Thriving in the Information Age

Why Marine Corps commanders must maximize their existing information-related capabilities

by LtCol Jamel Neville

Since its inception, the Marine Corps has defined itself as an innovative and adaptive institution that has demonstrated its value to the American public and Congress even while changes in society, science, and technology have taken place. The Marine Corps has remained relevant. In the Information Age, the Marine Corps faces the challenge of continuing to thrive at the same level of agility and versatility in increasingly complex operational environments. Operations will become more challenging as the speed and volume of information increases; advancements in information-related capabilities (IRCs) yield greater opportunities for both friendly forces' and adversaries' abilities to access, leverage, and exploit information as strategic capital; and fiscal resources are further constrained. Marine Corps commanders must maximize their existing IRCs via a common framework in order to generate and share *quality information* and intelligence to maintain a competitive edge and take decisive action across the range of military operations. *Quality information* includes the following attributes:

- "Accuracy: Information that conveys the true situation.
- Relevance: Information that applies to the mission, task, or situation at hand.
- Timeliness: Information that is available in time to make decisions.
- Usability: Information that is in common, easily understood formats and displays."
- Completeness: All necessary information required by the decision maker is available.

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- Brevity: Information is succinct but at the level of detail required.
- Security: Information is afforded sufficient protection where required.[1]

The Information Environment

The information environment is "the aggregate of individuals, organizations, and systems that collect, process, disseminate, or act on information."[2] The three interrelated dimensions that make up the information environment include the physical, informational, and cognitive dimensions. The dimensions collectively interact with individuals, organizations, and systems within the environment.[3] *Joint Publication 3-13 (JP 3-13), Information Operations*, and Figure 1 describe each dimension as follows:
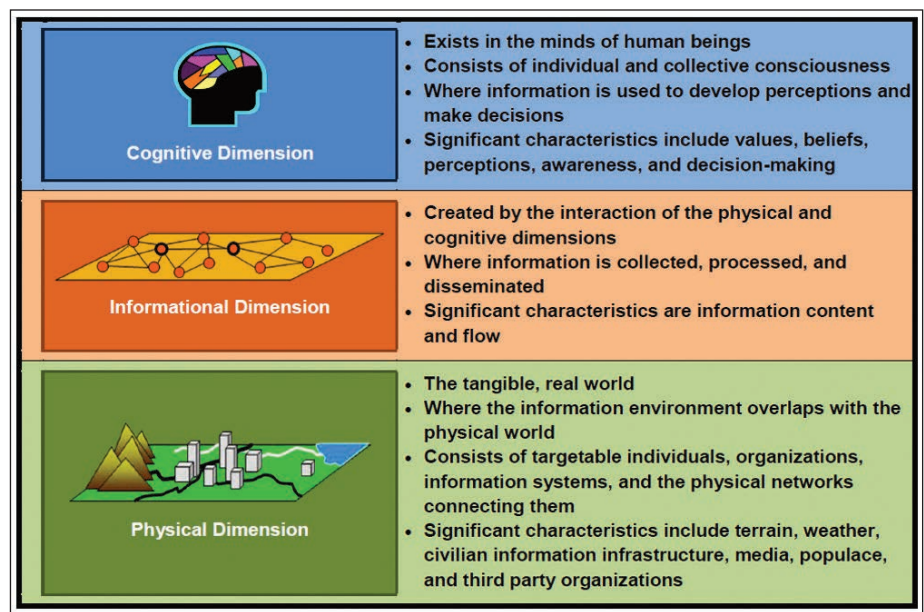

Figure 1. Dimensions of the information environment. (HQMC CD&I, **Marine Corps Operating Concept for Information Operations,** *4 February 2013.*)

a. Physical dimension:

composed of *C² (command and control) systems, key decision makers, and supporting infrastructure* that enable individuals and organizations to create effects.

b. Informational dimension: encompasses "*where and how* information is collected, processed, stored, disseminated, and protected."

c. Cognitive dimension: "encompasses *the minds* of those who transmit, receive, and respond to or act on information."[4]

IRCs, the tools, techniques, or activities employed within the information environment dimensions, create effects and operationally desirable conditions.[5] Marine Corps IRCs include the C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) systems, services, and processes that enable C² as depicted in Figure 2. Marine Corps IRCs also include other DOD Internet services[6] and Internet-based capabilities[7] leveraged by a command/organization such as social media.

This article attempts to offer the Marine Corps commander insights and considerations for operating in the information environment, from garrison/steady-state to contingency/combat operations, and leveraging existing IRCs. Taking an ends, ways, means approach, a framework and critical control variables provide a method to generate quality information within and across commands and organizations. Quality information directly correlates to providing commanders and staffs with actionable information and intelligence, shared understanding, unity of effort, and greater operational efficiencies and effectiveness.

The Problem Set

Challenges of today's operational environment. Commanders inherently understand that timely and actionable information and intelligence enhance decision making across the range of military operations. However, making sense, responding, adapting, and command-and-controlling their forces[8] is challenging for commanders and staffs

MEF / MEB Table of Applications

Personnel	Logistics	Medical	Intel	Net Mgmt	Fires	Collaborative	C2	FP	Maneuver
APES	SMS-IBS	NavFit98B	IOS v2A	TCWS	EMT	IRCXPro	IOS v1	GBOSS	JBV
DTMS	SMS-IBS-CMM	NISPS	CIDNE	Win 08 Server	PFPS	MAKO	CPOF	BAT-HIIDE	FBCB2 BFT
WEB ORDERS	TCPT	FltTemps	Palantir	MS Exchange	PSS-SOF	SharePoint	JFRG II	JWARN	
TMS	ICODES	BUPERS	IOS v3	HBSS	AFATDS	Adobe Connect	C2PC	JEM	2
MROWS	IGC	NKO	METOC	IIS	StrikeLink	OpenFire			
MCAAT	BCS3	MRRS	TEG	TDMS	TBMCS	Transverse			
OMPF	GCSS-MC	DenCas	DTAMS-L	Solar Winds	JADOCS		6	4	
NMCRS	CLC2S	AHLTA	PRISM	Remedy					
MCEAS	TAMIS	DEERS	VideoScout	MS Office	7				
US/MIPS-W	Web ATLASS	NFAAS							
MCAT	TLCM-OST	NAVMED & PERS	9	9					
MOL	MERIT								
IAPS	AEMIT-EWRB		11						
Rpts Net Studio	TFSMS								
MCTFS	CRANE								
3270.00	MDSS II								
MCMPS	DRRS-MC								
Marine net	RF ITV								
DFAS/My Pay	SRS								
AMHS									
TFSMS	17								
MISSO									
MROS									
21									

Ownership Key

G-1		Medical	
G-2		G-4	
G-3		G-6	
G-3 Air		IMO	
G-3 FECC		FP	

Figure 2. Common Marine Corps C4ISR, collaboration, and warfighting IRCs. *(HQMC C4, Information Management Advocacy brief, 27 October 2015.)*

given the deluge of data and information constantly produced, received, transmitted, and stored by stakeholders within and across their commands and organizations, as illustrated in Figure 3.

Physical and virtual workspaces, file cabinets, shared drives, and web portals have become vast wastelands of years' worth of unstructured, unnavigable data and information within commands and organizations. While there are subject-matter experts within commands and organizations trained and tasked to prevent and mitigate these challenges, there is a lack of standardization—from the tactical to the strategic level—for integrating and employing IRCs and these subject-matter experts.

Strategic misalignment. All Marine Corps commands and organizations use some form of a *decision cycle* to *assess, plan, direct,* and *monitor* operations
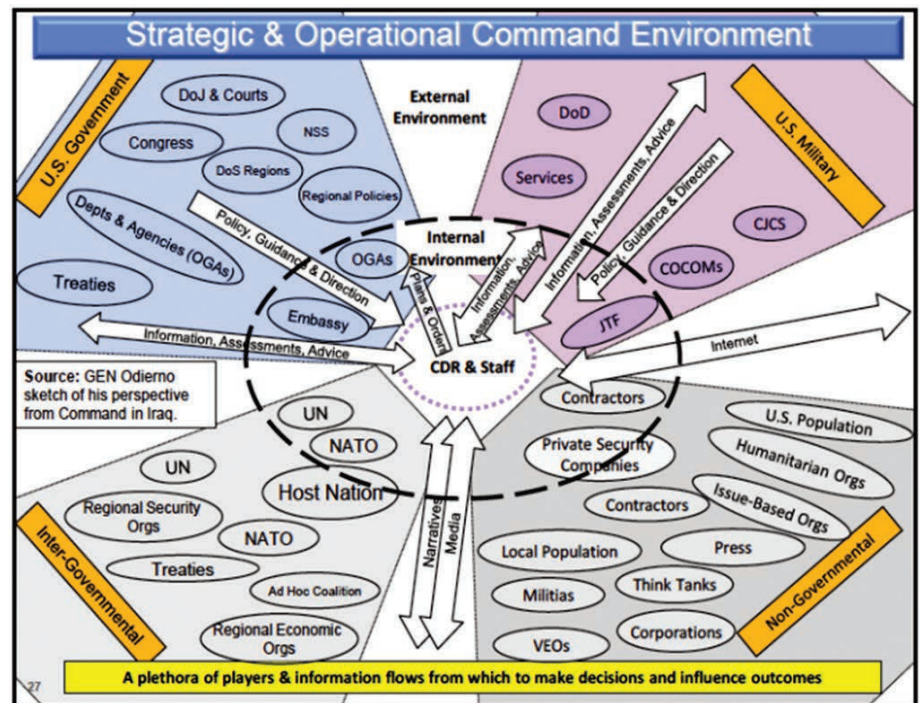
Figure 3. Information flows and stakeholders in the operational environment. *(GEN Raymond Odierno, USA, address to the Knowledge Management Workshop, May 2011.)*
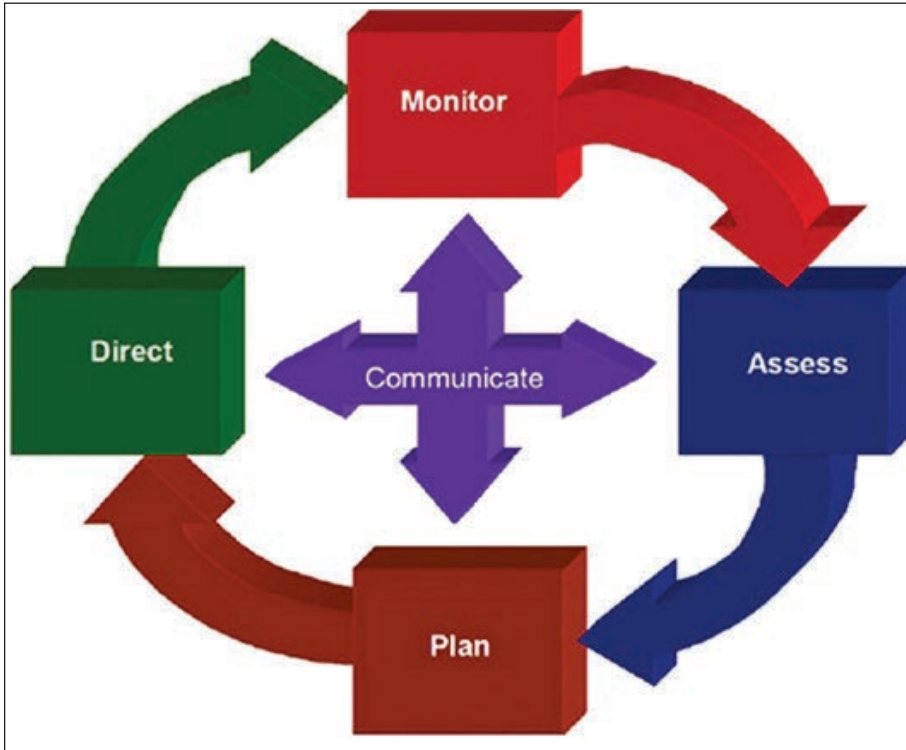
Figure 4. Commander's decision cycle. (*The Joint Staff J-7,* Joint Operations, *Fourth Edition, March 2013.*)

as depicted in Figure 4. According to the Joint Staff J-7 Deployable Training Division (DTD),[9] the decision cycle is

> a matter-of-fact model that describes how an operational commander makes decisions. It provides a means to focus the staff on how to support the commander's decision making.[10]

While the days of asking, "What do I know? Who needs to know it? Have I told them?" are still applicable and fundamental principles in managing and sharing information and intelligence, this process is largely reductionist in nature and inadequate when operating in the information environment, which calls for *speed* and *focus* to maintain the competitive advantage. When processes are not in place to effectively capture, share, and transfer operational information and intelligence, internal friction ensues and commanders' decision cycles are negatively impacted.

In an attempt to gain control of the "information chaos,"[11] commanders and staffs frequently resort to technology-focused solutions (e.g., SharePoint) and strategies to improve decision making and staff operations; however, these

do not always address the root causes of information and intelligence sharing. The Joint Staff J-7 DTD warns that "we must guard against the tendency and lure of technology to entice us to attempt to scientifically model outcomes and centrally control operations."[12] Information silos and barriers to sharing quality information and intelligence will only continue to persist with a lack of a holistic approach to IRCs' in-

tegration and employment. These gaps and shortfalls ultimately translate into wasted time and money, information security vulnerabilities, redundant IRCs, and the Marine on the forward edge not receiving the timeliest and optimal services and support.

The Marine Corps' IM (information management) is not institutionalized. Information management is

> the function of managing an organization's information resources for the handling of data and information acquired by one or many different systems, individuals and organizations in a way that optimizes access by all who have a share in that data or a right to that information.[13]

Marine Corps commanders share a general understanding of IM and the value it yields; however, there currently is no formal structure or training within the Marine Corps for the IM community.[14]

While Marine Corps communications officers currently serve as IM officers (IMOs) for their command or organization, many commanders and staffs do not understand that the IM discipline encompasses more than the duties and responsibilities of a basic communications officer. A communications officer is primarily expected to plan and supervise the installation, operation, and maintenance of radio, data, and telecommunications network infrastructures and bandwidth. An IMO is responsible for facilitating the *flow* of information across these network
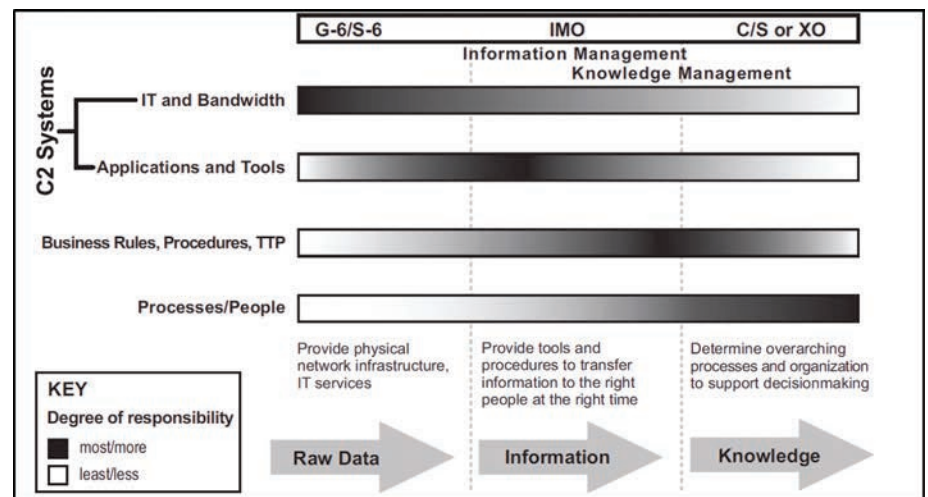

Figure 5. Information Management levels of responsibility. (HQMC CD&I, MCWP 3-40.2, Information Management.)

infrastructures while synchronizing the integration and employment of IRCs as depicted in Figure 5. They must be able to work by, with, and through principal staff officers, such as the operations officer (J/G/S-3), intelligence officer (J/G/S-2), and communications officer (J/G/S-6), to facilitate the following critical information within and across commands and organizations:

• Key decisions the commander must make to successfully achieve desired results.

• Daily reports on set conditions for tactical operations to maintain commander situational awareness.

• Information required by the commander to reduce uncertainty about the force, the adversary, and the environment.[15]

Leveraging and Multiplying the Force

Ends: producing quality information via a common framework. To successfully operate and thrive across the range of military operations in today's fluid information environment, all Marine Corps commanders and staffs must place a premium on the production of quality information to best inform their decision making and enable staff operations. All data and information produced, received, transmitted, and stored within their command or organization—paper-based and digital alike—is strategic capital.

In the same manner, commanders should track and manage the status and activities of their personnel, equipment, and fiscal resources; the management and utilization of the data and information within their command/organization is just as important. While this task may seem daunting for some, applying the right methodology can achieve incredible results. Over time, IRCs' integration techniques, tactics, and procedures will become transparent and a normal part of staff operations. A starting point is the commander focusing his staff toward achieving and sustaining the following value proposition:

Optimize how information and knowledge assets[16] are captured, shared, and transferred to provide Marines, leaders, and commanders with timely and ac-

The commander must work in a medium which his eyes cannot see, which his best deductive powers cannot always fathom, and with which, because of constant changes, he can rarely become familiar.

—Carl Von Clausewitz

tionable information and intelligence, while continuously improving organizational processes and continuity of operations.[17]

Delivering this level of value throughout steady-state and complex operational environments requires more than mere lip service and/or technology solutions. Detailed, deliberate planning on the part of the commander and staff and leveraging a common framework is fundamental to setting the conditions necessary for optimizing decision making and staff operations. The IRCs integration continuum is one such framework for effectively integrating and employing IRCs to produce quality information and intelligence.

The IRCs integration continuum includes three mutually supporting LOEs (lines of effort) for commanders and staffs to align and build their IRC strategies upon—the mission, Marines, and machines (M3). M3 represents the force (the command or organization) writ large and what every Marine Corps commander is directly responsible for at all levels of command.
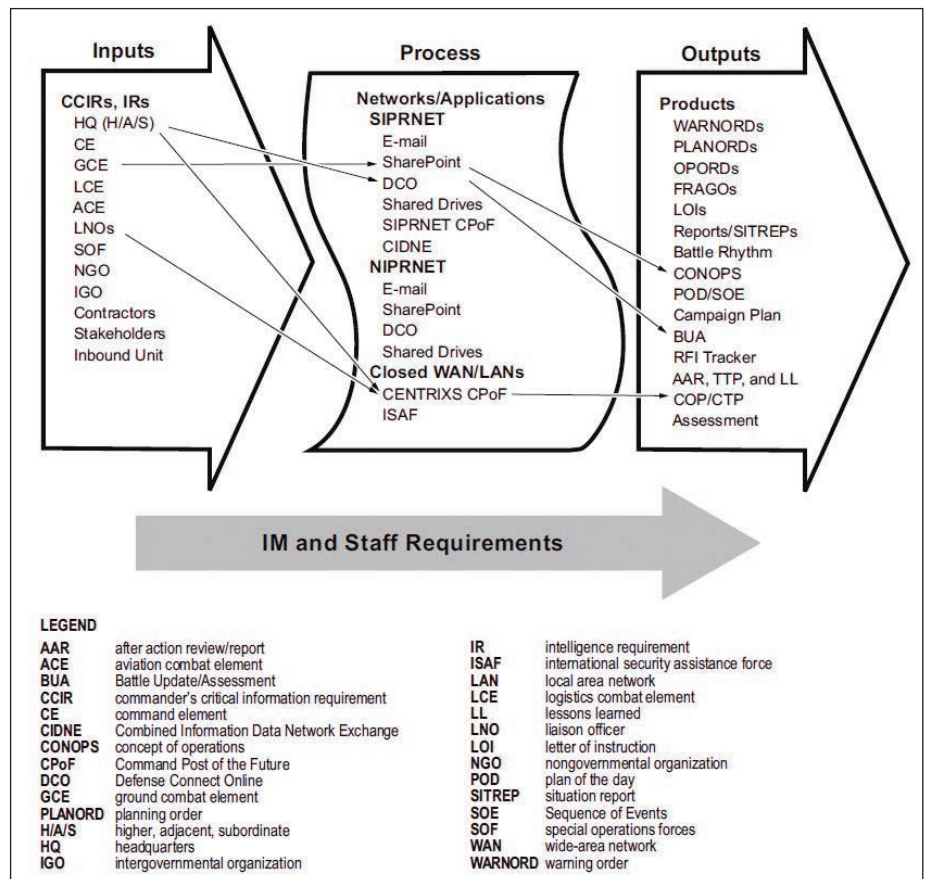

Figure 6. Generic process for determining the IRCs to support IERs. *(HQMC CD&I, MCWP 3-40.2, Information Management.)*

- Mission: the task and purpose of the command/organization.
- Marines: the personnel the commander leads, manages, and/or influences. This includes members of the command or organization, i.e., uniformed personnel, government civilians, contractors, and other key stakeholders.
- Machines: the resources the commander collectively brings to bear to accomplish the mission and equip Marines for success. This includes equipment, technology, funding, and operational processes.

With the M3 LOEs established as a baseline, commanders and staffs must next coordinate with key stakeholders within the command/organization to map out their (and/or the adversary's) respective information and intelligence requirements. This will take time and effort. Though M3 will differ between commands and organizations, the following questions can help commanders and staffs determine their baseline requirements:
- What information is critical to the commander, and when is it needed?
- What format and style do the commanders require?
- Who is responsible for obtaining, processing, analyzing, correlating, and disseminating the information?
- How should this information be protected and from whom?
- Does the required information already exist?
- Who else might need the information?
- Who has the need to know?
- Who has authority to release information?
- What is the most effective way to get the information to other users?[18]

These inquiries include identifying the CCIRs (commander's critical information requirements) and IERs (information exchange requirements) between the command/organization's higher headquarters, supported and supporting organizations, and other key stakeholders, as depicted in Figure 6. Once complete, the commanders and staffs must analyze and validate the requirements against their existing inventory of IRCs.

Investing time toward this level of deliberate planning and requirements analysis helps commanders and staffs accurately identify the gaps and shortfalls within their existing suite of IRCs while shedding light on opportunities for optimizing them to fulfill other information and intelligence requirements—saving time and money and/or reducing redundancies. Moreover, commanders and staffs will discover that if their existing IRCs are not satisfying certain information and intelligence requirements, they are able to make informed decisions to fill those gaps. As the appropriate IRCs are determined, the critical drivers—the ways and means—for their operations start to become evident.

Ways and Means: identify and integrate the critical IRCs drivers. With bona fide information requirements captured, the commanders and staffs must now identify and integrate the ways and means needed to optimize their IRCs' ability to produce quality information and intelligence. A competent IRCs cadre should facilitate this integration. The command/organization's chief of staff (C/S) or executive officer (XO) should synchronize and coordinate the cadre's actions so the commander continuously has the right information and intelligence to make informed decisions.[19]

The IRCs cadre should include the command/organization's IMO and senior representatives from the J/G/S-6, J/G/S-3, J/G/S-2, J/G/S-1, and public affairs officer (PAO) staff sections (preferably SNCOs or commissioned officers). Additionally, special staff members, including the KMO (knowledge management officer),[20] COC SWO (combat operations center senior watch officer), FDO (foreign disclosure officer), security manager, and electronic warfare and cyber officers should also be included if these personnel exist within the command/organization. The core tasks the IRCs cadre should work together to complete and sustain for the command/organization are as follows:
- Develop and publish IRCs-related operation orders or plans.

- Determine IERs that impact networks, systems, and applications required to plan for and integrate IRCs.
- Publish and update report matrices and SOPs.
- Develop the daily battle rhythm and support/facilitate B2C2WGs' (boards, bureaus, centers, cells, and working groups) collaboration.
- Coordinate additional training required by the staff and component elements to support the production of quality information through effective IRCs procedures.
- Ensure the effective information exchange of operationally relevant information and intelligence within and across commands and organizations.
- Work closely with the principal staff members, IRCs representatives, and subordinate and higher headquarters' IMOs to develop and publish IRCs' procedures and processes.
- Advise the C/S/XO on recommended information flow improvements/enhancements for evaluation and possible implementation; prepare/coordinate plans for any changes to established IRCs' processes and procedures.
- Support continuous process improvement within the command/organization.[21]

The IMO reports directly to the C/S/XO and leads in managing the IRCs cadre and its tasks, projects, and requirements. Given the scope and impact of these responsibilities, it is ideal that the IMO's operational experience, level of leadership, and ability to influence others be on par with the commander's principal staff members to best facilitate information flow within and across commands and organizations. The IRCs cadre is the means by which the commander and staff directly manage and shape the critical control variables they can control to mitigate friction and generate quality information and intelligence.

Critical control variables nest within the T3 (tasks, time, and talent) construct as a way to analyze and process the data and information produced, received, transmitted, and stored within the command/organization. The T3 construct primarily shapes and is shaped
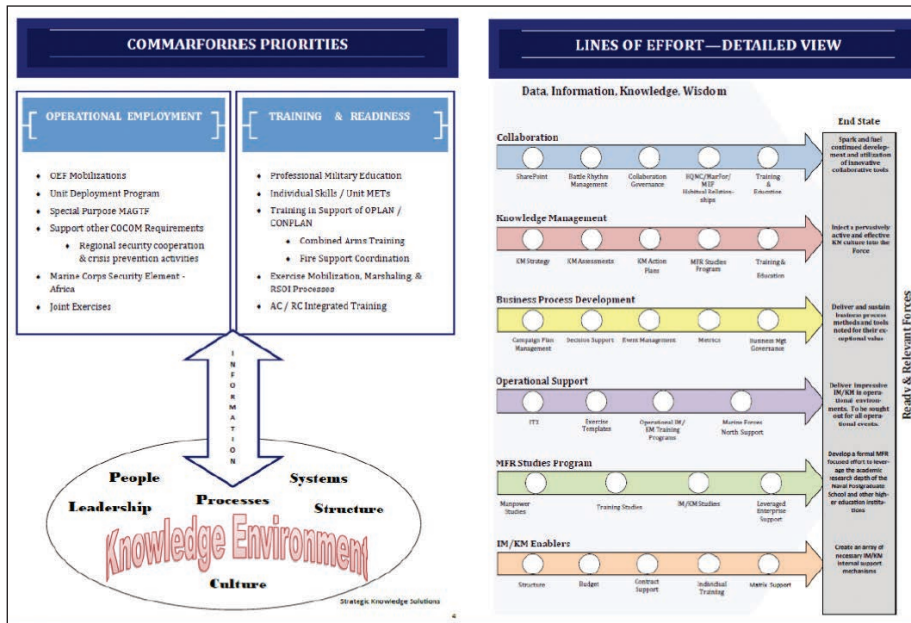
Figure 7. MARFORRES commander's strategic approach to IRCs integration. (MARFORRES IM/KM program overview brief to the Marine Corps Knowledge Management Community of Practice on 13 June 2013).

by the information and cognitive dimensions of the M3 information environment. It serves as the cornerstone for IRCs' employment across the range of military operations and is summarized as follows:

• Tasks: the operations, actions, and deliverables the command/organization must complete in support of the mission.

Critical control variables:

■ Mission Essential Task List (METL): outlines the command/organization's strategic goals and objectives that all IRCs-related efforts are based upon.[22]

■ CCIRs: support the commander's situational understanding and decision making, as information flow is essential to the success of the decision-making process.[23]

■ Commander's Intent.[24]

■ Standard Operating Procedures (SOPs).[25]

• Time: information regarding recurring friendly and/or adversary forces' event and reporting timelines directly tied to the commander's decision cycle.

Critical control variables:

■ Battle rhythm: assists the staff with prioritizing and managing the commander's most important resource, the time and actions of the

staff, in support of the commander's decision cycle; best managed and enforced by the C/S/XO.[26]

■ Training exercise and employment plan (TEEP).[27]

• Talent: information regarding friendly and/or adversarial subject-matter expertise and current capabilities.

Critical control variables:

■ Knowledge, skills, and abilities (KSA) data: provides commanders and staffs with insights into where subject-matter expertise resides within and outside the command/organization.[28] (Note: KSA data contains sensitive, personally identifiable information[29] and therefore requires appropriate safeguarding.)

■ Organizational charts.[30]

■ Journals and logs.[31]

As with M3, the T3 components are mutually supportive of one another and bring synergy to M3. The sustainment of this synergy requires the commander's championship and fostering of a culture of collaboration and change, otherwise known as the C3. Like T3, the commander and staff directly influence critical control variables within the C3 construct. Unlike T3, however, the C3 components are less tangible and largely dependent upon the climate

the commander establishes within the command/organization and the level of trust and rapport the commander and staff have with their higher headquarters, supported and supporting organizations, and other key stakeholders. C3 is the fuel that keeps the T3 engine operating. Thus, of the two IRCs integration continuum constructs, C3 is the most critical in setting the conditions necessary for optimal decision making and staff operations.

The need for the commander's championship and guidance in the design of their IRCs' integration and employment strategies cannot be overstated. As an example, while serving as the Commander, MARFORRES (Marine Corps Forces Reserve) in 2012, LtGen Steven Hummer instituted and championed a command-wide directive to bring order to the "information chaos" and develop an information- and knowledge-based culture.[32] His vision included

> developing and sustaining an IM/KM [knowledge management] infrastructure and culture which provides decision makers at all levels prioritized, relevant and timely information to make the best decisions.[33]

The MARFORRES IM/KM campaign plan included six LOEs and milestones that aligned to LtGen Hummer's priorities and MARFORRES' strategic goals and objectives as depicted in Figure 7. LtGen Hummer's vision and directive continues to influence the development of an effective collaborative information environment (CIE) that powers operations, increased staff cooperation and awareness, and efficiencies across the command according to the MARFORRES IMO.[34] The campaign plan exemplifies the IRCs integration continuum's C3 construct and the value that it yields. The construct is a mixed blend of the physical, informational, and cognitive dimensions of the M3 information environment. Its critical control variables are as follows:

• Championship: the commander and staff's advocacy, use, and support of the command/organization's IRCs and related initiatives.

Critical control variables:

- IRCs cadre.[35]
- Strategic communications and guidance.[36]

• Collaboration: the commander and staff's process of incorporating all available expertise and IRCs to develop plans, maintain situational awareness, and support the commander's decision cycle. Perspectives provided by stakeholders and mission partners enhance situational understanding.[37]

Critical control variables:

- B2C2WGs: bring a significant amount of intellectual capital to bear to produce optimal solutions for routine to complex operational problem sets and quality information.[38]
- CIE: secure and non-secure web portals and/or other IRCs such as tactical chat rooms and common operating pictures that serve as the command/organization's authoritative repository and information exchange hub(s). CIE best practices include the following:
  o Develop/design the CIE to directly support the command/organization's strategic goals and objectives (e.g., METL) and incorporate the T3 critical control variables previously outlined.
  o The IRCs cadre should continuously review, purge, organize, and archive information and processes within the CIE to ensure relevancy.
  o (Note: A CIE can be digital and/or paper based and as simple as a centrally managed external hard drive, command read boards, and/or a collection of SOPs and turnover binders.)

• Change: the commander and staff's continuous assessment and optimization of the command/organization's IRCs to best support the institution's strategic goals and objectives, commander's decision cycle, and staff operations.

Critical control variables:

- Strategic communications and user guides/training.[39]
- Measures of performance and effectiveness metrics.[40]

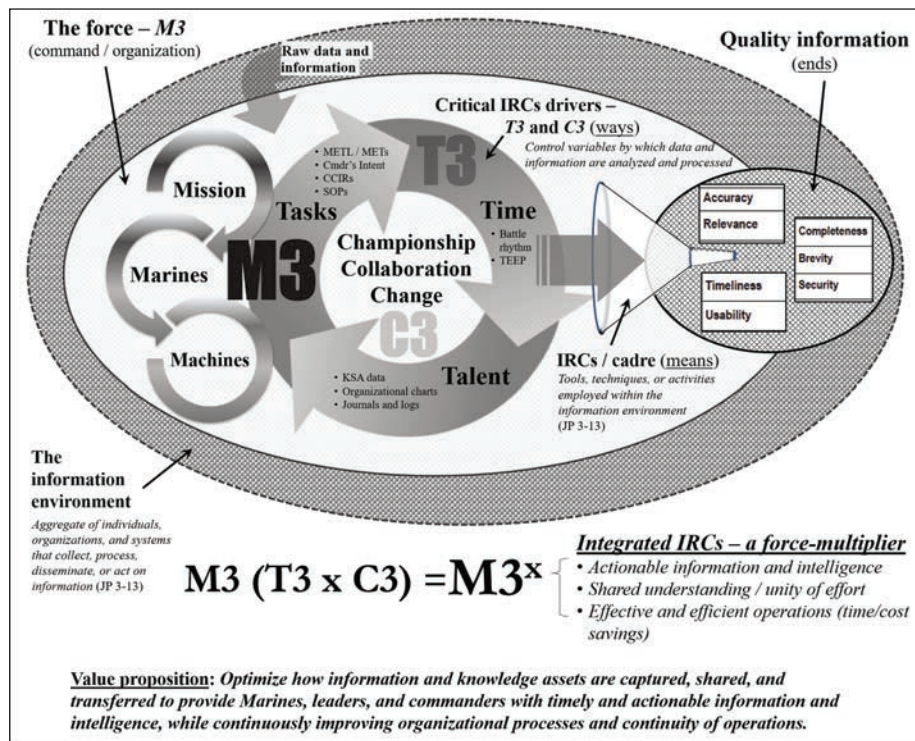As a whole, the IRCs integration continuum enables the commander and staff

Figure 8. The IRCs integration continuum conceptual model.

to adapt and thrive in the information environment by providing a framework to establish the parameters necessary for sensing, responding, adapting, and command-and-controlling the force. Conversely, the IRCs integration continuum can also be leveraged for designing information operations focused on manipulating the adversary's situational awareness and denying him the ability to command and control his forces. The resulting effects of the model collectively act as a force multiplier. In essence, M3 (T3 x C3) = $M3^x$ as conceptualized in Figure 8.

Proof of Concept

The following vignette briefly describes my experience with developing and applying the IRCs integration continuum in the operating environment. It includes the insights and observations of my force reconnaissance commander and staff's integration and employment of IRCs in support of the forming and operating of the first Special Purpose MAGTF (SPMAGTF)-Africa command between June 2011 and March 2012.

M3. The mission of our SPMAGTF-Africa rotation was to deploy task-organized teams to train and advise multiple African partner-nation forces in various tactical and logistics skills in order to prepare them for follow-on combat and stability operations. Our task force also had to be prepared to conduct limited planning in support of contingency operations. With a force reconnaissance commander and staff serving as a MAGTF command element, we made a deliberate effort to analyze and ac-

The [Collaborative Information Environment] became the backbone of the program allowing past, present, and future [SPMAGTF-Africa rotations] to communicate and continually improve the program.[41]
—Col David Morgan II, first SPMAGTF-Africa Commander

count for key C^2 systems and processes required for operating at the operational and strategic levels, including how the task force would integrate and employ our IRCs simultaneously in support of distributed operations across multiple countries.

The Marines who made up the task-force table of organization primarily consisted of force reconnaissance Marines, combat engineers, and various service support personnel, all who typically operated at the tactical level prior to joining SPMAGTF-Africa. They operated and shared information and intelligence with joint and interagency stakeholders, to include Special Operations Command Africa, Combined Joint Task Force-Horn of Africa, the 24th MEU, the Department of State, U.S. Navy organizations, and various U.S. Africa Combatant Command Service components. Within the task force command element, the XO, S-6/IMO (myself), S-2, S-3, COC SWO, and S-1 unofficially formed the IRCs cadre, integrating the task force's IRCs to facilitate interoperability with the aforementioned stakeholders.

The IRCs for the first SPMAGTF-Africa rotation were limited, primarily consisting of our force reconnaissance company's table of equipment. It was therefore necessary to externally source a large portion of the IRCs to fill capability gaps. Serving in the capacity as both the S-6 and IMO, I leveraged no-cost DOD Internet services such as the Defense Information Systems Agency and Office of Defense National Intelligence's suite of secure and non-secure enterprise services to engineer and implement the baseline SPMAGTF-Africa CIE, which included Intelink IntelShare (SharePoint).

First piloted to support our task force's PTP (predeployment training period) requirements, the SPMAGTF-Africa CIE eventually became critical in enabling C^2 for the task force's 24x7 operations and interoperating with our joint mission partners. In addition to the CIE, the task force commander and staff leveraged host tenant commands' information and intelligence network infrastructures and deployable data suites as a means to C^2 our task force

elements. Liaison officers assigned to U.S. embassies leveraged their respective Department of State embassy networks to integrate into the SPMAGTF-Africa CIE and other IRCs. The S-2 and I also worked closely to develop and implement robust cybersecurity processes and systems to protect and defend the CIE, its supporting network infrastructure, and information writ large.

T3. Our task force PTP provided the commander and staff with adequate time to transition from the role of a force reconnaissance staff to that of a MAGTF command element, establish our M3 LOEs, and align the supporting T3 and C3 constructs prior to our

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... the S-3 developed the task force METL ...

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deployment. During the PTP, the S-3 developed the task force METL, and our commander provided his initial intent and CCIRs. The IRCs cadre and I then identified and aligned our task force's IRCs to support the METL, CCIRs, and IERs, which included daily situation reports, communications status reports, storyboards, country books, commander's update briefs, and AARs. Synchronizing our staff actions to support these requirements and the task force METL became our next focus of effort. Developed and managed by the XO and S-3, the task force battle rhythm was critical for integrating and synchronizing our METL and supporting IRCs. The battle rhythm accounted for key task force events, to include commander update briefs, task force training management, higher headquarters reporting, and engagements with external stakeholders. The battle rhythm was developed to be flexible and updated as our mission transitioned between steady-state and contingency operations. In summary, the battle rhythm facilitated the integration of the staff's IRCs, thereby enhancing cross-staff synergy, unity of effort, and shared understanding.

To maximize our operational effectiveness, the commander and staff conducted detailed task force-wide subject-matter expertise KSA data and equipment capabilities analyses prior to and throughout the deployment. The analyses provided key insights for aligning and applying our T3 to best enable and support the task force's M3 and identified where our shortfalls resided as depicted in Figures 9 and 10. This information proved valuable during our crisis-action planning and operations when our staff estimates and products had to be developed and delivered on short notice. Moreover, detailed information about each Marine's role and responsibility instilled a sense of purpose, reduced friction, and increased awareness across the task force.

C3. Our commander's advocacy for agility and operational efficiency fostered a culture of collaboration and innovative uses of our IRCs throughout the deployment. Over time, synergies emerged because of the feedback the commander and XO provided regarding the design and functionality of our IRCs, namely the SPMAGTF-Africa CIE.

Purposely engineered in a light and agile way, the SPMAGTF-Africa CIE adapted to the changing needs of the commander and staff's IERs. Specifically, the CIE portal aggregated the task force COC SWO logbook feed, key staff products, reports, the friendly force tracker COP, and links to chat and web conferencing rooms and integrated them with our task force's T3 critical control variables, namely the battle rhythm, task trackers, SOPs, staff directory, and AAR products. Because of its utility and design, SPMAGTF-Africa CIE portal access requests from higher headquarters (Marine Corps Forces Africa), our deployed teams, and follow-on task force rotations reached over 2,000 per day within the first few short months of our deployment. The resulting cross-staff interaction and collaboration streamlined relief-in-place/turnover of authority efforts, mitigated duplicative efforts, and enabled the continuity of operations between subsequent SPMAGTF-Africa rotations.

Overall, higher headquarters and members across the task force staff commended the degree of effectiveness and efficiency of the mission accomplishment, program continuity, and quality information exchanged via the SPMAGTF-Africa CIE as noted by one principal staff officer:

> Operators, combat service support entities, and the Commanding Officer [had] the ability to share accurate and real time information thus resulting in extremely effective Information Management and Command and Control (C^2) … real time voice and web communications with multiple [teams] operating thousands of miles away … greatly enhanced our Commanding Officer's decision making ability.[42]

The results themselves were not simply a product of the IRCs cadre's efforts or the CIE but rather a combination of the communication, collaboration, and trust-based relationships built amongst the staff and teams throughout the deployment. Setting these conditions significantly enabled the task force IRCs cadre, XO, and principal staff officers to clearly identify our IRCs requirements, resolve gaps, improve staff processes, and manage change through routine strategic communications and various IRCs training initiatives.

Conclusion

In summary, despite the challenges presented by the Information Age, there are variables within the information environment that Marine Corps commanders and staffs *can* control in an effort to better sense, respond, adapt, and command and control their forces. When the commander and staff places a premium on quality information as strategic capital and invests the time to accurately identify and align their IRCs, improvements in the commander's decision cycle and staff operations emerge. This requires the commander's proper employment and empowerment of the IRCs cadre—supervised and directed by the C/S/XO and led by an IMO with a level of leadership, operational experience, and influence comparable to the commander's principal staff members.
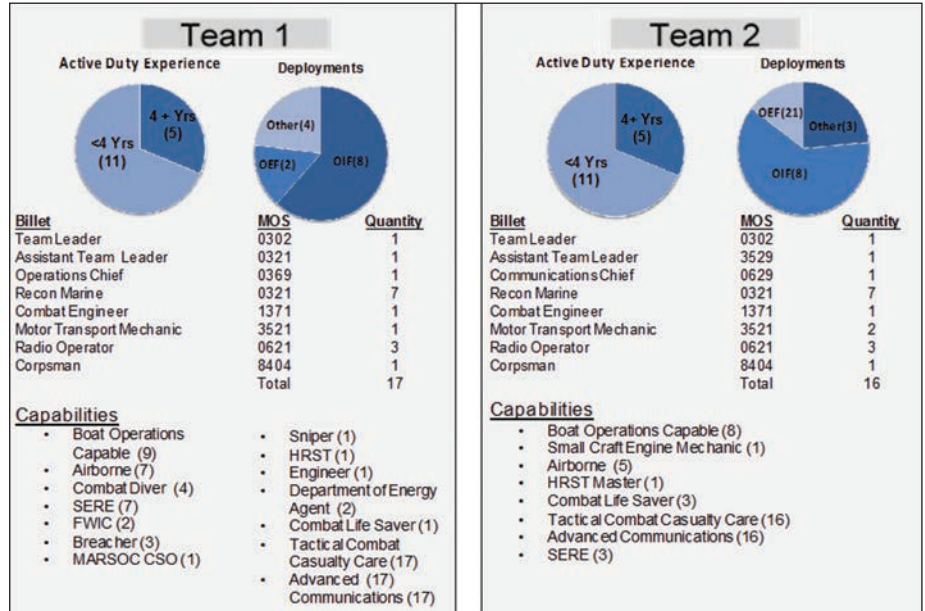
Figure 9. SPMAGTF-Africa command element KSA analysis and overview. (SPMAGTF-Africa Capabilities Brief, 29 September 2011.)

Commanders and staffs must understand that technological solutions and strategies do not always resolve issues in operational inefficiencies and barriers to sharing quality information and intelligence. These problems are often rooted in inadequate requirements analyses, the misalignment of IRCs to command/organization strategic goals and objectives, and/or a lack of senior leader advocacy. Practical solutions, such as the IRCs integration continuum, act as a force multiplier, enabling commanders to maximize their existing IRCs. When focused on achieving these ends, Marines are better equipped to innovate, adapt, and change[43] in the Information Age.

Notes

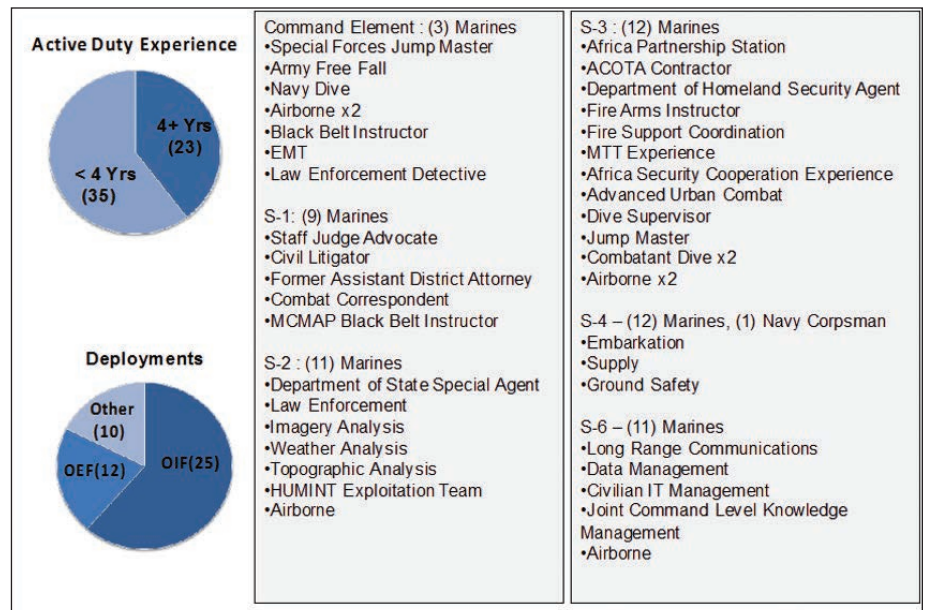1. Headquarters Marine Corps, *MCWP 3-40.2,*

Figure 10. Deployable SPMAGTF-Africa teams' KSA analysis and overview. (SPMAGTF-Africa Capabilities Brief, 29 September 2011, slide 10.)

Information Management (IM), (Washington, DC: 8 June 2014), available at http://www.marines.mil.

2. Joint Staff, *Joint Publication 3-13 (JP 3-13), Information Operations (IO)*, (with change 1 from 27 November 2012), (Washington, DC: 20 November 2014), available at http://www.dtic.mil.

3. Ibid.

4. Ibid.

5. Ibid.

6. "DOD Internet Services." All information capabilities and applications available across the Internet in locations owned, operated, or controlled by the DOD. DOD Internet Services include collaborative tools such as websites, social networking, social media, user-generated content, social software, email, and instant messaging and discussion forums delivered through a variety of platforms and presentation mediums. This definition is from *DOD Instruction 8550.01 (DODI 8550.01), DOD Internet Services and Internet-Based Capabilities,* (Washington, DC: 11 September 2012), available at http://www.dtic.mil.

7. "Internet-based capabilities." All public information capabilities or applications available across the Internet from locations not directly or indirectly controlled by DOD or the Federal government (i.e., locations not owned or operated by DOD or another Federal agency or by contractors or others on behalf of DOD or another Federal agency). This definition is from *DODI 8550.01.*

8. Headquarters Marine Corps, *MARADMIN 596/15, Establishment of Marine Corps Information Warfare Task Force*, (Washington, DC: 25 November 2015), Task d: The Marine Corps Information Warfare Task Force is tasked with recommending

> capabilities required by the MAGTF Commander to successfully operate within the information environment to *sense, respond, adapt, and command and control his forces* while manipulating the adversary's situational awareness and denying him the ability to command and control his forces,

available at http://www.marines.mil.

9. The Deployable Training Division (DTD) of the Joint Staff J-7 helps inform both the joint warfighters and key functions within the J-7, notably lessons learned, doctrine, education, and future joint force development. The DTD gains insights on operational matters through regular contact and dialogue with combatant and joint task force commanders and their staffs as they plan, prepare for, and conduct operations. The DTD observer/trainers collect and compare practices among the different headquarters, draw out and refine "insights" and "best practices," publish them, and share them across the operational, training, lessons learned, doctrine, and joint development communities, available at http://www.dtic.mil.

10. Joint Staff J-7 DTD, *Joint Operations*, fourth edition, (Washington, DC: March 2013).

11. "Information chaos." Term used in Marine Forces Reserves' (MARFORRES) Commander's Information Management/Knowledge Management (IM/KM) strategy official message (DTG: 032157Z Jul 12) to the MARFORRES staff sections and subordinate commands. (New Orleans, LA: 3 July 2012).

12. *Joint Operations.*

13. *MCWP 3-40.2.*

14. Headquarters Marine Corps C4, *IM Advocacy Decision Brief*, (Washington, DC: 27 October 2015).

15. *MCWP 3-40.2.*

16. "Knowledge assets." Information or skills within a business that make it more valuable or competitive, see https://dictionary.cambridge.org. Examples of knowledge assets within a military organization include the knowledge, skills, and abilities (KSA) of personnel, SOPs, after-action reviews/reports (AARs), best practices, lessons learned, policies, etc.

17. This value proposition is derived from the Marine Corps IM/KM community's value proposition, presented at the USMC KM Community of Practice quarterly meeting brief (slide 4), (Quantico, VA: 18 June 2013), available at https://eis.usmc.mil.

18. *MCWP 3-40.2.*

19. Ibid.

20. "Knowledge management." The integration of people and processes, enabled by technology, to facilitate the exchange of operationally relevant information and expertise to increase organizational performance; see *MCWP 3-40.2.*

21. Ibid.

22. HQMC, *MCO 1553.3B, Unit Training Management (UTM) Program*, (Washington, DC: 23 November 2011), available at http://www.marines.mil. The METL includes the mission statement and tasks required to accomplish the multiple missions that are or may be assigned to a commander.

23. *Joint Operations.*

24. *MCWP 3-40.2.* Also referred to as the *commander's priorities*, commander's intent "establishes the standards by which success is judged" within the command or organization.

25. SOPs. Authoritative sources for the command/organization's codified procedures and processes. SOPs are centrally managed and maintained by the IRCs cadre.

26. *Joint Operations.*

27. MARFORRES, *Force Order 3502.1, TEEP Standard Operating Procedures*, (New Orleans, LA: 16 March 2012). The commander's management tool designed to identify required units, personnel, equipment, and resources for the efficient and effective execution of training exercises or exercise deployments. Long range in scope, the TEEP tracks resource utilization over time and define the approved unit participation as it relates to a specified event.

28. KSA data from Marines' performance evaluations, military/civilian training schools, counselings, personal awards, and other manpower management database systems are fully exploited by the IRCs cadre.

29. "Personal identifiable information." Information which can be used to distinguish or trace an individual's identity, such as their name, social security number, date and place of birth, mother's maiden name, biometric records, including any other personal information which is linked or linkable to a specified individual. See *DOD 5400.11-R*, *Department of Defense Privacy Program*, (Washington, DC: DOD, 14 May 2007), available at http://www.dtic.mil.

30. *MCWP 3-40.2* identifies the roles and responsibilities of the command/organization and touch points for the coordination of people, processes, and technology to support and integrate decision making and staff operations.

31. Journals and logs are primarily managed in the COC by the SWO; this information keeps the commander and staff up to date on significant activities and significant events. The products are used for analyzing operations, extracting lessons learned, and investigating, when requested. Meeting notes and AARs can be grouped into this category. See *MCWP 3-40.2.*

32. Commanding General, MARFORRES message 032157Z, July 12, IM/KM strategy mission statement.

33. HQMC CD&I, USMC KM Community of Practice quarterly meeting brief, *MARFORRES IM/KM Vision*, slide 15 (Quantico, VA: 18 June 2013), available at https://eis.usmc.mil.

34. LtGen Richard P. Mills', CG, MARFORRES, retirement award summary of action, August 2015. LtGen Mills continued to manage the IM/KM strategy LtGen Hummer initiated in July 2012, 11 months prior to their turnover.

35. The IRCS cadre is an empowered and unified group whose efforts synchronize and enable staff operations and the commander's decision cycle. As previously mentioned, this cadre includes the IMO (lead), J/G/S-6 (communications, co-lead), J/G/S-3 (operations), J/G/S-2 (intelligence), J/G/S-1 (personnel), and other special staff members, including the KMO, SWO, FDO, PAO, security manager, and electronic warfare and cyber officers if applicable.

36. Strategic communications and guidance regarding the capabilities, operations, and use of the command/organization's IRCs and related initiatives. The routine internal and external promulgation of communications with the command/organization's respective partners and stakeholders.

37. *Joint Operations.*

38. *Joint Operations.* B2C2WGs, such as the IRCs cadre and operational planning teams, aggregate the functional expertise from across the command/organization and external stakeholders to support decision making. Many commands and organizations leverage virtual collaboration IRCs to facilitate inclusiveness at these venues.

39. Strategic communications and user guides/training should focus on enabling users to use all command/organization-wide IRCs tools and associated processes; tool updates routinely promulgated via official communications channels, meetings, and forums.

40. Measures of performance and measures of effectiveness metrics should routinely assess IRCs against M3 (namely the METL) and T3 (namely IERs, CCIRs, and battle rhythm), making improvements as required.

41. Reporting senior remark from Col David Morgan II (first SMAGTF-Africa Commander) on the author's fitness report, 13 September 2012.

42. Comment from the SPMAGTF-Africa S-4 to the author via LinkedIn.com, 13 March 2012.

43. Gen Robert B. Neller, Commandant's Message to the Force 2017: *Seize the Initiative*, (Washington, DC: 7 February 2017).

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