish a task. The alignment of knowledge management with specific business processes to overcome these inefficiencies provides the value."

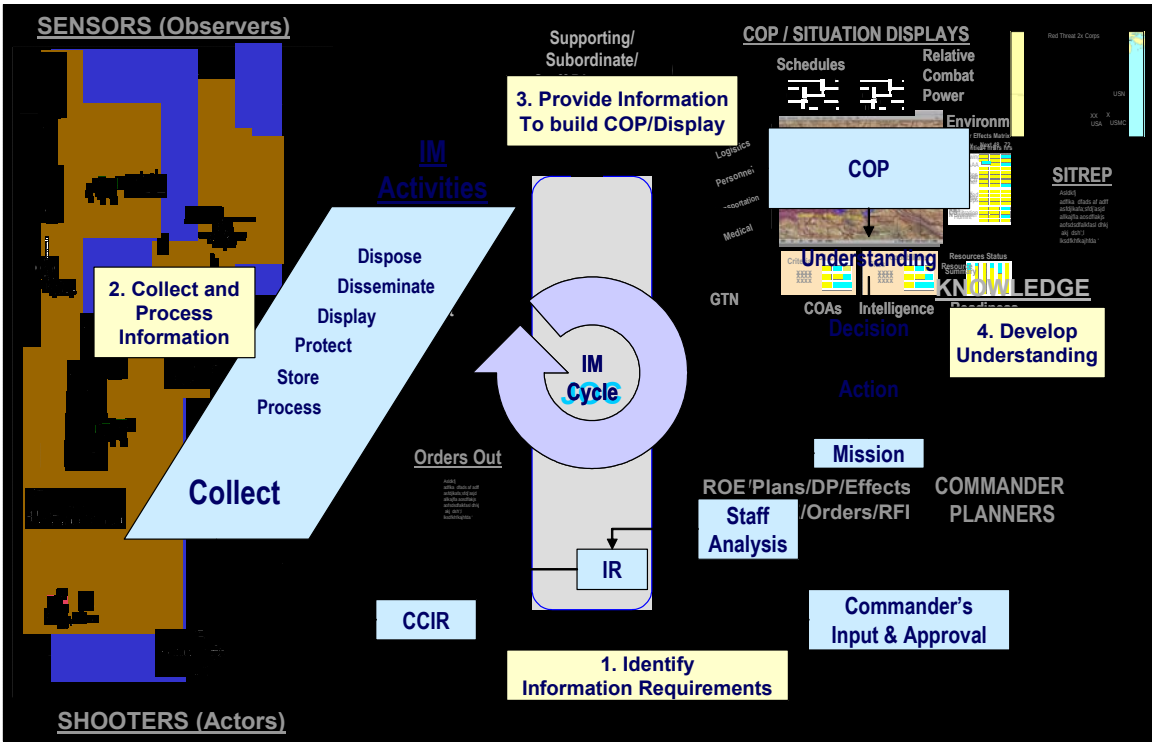
The Multi-Service TTP For IM goes a long way toward describing a comprehensive framework. As shown in the figure, however, there are definitional issues that remain.

Mixture of Concepts. "IM Cycle" includes development of information requirements and understanding-KM functions, IM activities-information flow efficiency functions, and COP. Pure Information Focus—Drops Consideration for "communicating execution information … "



Multi-Service TTP For IM Cycle

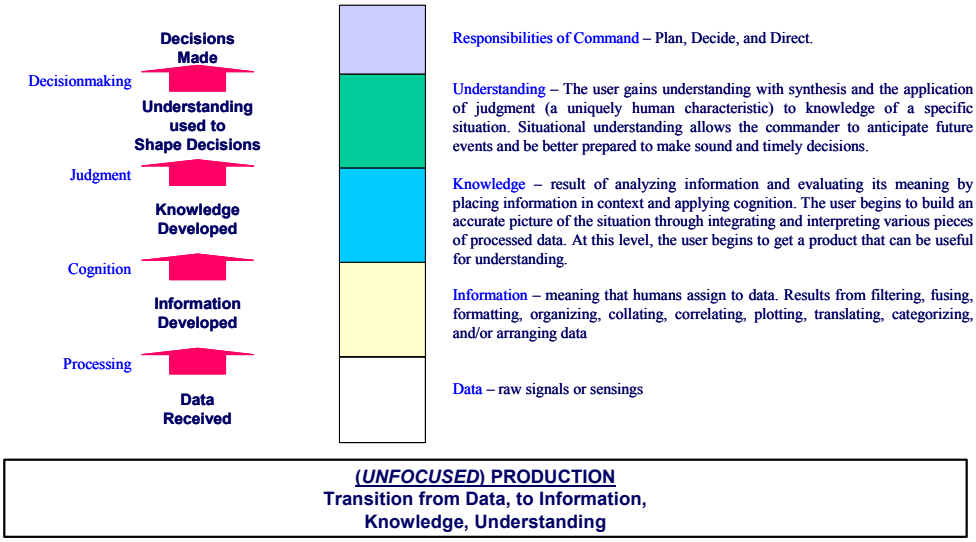
But what is most important about this particular representation is illustrated below. When overlayed on the C2 High Level Concept grahic presented earlier, we see an excellent fit. And again, there exists an understandable base to proceed with discussion of KM/IM.



IM/C2 Correspondence

What this shows is that KM/IM is an articulation of an underlying mechanism for achieving effective C2. And this articulation is an extension of the articulation of functions such as operations, intelligence, and logistics. These latter are nothing more than extensions of the commander's responsibilities compartmentalized organizationally. KM/IM structure reflects compartmentalization of a commander's cognitive function. As such, we again begin to form the basis for organizationally structuring to implement KM/IM.

Much of knowledge management other discussion of cognition focuses on knowledge production as illustrated below. But this omits an essential element—articulation of commander's needs. Production can occur, but it remains unfocused.



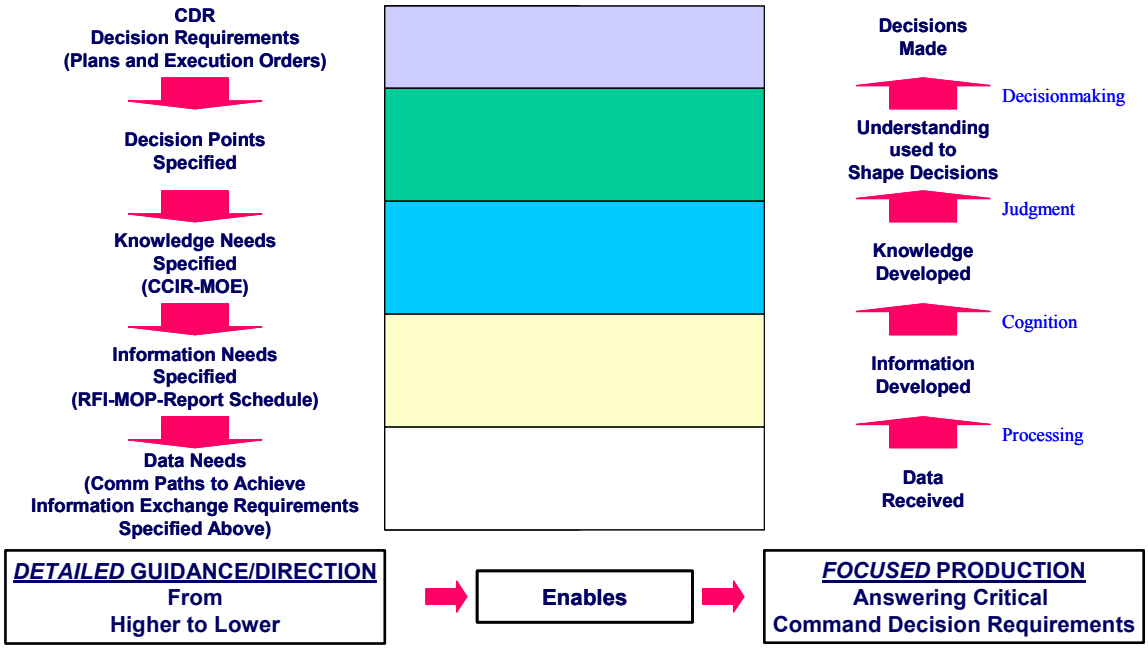
Knowledge Production – Cognitive Heirarchy

Command Terminology Perspective and Demystification

C2 Terms	What They Really Mean
• Mission	• What I Must Accomplish
• Intent/Guidance	• Broadly, How I Want It Accomplished
• Plan	• Specifically, What I Expect You To Do
• Decision Point	• I'll Cross That Bridge When…
– COAs	– Have To Do Something--What?
– Phases	– When?
– Branches	– What If?
– Sequels	– What Next?
• ROE	• I Don't Need to Make That Decision For You
• CCIR	• Sun Tzu (*Big Questions*)
– PIR	– I Must Know the Enemy (and Environment)
– FFIR	– I Must Know Myself (Location, Strength, Will)
– EEFI	– I Must Surprise the Enemy (OPSEC, Deception)
• RFI	• I Need Information To Help Answer *Big Questions*
• MOP	• Is Execution Producing Planned Results?
• MOE	• Are Planned Results Leading Toward Mission Accomplishment?

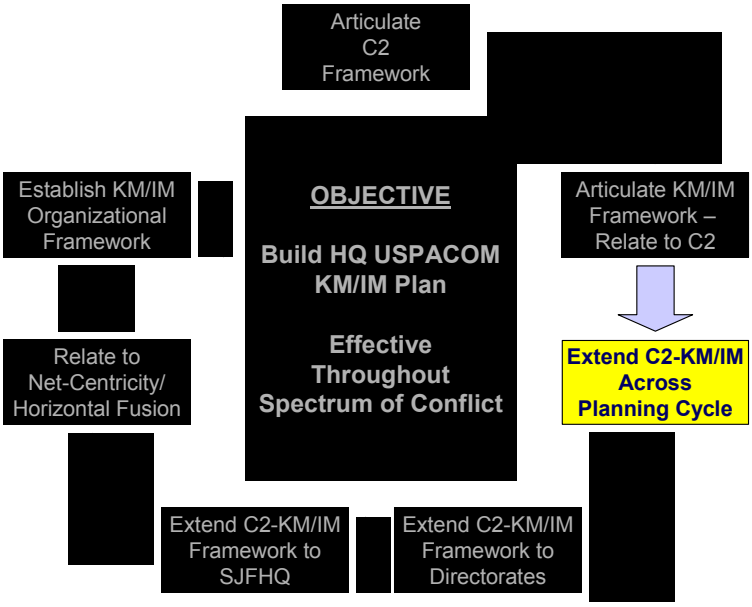
Knowledge Production – C2 Terminology Description

The tools exist to focus production, but the absolute necessity to implement these tools is only beginning to be appreciated. A lack of appreciation has been a barrier to rapid implementation of several DOD CINC21 programs initiatives, such as Decision-Focused Command and Control (DFC2), which incorporated a mechanism to force consideration of commander's information needs. The terms used to focus production are fairly well known. The interrelationships among the terms are less well understood. A depiction of these relationships is shown below, along with the relationship to knowledge production. The similarity to the Multi-Service TTP For IM is accidental, although inevitable. A key element of this depiction, however, is the layering which you may remember from an earlier graphic describing the Command Center structural and organizational construct.



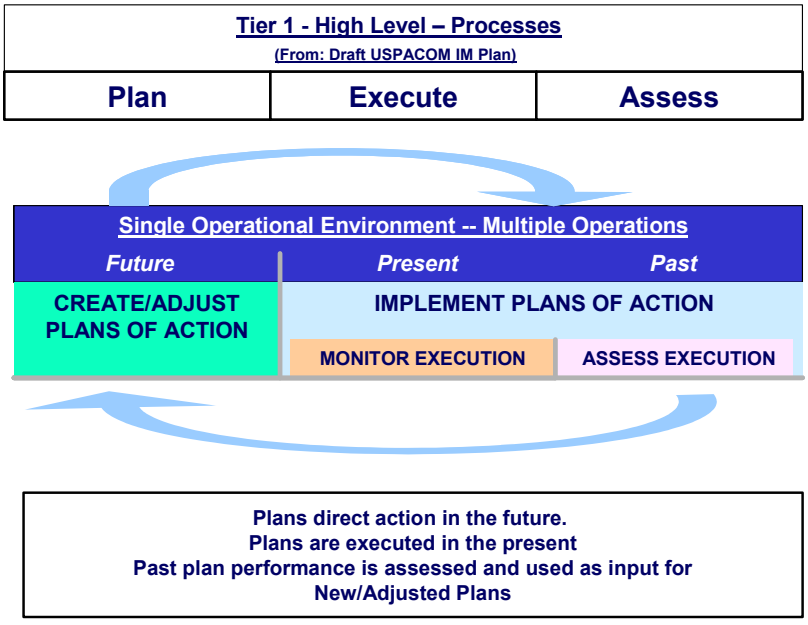
Focused Knowledge Production Cognitive Heirarchy

STEP THREE-EXTENDING KM/IM AND C2 CONCEPTS ACROSS TIME



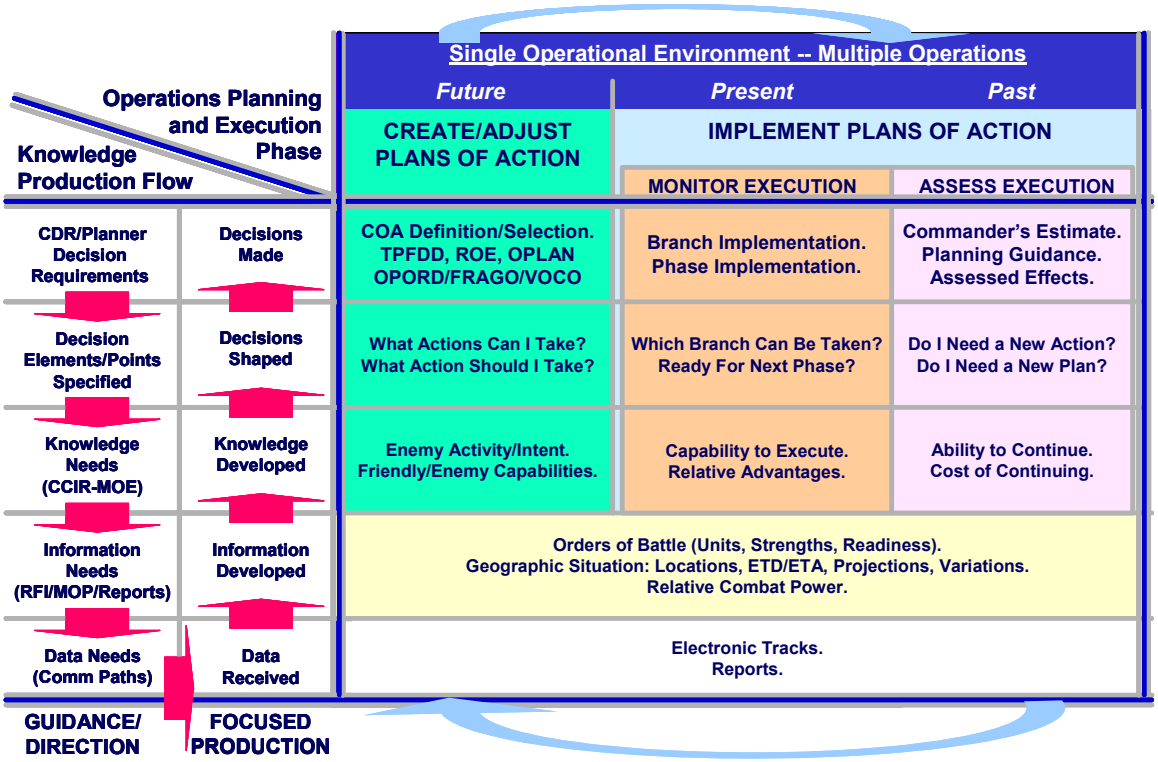
Extend C2-KM/IM Across Planning Cycle

Planning and Execution is both time-phased and cyclical. At any one time in an operation, plans are being made for future execution, elements of a plan are being executed, and past elements of execution are being assessed to determine possible requirements to adjust or create plans. This abbreviated planning and execution cycle has been looked at within USPACOM as a basis for revising the 6-phased JOPES planning and execution cycle. Within either representation KM requirements vary, but support all time components of the cycle.



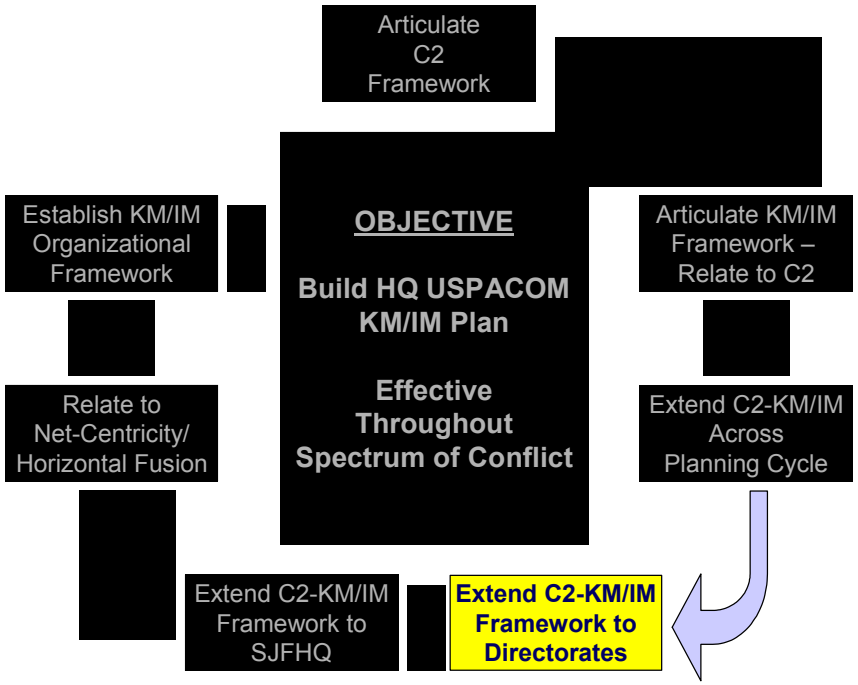
Generalized Operations Planning and Execution Model

Knowledge Production models developed earlier can be integrated with the time-phased planning model above to create a generalized planning and execution model as illustrated below. This depiction can further help depict the assignment of KM/IM functions and responsibilities to existing or new organization elements within command centers.



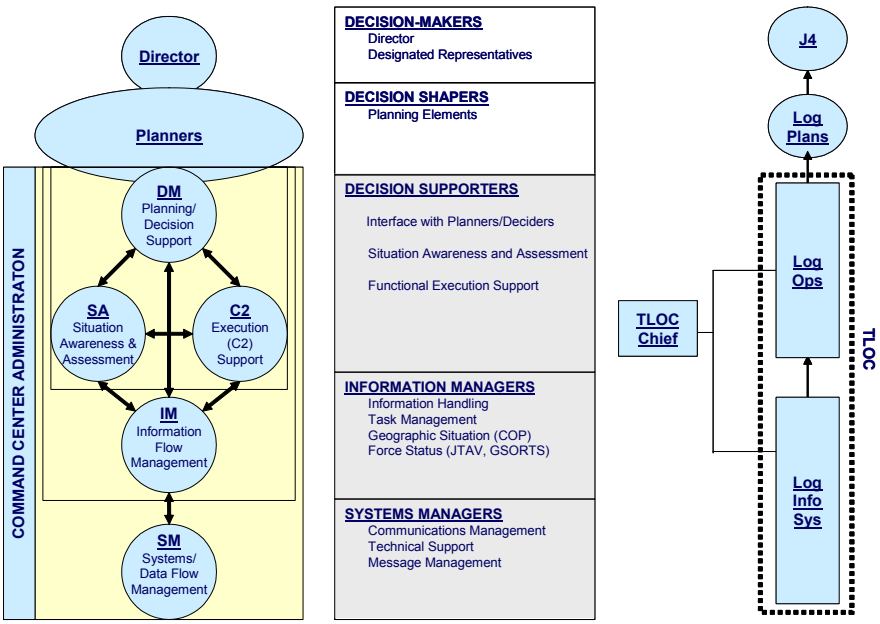
Integrated Focused Knowledge ProductionCognitive Heirarchy
and Generalized Operations Planning and Execution Model

STEP 4 - EXTENDING KM/IM AND C2 FRAMEWORKS ACROSS THE COMMAND HEADQUARTERS



Extend C2-KM/IM Framework to Directorates

This is a relatively straightforward process. All directorates contribute to planning and execution at least as reflected in annexes to a basic operation plan. They all conduct operations within their functional areas, conduct operations support, and contribute to knowledge production. As with the J4, it is relatively easy to depict its operating organization in much the same way we earlier depicted the USPACOM command center organization.

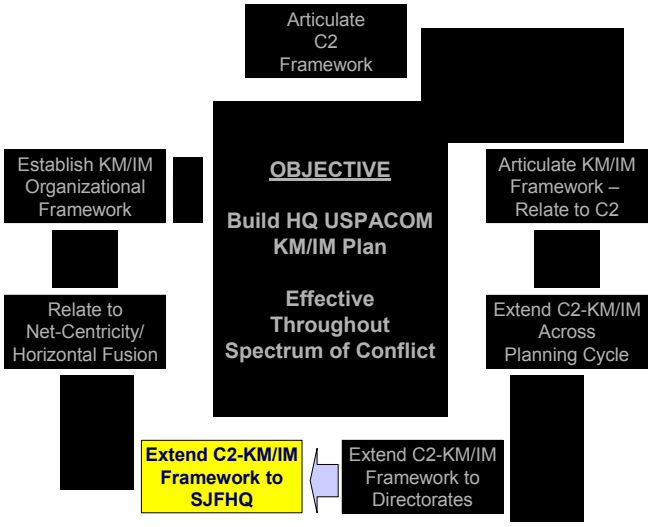


Logistics Directorate Alignment with Command Center Functions

Within a directorate, KM/IM functions support two masters. All production must support the USPACOM commander, but within the directorate, it must also support the director's information needs. It is important to note that director-focused production are normally inappropriate for direct use in addressing commander information needs. Lest one feel too sorry for the directorates, it should be noted that even the headquarters command center has a second master at the next higher level of command-the Secretary of Defense through the National Military Command Center (NMCC). Note also that this structure easily extends to other external organizations: service components, JTFs, and supporting commands. Again the importance of articulation of commander's needs and the focusing of production to meet those needs is both important and often not straightforward. In the end, KM does not make it easy for the command center as much as it is aimed to make it easier for the decision maker. When integrated with IM as part of a unified cycle, then we can address making it easier for the command center.

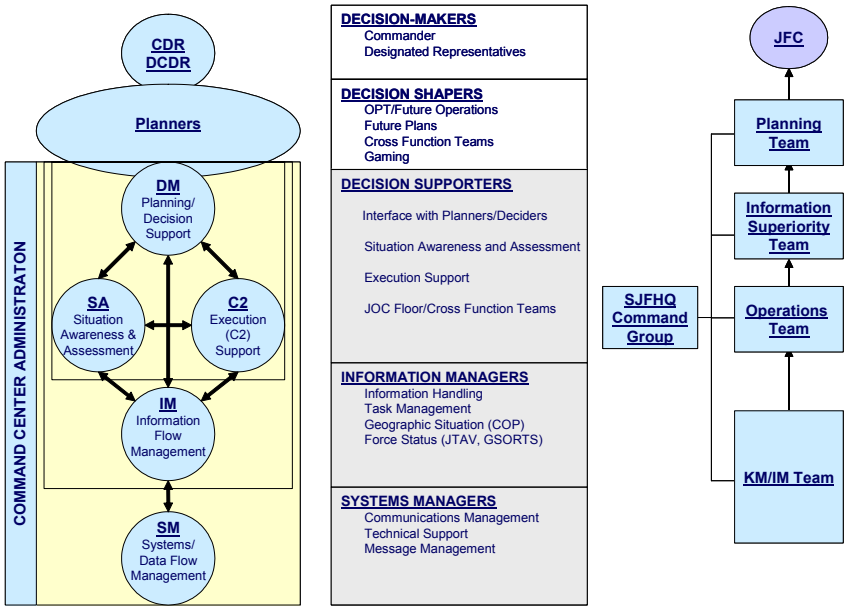
Before moving on, it is important to note that the common vertically layered KM/IM and C2 construct across the headquarters sets the framework for net-centricity. Where before, we were concerned with vertical information flows, we now see a structure that can facilitate horizontal (interorganization) integration and information flow.

STEP 5 - SJFHQ AND THE KM/IM AND C2 FRAMEWORK



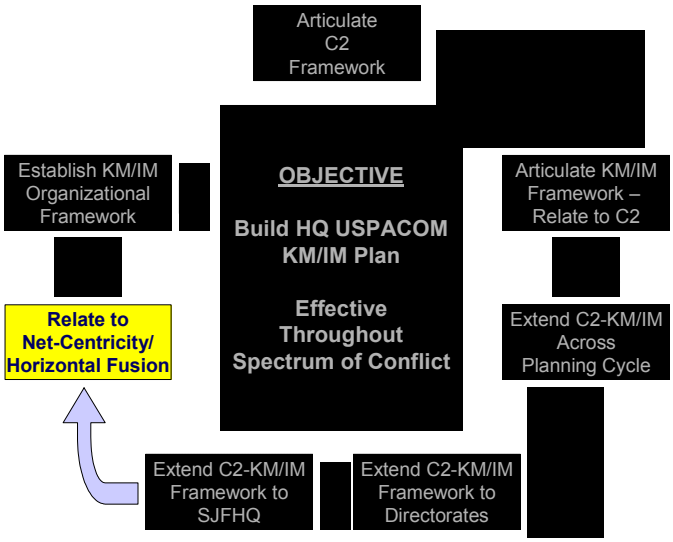
Extend C2-KM/IM Framework to SJFHQ

The SJFHQ is an intriguing concept. It is described as being a dedicated, distinct staff element that will have a daily focus on readiness and deliberate and crisis planning and is specifically organized to conduct effects-based planning and operational net assessments. Its organization is purely functional consisting of planning, operations, information superiority, IM/KM, and logistics groups. When operating, the logistic group is integrated within the other groups. It is clearly evident that the SJFHQ is a command center adjunct with special skills—including an approach to KM/IM within its organization. The requirement for USPACOM, and other commands in which SJFHQ is being fielded, is to achieve a commonality of structure and KM/IM processes so that SJFHQ becomes an integral part of the command center rather than a distinct entity with its own, foreign processes. In fact, SJFHQ may be a leader in the command by acting as a test bed for KM/IM concepts.



SJFHQ Alignment with Command Center Functions

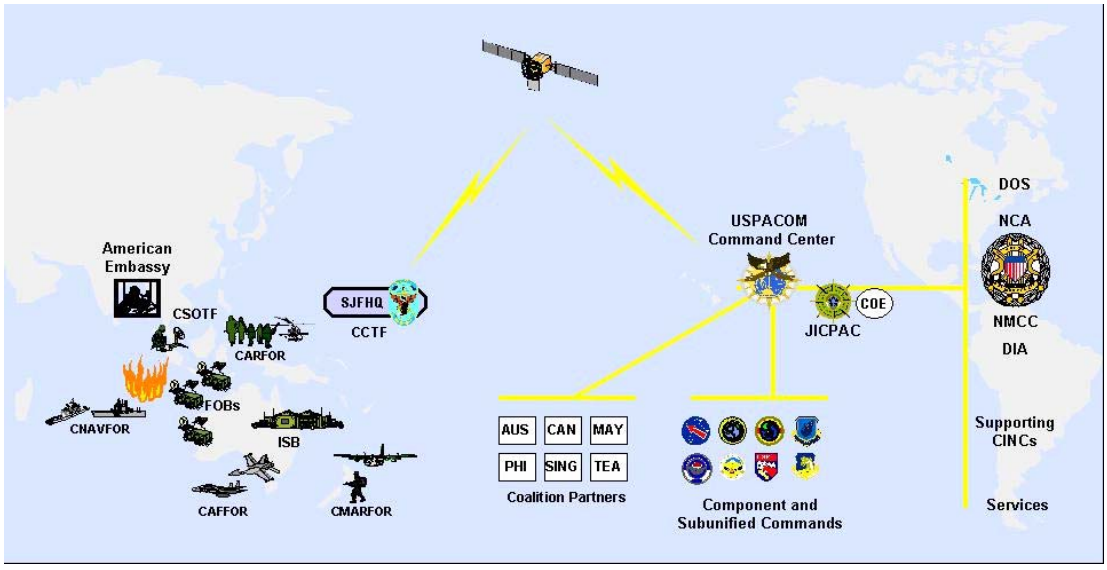
STEP 6 - KM/IM AND C2 RELATIONSHIP TO NET-CENTRICITY AND HORIZONTAL FUSION



Relate to Net-Centricity/Horizontal Fusion

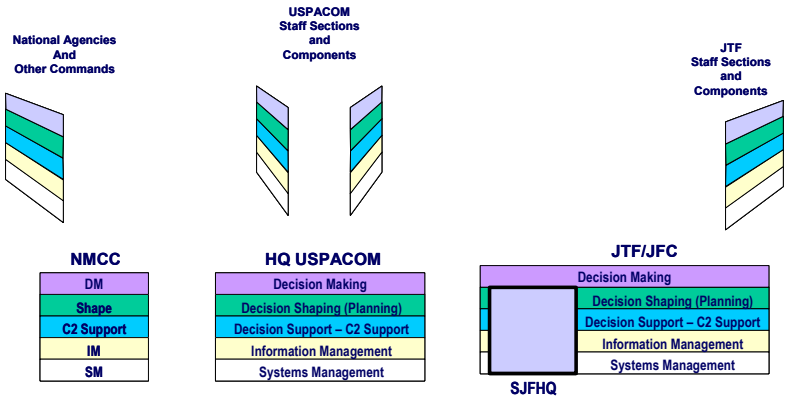
By this time, the relationships may be very obvious. In describing extensions across space with the requirement for cross-organization support to commander information needs, we have also depicted a construct that begins to show the manner in which physically separated nodes, all of which are conducting a vertically integrated C2-KM/IM function will be organized to achieve the coordination—across each layer of the KM/IM function—that will make achieving net-centricity practical.

The following three graphics illustrate the concept. The first is a pictorial of an operation in progress.



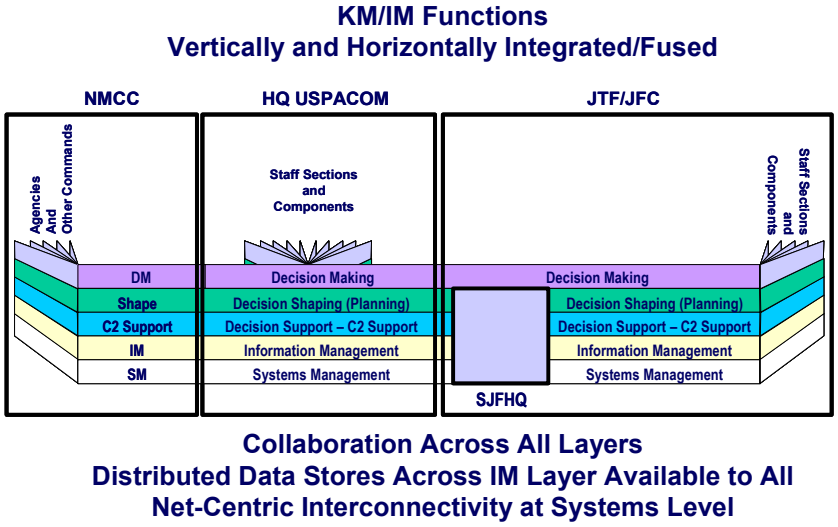
Example Operational Concept – JTF with SJFHQ Support

The second is a depiction of the organizations executing KM/IM-C2 vertically integrated function.



Individual Elements Coordinating

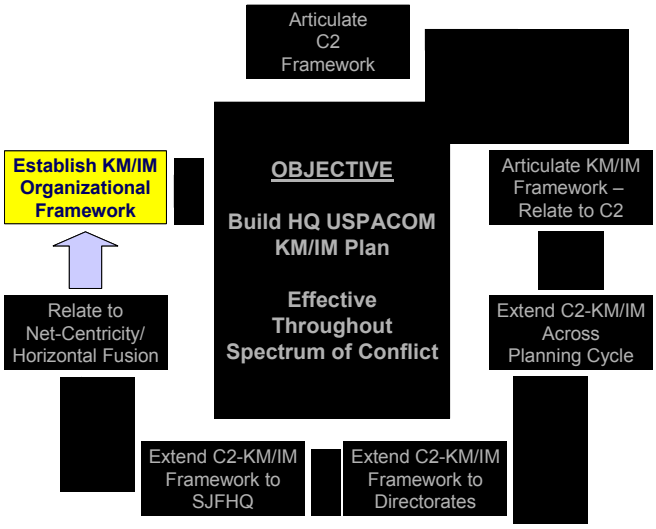
The last is a depiction of the integration across layers of the KM/IM-C2 function that enables the coordination and cooperation essential to achieving horizontal fusion and net-centricity. Command elements coordinate to make mutually supporting decisions. Planning elements coordinate across organizations to achieve synchronized employment of forces and fires, operations centers coordinate to ensure "common" operational pictures and rapid assessment/validation of events. IM/KM elements coordinate to ensure that data stores are accessible, compatible, and redundant without being unnecessarily duplicative. Systems elements coordinate to ensure physical accessibility. Each respond to their organization's requirements and represents those requirements to achieve the necessary coordination.



Collaborative, Horizontally Fused, Net-Centric Integration

The key remains establishing formal structures within organizations consistent with the layered KM/IM-C2 function. Sometimes I think this statement is too simple. It is simple, but I don't intend to imply that it will lead to easy solutions. However, ad hoc IM organizations—set apart from rather than integrated into the C2 function, are almost certainly doomed to fail. An integrated IM/KM entity truly understands internal customer needs, can better explain IM/KM concepts, and can represent actual instead of assumed needs with other commands. Combine this with leadership enforcing realistic lines of cross-organizational authority, and the mechanism to achieve effective horizontal integration.

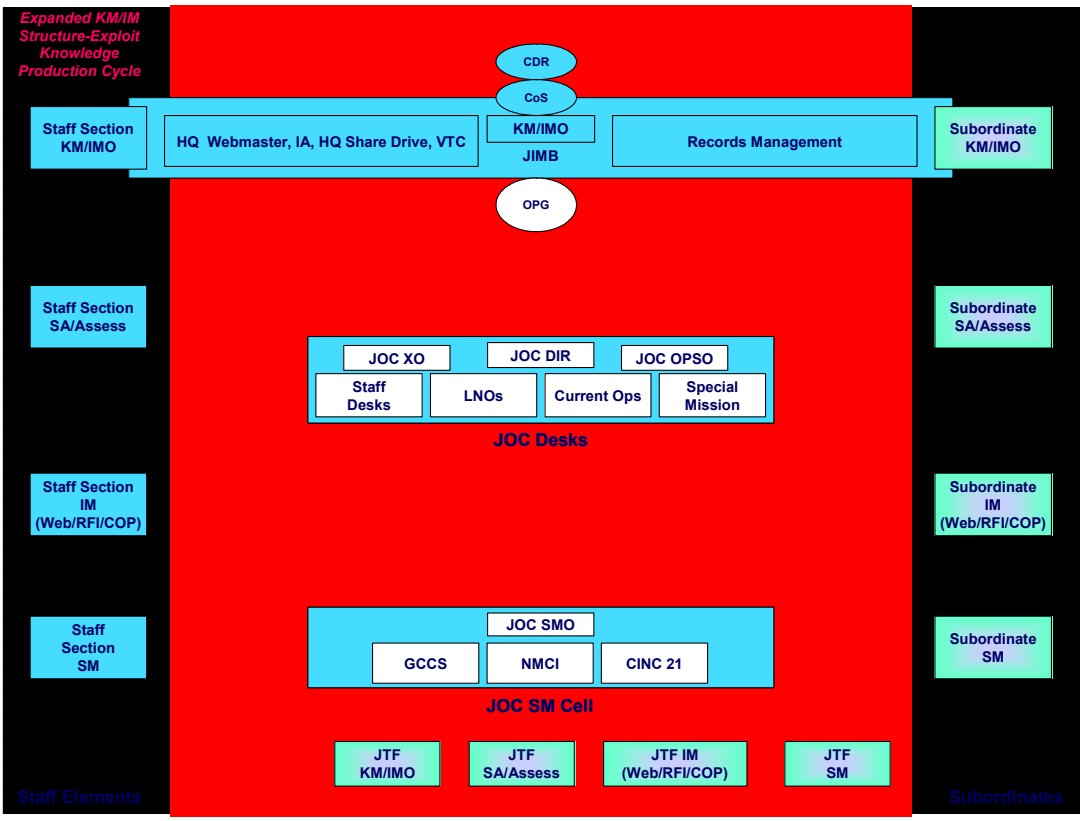
STEP 7 - LET'S GET ORGANIZED



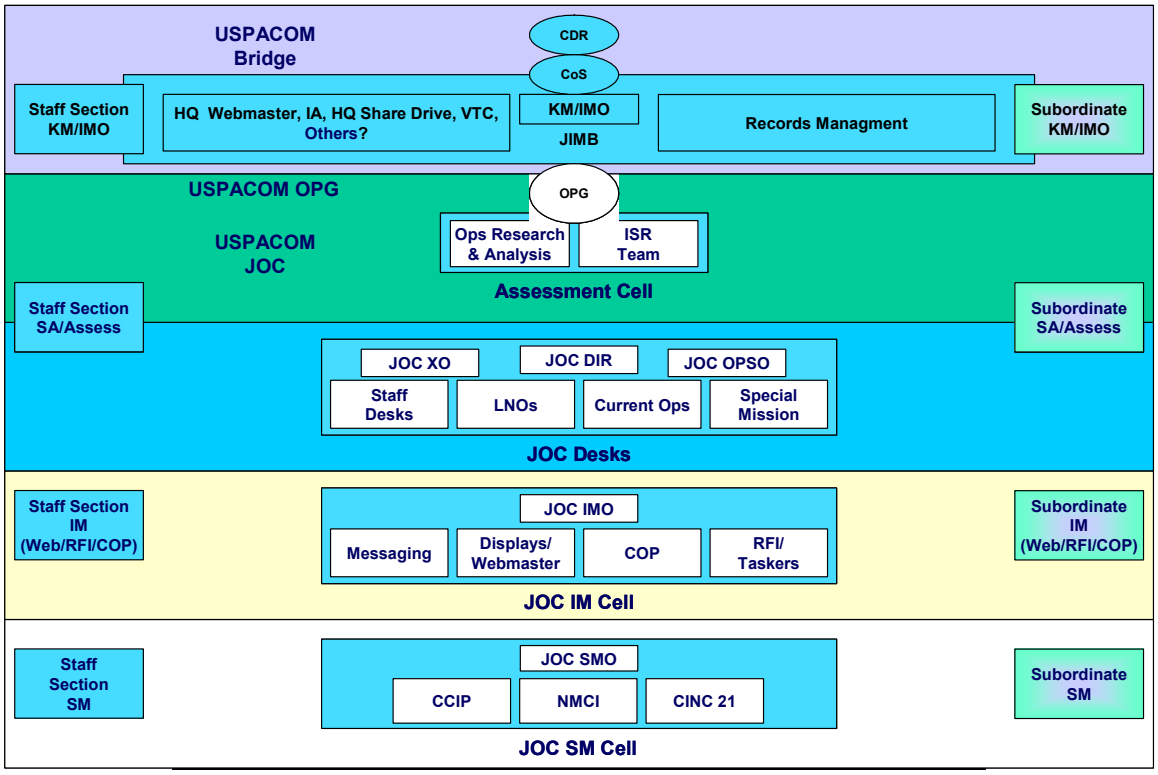
Establish KM/IM Organizational Framework

This is the crux of the issue. Many things come into play here, not the least being cultural issues. If anything is made clear by this or any discussion of C2 and KM/IM, it is that information handling and knowledge production are important, if not the most important, functions of a command center. Yet command centers are dominated by warriors who would chafe at being called "knowledge workers." Paradoxically, these same people tend to take on increasingly burdensome IM responsibilities that can, and in my construct, should be taken up by dedicated information handlers who do not require exceptional warrior experience. The result is a common experience in command centers. Personnel are overwhelmed by the volume of incoming information making it impossible to apply the judgment inherent in their rank and experience. They end up passing massive amounts of unfocused information to their commanders under the hope, if not expectation, that the commanders gets what they need. Command centers reflect the acknowledged fact that the commander cannot do it all. Indeed, anyone who suggested that staffs should be done away with (there is always some argument as to the proper size) would, in this day and age, be thought thoroughly dotty. It appears to be time to understand that the command center, as traditionally organized, can no longer do it all.

The graphics below provides an initial proposal—a straw man—that looked at how USPACOM might look at reorganizing its command center operations to establish a vertically integrated KM/IM structure that supports all phases of joint planning and operations, and creates the conditions for effective cross-department collaboration and coordination.



Strawman Command Center Realignment



Strawman Command Center Realignment – IM/KM Layers

CONCLUSION

This paper is the result of studies and actions being taken to support USPACOM C2 transformation efforts and support the development of a command IM plan. Its impetus was an observed lack of understanding and lack of shared vision as to what transformation meant, what the interrelationships were among various transformation efforts, and how people and organizations had to change.

This paper holds the following central tenets:

- C2 is the overarching concept. C2 is not being transformed so much as its components.
- KM/IM is such an integral component of C2.
  - KM provides methodology to support effective C2
  - IM provides tools and methodology to support efficient KM
- Organizational realignment to support KM/IM is absolutely necessary, but may not be as wrenching as is feared.
- All directorates and subordinate/supporting commands execute C2-KM/IM. Their current internal organizations model similar C2 structures.
- Adoption of a common C2-KM/IM structure and subsequent coordination can facilitate real-world achievement of net-centric and horizontal fusion goals.

It is likely that the contents of this paper reveal no one big new thing. What is intended is three things: relate developing transformation concepts and language to the C2 concepts and language with which operators are familiar; reveal the interrelatedness of multiple C2 transformation efforts, and depict some of the efforts to develop real-world organizational constructs to help in implementing transformation in a joint command. To the extent it helps others in their pursuit of transformation goals, it will have done good. To the extent it draws criticism and constructive comment, it will do good for the authors and our command.

Joe Thomas

22 March 2004