PM MAGTF Command, Control & Communications (MC3) Overview

Col Peter C. Reddy USMC
Program Manager

AFCEA QUANTICO-POTOMAC CHAPTER

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We Acquire, Integrate and Sustain Sensors, Communications, Command and Control, Networking and Counter Improvised Explosive Device Electronic Warfare Systems to Enable the Marine Air-Ground Task Force to Accomplish Its Mission.
Enduring priorities: accomplish the mission, take care of each other, represent our command, corps, and country honorably.

- Support to Operating Forces (deployed (OEF, MEU), preparing to deploy, and other Operating Forces).
- Develop & sustain world-class, high performance C3 and Force Protection Systems capable of operating in integrated MAGTF, Joint, and coalition environments; & do so affordably and efficiently.
- Develop programmatic work force (military and civilian) through appropriate acquisition and professional training, education, certification and leadership development; enhance project planning processes; support workforce with adequate space and computer resources.
- Ensure effective integration and support of all MC3 programs into overarching portfolio; consolidate MC3 into a high performing team of teams providing essential capability to the warfighter.
The Marine Corps is America’s Expeditionary Force in Readiness — a balanced air-ground-logistics team. We are forward-deployed and forward-engaged: shaping, training, deterring, and responding to all manner of crises and contingencies. We create options and decision space for our Nation’s leaders. Alert and ready, we respond to today’s crisis, with today’s force … TODAY. Responsive and scalable, we team with other services, allies and interagency partners. We enable and participate in joint and combined operations of any magnitude. A middleweight force, we are light enough to get there quickly, but heavy enough to carry the day upon arrival, and capable of operating independent of local infrastructure. We operate throughout the spectrum of threats — irregular, hybrid, conventional — or the shady areas where they overlap. Marines are ready to respond whenever the Nation calls … wherever the President may direct.

--Gen James F. Amos, 35th CMC, Commandants Planning Guidance

"No single activity in war is more important than command and control."

"Command and control by itself will not drive home a single attack against an enemy force. It will not destroy a single enemy target. It will not effect a single emergency resupply. Yet none of these essential war fighting activities, or any others, would be possible without effective command and control.

Without command and control, campaigns, battles, and organized engagements are impossible, military units degenerate into mobs, and the subordination of military force to policy is replaced by random violence. In short, command and control is essential to all military operations and activities."
• Planning and executing in response to Priorities of the 35th CMC:
  - We will continue to provide the best trained and equipped Marine units to Afghanistan. This will not change. This remains our top priority!
  - We will rebalance our Corps, posture it for the future and aggressively experiment with and implement new capabilities and organizations.
  - We will better educate and train our Marines to succeed in distributed operations and increasingly complex environments.
  - We will keep faith with our Marines, our Sailors and our families.

• Planning and executing in response to Vision & Strategy 2025.
  - Develop necessary capability and capacity to effectively operate in the information environment.
  - MAGTF CE's optimized for amphibious and contingency operations; properly equipped with modern and secure C2, intelligence, communications, and networking systems.
  - Integrate C2 and ISR capabilities down to the squad level.
  - ACE: secure, network-enabled, and digitally interoperable to ensure it is responsive, persistent, lethal, and adaptive.

• Efforts and support of the Marine Operating Concepts 2010's direction for the MAGTF & CE:
  - Command will continue to decentralize — and the MAGTF commander and his staff need to be networked into the major subordinate elements (MSE) to command and facilitate coordination and information flow. Improved communications, over-the-horizon, on-the-move, will aid in facilitating information flow.
  - Improved surveillance and reconnaissance, increased fidelity from UAS and sensors tied into reports from Company Level Intel Cells (CLIC) to create a more descriptive picture of the battle.
  - Enhanced sharing of information throughout the MAGTF allows commanders at all levels to better predict and understand enemy actions and maneuver their forces ahead of those of the enemy.

• Efforts and support of the Marine Operating Concepts 2010's direction for the ACE:
  - To become better networked both within the aviation component and within each component of the MAGTF; to leverage the networking capability and sensors developed for the JSF and integrate the JSF into Marine Aviation Command and Control to enable information-sharing between dispersed elements of the MAGTF.
  - To provide the MAGTF with a common, secure data link capability and improved long-range communications suite to counter line-of-sight complications resulting from operations in geography or at extended distance.

• MAGTF C2 Core Ideas:
  - Commander/Leader centric
  - Network enabled
  - Information Assurance
  - Collaborative, shared situational understanding
  - Performed by all echelons
  - Can be performed anywhere in the battlespace

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• MCSC adjusting and executing in response to USD(AT&L) Mandate for Better Buying Power: Guidance for Obtaining Greater Efficiency & Productivity in Defense Spending
  - Target Affordability and Control Cost Growth.
  - Incentivize Productivity and Innovation in Industry.
  - Promote Real Competition.
  - Improve Tradecraft in Services Acquisition.
  - Reduce Non-Productive Processes and Bureaucracy.
  - Do more without more.

• Staying on target with ASN RDA Priorities
  - Getting the requirements right
  - Making every dollar count
  - Performing to Plan
  - Minding the health of the industrial base
  - Strengthening the acquisition workforce
“Predominant in all command and control development are the essential human factors in war characterized by friction, uncertainty and complexity.”

Richard P. Mills
Lieutenant General, USMC

- Pursue development of solutions that are not system-centric, but that **enhance leader-centric, network enabled operations today and in the future.**

- Make decisions regarding capability, density or a combination of the two so that the solutions provided to our operating forces are the **best that available resources can buy.**

- Reduce the structure and emphasize the Marine Corps as a middleweight force in an environment of **fiscal constraint.**

- Reduce our systems inventory and our sustainment and training costs by balancing desired capability with **economic reality.**

- Sustain and educate our force to better prepare for future conflict in increasingly dynamic, hostile and widely dispersed conditions with **innovative approaches.**
The FY-13 MAGTF Command & Control Roadmap focuses on three strategic areas:

- **Amphibiosity in the context of future expeditionary operations.**
  - Robust, integrated C2 architecture solution with the Navy to ensure seamless transition of command and control, in support of littoral maneuver, in all phases of action from afloat to sustained operations ashore
  - Integrated Joint C2 architecture solution in concert with other Services and Agencies.

- **Success in a period of austerity.**
  - Balancing operational risk versus capability and capacity shortfalls associated
  - Mitigate risks by training and education.

- **Institutionalization of Mission Command.**
  - Basic tenets of Mission Command: commander’s intent, mission-type orders and decentralized execution
  - Requires an unprecedented degree of trust, nerve and restraint on the part of senior leaders while fostering a bias for action in subordinate leaders unafraid to fail.
  - Mission Command requires a balance of the art and science of command and control that transcends technology

“As the Corps continues to fight the war in Afghanistan, we must ensure that our Marines are provided the finest command and control (C2) assets available resources can buy while looking towards future operating environments, particularly from the sea and in the littorals while refining the art and science of command and control.”

Richard P. Mills
Lieutenant General, USMC
MAGTF Command, Control and Communications MC3

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Radar Systems:
Mr. Dave Buck

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LtCol Kirk Mullins

Identification & Detection

USMC CREW
CVRJ/Chameleon (II)
CVRJ Band C (IV-M)
Thor III (IVM)
QRD (UUN – TPE)
CREW 3.1 (USON)
USMC JCREW 3.3 (III)

Mounted
Dismounted

Fixed Site

Surveillance Systems

RMNIIS
Secure 1000
CSBS
IED Detection Dogs
BAT (UUNs)
HIIDE (UUNs)
BESD (AAP)
IDS
VOSS
PRDSS
GBOSS (IVM)
GBOSS(E) (III)
MORSS (S&T)

Digital FIRES

AFATDS (II-A)
BUCS
MTS
TLDH5 (III)
BLK 1/2 (III)
BLK 3 (IVT)

JBC-P Incr 1 (II-A)
BFT
MRC
JCR
BFT II
KGV-72

JBC-P Incr 2 (II-A)

BFSA

COC

COC (V) 2-4 (III)
COC (V) 1 (AAP)
COC OTM (UUNs)

MC2SA

JTCW (IVT)
C2PC
TSAO (Pre-ACAT)
GCCS (IAM-ODS)
TCO (IVT)
JCR
TAC-Chat (S&T)

CCS

PAE
MARCM (S&T)

TT0

NOTM Incr 1 (IVP-1/2 (IV)
BMDO (S&T)
SOC (S&T)
DBMA/BSM-MC (S&T)
SIE/DTN (S&T)
BSN (S&T)

TEDS JCTD (S&T)
M2C2/COBRA3 (S&T)
H2 (H2C2, VSCP,
Trusted H2C2 Sleeve) (S&T)
SPAN (S&T)

TTS

RVVT (Pre-ACAT)
Corporal-JCTD (S&T)
Video Scout (AAP)
RQ-21 STUAS (III-N)
RAVEN B (IV-N)

VSAT-L (U)
VSAT-M/S (UVM)
SWAN (USON)
TDN DDS-M (IVM)

NOTM Incr 2 (Pre-ACAT)
SPEED

C2 Radios

MBR II (IVM)
MBR (USDN)
HFR (IVM)
SINCgars

Tactical Data Radios

WPPL-D (USDN)
TRC-170 II (AAP)
TRC-170 Ant Replacement (AAP)
MRC-142 B (AAP)
MRC-142 C (IVM)
TEAMS (AAP)
EPLRS (II-A)
TSSR (USDN)
TALON (S&T)
NGTS (S&T)

Platform Integration

THHR Maritime (V) 3
THHR SVA (IVM)
THHR Urban (IVM)
HIIR (IVM)
WB THHR

Long Range Radar
AN/TPS-59 (IVT)
(V)3 PPM I
(V)3 PPM II
AN/TPS-63
3DELRR (Pre-ACAT-AF)
VWC

FMS (13 Cases)
AN/TPQ-46 (II-A)
LCMR (AAP)
TPS (AAP)

Mobile (AAP)
Palletized (III)
TEAM

VSAT-M/S (UVM)
SWAN (USDN)
TDN DDS-M (IVM)

NOTM Incr 2 (Pre-ACAT)
SPEED

Networking and SATCOM:

SATCOM Systems

GBS (I-USD)
SMART-T (II-A)
DAGR (II-JPO)
Phoenix (I-USD)
ECCS-BLK 0/BLK 1 (IVM)

LMST (AAP)
SI VSAT (AAP)
SI Comms (AAP)

SWE-DISH

EXCOMM

VSAT-L (UVM)
VSAT-M/S (UVM)
SWAN (USDN)

TDN DDS-M (IVM)

NOTM Incr 2 (Pre-ACAT)
SPEED

Identification & Detection

RMNIIS
Secure 1000
CSBS
IED Detection Dogs
BAT (UUNs)
HIIDE (UUNs)
BESD (AAP)
IDS
VOSS
PRDSS
GBOSS (IVM)
GBOSS(E) (III)
MORSS (S&T)

Digital FIRES

AFATDS (II-A)
BUCS
MTS
TLDH5 (III)
BLK 1/2 (III)
BLK 3 (IVT)

JBC-P Incr 1 (II-A)
BFT
MRC
JCR
BFT II
KGV-72

JBC-P Incr 2 (II-A)

BFSA

COC

COC (V) 2-4 (III)
COC (V) 1 (AAP)
COC OTM (UUNs)

MC2SA

JTCW (IVT)
C2PC
TSAO (Pre-ACAT)
GCCS (IAM-ODS)
TCO (IVT)
JCR
TAC-Chat (S&T)

CCS

PAE
MARCM (S&T)

TT0

NOTM Incr 1 (IVP-1/2 (IV)
BMDO (S&T)
SOC (S&T)
DBMA/BSM-MC (S&T)
SIE/DTN (S&T)
BSN (S&T)

TEDS JCTD (S&T)
M2C2/COBRA3 (S&T)
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Trusted H2C2 Sleeve) (S&T)
SPAN (S&T)

TTS

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Corporal-JCTD (S&T)
Video Scout (AAP)
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RAVEN B (IV-N)

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Providing MAGTF-Wide C3 Integration

- Capability objectives met through grouped and aligned capabilities and capability sets rather than individual programs
- Engineering trade-offs across the integrated MAGTF C3 portfolio
- Integrated, end-to-end SoS testing, evaluation and certification
- Body of domain expertise able to flex across systems to efficiently and effectively engineer systems

Figure 2.1: System of Systems Engineering V

Working in Concert with the Capability Developer (CD&I) and Technical Authority (SIAT) to Engineer MAGTF C3
Complex C3/Communications/Sensor/Weapons Programs

- Multiple Program, Technical, and Organizational Interdependencies
- Significant Integration Effort
- Interoperability and Information Assurance Certification Required for ~80% of MC3 Programs
- Software Intensive
  - Significant Maintenance Effort

Joint/Other Service Programs

- ~50% of MC3 Programs
- Significant Interaction and Partnering
- Joint C3 & Service Oriented Architecture Mandates

Closely linked to PEO LS efforts

- Common Aviation Command & Control System
- Ground/Air Task Oriented Radar
MC3 Architecture
MC3 leverages other service programs, Naval Warfare Centers, Systems Centers, Experimentation Centers, academia, and industry partners.
**PdM Force Protection Systems MISSION**

To develop, procure, and provide life cycle management of logistically supportable, fully integrated, USMC systems in a timely and cost effective manner. PdM Force Protection Systems will participate and coordinate programmatic efforts with other U.S. Military Services to leverage systems development, interoperability, supportability and cost effectiveness.

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**PRDSS**
Portable Rapid Deployment Surveillance System (PRDSS). Supports ground based 360 degree camera systems.

**VOSS**
Vehicle Optical Sensor System (VOSS). Route Clearance for EOD Teams; vehicle crews identify IED hazards with a 360 degree camera which utilizes high quality color daylight, night vision, and thermal imagery.

**CVRJ**

**IDD Dogs**
First infantry unit deployed with 34 IDDs in Sep 2011 (up from 13). UUNS requirement met in Jan of 2012. Certified 504 USMC and 69 UK IDDs.

**THOR III 3.1**
THOR III: Man-portable Counter RCIED solution for selected threats. BAT: Toolset for personal biometric identification.

**THOR III & Biometrics**
THOR III: Man-portable Counter RCIED solution for selected threats. BAT: Toolset for personal biometric identification.

**JCREW I1B1**
JCREW: Next Generation CREW System for Global Operations.

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JCREW: Next Generation CREW System for Global Operations.

**G-BOSS**
G-BOSS: Expeditionary, ground-based, self-contained, multi-spectral sensor-oriented, persistent surveillance system utilizing a fused video and sensor data display.

**MEU(SOC USON)**
Interim CREW System for Global MEU(SOC) Operations.

**SECURE 1000**
The Secure 1000 (S-1000) is a non-intrusive personnel scanning system.

**RMNIIS**
Rugged Mobile Non-Intrusive Inspection System (RMNIIS). The RMNIIS provides the Warfighter the ability to scan vehicles and cargo at entry control points for organic and inorganic threat material.

**Counter Suicide Bomber**
Counter Suicide Bomber System (CSBS). The Counter Bomber provides the capability to screen personnel at a stand-off distance of up to 100 meters.

**Biometric Automated Toolset (BAT)**
Biometric Automated Toolset (BAT) Client

**Biometric Automated Toolset (BAT)**
Biometric Automated Toolset (BAT) Server

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**UNCLASSIFIED**
Digital Fires And Situational Awareness (PdM DFSA)

Marine Air Ground Task Force (MAGTF) Command, Control and Communications (MC3)

**PdM DFSA MISSION**

PdM DFSA develops, modernizes, and sustains affordable, world class, high performance Blue Force Situational Awareness and Advance Targeting Systems capable of operating in integrated MAGTF, joint and coalition environments.

**DIGITAL FIRES**

Advanced Field Artillery Tactical Data System (AFATDS) Family of Systems provides the MAGTF the ability to rapidly integrate all fire support assets into maneuver plans via digital data communications links.

**Target Location, Designation, and Hand-off System (TLDHS)** is a modular, man-portable, equipment suite that provides the capability to quickly and accurately acquire targets in day, night, and near-all weather visibility conditions.

**UNMANNED SYSTEMS**

MAGTF C2 Integration of Unmanned Systems and Remote Video Terminals (RVT). The portfolio currently consists of two general capabilities: Unmanned Aircraft Systems (UAS) which is Group 1 WASP, RAVENB, PUMA and STUAS along with RVT which is VideoScout and RVVT.

**SITUATIONAL AWARENESS**

Joint Battle Command-Platform Family of Systems (JPC-P) Increment I, Blue Force Tracker (BFT FoS), will provide tactical input/output battlefield digitized PLI and SA to enhance friendly forces, and integrate the blue force COE into a COP. Increment II, The Joint Battle Command Platform (JBC-P) will consists of JBC-P software, a stand-alone dismounted computing platform (handheld or end user device), and improvements to dismountable variants in future refreshes.
Marine Air Ground Task Force (MAGTF) Command, Control and Communications (MC3)

**PdM MC2S MISSION**
PdM MC2S delivers to the Marine warfighter an end-to-end, fully integrated, cross-functional set of MAGTF Command & Control (C2) Capabilities across five-echelons of Combat Operations Centers through a Common MAGTF C2 Software Baseline.

**TECH TRANS**
The transition of S&T projects such as the Mobile Modular Command & Control (M2C2) system and the Network-On-The-Move (NOTM) capability into Programs of Record (PoRs) ensures warfighters are equipped with cutting edge technology.

**TEAM MC2SA**
MAGTF C2 Systems and Applications (MC2SA) provides the common, modular and scalable collaborative planning software for all elements and echelons of the MAGTF and is the software baseline for MAGTF C2.

**COMBAT CAMERA SYSTEMS**
CCS supports all elements of the MAGTF by providing a full range of professional imagery collection, print and reproduction capabilities.

**PUBLIC AFFAIRS EQUIPMENT**
Provides PA Marines the capability to collect, produce, transmit, and manage still, video, written, and audio communication products in order to globally engage various publics.

**COC**
The Combat Operations Center (COC) is a deployable, self-contained, centralized facility that provides shared command and control / situational awareness (C2/SA) functionalities in a collaborative environment.
PdM NSC MISSION
PdM NSC Team leads the Marine Corps’ effort in research and development, acquisition and sustainment of tactical networking and switching equipment; wireless broadband, and satellite ground communication systems, as well as cryptographic equipment.

SATCOM SYSTEMS
EHF and SHF wideband SATCOM systems providing long-haul communications to higher headquarters for reach back into the GIG and intra-MAGTF communications down to the Battalion level. Systems include ECCS, LMST, Phoenix, SMART-T, DAGR, GBS TGRS, and SCI COMMS.

TACTICAL NETWORKS
Tactical switched systems, technical control functions, communications security to our Operating Forces. Systems being developed include COMSEC, DTC-R, TSM, and JECCS.

EXPEDITIONARY COMMUNICATIONS
Tactical networking systems and other GIG-enabling technology that enhances the expeditionary Operating Forces. Systems being developed include NOTM, TDN DDS-M, VSAT, and NPM/SPEED.
Foreign Military Sales (FMS) Team

The FMS Team supports multiple FMS cases for Kuwait, Bahrain and Egypt to provide sensor and C2 platforms that are interoperable with US forces. The FMS Team are representatives of the Command in these international communities, and support US Foreign Policy objectives as well.

PdM RS MISSION

To develop, procure, integrate, field and provide life cycle management of logistically supportable, fully integrated and interoperable Radar Systems and to provide our customers timely and cost effective support while maintaining the highest standards of professional integrity.

Family of Target Acquisition Systems (FTAS)

FTAS: Equipment required to search, detect, track, locate and process hostile indirect fire (IDF) weapons - mortar, artillery, and rocket projectiles for counter fire or servicing. The equipment includes the AN/TPQ Firefinder, the AN/TPQ-48 Lightweight Counter-Mortar Radar and the AN/TSQ-267 Target Processing Set.

Long Range Radar Systems

AN/TPS-59: 3-D Long Range Radar, which detects aircraft and tactical ballistic missiles.
AN/TPS-63: 2-D Medium Range Radar
**PdM TCS MISSION**

(PdM TCS) leads the Marine Corps’ tactical communication modernization effort through the acquisition and life cycle management of tactical communication systems supporting combat and training operations.

**Command and Control Radios**
Multiband Line-of-Sight and Satellite man-packable and vehicular mounted capabilities.

**Tactical Data Radio Systems**
Line-of-Sight (LOS) and Beyond LOS voice and data tactical radio capabilities.

**Handheld Radios**
Tactical Hand Held Radio (THHR) : Line-of-Sight handheld and vehicular mounted capabilities supporting the United States Marine Corps.