Communications and Electronics Support in the Digitized Division

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Introduction

If you were around thirty years ago and could visualize compact computers operating at today's speeds, high-speed internet access to the World Wide Web, and the Army operating a digital battlefield or “Tactical Internet” (TI) via FM packet mode transmission, you were a true visionary. Today, our Army is realizing 21st Century technological advances that were previously only dreams. These advances will save lives and money and provide a real time situational awareness picture for Commanders.

Technology has invaded the Army at the very lowest level and individual soldiers are an integral part of the ongoing transformation. The war fighting technology demonstrated within the 4th Infantry Division and Interim Brigade Combat Teams has been tried and tested upon the backs of soldiers who have been willing, capable, and anxious to see these new systems succeed. Most of the soldiers operating these digital systems are use to this technologically driven environment having grown up in a digital age and video game world. The integration of technology into Army vehicle platforms, like current civilian combinations of Personal Digital Assistants (PDA's) and cell phones, is an exciting transformation to watch unfold.

The lower level Army Battle Command System (ABCS), known as the Force XXI Battle Command Brigade and Below (FBCB2), is the most common system within the digitized force. Vehicle platforms in the digitized force may contain:

- Computer, Display and Keyboard (FBCB2 system and cables)
- Position, Lightweight, GPS Receiver (PLGR)
- Vehicular Amplifier Adapter (VAA) containing an Internet Controller (INC)
- RT-1523E, Single Channel Ground and Airborne Radio System, (SINCGARS) Advanced System Improvement Plan (ASIP)
- RT-1720B/C - Enhanced Position Locating Reporting System (EPLRS) (Installed only in specific FBCB2 configurations)
- Mobile Subscriber Radio Telephones (MSRT)
- Movement Tracking Systems (MTS).

Transmitting from the lowest level up through a digital architecture and signal backbone, individual FBCB2 systems have their own “unit role number” or “IP address” and this unique identifier creates an icon that is overlaid on a digital map for commanders and other FBCB2 users to view. Data, such as text messages or enemy position/obstacle information, transmits via the radio systems as well. Integrated throughout the digital network and providing various situational awareness and combat enhancement tools for commanders, ABCS’ s are the Army's effort to take advantage of 21st Century technological advances. In addition to FBCB2, other ABCS’s have increased our effectiveness in Command and Control, Air Defense, Topography, Field Artillery, Intelligence, and Logistics.

ABCS and Two-Tier Maintenance

Driven by technological advances, the nature of the battle space, and customer demands, maintenance support has evolved. Defined Maintenance Allocation Chart (MAC) tasks have given way to “on the spot” customer support which may combine Operator, Organizational, and Direct Support (DS) tasks. Maintenance provides the setup, repair, replace, or evacuation solution necessary to keep the customer operational as quickly and as far forward as possible. Although traditional DS tasks such as internal electronic maintenance requiring circuit card repair or replacement is transitioning towards "two-tier" maintenance concepts - soldier operated, depot repaired equipment - system troubleshooting is still a demanding aspect of Organizational and DS maintenance and has led to an increase in the DS maintenance OPTEMPO.

Most ABCS equipment is supported through the two-tier maintenance concept and has one thing in common; Operational Readiness Float (ORF) asset inventories. Currently positioned within the DS Communications and Electronics (COMMEL) sections, ORF assets provide forward replacement customer

support solutions. COMMEL personnel maintain, account for, and evacuate two tier systems and supporting ORF assets. ORF equipment can exceed several million dollars and consist of laptops, common hardware software terminal platforms, various radios, and GPS receivers. ORF provides replacement solutions to inoperative equipment while faulty components are evacuated to the depot level.

The Ordnance Role in the 2001 Division Capstone Exercise (DCX)

Although a distant memory, the spring 2001 DCX was a large scale National Training Center exercise that demonstrated the digitized Army's combat and logistical enhancements. It also highlighted challenges facing the digitized force. Our DS COMMEL repair section operated as a one-stop shop for all who required assistance and handled nearly 500 maintenance actions. The Forward Support Battalion (FSB) COMMEL section handled over 1,000 maintenance actions. The DSB COMMEL team consistently performed operator and organizational tasks regardless of whom the customer was doctrinally supported by. This "Jiffy Lube" type of maintenance provided answers and immediate solutions to system failures.

Teams of CMF 35 (35E/F/J) personnel provided full ranging maintenance capabilities in support of the digitized customer. In addition to our normal DS MAC tasks, soldiers responded to "on site" repair calls and supported customers as they rolled up; whatever the customer needed, we strived to provide it. We frequently performed software upgrades and re-formatted the FBCB2, PLGR and VAA INC. We replaced dozens of miscellaneous cables, assisted with EPLRS and ASIP set up, and handled COMSEC key reloading. In addition to vehicle troubleshooting and equipment replacement, our soldiers responded to on site trouble calls at TOC locations where TI manager stations were located. It was not uncommon to have five to ten vehicles awaiting assistance.

For the DCX, Division leaders created a Digital Support Team (DST) that acted as a forward liaison between contractor personnel and the digital customer. Collocated with the FSB COMMEL team at the Engineer Support Element, the DST facilitated evacuations of faulty systems to the DSA where the DSB COMMEL team handled the eventual turn in to contractor and depot level agencies. Most importantly, the DST connected forward S6 sections to an around the clock network of contractors and communications and electronics logistics capabilities.

In a training environment, the second tier is physically closer and logistically easier to evacuate to, but in real world operations at remote locations and operating in immature theaters, the second tier may be much further away. To decrease downtime and prevent "No Evidence of Failure Found" (NEOFF) returns to the second tier, our section performed a "DS Screening" function. Through screening, we found that the real failure rate of systems requiring evacuation was much lower than the suspected failure rate. Had the supply support activity handled these suspected failures as ORF "one-for-one" transactions and had no DS screening or theater level quality control taken place, these misdiagnosed, operational items would have been taken out of the ORF pool unnecessarily. Over time, reliable built-in-test (BIT) and operator and organizational level fault recognition may decrease the screening requirement, but for now, DS Screening is invaluable. Proper fault identification as far forward as possible is key to sustaining the digital network.

The DSB, FSB, and ASB COMMEL teams attempted to maintain a communication link throughout the DCX exercise as we learned how these systems were functioning, the Division balanced ORF assets and tracked equipment availability, and we responded to surges in support demand. Communication between the civilian entities and COMMEL teams was challenged by our structure and as a solution, a consolidated communications element, the Division Communications and Electronics Maintenance Company, should be considered as a way of centralizing the future digitized communications support force.

The Division Communications and Electronics Maintenance Company (DCEMC)

To sustain the digital battlefield and to maintain the knowledge base necessary for the future, the Army should consider creating a Division Communications and Electronics Maintenance Company (DCEMC) (possibly operated under the DISCOM, G4, or DSB). The following are a few benefits of the DCEMC:

- Permanently provides the infrastructure and military support liaison with the ESSC and contractor community and integrates key civilian entities within it's organization for Division Support.
- Provides military help desk for S6 support, theater level warranty control and evacuation conduit to the 2nd tier, and on site trouble call dispatch.

- Advises the command in system integration issues and is a sole point of contact for Force Integration offices and contractor agencies.
- Creates a digital network between COMMEL teams and information dissemination flow operating via DCEMC hierarchy.
- Operates a "hub and spoke" design to control ORF flow
- Task designed, networked, COMMEL teams positioned throughout the battle space using CAISI-E type logistics platforms.
- Personnel electronics training enhancements pooling technical expertise and effectively accommodates strengths and weaknesses within personnel pools.

The DCEMC might have an Ordnance Captain or Senior Warrant Officer as the Commander and a 35W50 as the First Sergeant. The CMF 35 personnel and MTOE equipment would be derived from existing authorizations and include the COSCOM COMMEL Division paragraph. Additional personnel authorizations might include a Senior Electronic Systems Maintenance Technician (918E), 92Y's (supply) and 92A (STAMIS). In a DCEMC structure, Ordnance enlisted CMF 35 and Warrant Officer 918B personnel will be well positioned and capable to support the digitized force at various locations throughout the Division.

Signal enlisted MOS's such as 74B and 31U and Warrant Officer MOS's 251A and 254A are key to the support structure as well. Overburdened Organizational level, 31U and 74B Signal personnel need their numbers increased and must be talented unit trainers. Operator tasks such as operating an Automated Net Crypto Device (ANCD) and setting up EPLRS, ASIP, and PLGR with FBCB2 need constant reinforcement. A top-notch sustainment-training package will need to be in place to maintain digital readiness in the future. It is my experience that lack of training at the operator level is a key ingredient to system failure. CMF 35 DCEMC personnel would have a key role in maintaining sustainment packages and digital education.

Support similarities between ABCS and STAMIS logistics platforms will likely drive Signal and Ordnance overlapping responsibilities as well. Intertwined CSSAMO and DCEMC support responsibilities are, in my view, inevitable. STAMIS or GCSS-A logistical support can be derived from the multi-functional DCEMC.

Summary

In the last ten years, the Army has transitioned from bulky VRC-12 radio systems to smaller secure communications systems that support a mobile, TI network. Over the next 10, 20, and 30 years, the Army's communications systems will continue to shrink in size and convert to "two-tier" maintenance or possibly "replace and demilitarize" technology. Computer operating systems may encompass tactical war fighting and logistics support into a single multi-functional database. This type of technological integration and embedded-secure communications will force DS maintenance to evolve.

Creating a DCEMC should be considered as just another phase in the Army's continuing transformation. We must consider a support structure that facilitates – through it's design, personnel authorizations, and stated mission - a proactive posture in supporting the digitized Army and easily identifies support options to digitized customers. The educational demands and force structure of the past have served the Army well. We must now look down the road at how we train soldiers and develop technicians while redefining how we organize and support the customers we are judged by.

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