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ARMY MEDICAL INFORMATION OPERATIONS

HEADQUARTERS, DEPARTMENT OF THE ARMY

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PREFACE

This publication provides the operational context of medical information operations (IO), relevant terminology, and the environment of medical IO. The medical IO mission includes all three of the Army operational environments (sustaining base, strategic, and theater/tactical). It supports medical IO and provides guidance to medical commanders, medical staffs, and personnel providing combat health support (CHS). This guidance may be used by CHS planners to supplement Field Manuals (FMs) 8-10 and 8-55. It provides information essential to the effective planning and efficient utilization of medical IO resources for peace and war. This publication is in compliance with FM 100-6, the Army's capstone manual for IO doctrine.

This publication establishes the foundation and architectural design for Army medical information management relationships. It identifies the architecture requirements for medical IO. It provides and delineates the responsibilities, accountabilities, major roles, and functions of Army Medical leaders, commands, agencies, activities, and personnel for medical IO. Medical IO guidance is provided for all of the Army Medical Department's (AMEDD's) functional areas. Additionally, guidance on digital information systems security procedures are contained in this publication.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

The proponent for this publication is the United States (US) AMEDD Center and School (AMEDDC&S). Send comments and recommendations on Department of the Army (DA) Form 2028 directly to **Commander, AMEDDC&S, ATTN: MCCS-FCD-L, 1400 East Grayson Street, Fort Sam Houston, Texas 78234-6175**.

CHAPTER 1

INTRODUCTION

1-1. General

The emergence of the Information Age has created an increasingly complex environment that will continually challenge CHS IO. The IO environment is global, encompassing not only the Army, but all other Services, Department of Defense (DOD), allied, and coalition forces. This complex environment will affect how CHS IO collects, processes, and disseminates information.

a. The Army's capstone guide to IO, FM 100-6, explains the fundamentals of IO for the Army.

b. Combat health support IO doctrine prescribes guidelines that support the information mission area (IMA) for medical units. It provides basic principles and overarching guidance for the effective employment of automated information systems (AIS) and information technologies.

c. This publication describes Army medical management and operation of the IMA. In accordance with Army Regulation (AR) 25-1, the—

(1) Information mission area encompasses the responsibilities, activities, and programs associated with, and related to, the disciplines of telecommunications, automation, visual information, records management publications and printing, and libraries. The IMA is applicable to Army units organized under tables of organization and equipment (TOE) and tables of distribution and allowances (TDA).

(2) Information mission area addresses all three of the Army's environments—theater/tactical, strategic, and sustaining base. A specific goal of the IMA is the elimination of all artificial barriers between information and information systems in all environments. The purpose of referencing the Army's three environments is to assist in focusing the discussion of IMA on the major areas of interest. Most information and many information systems are located and function in more than one environment.

1-2. History

a. The first generation of computer-driven IO in the Army appeared in the form of embedded computers in weapons systems and management of the AIS to support administrative activities. These activities include logistics, financial, and personnel in the continental United States (CONUS), known as base operations (BASOPs) or the Standard Army Management Information Systems (STAMIS). The next generation appeared as battlefield command and control (C2) systems that began to incorporate various human and automated sensor systems. These were generally associated with specific battlefield operating systems (BOS) such as fire support, air defense, combat service support, and maneuver control. This generation was followed by the inclusion of function-specific administrative systems for combat service support (CSS). The Army's first use of field medical AIS was the development of the Theater Army Medical Management Information System (TAMMIS) that attempted to deliver computer support for logistics, patient administration, blood management, medical regulating, and C2. The most successful module was logistics, which today is employed in both fixed and deployed settings. Other functional modules are being replaced by newer systems; some developed by DOD Health Affairs (HA) under the military health system (MHS)

concept. An example of system replacement is the Patient Accounting & Reporting Real-Time Tracking System (PARRTS), an Army augmentation of the patient administration component of TAMMIS, itself to be replaced eventually by United States Army Transportation Command's (TRANSCOM's) Regulating and Command and Control Evacuation System (TRAC2ES). Another example is the Defense Blood Standard System (DBSS) for blood management.

b. In the area of clinical support, the Composite Health Care System (CHCS) has been field tested in two different settings: one, clinically fixed facilities in the CONUS, and two, facilities configured for field operations. This will permit continuous clinical support for hospital operations, down to Echelon III.

c. Finally, the most recent computer system efforts focus on the support of situational awareness through real-time C2 systems. This is achieved by the fusion of multiple sensor platforms to create a relevant common picture of the battlefield, shared by all users and tailored to their functional requirements. The CHS IO entry into this generation is the development of the Medical Situational Awareness and Control (MSAC) System, which will be the medical module to the Combat Service Support Control System (CSSCS). The MSAC system will be architecturally compatible with the Army's Maneuver Control System (MCS), which provides real-time awareness and disposition of enemy and friendly forces.

1-3. Information Operations Concept

The IO concept serves as the basis for developing doctrine, training, leader development, organizations, materiel, and soldiers (DTLOMS) changes that focus on the support of the Army's future operational capabilities (FOC). Further, the concept lists the requirements and solutions for providing integrated command, control, communications, computers, and intelligence (C4I) support to Army medical assets positioned worldwide. The concept studies and then calculates what is needed to provide optimal medical care when and where needed. This concept also applies to the Reserve Components medical force structure. Information operations is the framework accentuated by C4I and interwoven through each of the ten Army medical functional areas: medical treatment; medical evacuation and regulation; hospitalization; combat health logistics and blood management; preventive medicine (PVNTMED); veterinary services; dental services, combat stress control (CSC); C4I; and laboratory services. Information operations leverages the commander's ability to enable, enhance, and protect the decision cycle and mission execution to achieve an information advantage across the full range of military operations.

1-4. Operational Environment

Global connectivity is essential for linking the strategic, operational, and tactical aspects of IO and the ability to project forces worldwide. The global information environment (GIE) includes—

- All individuals, organizations, or systems, most of which are outside the control of military or National Command Authorities (NCA), that collect, process, and disseminate information to national and international audiences.

- All military operations and thus all Army medical operations that take place within the GIE, which is both interactive and pervasive in its presence and the influence it exerts upon those operations.

- Current and emerging technologies that permit any aspect of an Army medical operation to be made known to a global audience in near-real time and without the benefit of filters. Information Age technology and its related management ideas have influenced the Army and the AMEDD's organization and structure. This increased ability to communicate and transmit data impacts on all operating systems.

1-5. Doctrine Application

This doctrine is applicable to all CHS IO users and encompasses requirements for hardware, software, data, people, funding, and time.

a. The AIS in use by CHS units and organizations increases readiness across the operational continuum.

b. Information will be managed to improve CHS so that informed choices can be made by the commanders, providers, and users of the CHS IO systems.

c. Information systems will be protected from unintentional or unauthorized alteration, destruction, compromise, or disclosure.

d. Whenever possible, practical, and appropriate, present and future CHS AIS will be integrated with existing or emerging Army warfighter BOS (such as CSSCS, MCS, and/or the Army Global Command and Control System [AGCCS]) and DOD medical AIS.

e. Software applications will be engineered so that data is entered only once as a by-product of the business process.

f. Application of this doctrine enhances split-based operations.

g. Information systems for CHS IO will look and feel the same across all echelons of care.

1-6. Strategic Principles

The Army's medical "strategic principles" were adopted from the MHS Information Strategic Principles. These principles align the Army medical goals with those of the MHS and the Army, including the Army's Force XXI warfighting doctrine. Listed below are the MHS strategic principles:

a. Information systems will be designed to seamlessly support readiness across the spectrum of the MHS.

b. Information management entails ongoing planning, programming, estimating benefits, funding, deploying, implementing, and realizing benefits.

c. To progress requires aggressive tactical and objective benchmarking against the best practices in the civilian and federal sectors.

d. Information will be managed so it improves the understanding of how to effectively and efficiently provide health services. This allows informed choices by providers and beneficiaries based on the recognition of best value.

e. Information systems architecture will be designed and maintained so that computing and communications infrastructure systems are interchangeable, interoperable, reusable, and transparent to the user.

f. Information will be available when and where needed and protected from unintentional or unauthorized alteration, destruction, compromise, or disclosure.

g. Operational efficiency will be accomplished, whenever possible, using process reengineering to simplify and integrate common functions before investing in new or additional information technology.

h. Common functions will be supported by single, integrated information management approaches, consisting of uniform data sets, processes, and technical standards which do not mandate identical systems.

i. New business and information management processes will be validated through maximum use of on-site, rapid, user-based prototyping before systemwide deployment.

j. Rather than new development and whenever practical, competitive bidding will be used in compliance with these principles to obtain off-the-shelf products from the most cost-effective sources.

k. Processes will be engineered so that data is entered only once as a by-product of the business process.

l. Information management capabilities will offer consistent presentation, will be easy to use, and will be acceptable to users.

m. Information management capabilities will be deployed incrementally to accelerate uniform benefit realization for all MHS beneficiaries.

CHAPTER 2

ROLES AND RESPONSIBILITIES FOR COMBAT HEALTH SUPPORT INFORMATION OPERATIONS

2-1. General

a. This chapter delineates the responsibilities of The Surgeon General (TSG), US Army Medical Command (MEDCOM) commander, and medical unit commanders for the management of IO. This chapter is in compliance with the US Army MEDCOM's supplement to AR 25-1.

b. The IO roles and responsibilities outlined in Figure 2-1 are applicable to all levels of the AMEDD, both TOE and TDA, in CONUS and outside continental United States (OCONUS), across the continuum of operations, and includes all IMA disciplines.

2-2. The Surgeon General

a. *Accountability.* The Surgeon General has overall responsibility for CHS IO and is accountable to the Chief of Staff, US Army, for medical staff functions at the DA level.

b. Responsibilities. The Surgeon General is responsible for implementing DOD and DA policies in the management of the IMA in accordance with AR 25-1. The Surgeon General has approval authority for CHS information doctrine and oversees acquisition of information technology systems according to AR 40-60.

c. Duties. The Surgeon General—

- Serves as a direct interface between major Army commands (MACOMs), the MEDCOM, and the DA staff on resource programming actions for IO.
- Is responsible for the interpretation and integration of DOD and DA policy into CHS IO policy.
- Assigns the Deputy Surgeon General (DSG) as the Chief of Information (COI) for CHS.

2-3. The Deputy Surgeon General/Chief of Information for Combat Health Support

a. *Accountability.* The DSG/COI is accountable to TSG for effective and efficient AMEDD IO across the full spectrum of Army operations.

b. Responsibilities. The DSG/COI—

- Serves as the proponent for CHS IO policy development and implements the Army medical IMA according to AR 25-1.
- Ensures that Information Management Strategic Principles and IO tenets are followed.

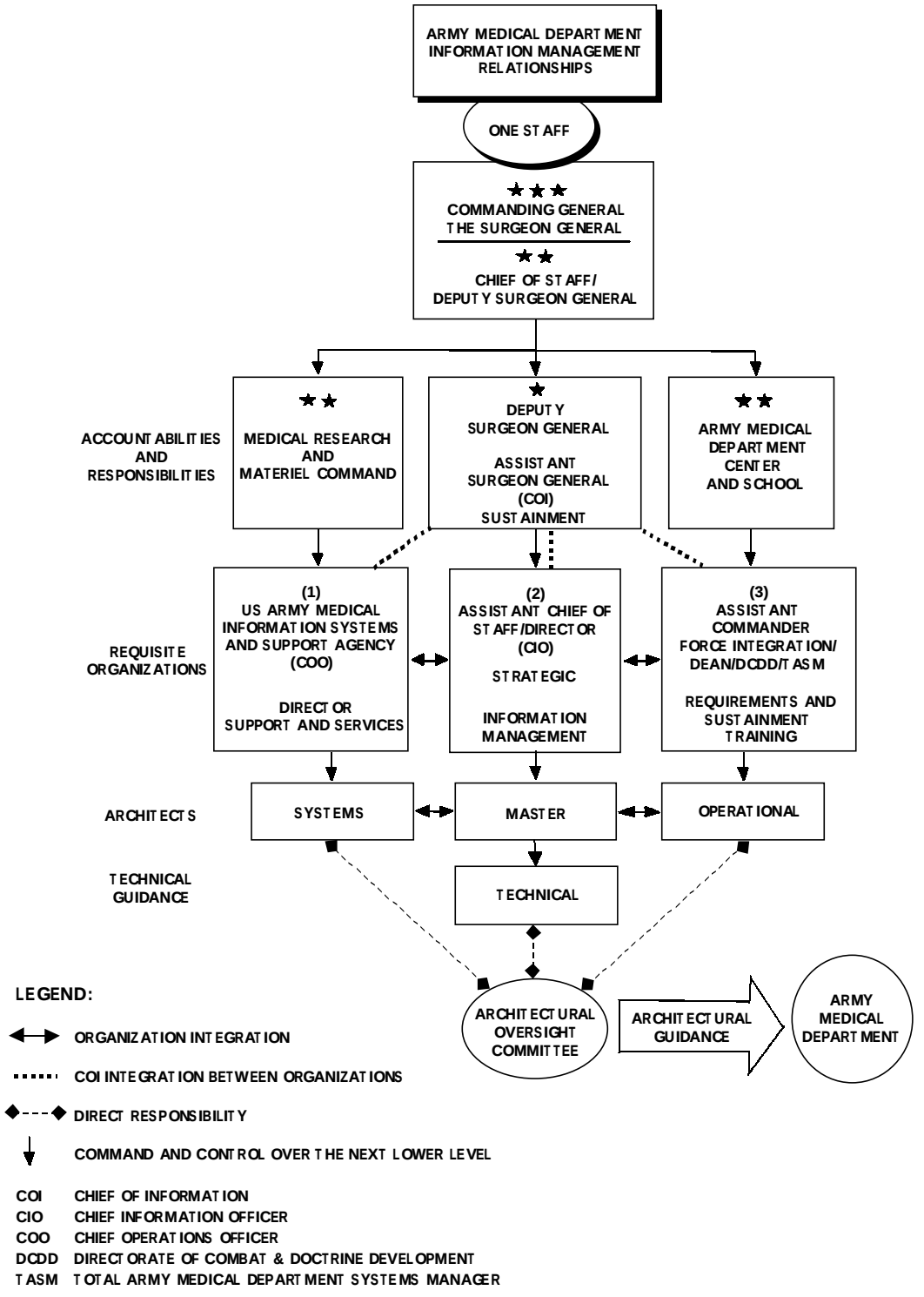

Figure 2-1. One staff relationships within AMEDD information operations.

- Ensures that Army medical units are appropriately staffed and medical personnel are trained to conduct IO.

- Ensures coordination between US Army Medical Research and Materiel Command (MRMC), MEDCOM, Assistant Chief of Staff for Information Management (ACSIM)/Chief Information Officer (CIO), andAMEDDC&S on IO issues.

c. Duties. The COI—

- Establishes the position of CIO in the MEDCOM.

- Ensures coordination between MRMC, MEDCOM, and AMEDDC&S on IO issues.

- Represents the AMEDD at DOD (Health Affairs) on information management proponent committee meetings.

- Ensures coordination between MRMC, MEDCOM, and AMEDDC&S on IO issues.

- Provides strategic oversight for all issues relating to strategic-level operations of CHS IO to the COI.

- Provides strategic oversight for all issues relating to the development of information requirements and business process reengineering initiatives.

- Provides strategic oversight for all issues relating to the fielding and training of medical personnel on automated information systems.

2-4. Commander, United States Army Medical Command

a. Accountability. The MEDCOM commander is accountable to the Chief of Staff, US Army, for internal information resources management responsibilities of the command.

b. Responsibilities. The MEDCOM commander—

- Ensures the security of information systems operations within the MEDCOM according to AR 380-19.

- Develops MEDCOM IO policies for the management of information.

- Monitors the medical information technology systems acquisition policy for compliance with AR 40-60.

c. Duties. The MEDCOM commander—

- Designates a ACSIM in accordance with AR 25-1 and TSG's directives.

- Coordinates with other MACOM commanders to ensure CHS operational integration into systems.

- Coordinates with counterparts in other Services, DOD, heads of state and federal agencies, and chief executives of nongovernmental organizations for CHS IO interoperability and integration.

2-5. Assistant Chief of Staff for Information Management, Medical Command

a. *Accountability*. The ACSIM, MEDCOM, is responsible for ensuring that information requirements and support services are adequate to meet MEDCOM mission requirements. The ACSIM is dual-hatted as the MEDCOM CIO and advises the MEDCOM commander on applications of information services and technologies within the MEDCOM. Additionally, he is accountable to the DSG/COI for issues relating to the strategic management of information and information technology for CHS. The duties and responsibilities as the CIO are discussed in paragraph 2-6 below.

b. *Responsibilities*. The ACSIM—

- Manages the strategic plans and serves as a member of the MEDCOM Strategic Planning Council.

- Consolidates IO and information management support operations in accordance with AR 25-1 and AR 40-60.

- Develops policy for working with Department of Veterans Affairs (VA) hospitals, civilian hospitals as part of the DOD network, and contract physicians for managed care support contracts.

- Develops resource requirements for information support and services and contracts for services not available within the Army support system.

- Coordinates with the Deputy Chief of Staff for Information Management (DCSIM) of major commands and the Communications-Electronics Directorate (J6) of unified and specified commands for CHS IO requirements.

- Manages the CHS IO architectural business process and appoints the master architect which is normally located in the Army MEDCOM.

- Ensures that information requirements and support services are available.

- Ensures that CHS information is strategically managed in support of the AMEDD Strategic Plans and ensures that information capabilities are considered in the development of the AMEDD Strategic Plan.

- Ensures the MEDCOM information management organization remains current with evolving IO technology and programs for modernization/updates as required to meet mission requirements.

- Coordinates with the COI, CIO, MRMC commander, and AMEDDC&S commander to develop plans, programs, and priorities for Army resources needed to manage CHS information in support of Army operations. Provides recommendations to the Office of the Secretary of Defense (Health Affairs) (OSD[HA]) on the purchase of IO systems and Army CHS IO requirements.

- Coordinates with the COI and CIO to produce and maintain the documents and concept statements that guide the MEDCOM in the use of information resources for supporting the Army CHS strategy. This includes developing the IMA modernization plan and executing the MEDCOM portion of the Army's IMA modernization plan in accordance with DA and MEDCOM policies.

- Represents information management medical organizations at MACOM-level Planning, Programming, Budgeting, and Execution System (PPBES) meetings.

2-6. The Chief Information Officer

a. Accountability. The CIO, Army MEDCOM, is accountable to the DSG/COI for implementing, resourcing, and managing CHS IO.

b. Responsibilities. The CIO—

- Incorporates IO requirements and policies into strategic plans.

- Integrates IO resources into the Medical Readiness Strategic Plan (MRSP).

- Checks the IO architecture for completeness.

- Oversees the day-to-day CHS IO management.

- Ensures that information is strategically managed in support of the Army operations.

- Serves as the deputy to the COI on staff issues related to CHS IO.

- Serves as a member of the MEDCOM Strategic Planning Council Information Management Program Review Board.

- Ensures that materiel requirements documents (MRD) that include requirements for information technology, conform with the Army's technical architecture and address integration into the Army's system architecture.

- Ensures that the requirements have gone through a Business Process Reengineering.

- Ensures that MRD is in concert with emerging information technologies.

- Maximizes the value and assess and manage the risk of the Army's information technology acquisitions.

c. Duties. The CIO—

- Coordinates with the Defense Information System Agency (DISA), CIOs of other federal agencies, and with Service components for CHS IO requirements.

- Provides directions and guidance to Army medical organizations, agencies, and units on how to integrate CHS IO, medical information management, and information technology programs, products, capabilities, services, and support.

2-7. Master Architect Information Management Systems

The master architect is accountable to the MEDCOM commander, CIO, and COI for the architectural business process. He is responsible for—

- Developing IO architecture policy and procedures.

- Facilitating and marketing the IO architectural process to CHS IO systems users.

- Conducting liaison within and outside the AMEDD to define the operational systems and technical architectures needed to create a seamless health care continuum.

- Working with the operational architect (AMEDDC&S [DCDD]) and the system architect MRMC to develop the CHS technical architecture for the CIO.

2-8. United States Army Medical Department Center and School

a. Accountability. The AMEDDC&S commander is accountable to the DSG/COI for identifying CHS IO requirements and developing Army doctrine to support CHS IO mission requirements. The AMEDDC&S is accountable for the integration of user requirements and core business processes across the full spectrum of CHS for Army operations, for training business processes, and for customer advocacy.

b. Responsibilities. The AMEDDC&S commander is responsible for ensuring that end-user requirements for the CHS IO systems are integrated and prioritized and that capabilities developed or acquired in support of the CHS mission requirements meet the user needs. The commander—

- Serves as the proponent and approval authority for CHS information doctrine.

- Ensures that all CHS information requirements are documented and prioritized according to AR 71-9 and in consonance with the operational needs as defined by the users and as delineated in the AMEDD Information Management Strategic Plan and AR 40-60.

- Is responsible for operational architecture of the medical seamless CHS IO continuum from far forward medical treatment facility (MTF) to the CONUS-based hospital.

c. *Duties*. The AMEDDC&S commander—

- Produces the operational architecture (functional integrator) and ensures connectivity to business functions and that information flows between those functions.

- Analyzes CHS operations and identifies reengineering and/or business process improvement opportunities where information technology can enhance enterprise performance.

- Coordinates within CHS IO channels with COI, MRMC commander, CIO, MEDCOM ACSIM, master architect, and medical commanders for development of the CHS seamless health care continuum and supports its information management infrastructure.

- Coordinates with the master architect (MEDCOM) and with the system architect (MRMC) to create the AMEDD operational architecture.

- Serves as the proponent for medical IO doctrine development.

- Coordinates corporate requirements development for identification and documentation of medical information requirements identified by nonmedical organizations.

- Obtains and evaluates CHS information requirements from throughout the Army and forwards those requirements that must be addressed by DA and/or DOD activities in order to enhance CHS IO.

- Coordinates CHS IO requirements development and other life-cycle management (LCM) activities (initial and sustainment training and operational test and development) for medical and nonmedical users.

- Assists medical facilities in business process analysis and reengineering of CHS IO.

- Provides account servicing (strategic consultant services) as required to the CHS IO systems users.

- Coordinates and/or manages training and operational test and evaluation of CHS IO and information technology in accordance with AR 40-60.

- Coordinates with training (agencies) of the Army and other Service components to integrate CHS IO.

- Coordinates the combat camera operation for CHS IO with US Army Training and Doctrine Command (TRADOC) and the US Army Signal Center (see FM 24-1).

NOTE

See Appendix A for a discussion of operational, technical, and systems architecture.

2-9. United States Army Medical Research and Materiel Command

a. Accountability. The MRMC commander is accountable to the COI for materiel development, logistics, and systems support, common systems and infrastructure operations. He is also accountable for the CHS IO systems architecture. He establishes and maintains a liaisons with the US Army Signal Corps to ensure appropriate interoperability with Army and other DOD systems.

b. Responsibilities. The MRMC commander is the acquisition executive for medical materiel. He—

- Serves as the Assistant Surgeon General for Research, Development, and Acquisition for medical materiel (see AR 40-60).

- Manages the essential administrative overhead support functions for AIS and materiel, to include contracting and budgeting (see AR 40-60).

c. Functions. The MRMC commander—

- Coordinates with acquisition and materiel agencies of the Army and other Service components for LCM of information technology.

- Coordinates in IO channels with COI, AMEDDC&S, CIO, and other medical organizations for the development and sustainment of a functional CHS IO system.

- Manages medical research and development, logistics, and materiel development of information technology in accordance with AR 40-60.

- Coordinates with the master architect (MEDCOM) and the operational architect (AMEDDC&S) to create the Army CHS IO integrated systems architecture.

- Appoints the Chief Operations Officer (COO) for CHS IO.

2-10. Chief Operating Officer for Combat Health Support Information Operations

a. Accountability. The COO for CHS IO is accountable to MRMC commander for systems management, design and engineering, and operational support necessary for a viable CHS IO system.

b. Responsibilities. The COO is responsible for systems management. He—

- Serves as the medical configuration manager of CHS information management/information technology fielded systems. He is the principal coordinator with the DOD MHS and other proponents to ensure design and integrity, status accounting, audits, control, and synchronization and management of the AMEDD input to Army and DOD configuration control boards (CCBs) for those systems (see AR 40-60).

- Serves as a member of the integrated product and process or concept team(s) with the AMEDDC&S, Army DOD (HA) and other Joint Service functional proponents in the development of new medical information management/information technology capabilities requirements (see AR 40-60).

- Is responsible for providing systems management support for standardization and integration of information technology. He provides customer technical support services, program/product management, and LCM/PPBES services. He is responsible for development of standing operating procedures (SOPs), policies, directive, and information bulletins for sustainment of the CHS IO (see AR 40-60).

- Manages the day-to-day technical operations activities that are necessary for the deployment and sustainment of the CHS IO, to include systems maintenance support.

- Is responsible for the technical support and documentation of customer requirements identified by the AMEDDC&S.

c. *Duties*. The COO manages the standardization and integration of IO equipment for the CHS information management systems. He—

- Organizes and operates the marketing requirements for IO equipment.

- Analyzes the current capabilities to define the requirements for future information management/information technology functional prototypes and the potential solutions for multiple users.

- Develops and manages the process for recommending to responsible authorities the appointment of information management/information technology product and project life-cycle managers. These LCM managers shall be responsible for total support of CHS IO systems and products.

- Conducts information management/information technology total systems acquisition and LCM, to include concept, analysis, design, development, testing, fielding, and sustainment.

- Organizes and operates help desks that provide program oversight, technical assistance, and needs validation. This assistance would also include engineering, production, and operations support of information management/information technology product lines to medical and nonmedical users.

2-11. Army Installation Commanders with Medical Facilities

a. *Accountability*. Installation commanders with medical facilities will include CHS IO in their installation's Information Management Plan (IMP). While installation commanders are accountable to their

higher headquarters, the medical facility commander is accountable to the MEDCOM for CHS information management/information technology operations on his post, camp, or station.

b. *Responsibility*. Army installation commanders will appoint Directors of Information Management (DOIMs). Medical department activities (MEDDACs), US Army Medical Centers (MEDCENs), and other MTFs will establish information management offices (IMOs) as directed (see AR 25-1 and DA Pamphlet (Pam) 25-1-1).

2-12. Commanders, Army Medical Units

a. *Accountability*. Medical unit commanders at all levels are accountable to their chain of command for the information management of their unit.

b. *Responsibilities*. The medical unit commanders will—

- Plan to meet all IMA requirements of the command through execution of an integrated command IMP in collaboration with all supported facilities or units.
- Ensure integration and interoperability of IO, both vertically and horizontally.

c. *Duties*. The medical unit commanders—

- Assess the need for CHS IO training and locally resource the solution.
- Support readiness of active duty and reserve component medical personnel, ensuring they are provided CHS IO training, as required.
- Achieve architectural compliance based on the unit's or higher headquarter's IMP.

Additional functions unique to each organization are discussed below.

2-13. Army Medical Department Major Subordinate Command

a. The major subordinate command (MSC) medical commanders will establish a DCSIM or equivalent with the same staff responsibilities for the MSC as the ACSIM at the MEDCOM level according to AR 25-1.

b. The MSC DCSIM will—

- Identify CHS IO resource requirements for acquisition and maintenance.
- Establish IO relationships within their command and with IO counterparts in other major subordinate commands.

- Establish relationships with other Service organizations; the National Defense Medical System (NDMS), to include VA hospitals; civilian hospitals as part of the DOD network; contract physicians for managed care support contracts; and the Federal Emergency Management Agency (FEMA).

2-14. Regional Medical Command

a. The Regional Medical Command (RMC) commanders will establish a DCSIM or equivalent with the same staff responsibilities for the RMC as the ACSIM at the MEDCOM level (See AR 25-1).

b. The RMC DCSIM will—

- Identify CHS IO resource requirements for acquisition and maintenance.

- Establish IO relationships within their command and with IO counterparts in other regional commands.

- Establish relationships with other Service organizations; NDMS including RMC, VA hospitals; civilian hospitals as part of the DOD network; contract physicians for managed care support contracts; and FEMA.

2-15. Medical Centers

a. Medical center commanders will establish an IMO, or equivalent, with the staff responsibilities to effectively manage the IO program.

b. The MEDCEN IMO will—

- Identify CHS IO resource requirements for acquisition and maintenance.

- Establish horizontal relationships with post DOIM and other MEDCENs.

- Establish vertical relationships with IO counterparts at supported facilities or units, RMC, and the lead agent.

- Establish relationships with NDMS to include RMC, VA hospitals; civilian hospitals as part of the DOD network; support to managed care support contracts; and FEMA.

- Perform day-to-day CHS IO operations as specified in AR 25-1.

2-16. Medical Department Activities

The MEDDAC commanders will establish an IMO, or equivalent, with staff responsibilities to effectively manage the IO program. They will—

- Identify CHS IO resource requirements for acquisition and maintenance.

- Establish horizontal relationships with post DOIM and other MTFs. The commander will establish vertical relationships with IO counterparts at supported facilities or units, regional MEDCENs, RMC, and the lead agent.

- Establish relationships with counterparts at other Service organizations, to include NDMS, VA hospitals; civilian hospitals as part of the DOD network; and for support to managed care support contracts, and FEMA.

- Perform day-to-day CHS IO according to AR 25-1.

2-17. Combat Health Support Command, Control, Communications, Computers, and Intelligence for the Communications Zone

a. Theater Medical Command. The current theater medical command does not have an Assistant Chief of Staff, G6 (Communications-Electronics). This function is usually detailed as an additional duty for one of the headquarters staff officers. Under Medical Reengineering Initiative (MRI), the theater and corps medical commands are authorized a G6. The G6 will—

- Ensure that information requirements and support services are integrated and complementary in order to ensure adequate information resources (the Assistant Chief of Staff, G3 [Operations and Plans] prepares the plan).

- Identify CHS IO resource requirements for acquisition and maintenance (the Assistant Chief of Staff, G4 [Logistics] is responsible for acquiring and maintaining logistical materiel).

- Coordinate with the theater Army command G6 or Joint command J6, theater support command, IO counterparts of other Services, the DISA, if established, and with supporting and supported units for CHS IO requirements and connectivity.

b. Medical Brigade. The current Army of Excellence (AOE) medical brigade does not have a Communications-Electronics Officer (US Army) (S6)/IMO. This function is usually detailed as an additional duty for one of the headquarters staff officers. Under MRI, the medical brigades in corps and at echelons above corps will be authorized an S6. The S6 will—

- Ensure that CHS IO requirements and support services are integrated and compatible in order to operate information resources.

- Coordinate with the theater command G6, the commander's IMO section, the G6 of the MEDCOM, the corps G6, IO of the divisions, other Service components, and with supporting and supported organizations to establish connectivity and exchange of information.

c. *Medical Battalions and Hospitals*. The current medical battalions and hospitals include the area support, evacuation, dental and the medical logistics battalions and the combat support, field, and general hospitals. In these AOE units, the S6 functions are normally an additional duty for one of the headquarters staff officers. Under MRI, there is no dental battalion, but dental companies and detachments are present and significant changes were made to the area support, the evacuation, and the medical logistics battalions. Also, under MRI, the field and general hospitals are replaced by the combat support hospital. The S6 is an authorized position with the MRI medical battalions and combat support hospitals. The battalion/hospital S6—

- Ensures that CHS IO requirements and support services are integrated and complementary in order to exploit information resources.

- Coordinates with the medical brigade/group S6, supporting signal units, IO counterparts of other Service components, and with supporting and supported activities across the continuum of operations to ensure connectivity and to identify IO requirements.

2-18. Combat Health Support Command, Control, Communications, Computers, and Intelligence for the Combat Zone

a. *Corps Surgeon*. The corps surgeon—

- Develops CHS IO plans to meet all medical IMA requirements of the command through execution of an integrated command CHS IMP. This is currently coordinated with the AOE medical brigade and/or medical group. Under MRI the corps surgeon will collaborate with the MEDCOM and/or with the medical brigade.

- Identifies and prioritizes medical IMA requirements for inclusion in corps deployment plans.

- Coordinates with the corps G6, the signal brigade Operations and Training Officer (US Army) (S3), and through medical channels, with supporting and supported activities to ensure connectivity and to identify IO requirements.

b. *Medical Brigade/Group (Current Medical Brigade/Group or Medical Command/Brigade under MRI)*. Same as paragraph 2-17*b* above.

c. *Medical Battalions and Hospitals (Current Medical Battalions and Hospitals and MRI Medical Battalions and Combat Support Hospitals)*. Same as paragraph 2-17*c* above.

d. *Medical Detachment, Telemedicine*. See Appendix B for telemedicine enablers.

(1) Horizontal and vertical coordination with supporting and supported activities shall be defined by the corps surgeon and tailored to the operational situation.

(2) The Medical Detachment, Telemedicine (MDT) is normally attached to a battalion-size organization, but is responsible for supporting its own IMA requirements.

e. Nondigitized and Digitized Divisions.

(1) *Nondigitized division.* In the nondigitized division, the division surgeon is responsible to the division commander for developing plans to meet all medical IMA requirements. He is assisted by the division medical operations center (DMOC) which is assigned to the division support command (DISCOM). The DMOC is responsible for the execution of an integrated command CHS IMP in coordination with all DISCOM medical companies and medical platoons organic to brigade maneuver battalion. The DMOC identifies and prioritizes medical IMA requirements for inclusion in division and DISCOM operation plans (OPLANs). The DMOC coordinates with the medical brigade staff officer responsible for S6 functions, the division staff officer responsible for G6 functions, the signal battalion S3, IOs of other Service components, and with supporting and supported units for connectivity and CHS IO requirements.

(a) Corps Medical Slice Attached to the Division. The IMO/S6 of the units to which these corps medical units are attached is responsible for supporting the necessary IMA requirements.

(b) Main Support Medical Company and Forward Support Medical Company. The commanders of the main support medical company/forward support medical company will—

- Develop plans to meet all IMA requirements of the command through execution of an integrated command IMP in collaboration with all supporting and supported units.

- Identify and prioritize CHS IMA requirements for inclusion in their battalions and supported brigade OPLANs.

- Coordinate with the main support battalion/forward support battalion signal officer and the DMOC for DISCOM and division IMA support.

(2) *Digitized division.* In the digitized division, the division surgeon is responsible for directing division CHS operations. The primary functions of the DMOC, along with its personnel, are moved to the division surgeon's section (DSS). The DSS will perform the majority of tasks associated with IO. The DSS will be assisted by the medical operations cell (MOC) and medical materiel management branch (MMMB) in the DISCOM, the health service support officers in the division support battalion and forward support battalions, the division and forward support medical companies (FSMCs), and by the brigade surgeon's section (BSS) located in each of the maneuver brigade headquarters. The BSS is responsible for developing the CHS IMA requirements for the brigade and developing the brigade CHS IMP that is based on the division CHS IMP. The IMP is integrated into the brigades OPLAN/OPORD that is disseminated to the FSMC and the medical platoons of the maneuver battalions.

2-19. Users of Combat Health Support Information Operations Systems

a. Accountability. The users of CHS IO systems (the customers) are accountable for identification of additional needs across the spectrum of military operations.

b. *Responsibilities*. The individual identifies his needs for IMA resources upward through the chain of command. Information mission area resources are inclusive of, but not limited to, computers, communications, copiers, facsimile (FAX) machines, mail/message, and video.

c. *Function*. The individual will—

- Work through the chain of command for IO support to do his job.
- Train in and sustain IO core competencies.
- Comply with AR 380-19, contingency/OPLANs, the Privacy Act of 1974, and the Freedom of Information Act.

CHAPTER 3

AUTOMATED INFORMATION SYSTEMS MANAGEMENT

3-1. General

This chapter addresses the AIS management. It also discusses the communications and information architecture, the Warfighters Information Network (WIN), that will ultimately provide a seamless connectivity from the sustaining base to the foxhole. The emerging network will be the key enabler for Army XXI units and will enable medical units to provide CHS across the continuum of all military operations.

a. In the future with final incorporation of the WIN to the total Army, all medical operations throughout the battlefield may be monitored by senior leaders. The dynamics and tempo of future operations will require continuous mission analysis and adjustments to the operation orders (OPORDs)/OPLANs. Army medical units must be highly mobile and must have the ability to react, coordinate, and synchronize CHS across the nonlinear battlefield.

b. Wireless local area networks (LANs), satellite, and personnel communications services will allow for greater mobility of medical units. The WIN architecture will replace the noninteroperable stovepipe systems of the past. The WIN architecture will provide for an operations environment that is highly robust, reliable, and readily capable of exchanging information vertically and horizontally across the different levels of security classifications and airwave bandwidths.

3-2. Automated Information Systems

a. *General*. Basic information system functions include personnel, machines, and manual or automated systems that allow for the collection, transportation, processing, dissemination, display, and protection of information. These basic functions cover all aspects of an organization's operations and provide commanders with an accurate, relevant, and common picture, and a common situational awareness of the battlefield. Commander will use their staffs as part of the AIS to plan and integrate IO.

b. *Continuum of Combat Health Support/Operations*. Army medical organizations/units use AIS to support seamless CHS throughout the continuum of Army operations.

(1) Medical units will support current operational deployments while simultaneously planning for future CHS contingencies. The requirement for Army forces to conduct force projection and split-based operations using strategic systems make interoperability and flexibility critical characteristics of any AIS fielded by the Army. The CHS IO requirements are expressed in the CHS information architecture (see paragraph 3-3).

(2) The use of computerization (digitization), along with cellular communications and satellite connectivity, allows Army units individual soldiers to connect to any location using the Internet or a satellite connection. The cumulative effects of these changes will affect the shape of organizations and C4I architectures in the future. See paragraph 3-3 for further discussion of the technical architecture.

(3) The infrastructure provided allows Army medical organizations/units to interface with the global information infrastructure (GII). The GII includes more than just the physical facilities used to store, process, and display voice, data, and imagery. It encompasses a wide array of ever-expanding capabilities, including cameras, scanners, keyboards, FAX machines, and more. It electronically links organizations and individuals around the globe and is characterized by a merging of civilian and military information networks and technologies. The infrastructure includes both military and nonmilitary AIS. See paragraph 3-3 for further discussion of the systems architecture.

c. Military Automated Information Systems. Military AIS integrate fielded and developmental battlefield automation systems and communications to functionally link strategic, operational, and tactical headquarters. Information systems maximize available information networks through seamless connectivity as well as C4I interoperability.

d. Nonmilitary Automated Information Systems. The nonmilitary AIS that the Army relies on include—

- Postal and telegraph systems within CONUS and those of host nations.
- Commercial communications satellites systems such as intelligence satellites and the International Maritime Satellite.
- Electric-powered systems that support information networks.
- Commercially developed software applications.
- Public-accessed databases and bulletin boards.
- Digital cameras and video-teleconferencing.
- Public access telephone and data communication networks (Internet).

(1) These nonmilitary AIS offer the commander alternative means to satisfy informational C2 needs, but only after carefully assessing each for security risks.

(2) Forward deployed medical organizations will be challenged to employ flexible interfacing systems and effective training strategies. Training strategies must address sustainment and new equipment training. Maintaining skill levels of the users of IO equipment and software programs is essential for conducting effective CHS IO. The IO systems must have embedded tutorials and access to distance learning programs for maintaining user skills. If commercial off-the-shelf (COTS) hardware and software is purchased, training support packages must be included in the purchase (manuals, tutorials, and help desk and website addresses). Additionally, information on other sources of training programs and training materials is available to the users.

e. Information Technology. It must be remembered that information technology is only an enabling tool. In and of itself, technology is not a panacea that will solve all the problems and challenges of

a modern battlefield, or of national and international emergencies. Only quality-trained soldiers and leaders will allow the Army medical units to function efficiently amidst the chaos that is created on the modern battlefield.

3-3. Architecture

Architecture, as defined by the DOD C4I Joint technical architecture, is explained in terms of a technical architecture, an operational architecture, and a systems architecture (Figure 3-1). These architecture definitions are also supported by the DOD technical architecture framework for information management. In order the medical units to be successful in the Information Age, they must be able to conduct IO on a continuous basis in support of joint, combined, or coalition operations. Across the spectrum of national and international relations, from stability operations and support operations to war, the ability to link with national and international agencies is a key factor in conducting successful operations. Prior to conflict or crisis, it is imperative that routine cooperation and coordination among all agencies associated with the AMEDD be established.

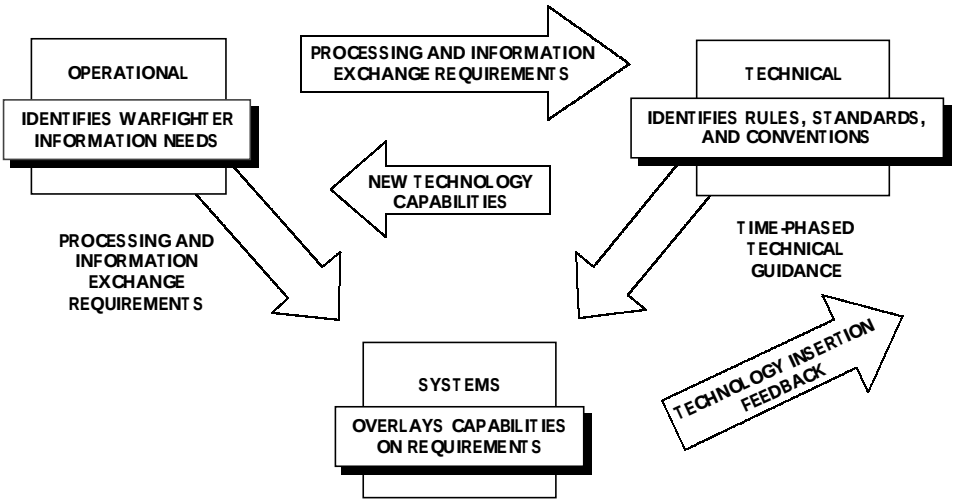

Figure 3-1. Operational, technical, and systems architecture.

a. Operational architecture (equivalent to functional architecture) identifies user information needs. It establishes the required connectivity among processes, functions, information, and organizations. It will show what the Army does, what information the Army needs to do its mission, and how often the Army needs to exchange information within the force. The AMEDDC&S brings together the CHS doctrine, requirements, and operations of the medical organizations into the operational architecture. Operational architecture is especially mission and location dependent.

b. Technical architecture establishes a set of rules governing the arrangement, interaction, and interdependence of all the parts and elements that, together, constitute the Army's AIS. It specifies the permissible standards for designing C4I capabilities and is critical to the creation and maintenance of interactive systems. The MEDCOM Information Management Directorate is accountable for and will publish the technical architecture. The AMEDD technical architecture complies with the Defense Information Infrastructure (DII) and the common operating environment, MHS, and the DISA technical architecture framework for information management.

c. System architecture is the responsibility of the MRMC. The MRMC identifies the relationships among C4I components of systems and creates physical connectivity within the AIS. It uses an organizational context to show system allocation and network structures and helps document engineering decisions, such as specific information protocols and bandwidth. See Appendix A for an inventory of information resources relevant to medical IO.

3-4. Planning for Combat Health Support Information Operations

For effective CHS IO planning, medical planners must:

- Have an understanding of the WIN and its subsystems being used to support the operations.
- Know the bandwidths available to medical units.
- Identify satellite use and funding requirements for deployed medical units.
- Know the echelons of care and other CHS capabilities.
- Identify and plan for consultation support from the sustaining base.

The CHS IO plan should provide information on how connectivity is achieved with the medical organizations located in the sustaining base. Army medical commanders and leaders must establish criteria for measuring the effectiveness of CHS IO in their organizations. Does the unit have procedures in place for conducting CHS IO, does the unit have the proper equipment, and how well is information being managed? Are the commanders' critical information requirements being met. Army medical units must establish minimum acceptable standards for the performance of CHS IO. Army Regulation 380-19 prescribes information management/IO/information technology standards for the Army. Currently under development is the Medical Analysis Tool (MAT) which will assist the medical planner in development of the CHS plan. The MAT is a decision support tool intended for use by medical planners in a secure environment for military operations planning, program budget preparation. The MAT will provide medical planners with analytical assistance and decision support for the steps in the medical planning process. The MAT allows the medical planner to describe a scenario graphically, illustrating units supported, according to time-phased arrivals in the theater of operations and geographic positioning on a map. The MAT includes a Requirements Generator (RG) module and a Course of Action Analysis (COAA) module. The RG calculates medical requirements. The COAA enables comparison of scenarios to assess their medical supportability and sustainability requirements. The MAT will provide a text file report that will enable medical planners the

ability to compare and evaluate scenarios efficiently. In the past, two separate tools performed these functions. The MAT integrates these two capabilities into one tool. Using the MAT, medical planners can determine the level and scope of medical support required for an operation. They can also develop and evaluate different courses of action for probable scenarios. The MAT will be fielded to the Joint Staff, OSD, the Services, Commanders in Chief (CINC), and their components.

CHAPTER 4

MEDICAL COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS, AND INTELLIGENCE

4-1. General

a. When totally fielded, the medical C4I system will provide a seamless state-of-the-art capability that permits global connectivity for medical units. This will provide connectivity between all medical units supporting the operations and between supported and supporting units, the CONUS-based hospitals and other medical organizations supporting global CHS operations. While the current medical C4I is flexible, versatile, and is capable of supporting the AOE, it must be updated to meet the IO requirements of providing CHS for the warfighters of Army XXI. Future medical C4I must be strategically, operationally, and tactically responsive to a broader range of worldwide requirements. The medical C4I capability will integrate both vertically and horizontally with the warfighters' C4I and BOS, and will provide real-time situational awareness. Future medical C4I will require communications network interconnectivity with the global automated systems architectures to access clinical and medical information used in supporting force projection operations.

b. The medical C4I capability requires automation and communications equipment to—

- Provide health threat information for preventing casualties due to disease and nonbattle injury (DNBI).
- Provide medical C4I for global CHS operations.
- Ensure the capability of rapid strategic deployability by exercising the C4I first-in, last-out principle.
- Enhance the capability to promptly locate, acquire, treat, and evacuate battlefield casualties.
- Conduct split-base operations on a continuous basis.
- Provide CHS staff advice and assistance at all command levels.
- Provide a lead element with deploying forces and coordinate the arrival of CHS assets into an area of operations (AO).
- Support joint, combined, allied, and coalition forces across the operational continuum.
- Interface with Army systems, other Services, and DOD automated systems throughout the operational continuum.
- Enhance the warfighter's capability to accomplish his mission by promptly reporting DNBI trends and suspected enemy biological warfare agent employment.

- Allow transfer of images and videos for medical situation awareness within the AO.

- Enable three-dimensional presentation of imagery and graphics with multimedia technology to help commanders visualize their AO for more effective training, planning, rehearsal, and execution.

4-2. Medical Communications for Combat Casualty Care

a. Medical communications for combat casualty care (medical C4I) is the ability to effectively link the health care provider with state-of-the-art diagnostic and communications systems. It embodies a seamless diagnostic, treatment, patient evacuation, and medical regulating infrastructure for the delivery of CHS. The medical C4I capability focuses on the evolving nature of military battle space and the military medical environment to support assigned operational missions. Further, to enhance readiness, it proactively focuses on developing total access for troops in isolated or distant locations.

(1) These technologies will enable the interchange of health information and enhance a MTFs ability to—

- Rapidly and accurately diagnosis disease and injury.

- Promptly determine appropriate treatment regimes.

- Monitor the patient's medical condition.

- Rapidly transmit and receive real-time medical threat data and facilitate its analysis into medical intelligence.

- Expedite notification of other CHS teams required to deploy in response to the disaster/incident after initial assessment is completed and requirements are identified by the deployed specialty response teams (SRTs). See FM 8-42 for definitive information on SRTs.

(2) This electronic bridge provides the vital communications link with MEDCEN and other AMEDD activities by—

- Providing C2 of CHS resources. This is accomplished by using long- and short-range wireless communications to deployed units utilizing frequency modulated (FM) and amplitude modulated (AM) radios. Also, a mix of military, civilian, and public sector communications systems to coordinate casualty care may be used. In addition, satellite communications link must be established with forward deployed medical units.

- Providing the medical C2 units with a real-time status of CHS capabilities. This includes the medical threats, DNBI trends, availability of medical evacuation assets, current situation of MTFs, patient tracking, return to duty (RTD) status of soldiers, combat health logistics (CHL) and blood status, and the status of medical, dental, and veterinary consultative, diagnostic, and treatment services.

- Maintaining a database of DNBI trends within the AO and provide guidance on PVNTMED measures to counter the threat.

- Acquiring, treating, and returning soldiers to duty as quickly as possible.

- Providing CHL (to include blood management) support to forward deployed units by ensuring the timely resupply of Class VIII items and blood.

- Providing enhanced CSC support to troops employed in forward areas.

- Providing, in conjunction with the nuclear, biological, and chemical (NBC) Warning and Reporting System, identification and immediate of dissemination of information on suspected NBC agent/weapon employment. Additionally, this electronic bridge will enhance the rapid identification of disease outbreaks in the AO.

- Providing information on hazards created by low-level radiation, toxic industrial chemicals, and NBC hazards.

- Projecting enhanced diagnostic medical and dental treatment procedures to lesser qualified medical personnel far forward on the battlefield or in distant areas. Also, it will provide professional consultative services on treatment protocols.

- Providing enhanced veterinary diagnostic and treatment procedures for military working dogs (MWDs) and other government-owned animals to veterinary personnel in far forward locations and in isolated areas. It will also provide telemedicine enablers to veterinary food inspection personnel.

b. Medical personnel at all echelons will exchange information with each other by audio, digital, video, and electronic media. This communications ability ensures maximum use of theater and US-based medical specialty skills, diagnostic capability, and treatment regimens. The integration of existing and emerging information technologies into the CHS and patient care systems will allow the medical commander to project the expert care necessary to sustain the future force.

c. To enhance the survivability of medical assets in future conflicts, a secure means of communications is required for all mobile CHS squads and teams, such as forward deployed ambulance squad or treatment team. Combat health support communications systems must be compatible and interoperable with all other communications systems to include the WIN architecture and other DOD communications systems. Medical units also require the capability to maintain and sustain the communications systems it employs.

d. To ensure the effective use of required communications assets, CHS communications requirements must be prioritized. Within the strategic and tactical communications systems, broadband widths may be limited and CHS requirements will compete with other operational requirements for use of these limited resources.

4-3. Medical Command, Control, Communications, Computers, and Intelligence

a. Echelons I and II. Medical C2 and situational awareness at the division and unit levels are critical to reducing morbidity and mortality on the battlefield. Medical units must be a part of the Army's C2 systems and have real-time situational awareness of the battlefield.

(1) Echelon I medical platoons organic to maneuver and combat battalions require communications in the form of voice, digital, and video systems. The medical platoon will employ Force XXI Battle Command Brigade and Below System (FBCB2) for digital communications and real-time situational awareness when fielded. Using the FBCB2 along with the global positioning system (GPS), the medical platoon will have instant visualization of where the medical and nonmedical vehicles of the battalion are located. In the future, the combat medics/medical platoon personnel will use the casualty locator system, currently under developed, to expedite the recovery and treatment of wounded or injured soldiers. In addition, medical platoon personnel will use the individual digitized patient record (IDPR) when fielded. Medical platoon will require the above enablers to support the digitized maneuver battalions of Army XXI and to ensure effective management and employment of their organic medical treatment and evacuation resources.

(2) Echelon II includes medical companies of the division, separate brigades, and area support medical battalions (ASMBs). It includes the medical staffs located in the DISCOM, division headquarters and headquarters company (HHC), and ASMBs. The medical C4I for Echelon II CHS will require communications equipment that employs wire, wireless, digital and video systems. In addition, Echelon II will require those items identified for Echelon I. In support of the Army XXI digitized divisions, the medical companies will use FBCB2 while the division medical staff (DSS of digitized divisions which take over the functions of the DMOC of the nondigitized division) will have access to or own a CSSCS. These capabilities are required to enable the DSS, the medical staff of the DISCOM, and medical unit commanders to provide CHS for the digitized division. During Joint operations, the above units and medical staffs may provide CHS for other Services. Also, medical units and staffs must coordinate for sharing CHS information with allied and coalition forces, host nation, and other governmental and nongovernmental agencies.

b. Echelons III and IV. The major medical C2 units at Echelon III (corps-level) are the medical brigade and medical group and at Echelon IV (communications zone [COMMZ]) the medical command. Under the Army XXI/MRI, the major C2 units at Echelon III are the medical command and medical brigade and at Echelon IV, the medical command.

(1) The primary focus for current or future COMMZ and corps major medical C2 units is on the Army component and corps commander's intent. These command medical units plan, coordinate, and synchronize CHS to meet the requirements of the warfighter commanders' objectives. They provide medical C4I for major subordinate medical units.

(2) These major medical C2 units will require state-of-the-art communications equipment to employ wire, wireless, and digital systems and satellite linkages. These capabilities are required to enable the commands to provide medical C4I for all assigned or attached units.

(3) The major medical C2 units require reliable communications network interconnectivity with the DA's AIS architecture, including access to the DOD and global automated systems architectures, to acquire and provide real-time CHS operations information. This capability is also required by commands and subordinate units to transmit and receive real-time mission requirements information, both vertically and horizontally, throughout the Army and the DOD information infrastructure.

(4) Joint, interagency, or multinational operations, headquarters will require communications connectivity with the other Services, allied and coalition forces, host nation, and other governmental and nongovernmental agencies.

c. Echelon V. The OCONUS/CONUS sustaining base hospital and other Army medical organizations supporting global CHS operations are included in Echelon V. In contingency operations, the major medical C2 organization deploying to an operations area, is responsible for linking medical functionally emulative increments (FEI) with the Army component commander's staff. Echelon V hospitals and other medical organizations supporting global CHS will require state-of-the-art communications equipment to employ wire, wireless, and digital systems and satellite linkages. These organizations will require access to commercial and military space communications technologies. The major medical C2 organization preparing to deploy, its FEI and its subordinate units, Echelon V hospitals, and other supporting medical organizations require communications capability and reliable network interconnectivity with the DA's information architecture. This also includes access to the DOD and global automated systems architectures. The fielding of new technology and systems, such as the electronic theater medical record and the computerized medical records for the MHS, will enhance all aspects of CHS. A necessary component of these will be the personal information carrier (PIC). The PIC is envisioned as a data repository (as small as an identification tag) for important information that will be carried by the military personnel pre- and postdeployment. These computer-based records may contain information related to prevention, surveillance, medical deployability, and health status and wellness of the active duty soldier. As the soldier moves through the continuum of care, the PIC provides a timely and accurate source of the patient's information.

4-4. Treatment

a. Today's force projection Army (and the missions it is required to perform) increases the need for rapid acquisition, aggressive initial emergency medical treatment (EMT), and safe evacuation of battle-field casualties. Current doctrine includes tactics, techniques, and procedures for providing CHS on the forward battlefield. The use of new technologies and techniques enhances our abilities to provide CHS. Medical communications for combat casualty care provides essential communications links of CHS personnel with each other and with other units/commands in the operational area as well as with out-of-theater organizations/activities. The types of communications equipment employed will vary with the echelons of care.

(1) Echelon I and II medical/treatment platoons and treatment teams have the same medical C4I requirements as identified in the paragraph above.

(2) The division surgeon and the DMOC collocate their staffs within the division support area to maximize their support efforts. These staffs prepare CHS plans for inclusion in the

divisional OPLAN. They provide medical oversight and coordinate the employment of nondivisional medical units and personnel placed in direct support of the division.

b. The future battlefield may be extended over larger areas, or in depth, with the supporting medical units spaced at greater distances. The combat medic may be the only medical person available to provide care within the first hour of wounding. The physician or physician assistant (PA) at the battalion aid station (BAS) may have a patient present with life-threatening injuries that requires treatment procedures beyond their professional skills. An enabler that will assist the physician, the PAs and the combat medic is telemedicine. Telemedicine combines the domains of clinical medicine, medical computer science, and telecommunications in order to enhance the health care provided to the soldier and other personnel authorized treatment. Telemedicine is a system designed to reduce the mortality and morbidity rate of soldiers by lowering the died of wounds rate. Also, telemedicine will aid physicians to make early diagnosis of diseases by making expert consultation in a variety of medical specialties available, as needed. Two enablers of telemedicine that offer access to specialized care not otherwise available are—

(1) *Telementoring*. This is a process that allows a medical person with greater knowledge and experience to guide a medical person with less knowledge who is treating a patient at a distant location. For example, a health care provider (the mentor) at a BAS guiding a combat medic in the treatment of a wounded soldier on the battlefield. Telementoring uses voice and/or digital AIS to communicate information.

(2) *Teleconsultation*. This is a process that allows two health care providers to discuss a patient's medical condition to establish the best treatment protocol. The purpose of teleconsultation is for health care providers to share their skills and knowledge to reduce the number of soldiers dying before they reach a definitive care facility. Teleconsultation may use voice, digital, text/graphic, and video AIS. Examples of teleconsultation are as follows:

(*a*) The PA with a treatment team operating a BAS minus discussing a patient's condition with the physician at another location in the battalion area.

(*b*) The health care provider at a MEDDAC consulting with a specialist at a MEDCEN.

4-5. Medical Evacuation and Medical Regulating

Medical evacuation is the transport of a patient via air or ground ambulance while providing en route care. Medical regulating is a corps and echelons above corps (EAC) function. In the corps, this function is performed by the corps medical regulating officer (MRO). At EAC, medical regulating is performed by MEDCOM MRO and the Joint medical regulating office. Medical regulating provides the coordination and control of moving patients to MTFs which are best able to provide the required specialty care. It is designed to ensure the efficient and safe movement of patients.

a. Echelon I.

(1) Ambulance teams will be linked to combat medics, medical treatment teams, and supported units by the same communications method as identified for Echelon I in the paragraphs above.

An enhanced communications capability will enable ambulance teams to rapidly receive evacuation requests and to receive evacuation mission updates while en route. Further, it will enhance the capability of the medic by making telementoring available as required to provide en route care.

(2) Medical regulating is not performed at this echelon. Medical platoons will track patients as they move in the division to supporting Echelon II MTF.

b. Echelon II.

(1) Ambulance platoons, squads, and teams must be able to rapidly locate, acquire, treat, and provide medical evacuation of patients from supported units. Echelon II ambulance platoons will provide direct and area medical evacuation support. Echelon II ambulance platoons will evacuate patients from supported BASs to the FSMC located in the brigade support area. Corps ground ambulances provide medical evacuation from FSMCs and main support/division support medical companies back to corps hospitals. Corps air ambulances in direct support of maneuver brigades will provide medical evacuation from the point of injury (mission, enemy, terrain, troops and time available, and civilian considerations ([METT-TC]-dependent) and from BASs back to the FSMC. Corps general support ambulances will evacuate from FSMCs and main support medical companies (MSMCs)/division support medical companies (DSMCs) back to corps hospitals. The ambulance platoons, squad, teams and air crews will require the same communication equipment identified above for Echelon II MTFs.

(2) Medical evacuation personnel must have a dedicated net to communicate with supported and supporting units. Air ambulance crews must be provided Army airspace command and control information. Medical evacuation personnel must be able to communicate with the other Services, allied and coalition forces, host nation, and other governmental or nongovernmental agencies as required.

(3) No formal medical regulating system at this echelon; only informal tracking of patient destinations.

(4) Division and DISCOM medical staffs must be able to communicate through secure wire, wireless, and digital communications to corps and supported units within the AO to successfully accomplish the medical evacuation and medical regulating missions.

c. Echelon III.

(1) The corps medical evacuation battalion provides both ground and air medical evacuation for supported divisions. Ground ambulance evacuation support for the corps is provided by the area support medical companies on an area basis. Air ambulance support will be provided with air ambulances from the medical evacuation battalion. Corps areas supported may include ports, airheads, and offshore and afloat facilities. Evacuation assets must be capable of communicating with supported and supporting units, and with medical C2 organization, other Services, allied and coalition forces, host nation, and other governmental and nongovernmental agencies. Communications will include wire, wireless, digital, video, casualty locator, global positioning, and satellite linkages. Additionally, medical personnel providing en route medical care must have the capability to receive telementoring and to input information into the PIC and the digitized medical record when fielded.

(2) A formal system of medical regulating is initiated at Echelon III. Communications between the medical brigade/group, hospitals, medical evacuation battalion, and other MTFs is required. Echelon III MROs must be able to coordinate with supported and supporting units, the other Services, DOD agencies, allied and coalition forces, host nation, and other governmental and nongovernmental agencies. The medical regulating mission requires the capabilities to transfer patient information to designate receiving facilities, to arrangement of modes of transportation, to provide movement to appropriate evacuation points, to provide patient tracking, and to provide medical treatment information. To accomplish this mission, communications using wire, wireless, digital, and satellite linkages must be available.

d. Echelon IV.

(1) Medical evacuation assets are centralized under a medical C2 organization and provide medical evacuation support to and from airheads and ports and patient transfers between Echelon IV facilities. Also, they provide medical evacuation support on an area support basis at EAC. The capability for telementoring and teleconsultation will also be required at this echelon. The actual mission of medical evacuation out of Echelon III and Echelon IV is performed by TRANSCOM assets. Communications in the form of wire, wireless, digital, global positioning, casualty locator, and satellite linkages must be available.

(2) Communications between medical C2 organizations, hospitals, evacuation assets, and medical holding facilities are required. Echelon IV MROs must be able to coordinate with supported and supporting units, the other Services, DOD agencies, allied and coalition forces, host nation, and other governmental and nongovernmental agencies. The medical regulating mission necessitates the capability to transfer patient information, designate receiving facilities, arrange mode of transportation, move patients to appropriate evacuation points, perform patient tracking, and provide medical treatment information. To accomplish this mission, communications means using wire, wireless, digital, and satellite linkages must be available. Furthermore, information and data from the DOD HA, TRANSCOM, and other standard automated systems must be capable of digital exchange through the integration of these systems and communications networks to form a seamless information web. An example of these systems is the TRANSCOM's TRAC2ES.

e. Echelon V.

(1) It is a Service responsibility to transport their patients from debarkation points to and between the supporting hospital or medical center. Echelon V facilities can include DOD hospitals and MEDCENs, VA hospitals, and civilian hospitals that are members of the NDMS. Memorandums of agreement or understanding between the US Army and local communities may exist to provide medical evacuation support to neighboring civilian communities, as well as providing evacuation support during disasters. Medical evacuation resources and medical C2 organizations must be able to communicate with supported and supporting units, the other Services, and other governmental and nongovernmental agencies. To accomplish these missions, communications using wire, wireless, digital, and satellite linkages must be available.

(2) The medical regulating mission necessitates the transfer of patient information, designation of receiving facilities, arrangement of mode of transportation, movement to appropriate evacuation

points, patient tracking, and medical treatment information. Communications between medical C2 organizations, MEDCENs, hospitals, evacuation assets, and medical holding facilities are required. Medical regulating offices must be able to coordinate with supported and supporting units, the other Services, DOD agencies, and other governmental and nongovernmental agencies. To accomplish this mission, communications using wire, wireless, digital, and satellite linkages must be available.

4-6. Hospitalization

a. *Echelon I*. There are no hospitals at this echelon.

b. *Echelon II*. There are no hospitals at this echelon. However, a forward surgical team (FST) may be deployed at this echelon to provide initial resuscitative surgery for nontransportable patients. This FST will collocate with a divisional or nondivisional medical company for required support. Information support will deploy forward as necessary, in support of the surgical teams as found at Echelon III.

c. *Echelon III*. The first hospital is located at this echelon. Patients received from the corps and division areas are stabilized for continued evacuation or treated and RTD. Those patients identified as non-RTD are evacuated to an EAC facility for further stabilization and evacuation out of the theater. The hospital will integrate telemedicine, hospital information, and communications systems providing full digital, voice, and video capability. These systems interface with supported and supporting units, the other Services, and other governmental and nongovernmental agencies at the strategic, operational, and tactical levels.

(1) The hospital communications system will include wire, wireless, and digital communications between hospital departments and personnel. It will also provide gateways to troop facilities at all echelons and evacuation platforms, using the WIN. The internal voice communications network will provide wire and wireless communications connectivity to the WIN, to include battlefield digitization, global C2, and sustaining base AIS.

(2) The hospital AIS will provide an integrated electronic patient database, including laboratory and radiology results, pharmacy orders, medications, allergy information, physician's orders, and required reporting formats. The deployed hospital patient database will be capable of transparent interface with other DOD patient databases. Patient records will be accessible on a central database and stored electronically on a PIC device. The hospital AIS will provide access to theater logistics, blood, medical regulating, and other medical AIS.

(3) The hospital will utilize a digital imaging network system. This system will transmit diagnostic quality medical images, high resolution still images utilizing digital cameras, radiological images, dental images, patient clinical data, pharmacy data, laboratory systems data, and microscopic images between hospital workstations, as well as via satellite or other communications system from the deployed MTF to the consulting MTF. This information will be stored electronically on a PIC device.

(4) The hospital will use video teleconference systems. A desktop video system may be incorporated into key hospital workstations, allowing for the display of interactive video, as well as the

various images of the digital imaging network. Large screen video has the potential to display images in the operating room or the EMT area. Direct satellite broadcast will support medical education, medical situation awareness, and PVNTMED operations.

d. Echelon IV. At this echelon, those patients not expected to RTD within the theater evacuation policy are stabilized and evacuated to Echelon V facilities. Those patients expected to RTD are provided convalescent care and rehabilitative services. Hospitals at this echelon will integrate telemedicine and hospital information and communications systems as identified for Echelon III.

e. Echelon V. This echelon of care is provided in DOD fixed hospitals and VA hospitals. Under the NDMS, patients overflowing DOD and VA hospitals will be cared for in designated civilian hospitals. Echelon V hospitals will provide the expert consultation base that could be accessed by deployed medical treatment units. Echelon V hospital information and communications systems that provide voice, digital, and video capabilities will be compatible with those systems used by deployed medical organizations and MTFs.

4-7. Dental Services

Dental services in the AO are provided by dental personnel that are organic to Echelons II and III MTFs and by dental units. The categories of dental care in the AO are emergency, preventive, general dentistry, and specialty care. Additionally, dental personnel will assist medical personnel in mass casualty situations.

a. Echelon I. No dental capabilities are organic to Echelon I. Preventive care is provided by mobile teams deployed from Echelon II and Echelon III dental resources.

b. Echelon II. Dental care is provided by organic dental personnel. They will be augmented by mobile teams deployed from corps dental units. Dental personnel at this echelon will require the ability to communicate with supported and supporting units. Telemedicine enabler capabilities are also required. Communications in the form of voice, digital, and video will be required for mission accomplishment.

c. Echelon III. Dental care at this echelon is provided by corps dental units and resources organic to Echelon III hospitals. Treatment teams are deployed forward to augment and reinforce the Echelon II dental personnel. Telemedicine enablers are required. Dental personnel will communicate with supported and supporting units, C2 units, other Services, allied and coalition forces, host nation, and other governmental and nongovernmental agencies. Communications in the form of voice, digital, and video will be required for mission accomplishment. Dental personnel will interface with the hospital communications system to access integrated patient dental records, storage of dental data, the PIC, and standard AIS for laboratory, radiology, and pharmacy services.

d. Echelon IV. Dental care at this echelon is provided by both independent dental units and dental personnel organic to Echelon IV hospitals. Telemedicine enablers are required. Dental personnel will communicate with supported and supporting units, C2 organizations, other Services, allied and coalition forces, host nation, and governmental and nongovernmental agencies. Communications in the form of voice, digital, and video will be required for mission accomplishment.

e. Echelon V. Dental care at this echelon is provided within fixed facilities. Dental personnel will use telemedicine enablers. Communications in the form of voice, digital, and video will be required.

4-8. Preventive Medicine Services

The most cost effective means of providing CHS is the employment of a competent PVNTMED program. To be effective, disease surveillance must begin before troops are deployed. Further, PVNTMED assets must be deployed with the first troops into an AO. Early surveillance is conducted by means of PVNTMED obtaining and disseminating medical threat information on the AO. Preventive medicine personnel must be able to communicate with supported and supporting units, C2 units, allied and coalition forces, host nations, and other governmental and nongovernmental agencies. Communications in the form of voice, digital, and video will be required for mission accomplishment. Broadcast satellite will disseminate PVNTMED information throughout the AO.

a. Echelon I. Preventive personnel are not organic to Echelon I. Preventive medicine activities at the unit level include those performed by individual soldiers, unit field sanitation team, and organic medical personnel. Routine PVNTMED support (such as training unit field sanitation teams) and PVNTMED surveillance activities are provided by Echelon II PVNTMED teams. Corps-level PVNTMED units/teams augment Echelon II PVNTMED teams on an as-needed basis. Communications in the form of voice, digital, and video will be required for mission accomplishment.

b. Echelon II. Preventive medicine support is provided to units at Echelons I and II on an area support basis. Communications in the form of voice, digital, and video will be required for mission accomplishment.

c. Echelon III. At this echelon, PVNTMED support is provided to those units at Echelons I and II as requested and to units at Echelon III on an area support basis by PVNTMED units specifically designed, organized, equipped, and manned to perform PVNTMED support. Also, at this echelon, each major medical C2 organization has a PVNTMED staff available to provide consultation and technical guidance on PVNTMED issues. All PVNTMED units/teams at this echelon will use voice, digital, and video communications. Further, the PVNTMED units/teams will use telemedicine enablers to maximize PVNTMED support throughout the AO. The staff of the major medical C2 organizations access AIS to receive and analyze DNBI data in order to provide commanders with guidance on PVNTMED measures to reduce and/or eliminate the health threats.

d. Echelon IV. Those PVNTMED support activities found at Echelon III and the medical C4I requirements are the same.

e. Echelon V. The CONUS-based medical organizations that provide PVNTMED support for Army installations are assigned MEDDACs and MEDCENs. Selected PVNTMED activities/organizations provide PVNTMED support on a global basis. These activities/organizations include but are not limited to US Army Center for Health Promotion and Preventive Medicine (USACHPPM), US Army Medical Research Institute of Infectious Diseases (USAMRIID), US Army Medical Research Institute of Environmental Medicine (USAMRIEM), Walter Reed Army Institute of Research (WRAIR), and US Army Medical

Research Institute of Chemical Defense (USAMRICD). These activities/organizations will require voice, digital, video communications and telemedicine enablers to maximize PVNTMED support to deployed units.

4-9. Combat Stress Control Services

a. Echelon I. Echelons II and III combat stress teams provide CSC support at this echelon to supported units and on an area support basis.

b. Echelon II. In the division, mental health sections organic to the MSMC and FSMCs provide CSC to supported units and on an area support basis. These sections are augmented as required from a corps CSC medical detachment that is in direct support of the division. The division psychiatrist provides input to the division surgeon on CSC-related matters. In the corps, mental health sections of the area support medical companies (ASMCs) under the guidance of the ASMB psychiatrist provide mental health/ CSC support on an area support basis. Both division and ASMB psychiatrists are responsible for synchronizing mental health/CSC activities for prevention, training and treatment of neuropsychiatric (NP) and stress-related casualties. The CSC personnel use communications in the form of voice, digital, and video to accomplish their mission and use telemedicine enablers to maximize the CSC support.

c. Echelon III. Echelon III CSC units include the CSC medical company and the CSC medical detachment. The CSC fitness section (two CSC fitness teams) and the preventive section of the CSC medical detachment provide direct support to a division and support in the corps. The CSC medical company provides comprehensive preventive and treatment services to the corps and EAC during war. It provides this support to all Services on an area support basis. The CSC medical company provides direct support to separate maneuver brigades or combat support brigades. It reinforces or reconstitutes other CSC units or sections in the corps or division. The CSC medical company provides CSC/mental health to indigenous populations as directed in stability operations and support operations, to include domestic support operations, humanitarian assistance, disaster relief, and peace support operations. The CSC medical company augments hospital NP services by staffing a temporary NP ward and augments ASMB mental health sections as required. The CSC medical company will also conduct CSC reconditioning programs. Combat stress control units and mental health sections located in or operating from the corps require communications in the form of voice, digital, and video to accomplish their mission and will use telemedicine enablers to maximize the CSC support. At this echelon, the medical brigade has a mental health staff to monitor, coordinate, and provide technical guidance.

d. Echelon IV. Those mental health/CSC support activities found at Echelon III are replicated and the medical C4I requirements are the same.

e. Echelon V. Community Medical Health Activities (CMHAs) located at MEDCENs and MEDDACs provide mental health support for Army installations. Division and corps mental health sections and corps CSC units may augment CMHAs. The MEDDAC or MEDCEN may deploy stress management SRTs prior to or in the initial stages of a major incident or catastrophic event. The stress management SRT provides initial NP, mental health, and stress assessment. This team provides initial critical events stress management for military and civilian responders and for survivors, as directed.

Designated MEDDAC and MEDCENs will provide CSC consultation support and services for deployed forces. The MEDDAC and MEDCEN staffs monitor, coordinate, and provide technical guidance to the staffs of deployed mental health/CSC sections and units. In Echelon V, CMHA and CSC units/teams use communications in the form of voice, digital, and video to accomplish their mission and use telemedicine enablers to maximize the CSC support.

4-10. Laboratory Services

a. Echelon I. Laboratory services at this echelon are limited to "dipstick" techniques performed by the physician or PA.

b. Echelon II. Laboratory services at this echelon are limited. The laboratory specialist will use wire, wireless, digital, and high resolution still imaging video communications to receive support from an Echelon III laboratory facility in evaluating prepared laboratory presentations. Support will consist of evaluation and consultation of laboratory test results, digitized images of microscopic cells and structures, and high resolution still images. For stability and support operations deployments, the supporting laboratory may be an offshore or US-based laboratory facility.

c. Echelons III and IV (Corps Level and Echelons Above Corps).

(1) *Clinical laboratory services.* Clinical laboratory services are located in Echelon III hospitals. The clinical laboratory services will use wire, wireless, digital, video, high resolution still images, microscopes equipped with video and still cameras, and satellite communications. These systems will be used to receive support from the general CHS laboratory and other supporting laboratories. Laboratory specimen presentations will be transmitted via digital, video, and satellite communications. Reports of laboratory services will be provided to the requesting clinical service or ward via wire, wireless, and digital communications. Blood transfusion and blood donor information will be transmitted via digital, wire, wireless, and satellite communications. Blood management information will be linked to the theater joint blood management information system. For stability operations and support operations deployment, the supporting laboratory may be an offshore or a US-based laboratory facility.

(2) *Theater Army Medical Laboratory.* The current Theater Army Medical Laboratory (TAML) will be replaced by the Area Medical Laboratory (AML) as a result of MRI. The AML functions are focused on rapid health hazard identification and assessment and initial identification of suspected biological warfare agents within an AO. These operational health hazards include NBC threat agents, endemic diseases, and other medical threat associated with occupational and environmental health risks. The AML is capable of tailoring its deployable assets to meet specific operational objectives and split-base mission requirements. The AML will be linked to medical and nonmedical units via wire, wireless, digital, still cameras, active video, and satellite communications. The AML will be linked to medical units at all echelons including the supporting Echelon V MTFs, US-based laboratories, MRMC facilities, and other governmental and nongovernmental facilities as required. The AML will provide telementoring and teleconsultation support to supported medical units. Collectors will have access to the AML for directions on collection, preparation, and shipment of DNBI or suspect NBC specimens and samples.

d. Echelon V.

(1) *Clinical laboratory services.* The clinical laboratory services at this echelon are contained in the MEDDACs and MEDCENs. The medical C4I requirements are the same as those identified at Echelons III and IV hospitals.

(2) *General combat health support laboratory.* The general CHS laboratory services at Echelon V are located at MEDCENs. They provide general laboratory support on a regional basis to medical activities within the regional medical commands. The medical C4I requirements are the same as those identified for the TAML.

(3) *Medical research laboratories.* Medical research laboratories will employ wire, wireless, digital, active video, still cameras, and satellite communications systems. These systems will be linked to supported laboratories on a worldwide basis. Any DOD CHS laboratory with communications capabilities can access this laboratory for support. However, lower echelon laboratories should remain in their technical chain of command for laboratory support. During stability operations and support operations, these laboratories may be the next echelon supporting laboratory. All suspect biological agent employment specimens are forwarded through channels to the designated laboratory for confirmation.

4-11. Veterinary Services

The US Army Veterinary Service is the DOD Executive Agent for veterinary support to the US Army, US Navy, US Marine Corps, and US Air Force. Veterinary support is also provided upon request. It is subject to availability of resources for government-owned animals of other federal agencies. In some instances, it is also provided to allied/coalition partners and/or host-nation agencies. Veterinary support begins long before troops are deployed. Veterinary personnel are employed on a daily basis to government-contracted food production facilities and on military installations in support of DOD personnel. Veterinary units/personnel require deployment with the first soldiers into an AO because of the potential health threat from foodborne diseases, the threat of NBC contamination of subsistence, and the need to assess the zoonotic diseases. Comprehensive veterinary medical and surgical programs are also re-quired to maintain the health of government-owned animals. Veterinary service personnel at all echelons must be able to communicate with supported and supporting units, joint forces, C2 organizations, allied and coalition forces, host nation, and other governmental and nongovernmental agencies. Communications in the form of wire, wireless, digital, video, and satellite will be required for mission accomplishment at all echelons.

a. Echelon I. At Echelon I, food safety investigations, animal disease surveillance to assess potential health threats, and animal emergency health care are provided across Service boundaries by Echelon III veterinary units.

b. Echelon II. Veterinary services are provided by Echelon III veterinary units to divisional Class I supply points. Animal health care and zoonotic disease surveillance is provided on an area basis by the medical detachment, veterinary (large) and medical detachment, veterinary (small). At this echelon, Level I and II (emergency treatment, stabilization, and evacuation) veterinary medical care is provided for animals.

c. *Echelon III*. The veterinary service detachment provides food safety, food laboratory analysis, zoonotic disease surveillance, and Levels I and II veterinary medicine for MWDs for all military Services on an area basis. Level III veterinary medicine is provided by the medical detachment, veterinary medicine. Level III veterinary medical care is definitive and comprehensive (complete care). Civil Affairs units at Echelons III and IV also contain veterinary personnel to assist with public health infrastructure rebuilding and to liaison with host nation government public health officials. Veterinary personnel will interface with medical evacuation assets for movement of injured MWDs.

d. *Echelon IV*. Echelons above corps veterinary detachments provide food safety, food laboratory analysis, zoonotic disease surveillance, and animal surgical/medical health care to all Services. An expanded veterinary laboratory analysis capability is available to support investigation of foodborne disease outbreaks. Veterinary assets within the TAML have additional capacity for unique laboratory evaluation of specimens of endemic and zoonotic diseases. Veterinary personnel will interface with medical evacuation units for movement of injured MWDs.

e. *Echelon V*. All DOD installations are supported by Army veterinary activities. The Veterinary Command oversees veterinary service for CONUS, OCONUS, and provides consultative support to deployed forces.

4-12. Combat Health Logistics

a. *Echelon I*.

(1) *Nondigitzed*. The nondigitized medical platoons and treatment teams receive its Class VIII resupply through supply point distribution from the brigade support area (BSA) or push packages from the division medical supply office (DMSO) located in the MSMC. Emergency Class VIII resupply is obtained from the FSMC.

(2) *Digitized*. The medical platoons, treatment teams, and medical sections at this echelon will employ voice and digital communications (FBCB2) and the TAMMIS Medical Logistics-Division (MEDLOG-D) when fielded, to request Class VIII resupply and medical maintenance support from the supporting Echelon II medical company. The supporting medical company will fill or forward requests to the supporting medical logistics company of the medical logistics battalion.

b. *Echelon II*.

(1) *Nondigitized*. The medical companies request Class VIII resupply, blood, and medical maintenance from the DMSO. Class VIII resupply is accomplished by the DMSO through ambulance backhaul, logistics packages, or push Class VIII packages.

(2) *Digitized*. The medical companies of the division request Class VIII resupply and blood using the TAMMIS MEDLOG-D. This system provides division medical companies and the medical materiel management branch of the DISCOM a direct link with the supporting MEDLOG battalion units. This connectivity is accomplished using mobile subscriber equipment. Once established, the MEDLOG

company provides Class VIII resupply for division medical elements and for corps medical elements operating in the division AO. During deployment lodgment, and early buildup phases, medical units operate from planned, prescribed loads and from existing pre-positioned war reserve stockpiles identified in applicable contingency plans. During the initial employment phase, each FSMC will receive a preconfigured medical resupply push package every 48 hours from pre-positioned stock or the sustaining base. Preconfigured medical resupply push packages will continue until appropriate units of the corps MEDLOG battalion, are established. Initial resupply efforts may consist of preconfigured medical supply packages tailored to meet specific mission requirements. Preconfigured push packages will normally be shipped directly to the DSMC and FSMCs until replenishment line item requisitioning is established with the supporting MEDLOG company. During this time BASs are resupplied from the DSMC or FSMCs. While resupply by preconfigured packages is intended to provide support during the initial phase, continuation on an exception basis may be dictated by operational needs. Planning for such a contingency must be directly coordinated with the DSS. Other than line-item requisitioning, the health service materiel officer of the DSS and the DISCOM MMMB will coordinate all Class VIII requirements for the division with the supporting MEDLOG battalion and/or MEDLOG company. The DMSO of the nondigitized division will remain with the digitized divisions until the division is issued the TAMMIS MEDLOG-D and throughput Class VIII from the corps MEDLOG company is established. Medical companies will employ voice, digital, and video communications to request Class VIII resupply, blood, medical maintenance, and optical fabrication and repair support from the supporting MEDLOG company and blood detachment.

c. Echelon III. The current MEDLOG battalion provides combat health logistics support for the corps and its divisions. This support includes Class VIII resupply, blood and blood products, medical maintenance, and optical fabrication and repair support. Under the MRI, the mission and functions of the MEDLOG battalion did not change, but the battalion was reorganized so that it could more effectively perform its mission. The MEDLOG battalion and the MEDLOG company will employ voice, digital, and video communications systems. The MEDLOG battalion communicates with supported and supporting units, the other Services, allied and coalition forces, host nations, and other governmental and nongovernmental agencies as required. The TAMMIS and the logistics information management system provides an integrated electronic Class VIII database, to include medical maintenance. Information on blood transfusions and blood donors will be transmitted via the blood management AIS and linked to the Joint Blood Management Office.

d. Echelon IV. Those CHL activities found at Echelon III are replicated and the medical C4I requirements are the same.

e. Echelon V. The strategic logistics system for Class VIII will employ information and communications systems the same as Echelon III and Echelon IV. The information and communications system will provide the capability to interface with DOD strategic elements as well as TDA and TOE medical organizations. It will allow the Class VIII strategic logistics units to access AIS for the capability of projecting time-phased medical requirements.

CHAPTER 5

DIGITAL INFORMATIONAL SYSTEMS SECURITY PROCEDURES

5-1. General

The use of the C4I system, telecommunications networks, and other AIS is available throughout the DOD. These systems and their databases play critical roles in operation, C4I, finance, personnel, and logistics missions. The systems' growing connectivity and the wealth of valuable information they process and store make them attractive targets for compromise of data, deception/corruption of data, disruption of system operation, or actual physical destruction of equipment. They are faced with threats that are genuine, worldwide in origin, technically diverse, multifaceted, and rapidly growing.

5-2. Communications Security

The present and ever-increasing dependence upon the AIS within the Army mandates that the security of *all* components (the information generated by and the systems that generate the information, the signal that transmits the information, and all processing systems) be protected. Risk management should be applied to all systems, to include classified systems as well as unclassified and/or sensitive systems. Threats to US systems can occur in two distinct areas, electronic warfare and computer intrusion. Both are part of command and control warfare and may occur independently or at the same time.

5-3. Warfighters Architecture Requirements

The Army's enterprise strategy focuses on three warfighter crucial architectures (see Appendix A).

a. The goal of the current security architecture is to ensure sensitive information and assets are protected throughout the continuum of military operations.

b. Earlier security systems did not meet the requirements for flexibility, accountability, and interoperability. Security policies and procedures are now developed to satisfy current requirements.

c. It is imperative that users exchanging information know that the data is authentic; that it is sent by valid users; and that it is not available to unauthorized personnel. Current and future security architecture must protect the confidentiality, integrity, and availability of information that is created, processed, stored, and communicated. Threats to the AIS are multifaceted in nature. They can come from a variety of sources ranging from an accidental intrusion to a deliberate military attack. The degree of acceptable risk in the assessment process is directly proportionate to the data's sensitivity, criticality, and perishability when compared to the threat.

5-4. Current Security Policy

The current security policy for the tactical packet network (TPN) mandates all hardware be accredited for secret high operation. The exception to this policy is the tunneling of sensitive but unclassified (SBU) information via in-line network encryption (currently the network encryption systems), through the

deployed TPN. The typical configuration calls for the use of firewalls at gateway points between network types and high assurance guards between the secret Internet protocol router network and the nonclassified Internet protocol router network.

a. The National Security Agency (NSA) is developing a set of solutions to provide secure interoperability for the Defense Information Infrastructure (DII) and the Defense Information System Network (DISN) (a subset of DII). (The area common-user system and the TPN are subsets of DISN.) The NSA solution, the Multilevel Information Systems Security Initiative (MISSI), is expected to provide the security services required by the WIN security policy through all transitional phases. The MISSI products will provide the following security services:

(1) *Data integrity* (*verification that data has not been modified in transmission or during computer processing*). Currently no widely used capability exists to accomplish this with electronic mail (E-mail) or with the message traffic (hard or soft copy). This is a new requirement.

(2) *Identification and authentication* (*I&A*) (*verification of the transaction originator*). This is similar to using a personal identification number (PIN) on a bankcard. Current procedures require system administrators and information system security officers to issue user identification (USERID) and passwords. The potential exists for a release authority to give his USERID and password to an unauthorized person. The same potential exists when using crypto cards and PINs.

(3) *Nonrepudiation* (*proof of participation by both sender and receiver in a transaction*). Current capabilities allow confirmation when the user receives or reads E-mail. However, the Army uses many E-mail software packages that do not have this capability.

(4) *Data confidentiality* (*data privacy with encryption during transmission or computer processing*). This includes encrypting text before transmission or the separation of data during processing. Using bulk data encryption and limiting network access meets this requirement. The secure telephone unit (STU) keys provide this capability for voice traffic over commercial networks.

(5) *Access control* (*ensuring that data transmission or computing processing systems are not denied authorized users*). Firewalls prevent the unauthorized access while the secure mail guard provides for multilevel security E-mail exchange. This capability is not fully utilized in garrison environments and is not currently deployed.

b. A MISSI building block approach is used to develop products that stay current with evolving security requirements and technology (Figure 5-1). Product categories are as follows:

(1) *Workstation security products*. These products include crypto cards and their associated crypto-ready applications that perform workstation security services.

(2) *Crypto-ready applications*. An evolving set of commercially available user software packages that call up the crypto security services.

(3) *System/enclave security products*. These products typically reside at the enclave boundary and provide access control and/or encryption services to external networks.

(4) *Secure computing products*. These products are high trust computer operating systems and application programs that contain features and assurances that support information sensitivity labels. They also prevent the deliberate or accidental release of information to unauthorized users. These capabilities enhance security in the local enclave. These capabilities currently exist in networks that use USERID and system-level passwords.

(5) *Network security management products*. These products support the security management of the network and perform services such as electronic key generation and distribution, issuing user certificates, maintaining user directories, and revoking user privileges.

(6) *Voice security products*. The MISSI does not provide voice security products. However, MISSI technology will be used in the secure telephone equipment (STE). The STE will be compatible with existing STU-IIIs and will replace existing KY-68s. Additionally, the near-term digital radio may use personal computer (PC) crypto cards and embedded cryptographic modules.

c. Prior to fielding WIN upgrades, developers will employ security tools (see FM 100-6) to identify system vulnerabilities and apply countermeasures. Access controls, MISSI security services, and encryption will be used to protect the confidentiality and integrity of the data passed. These tools will also be used at network entrances to isolate segments and detect intrusion. Once detected, countermeasures (including tracing and exploitation) will minimize the impact of the intrusion.

5-5. Midterm Programs and Initiatives

The midterm design will replace network encryption systems with a guard and add a crypto card to support Defense Message System (DMS) and guard fractions.

a. The following security initiatives and capabilities will be implemented as they become available for the majority of systems to support the evolution toward the WIN infrastructure:

(1) Provide a standard technique for "producer-to-consumer" protection of services in the SBU environment (for example, E-mail services, file transfer and storage, and video services). The MISSI security products implement the approved Army standards for SBU-level security.

(2) Integrate initial user account-level security management capabilities into the security architecture. The DMS Phase I delivers security management with a certificate authority workstation (CAW) user agent infrastructure for DMS accounts.

(3) Provide network component-level access controls and user-level distributed I&A services. Using a PC crypto card is the approved Army standard network access control technique and supports log-on and authentication services.

(4) Provide multilevel separation of nonsensitive, SBU, and SECRET information processed over one network environment. This is currently accomplished using in-line network encryptors (INE). The objective security architecture provides trusted guard functionality to allow multilevel operations.

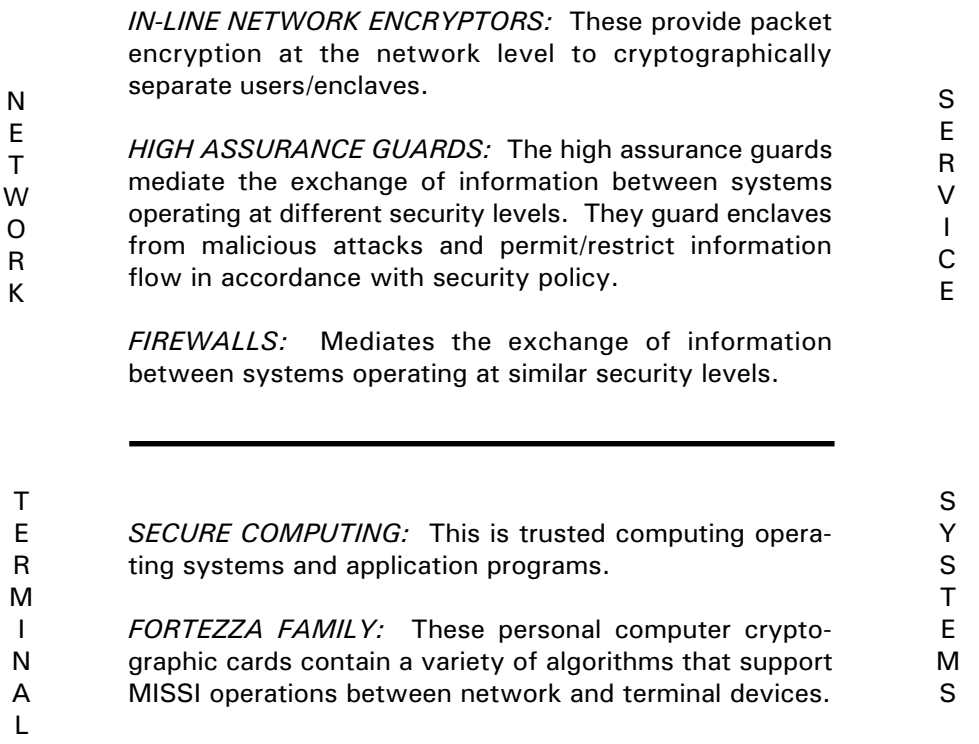

Figure 5-1. Multilevel information systems security initiative building blocks.

(5) Provide protected interconnection with, and interface to, the Internet. Firewall technology, in conjunction with a crypto card-based I&A, is a proposed way to protect against intrusion from the Internet.

(6) Provide continued separation and protection for TOP SECRET (TS) and sensitive compartmented information. Dedicated intelligence networks or subchannels on existing communications carriers will use INE technology to ensure separation.

(7) Provide secure voice compatibility and interoperability between analog and emerging digital voice communications. Secure telephone equipment, when fielded, will provide compatibility and interoperability with STU in voice mode.

(8) Provide compatible and interoperable cryptography between voice and data systems.

(9) Provide initial common security management infrastructure for end-system and network security products. A common security management infrastructure will support network security and STE. An initial security association management protocol will be available that uses common security labels, a security management information base, and security audit tool applications.

(10) Provide cryptographic security products that support multimedia information processing. High-speed "key agile" encryptors will be developed to support asynchronous transfer mode environments.

(11) Provide end-system security products that are compatible with projected end-system platforms.

(12) Provide compatible interfaces between tactical and garrison C2 environments. Tactical bridges will be provided through the integrated tactical-strategic data network employing MISSI products.

b. The MISSI is an evolutionary initiative with products delivered as available. Each new release of MISSI products will address the system security objectives of improved performance levels and progressively higher assurance. The MISSI products include—

(1) *In-line network encryptors*. These products typically reside at the boundary between local and wide area networks and provide highly robust encryption and access control services. For the near-term security architecture, INEs are used for tunneling and trunk security. For the midterm and objective security architecture, INEs may be used for trunk security.

(2) *Workstation products*. These products reside at individual workstations and provide writer-to-reader security services, intrusion detection, virus detection, and so forth. When used as recommended and in combination with trusted operating systems, application programs, and guard functions, these products may provide multilevel security network solutions.

(3) *Firewalls and secure server products*. A firewall is a set of components that control access between networks. Server products typically reside on the local network boundary as a guard. They can also reside within the local network to provide common security services for applications such as high-low guards, files services, and database management. Examples are the tactical guard and the high assurance guard (HAG); either could be equipped with a data encrypting capability.

(4) *Security management services*. These encompass such security measures as cryptographic keying, access control, authentication, and using passwords. These services include—

(*a*) The CAW, which will reside on the local area network and provide security support for the provision of such capabilities as digital signatures, cryptographic key, and access control permissions.

(*b*) Rekey managers that work in conjunction with the electronic key management system and provide cryptographic rekey support for security products.

(*c*) Audit managers, which provide support for the collection and analysis of security relevant auditable events associated with security products. An example of an auditable event is a repeated failed user log-in.

(*d*) Directories, which provide a repository for public security information essential for global message addressing. An example is the public part of a user's digital signature.

(*e*) Mail list agents, which are employed by messaging systems when a message is sent to many recipients to add security.

(5) The STE will allow transition from a primarily analog environment to a fully digital environment. It builds on the need for a secure voice terminal capable of interfacing with and using the enhanced features and capabilities of the digital infrastructure. Interfaces allow both tactical and strategic digital circuit switching to occur. The STE will offer backwards compatibility and compliance with the integrated service digital network standards for basic rate interface. It will provide high quality digital performance for secure and nonsecure voice and data operations. Security migration will allow for the capabilities to support I&A of individual users that allow voice, data applications, voice conferencing control, and video-conferencing greater security control. Interfaces to both integrated service digital network and switched 56 kilobytes per second digital public switched telephone services will allow both tactical and strategic digital circuit switching to occur.

5-6. Objective Environment

a. The following high-level security objectives represent the target capabilities for the objective security architecture:

(1) Protect and share all levels of security with firewalls and HAGs.

(2) Authenticate access through firewalls and HAGs.

(3) Secure network transactions.

(4) Establish information domains for all functional areas (for example, C2, intelligence, administrative, finance, and so forth).

(5) Institute global, dynamic management for all domains.

(6) Assure availability of service and share security technology with service suppliers.

b. Unlike the midterm architecture that concentrated on a single digitized division, the objective architecture will transition a corps at a time until all are upgraded. This will require an evolutionary process of incorporating security products, policies, and procedures as they are accepted into the Army architecture.

5-7. Multilevel Information Systems Security Initiatives, Secret to Sensitive, but Unclassified Configuration

a. Workstations equipped with crypto cards have writer-to-reader protection for data sharing between the SBU enclaves through unclassified networks. However, possibly in the midterm, legacy trusted vice public networks will be used. During the midterm, the introduction of the HAG enables secret enclaves to exchange SBU data with SBU enclaves and secret enclaves to exchange secret data through unclassified networks. A CAW will be required in the objective architecture. The CAW will provide the network security management for MISSI. The CAW software will include certificate management, directory user agent, DMS user agent, administrative directory user agent, and simple mail transfer.

b. The objective architecture will include crypto cards with both Type I and Type H algorithms and can interoperate from unclassified up to the TS-sensitive compartmented information level. Sometime between the midterm and objective architecture, the legacy secret-level backbone may transition to an unclassified network.

c. Future MISSI capabilities will incorporate future technologies and communications media such as the synchronous optical network and the broadband integrated service digital network. The security management capabilities from earlier solution sets will receive enhancements to provide higher performance in support of large-scale networks, such as the global grid.

d. Specific software and hardware mechanisms will be required to provide the security services in the objective architecture. Crypto cards perform key storage, encryption, decryption, digital signature, and verification of digital signatures. The secure network server for the MISSI configuration is a HAG. The HAG will provide multilevel security functionality in the objective architecture. It will contain multiple functions including mail applications, file transfer protocol, and remote log-in capability. The security policy programmed into the HAG will determine allowable traffic flows. A CAW will be required in the objective architecture. The CAW will provide the network security management for MISSI. The CAW software will include certificate management, directory user agent, DMS user agent, administrative directory user agent, and the simple mail transfer protocol.

5-8. Standardization of Information Operations Security Responsibilities During Joint and Coalition Operations

Standardization of information operations security responsibilities during Joint military and coalition forces is—

- Achieved through international forums in accordance with policy and procedures of the Chairman of Joint Chiefs of International Military Rationalization, Standardization, and Interoperability between the US and its allies and other friendly nations.

- Policy enhancing US military forces to communicate and share data and information with each other and their allies/coalition members.

Areas of particular concern for compatibility and commonality include command, control, communications, and computers (C4) and automated information systems, battlefield surveillance systems, target designation systems, target acquisitions systems, and communications security hardware and software systems.

a. Chairman, Joint Chiefs of Staff Responsibilities.

(1) The Chairman, Joint Chiefs of Staff (CJCS) functions within the chain of command by transmitting to the combatant commanders the orders of the President and the Secretary of Defense. The CJCS coordinates all communications in matters of Joint interest addressed to the combatant commanders by other authority.

(2) The Chairman operates the National Military Command System (NMCS) for the Secretary of Defense to meet the needs of the NCA and establishes operational policies and procedures for all components of the NMCS and ensures their implementation.

(3) General operational responsibility for the nuclear command, control, and communications (C3) system lies with the CJCS. The nuclear C3 system is centrally directed through the Joint Staff. The nuclear C3 system supports Presidential nuclear C2 and NCA C2 of the combatant commands in the areas of integrated tactical warning and attack assessment, decision making, decision dissemination, and force management and report back.

b. Combatant Commander Responsibilities. Combatant commanders—

(1) Submit C4 system requirements for Joint operations within the scope of their missions and functions to the CJCS. They also provide information copies of the correspondence to the other Services, and defense agencies. This submission will include requirements for CJCS-controlled transportable C4 assets, when such requirements are not satisfied by normal military department or military service processes.

(2) Collect, provide comments on, and forward to the CJCS the requirements applicable to Joint operations for all C4 equipment. The requirements are generated by subordinate operational commands and are submitted directly to the military departments or Services. The DISN/C4 resources must be validated at the combatant commander level.

(3) Report to the CJCS incompatibilities or lack of interoperability among C4 systems and between tactical systems and the DISN.

(4) Test the C4 systems' portions of appropriate OPLANs periodically as a part of a CJCS-sponsored or command-sponsored exercise. These tests will identify unresolved issues, verify operational procedures and interoperability, and provide Joint training.

(5) Ensure that Service components and subordinate unified commands submit requirements for all C4 systems applicable to Joint operations through the combatant commanders to the military departments or Services in accordance with procedures in effect.

5-9. Connectivity to the Sustaining Base

a. Throughout all force projection stages, a paramount need exit for a signal support means to transport information from the sustaining base power projection platform at CONUS installations, through strategic gateways, to forward deployed units. The signal support mission-essential tasks to project and construct the infosphere are to—

- Link the force to the infosphere to achieve seamless global connectivity.

- Transport information with broadband, high-capacity systems, optimizing satellites and terrestrial signal support, to connect CONUS, installation sustaining base, and Joint operational areas.

- Reach back through strategic entry points to power projection platforms and information infusion centers.

- Extend the communication range of battle command operations centers and fighting platforms by providing C4 for mobile operations.

b. The signal IO support mission-essential tasks are to—

- Digitize, compress, and broadcast multimedia battle command information in five categories using increased bandwidth, high-efficiency transport systems. The multimedia categories control, monitor, alert, inquire, and explore critical information.

- Encrypt and provide multilevel information security.

- Manage information networks with smart software that dynamically allocates throughput capacity on demand and then routes and disseminates information.

- Display via Army Battle Command System (ABCS), a three-dimensional, interactive, knowledge-based, relevant common picture.

c. Medical unit commanders request assistance from the supporting signal unit to obtain connectivity with the CONUS sustaining base. Information on message transmission security and information on security levels for various types of wire, wireless, digital, video, and satellite linkages are provide in the signal operating instructions. Also, this information may be obtained from the supporting signal unit.

APPENDIX A

ARCHITECTURE

A-1. Definition

Architecture is fundamentally a technical construct that applies to the software, hardware, and telecommunications components of an information system. Architecture is intended to expand the usefulness and extend the life of information systems through application of continuously evolving technical factors.

A-2. Operational Architecture

Operational architecture (the functional integrator) ensures connectivity to business functions and that information flows between functions.

a. Total Army Medical Department System Management. A "total system management" performs integration functions to ensure that information systems are correctly designed and integrated into the broader health care delivery system or subsystem they are tasked to support. This "total system management" concept designates a system manager to represent the user community. Ultimately the system manager is accountable for recommending whether or not a given system works in the user's operational context and if it is supportable within the operational environment. If, from a functional or cost-effectiveness point of view, the system manager deems a project to be ineffective, he has the duty to recommend project termination to the MEDCOM commander. From a cost point of view, the earlier a project is terminated because of lack of functionality or affordability, the better.

b. Corporate Requirements Development. The AMEDDC&S commander is responsible for identifying and documenting information requirements placed upon the AMEDD corporate body from external organizations that would not be otherwise identified by other medical organizations within the Army.

c. Requirements Integration/Prioritization. The AMEDDC&S commander is responsible for evaluating common requirements from all Army medical organizations to identify those essential to the CHS mission. He is responsible for identifying and forwarding those requirements that should be addressed by DA or DOD activities. He is responsible for monitoring existing projects or programs at DA and DOD levels to determine if they meet medical requirements and if they can be integrated into the medical information system. He prioritizes requirements based on the degree of impact they will have on the ability to carry out the corporate strategy. Considerations include consistency with Army policies, cost-benefit analyses, scope of impact, and feasibility of solution. This decision process requires input from both the customers and the information management community, but the customer community is accountable for the final prioritization. Individual customers (units, RMCs, and MTFs) retain the option to pursue independently resourced projects.

d. Functional Input Coordination. The AMEDDC&S commander coordinates functional input from across Army medical organizations for requirements development and system LCM activities, both internal and external to medical organizations. A key role is to educate the individuals involved in providing this input to ensure that they represent the requirements for Army medical organizations overall and not individual needs and desires.

e. *Business Process Analysis and Reengineering*. The AMEDDC&S commander assists facilities in analyzing their approach to accomplishing mission requirements to include providing unbiased assistance to users by defining business issues or problems and looking for sources of assistance. These sources of assistance are not limited to information systems applications, but should include the best approaches from all DTLOMS domain support.

f. *Account Servicing (Strategic Consultant Services)*. The AMEDDC&S commander provides consultation services and assistance to specific organizational clients (for example, the MSCs). The role is to assist clients in determining the specific type of need/requirement to be submitted to the AMEDD corporate body for resolution. This requires a thorough understanding of the client's organization missions, strategies, objectives, and business processes.

g. *Training and Functional Implementation*.

(1) *Training*. The AMEDDC&S commander coordinates all training requirements for information mission areas across the entire spectrum of Army medical personnel, facilities, and operations.

(2) *Functional implementation*. The AMEDDC&S commander manages the activities required to train users in how to use a new information capability in a facility or unit. In addition to basic functionality training, this process involves assessing existing business processes and determining how to integrate the new system or capability into these processes. Training will be consistent with TOE and TDA units. He assists the facility in learning how the system can enhance mission accomplishment through inherent efficiencies of automation, as well as a thorough understanding of how data from the system can help managers make optimal decisions.

h. *Operational Test and Evaluation*. The AMEDDC&S commander is responsible for the management and testing of newly acquired information capabilities by functional users. He ensures their needs are met and other existing systems are not adversely affected.

A-3. Technical Architecture

The technical architect, together with technologists, establishes a set of technical rules to enable the systems architect to ensure compatibility and interoperability. The technical architect's functions include—

- Facilitating the architecture process.
- Writing policy.
- Assuring publication of the architecture documents.
- Conducting public relations.
- Conducting liaison with medical and nonmedical organizations within the Army.

- Auditing systems to assess efficacy and ensure compliance.
- Ensuring the medical information systems meet the following objectives:
  - Common operating environment.
  - Open architecture.
  - Seamlessness.
  - Easily accessible by both Army and Joint users.
  - User friendly.
  - Effective and efficient.

A-4. Systems Architecture and Management

The systems architect seeks to identify relationships among C4I components of systems and create physical connectivity within the information system. He uses an organizational context to show system allocation and network structures and helps document engineering decisions, such as specific information protocols and bandwidth. The system architecture includes—

a. Information Management Systems Standardization and Integration. This system integrates data and process models. The COI for information management functions ensures that the appropriate technical input is given to the AMEDD architect. He provides assistance and oversees individual projects to facilitate use of the architecture in program development.

b. Account Services (Information Management Materiel). The MRMC commander provides information management consultant services and assistance to organizational clients. His role is to assist clients to understand the opportunities and limitations of information resources and to, if appropriate, assist the client to find an information management solution to an identified requirement.

c. Program and Product Management. Inside the current AMEDD one staff operations architecture (referred to in Chapter 2 and Chapter 3), the commander of MRMC is responsible, at the strategic level, to the Deputy Surgeon General (COI) for the management of US Army Medical Information Systems Support Agency (USAMISSA) (COO) (see Figure 2-1). The COO must first be issued guidance, expressed in a statement of work, by the accountable customer (the bill payer) before commencing development of any new systems. After USAMISSA designs, develops, or purchases an information system and ensures it meets the desired specifications, the system is purchased for Army medical organizations. It is the responsibility of USAMISSA to manage the resources (both financial and personnel) required for fielding of these systems into Army Medical organizations. All systems must pass both developmental and operational testing and evaluation before being adopted into the communications overall system inventory.

d. Life-Cycle Management/PPBES Linkage. The systems architect provides the required supporting resource documentation, including cost estimates, for specific information systems and capabilities used in the process of resource coordination at the MEDCOM staff level. He coordinates all LCM milestones-related documentation and ensures that resource planning incorporates the full life cycle of a given system.

e. Documentation and Training Support. The systems architect provides AMEDD-specific documentation and training programs and materials for information management systems. He ensures that all training requirements for the systems managed by MRMC are documented in an acceptable format to train managers at the AMEDDC&S.

f. Design/Engineering. The systems architect provides the technical and functional skills required to develop, acquire, and maintain the capability to meet an established requirement. He ensures that all systems are based on approved data and process models. He provides technical assistance to customers in developing these models to ensure that all new capabilities and processes are integrated into existing information environment systems and documents all developed models.

g. Application Specialists. The application specialists provide consultation and support services to specific functional areas on the best way to apply information systems and information technology in support of that function. This requires an understanding of how information technology is applied to a specific purpose, data set, or system and, therefore, requires both technical and functional area skills.

h. Core Technologists. Core technologists provide their expertise in technologies such as networks, databases, and user interfaces to be used in cross-functional teams assembled by project managers or on an ad hoc basis by application specialists to solve system-specific problems. This expertise is not limited to a specific purpose, data set, or system.

i. Developmental Test and Evaluation. Developmental tests and evaluations will determine whether a system developed meets the requirements as specified.

j. Common Infrastructure Operations/Management. The Director, USAMISSA operates and manages the AMEDD communications network (including interfacing with external networks) and any centralized data storage and processing centers in compliance with the published AMEDD architecture. He coordinates and monitors communications and data security for the AMEDD. He ensures continued modernization of the infrastructure by monitoring external activities (industry, Army, DOD) and participating in the planning and architecture processes.

k. Technical Services. The Director, USAMISSA (more specifically, Division C, Technical Services Branch within USAMISSA) serves as point of contact for maintenance problems; provides technical consultation; maintains information system asset inventories; maintains the continuity of operations; and provides help desk assistance.

l. Technical Implementation. The Director, USAMISSA provides all the required technical assistance to individual sites for installation of required hardware/software for specific systems. He ensures

that all new systems are integrated into the existing information systems environment at a facility and that existing systems are not adversely affected. He trains the facility's information system operators on technical aspects of system operation. Individual sites retain control of all implementation activities as long as they comply with published architecture.

m. Customer Support "Help Desk." The Director, USAMISSA provides direct support to all information systems users. He is accountable to the customer for the resolution of all information-related problems, including those that have been elevated to other sources of assistance. He manages all problems that cannot be resolved with the help of desk personnel by assigning them to the appropriate resource within the information management services organization.

APPENDIX B

TELEMEDICINE ENABLERS

B-1. General

a. Telemedicine has great potential to enhance the entire continuum of the CHS. It combines the domains of clinical medicine, medical computer science, and telecommunications in order to enhance the delivery of health care to individuals. It enables a health care provider to access the more specialized experts within the health care system. It will eventually gain widespread use and be integrated into routine clinical practice. The requirements for telemedicine services in support of MTFs within the AO are ever increasing. The ongoing developmental stages of this technology will continue to evolve.

b. The broad objectives of telemedicine are met by enhancing the availability, quality, and timeliness of the data provided by health care providers, the PVNTMED surveillance system, and evacuation regulators. These objectives are to—

(1) Promote health and prevent disease.

(2) Enable a more rapid RTD of soldiers.

(3) Facilitate the evacuation of casualties.

(4) Reduce the mortality and residual disability of casualties from diseases and injuries.

(5) Minimize the medical footprint on the battlefield.

c. The specific objectives of telemedicine are to—

(1) Reduce unnecessary patient evacuation.

(2) Reduce the urgency for evacuation.

(3) Improve the allocation of an appropriate priority for evacuation.

(4) Assist the selection of the appropriate destination MTF.

(5) Enhance the clinical management of casualties during their evacuation.

(6) Enhance the hand over of casualties evacuated to an MTF.

(7) Improve the triage process for multiple casualties.

(8) Enhance the application of EMT and advanced trauma management principles in the early management of casualties at the MTF.

(9) Enhance the prompt and accurate diagnosis of disease and injury.

(10) Enhance the prompt and appropriate treatment of casualties.

(11) Improve the monitoring of casualties' medical condition.

(12) Enhance the education of casualties about their condition.

d. Telemedicine must be subordinate to and consistent with the doctrine for CHS and the doctrine for medical treatment area support, far forward surgery, and hospitalization.

e. Telemedicine doctrine must be subordinate to and consistent with the overarching telemedicine doctrine for Echelons I through V CHS.

f. Telemedicine doctrine must enable software to link with other medical information systems within the theater, as integrated by the Theater Medical Information Program. The information systems supporting this doctrine must comply with the defense information infrastructure common operating environment.

g. Telemedicine doctrine must be consistent with the theater WIN doctrine for information and communications systems.

B-2. Telementoring and Teleconsultation

a. Telementoring/teleconsultation will be conducted on a dedicated communications network. This network will be restricted to use for telementoring (TMEN), teleconsultation (TCON), and requesting medical evacuation only. This network is not for use in routine activities such as resupply of medics/ treatment facilities, or other administrative activities. All other activities will be conducted on the admin/ log net or other established communications nets/systems.

b. The combat medic will employ a hands-free voice/data capable lightweight radio, a device to obtain GPS information on casualties, and a device to input information into the Multi-Technology Automated Reader Card (MARC) or the individual patient record. The hands-free equipment links the combat medic with the BAS for TMEN, requesting medical evacuation, and situational awareness. The communications equipment will be operated in accordance with the unit's standing operating procedures or operational security (OPSEC) rules. Telementoring assists the combat medic (ground medics and medics on medical evacuation platforms) in providing lifesaving EMT far forward on the battlefield. Effective telementoring requires the combat medic to make an accurate assessment of the patient; then communicate that assessment to the mentor so that treatment guidance can be given. The combat medic then treats the patient by applying the treatment guidance provided. Telementoring is **ONLY** provided on an ***as needed*** basis. TELEMENTORING IS NOT USED ON EVERY PATIENT. The combat medic should request mentoring in the circumstances listed below:

(1) Management of patients for more than one hour due to long evacuation times or the inability to evacuate.

(2) Treatment of IMMEDIATE and DELAYED patients that begins soon after wounding.

(3) Treatment provided does not appear to help.

(4) Required treatment is beyond the skill level of the combat medic on-site.

(5) Uncertainty as to nature of the injury or illness.

(6) Uncertainty as to the extent or type of treatment to provide.

(7) To request permission to perform one of the following tasks:

(*a*) Administering multiple doses of morphine.

(*b*) Performing needle chest decompression (thoracentesis).

(*c*) Performing intubation of a patient with suspected inhalation burns.

(*d*) Administering a hypertonic saline solution.

c. The Echelon I BAS will employ a hands-free voice/data capable lightweight radio for TMEN with the combat medic. The BAS will also employ the hands-free voice/data capable lightweight radio for TCON between the physician and the PA. The BAS will employ voice/data and still imagery communications for TCON with the FSMC clearing station. It will also employ the medical digital assistant and a device to read and update information in the PIC. Communications equipment will be operated in accordance with tactical standing operating procedure or OPSEC rules. The Echelon I medical evacuation section will employ wireless communications for communications with the BAS and supported unit.

d. The Echelon II (FSMC station) will employ voice/data and still imagery for TCON with the BAS. The FSMC communication link will be via the International Maritime Satellite using a mobile earth station (MES) and a rugged video teleconferencing (VTC) unit to the corps or higher level hospital/health support facility for TCON. The TCON sessions with corps and higher hospitals will be on-call sessions. Initial requests for TCON will be by voice link. Once the session has been established, the TCON session will be via VTC. The VTC mode will enable the physician at the higher-level hospital/health support facility to talk to the patient as well as view the actual patient's condition in active video mode. The equipment and systems comprising this link are as follows:

(1) The Mobile Tactical Internet (MTI) TCS-9700 MES provides voice, data, and video links (digital high speed data) to the supporting MTFs.

(2) The Remote Clinical Consultation System (RCCS) is a Digital Still Imagery System (DSIS) which transmits still images over the MTI TCS-9700 to the corps or higher-level hospital.

(3) The CLI-8100 provides a VTC capability which allows live, interactive VTCs. This capability enhances the consultant's ability to view and examine the patient as well as interview the patient. It allows for an open conversation between the patient and the attending medical officers at both locations.

(4) The Dynamic Medical Examination Scope Set (DMESS) consists of the otoscope, ophthal-moscope, dermatology scope, and the dental scope. The DMESS has the capability to send live real-time images during the conference, as well as "frame grabbed" still images which can be viewed immediately on the receiver's end. The still images acquired and sent in this manner should not be confused with the high resolution still images which are acquired by RCCS and transmitted over the MTI TCS-9700.

e. The Echelon III hospital will have the same telecommunications equipment as the Echelon II MTF. This hospital will also employ an intrahospital medical image and record acquisition system/LAN; included will be the filmless and paperless digital information capability for patient records. Electronically stored x-rays, computed tomography (CT) scans, and magnetic-resonance imaging files can be transmitted instantly around the world. This will assist in alleviating the logistical and environmental issues with film and forms, and expedite evacuation processing. Hospital management and crisis response will be improved within the hospital by the use of wireless handheld medical communications. The Echelon III hospital will provide TCON to the Echelon II MTFs and receive TCON support from an Echelon V hospital. Telecommunications with Echelon V will not include the DMESS.

f. The Echelon V hospital will have the same telecommunications capability as Echelon III, less the DMESS. The employment of these telecommunication systems enables individuals in an Echelon V hospital to project their expertise forward to the battlefield. A high data rate communication port for full modalities (audio, video, and digital) using satellite or terrestrial communication modes will provide direct interface in the out-years. Communication interface with civilian medical centers will allow the military to diagnose and treat the most widely diverse and individual cases experienced in the field. Additionally, an electronic digital archive for all patient data will augment a LAN for instantaneous storage, retrieval, and display of patient medical data.

g. Telementoring/teleconsultation sessions will be completed as quickly as possible. Long sessions tie up essential communication assets and may compromise OPSEC.

B-3. Deployable Telemedicine Units

a. Telemedicine services in support of Echelons II, III, and IV MTFs within the AO will be provided by a MDT.

(1) This unit consists of a small headquarters element and seven telemedicine teams for attachment to medical companies (with or without an attached forward surgical team) and hospitals.

(2) The MDT enables telemedicine services to be applied in a coordinated and consistent manner across the supported MTFs by the use of common operating procedures. It also allows better training programs for telemedicine personnel.

(*a*) Seven teams per MDT enables each unit to be capable of providing telemedicine support to one division and the average number of corps units supporting that division.

- Three FSMCs (of the forward support battalion).

- One MSMC (of the main support battalion) and one area support medical company (corps).

- Two corps hospitals.

(*b*) Seven teams are also near the limited span of command for the MDT commander. The MDT commander will normally be located with one of the telemedicine teams.

b. Each telemedicine team provides an integrated telemedicine service to the supported MTF. The telemedicine team will consist of personnel and equipment that enables the health care providers at the supported MTF to access other health care providers wherever they are located within the theater of operations or CONUS. The activities of the team involve the collection, collation and transmission of multimedia clinical information in the form of text, voice, other audio, still image and video data. Each telemedicine team is attached to either a medical company or a hospital. The team will be able to deploy to and move with the supported unit. The teams will be dependent upon the MTF for administrative, logistic, and other forms of support.

GLOSSARY

ABBREVIATIONS AND ACRONYMS

ABCS Army Battle Command System

ACSIM Assistant Chief of Staff for Information Management

AGCCS Army Global Command and Control System

AIS automated information system(s)

AM amplitude modulated

AMEDD Army Medical Department

AMEDDC&S Army Medical Department Center and School

AML Army Medical Laboratory

AO area of operations

AOE Army of Excellence

AR Army regulation

ASMB area support medical battalion

ASMC area support medical company

ATCCS Army Tactical Command and Control System

attn attention

BAS battalion aid station

BASOP base operation

BOS battlefield operating system(s)

BSA brigade support area

BSS brigade surgeon's section

C2 command and control

C3 command, control, and communications

C4 command, control, communications, and computers

C4I command, control, communications, computers, and intelligence

CAW certificate authority workstation

CCB configuration control board

CCIR critical information requirements

CHCS Composite Health Care System

CHL combat health logistics

CHPPM Center for Health Promotion and Preventive Medicine

CHS combat health support

CINC Commander in Chief

CIO Chief Information Officer

CJCS Chairman, Joint Chiefs of Staff

CMHA Community Medical Health Activities

CNR combat net radio

COAA Course of Action Analysis

COI Chief of Information

COMMZ communications zone

COMSEC communications security

CONUS continental United States

COO Chief Operations Officer

COTS commercial off-the-shelf

CSC combat stress control

CSS combat service support

CSSCS Combat Service Support Control System

CT computed tomography

DA Department of the Army

DBSS Defense Blood Standard System

DCDD Directorate of Combat and Doctrine Development

DCSIM Deputy Chief of Staff for Information Management

DII Defense Information Infrastructure

DISA Defense Information System Agency

DISCOM division support command

DISN Defense Information System Network

DMESS Dynamic Medical Examination Scope Set

DMOC division medical operations center

DMS Defense Message System

DMSO division medical supply office

DNBI disease and nonbattle injury

DOD Department of Defense

DOIM Directors of Information Management

DSG Deputy Surgeon General

DSIS Digital Still Imagery System

DSMC division support medical company

DSS division surgeon's section

DTLOMS doctrine, training, leader development, organizations, materiel, and soldiers

EAC echelons above corps

E-mail electronic mail

EMT emergency medical treatment

FAX facsimile

FBCB2 Force XXI Battle Command Brigade and Below System

FEI functionally emulative increments

FEMA Federal Emergency Management Agency

FM frequency modulated; field manual (when used with a number)

FOC future operational capabilities

FSMC forward support medical company

FST forward surgical team

G3 Assistant Chief of Staff (Operations and Plans)

G4 Assistant Chief of Staff (Logistics)

G6 Assistant Chief of Staff (Communications-Electronics)

GIE global information environment

GII global information infrastructure

GPS global positioning system

HA Health Affairs

HAG high assurance guard

HHC headquarters and headquarters company

HSMO health service materiel officer

I&A identification and authentication

IDPR individual digitized patient record

IMA information mission area

IMO information management office

IMP Information Management Plan

INE in-line network encryptors

IO information operations

J6 Communications-Electronics Directorate

LAN local area network

LCM life-cycle management

MACOM major Army command

MARC Multi-Technology Automated Reader Card

MAT Medical Analysis Tool

MCS Maneuver Control System

MDT Medical Detachment, Telemedicine

MEDCEN United States Army Medical Center

MEDCOM United States Army Medical Command

MEDDAC medical department activity

MEDLOG Medical Logistics

MEDLOG-D Medical Logistics–Division

MES mobile earth station

METT-TC mission, enemy, terrain, troops and time available, and civilian considerations

MHS military health system

MISSI Multilevel Information System Security Initiative

MMMB medical materiel management branch

MOC medical operations cell

MRD materiel requirements document

MRI Medical Reengineering Initiative

MRMC United States Army Medical Research and Materiel Command

MRO medical regulating office(r)

MRSP Medical Readiness Strategic Plan

MSAC Medical Situational Awareness and Control

MSC major subordinate command

MSMC main support medical company

MTF medical treatment facility

MTI Mobile Tactical Internet

MWD military working dog

NBC nuclear, biological, and chemical

NCA National Command Authorities

NDMS National Defense Medical System

NMCS National Military Command System

NP neuropsychiatric

NSA National Security Agency

OCONUS outside continental United States

OPLAN operation plan

OPORD operation order

OPSEC operational security

OSD(HA) Office of the Secretary of Defense (Health Affairs)

PA physician assistant

Pam pamphlet

PARRTS Patient Accounting & Reporting Real-Time Tracking Systems

PC personal computer

PIC personal information carrier

PIN personal identification number

PPBES Planning, Programming, Budgeting, and Execution System

PVNTMED preventive medicine

RCCS Remote Clinical Consultation System

RG Requirements Generator

RMC Regional Medical Command

RTD return to duty

S3 Operations and Training Officer (US Army)

S6 Communications-Electronics Officer (US Army)

SBU sensitive but unclassified

SOP standing operating procedure

SRT specialty response team

STAMIS Standard Army Management Information System

STE secure telephone equipment

STU secure telephone unit

TAML Theater Army Medical Laboratory

TAMMIS Theater Army Medical Management Information System

TASM total Army Medical Department Systems Manager

TCON teleconsultation

TDA tables of distribution and allowances

TMEN telementoring

TOE table(s) of organization and equipment

TPN tactical packet network

TRAC2ES TRANSCOM Regulating and Command and Control Evacuation System

TRADOC United States Army Training and Doctrine Command

TRANSCOM United States Army Transportation Command

TS TOP SECRET

TSG The Surgeon General

TSOP tactical standing operating procedures

US United States

USACHPPM United States Army Center for Health Promotion and Preventive Medicine

USAMISSA United States Army Medical Information Systems Support Agency

USAMRICD United States Army Medical Research Institute of Chemical Defense

USAMRIEM United States Army Medical Research Institute of Environmental Medicine

USAMRIID United States Army Medical Research Institute of Infectious Diseases

USERID user identification

VA Department of Veterans Affairs

VHF very high frequency

VTC video teleconference

WIN Warfighters Information Network

WRAIR Walter Reed Army Institute of Research

DEFINITIONS

ARCHITECTURE The AMEDD architecture is defined as a set of standards, guidelines, and statements of direction that facilitate the integration of information management resources.

ARMY BATTLE COMMAND SYSTEM The ABCS is the primary Army warfighting C2 AIS and employs a mix of fixed/semifixed installations and mobile networks, depending on the subsystem. This system interfaces with theater, joint, and combined C2 systems across the full range of military operations. It is fully integrated at the tactical and operational levels. The system provides connectivity to combat information data bases and processes information pertaining to the battlefield operating system. In addition to the theater-level AGCCS, other components of the ABCS include the Army Tactical Command and Control System (ATCCS) and the FBCB2.

ARMY GLOBAL COMMAND AND CONTROL SYSTEM A nontheoretically seamless C2 system operates at the upper echelons of the ABCS and supports C2 for the EAC units.

ARMY TACTICAL COMMAND AND CONTROL SYSTEM The ATCCS links directly to the AGCCS, providing the framework of seamless connectivity from brigade to corps. Moreover, it integrates the traditional separate stovepipe functions into a coherent, seamless infrastructure that binds the battlefield operating system together.

DIGITAL IMAGERY NETWORK SYSTEMS The digital imagery network systems include those systems which prepare digital imagery for long-haul transmission. Examples of these systems include, but are not limited to computed radiography, division support command interface, soft copy workstations, telecommunications gateways, network peripherals, and archive services.

DISTRIBUTED VIDEO This subsystem provides real-time video links within and between digitized field medical treatment facility. Examples of these systems include, but are not limited to: three chip charge coupled device camera, single chip camera, scope package, coder/decoder package, high resolution, 24-bit monitor, and video archive.

ELECTRONIC COMMUNICATIONS Procedures for using E-mail in place of paper distribution, strategies for maintaining electronic files (consistency), access to electronic data bases, and strategies for information interchange.

FORCE XXI BATTLE COMMAND BRIGADE AND BELOW SYSTEM The FBCB2 is a digital, battle command information system. It provides mounted/dismounted tactical combat, combat support and combat service support commanders, leaders and soldiers integrated, on-the-move, real time/near-real time, battle command informational and situational awareness from brigade down to the soldier/platform level across all battlefield functional areas.

HEALTH INFORMATION SYSTEM The health information system provides for the electronic management of alphanumeric patient data. This system includes, but is not limited to the LAN and workstations, archive capability and service, and removable patient media.

INFORMATION DOCTRINE The basic principles and overarching guidance required for the effective employment of information and information technologies within the AMEDD and the Army. (References: FM 100-6 and AR 25-1.)

INFORMATION SECURITY Virus protection, access to data (Privacy Act), program integrity, copyright security, and protocols for information transmission.

JOINT GLOBAL COMMAND AND CONTROL SYSTEM The Joint Global Command and Control System (primary national warfighting C2 information system) is the global C2 system that interfaces with the AGCCS.

WIRELESS DATA COMMUNICATIONS Wireless data communications provide initial warfighter and casualty status information to support readiness, sustainability, and survivability evaluations and actions.

WIRELESS VOICE COMMUNICATIONS Wireless voice communications provides a person-to-person capability for intrafacility, local, and long-range voice communications. This equipment consists of voice nets, receivers and cellular instruments, and cellular switch or equivalents.

REFERENCES

DOCUMENTS NEEDED

These documents must be available to the intended users of this publication. The documents were also used to develop this publication.

Public Laws and Acts

Freedom of Information Act of 1966. Amended in 1974.
Privacy Act of 1974.

Joint Publications

6-0. *Doctrine for Command, Control, Communications, and Computer (C4) Systems Support to Joint Operations*. 30 May 1995.
6-02. (S) *Joint Doctrine for Employment of Operational/Tactical Command, Control, Communications, and Computer Systems* (U). 1 October 1996.

Army Regulations

25-1. *The Army Information Resources Management Program*. 25 March 1997.
25-3. *Army Life Cycle Management of Information Systems*. 15 October 1989.
40-60. *Policies and Procedures for the Acquisition of Medical Materiel*. 15 March 1983.
71-9. *Materiel Requirements*. 30 April 1997.
71-32. *Force Development and Documentation—Consolidated Policies*. 3 March 1997.
380-19. *Information Systems Security*. 1 August 1990.
530-1. *Operations Security (OPSEC)*. 3 March 1995.

Department of the Army Pamphlet

25-1-1. *Installation Information Services*. 27 August 1991.

Department of Defense Publication

5000-2. *Mandatory Procedure for Major Defense Acquisition Programs (MDAPS) and Major Automated Information Systems (MAIS) Acquisition Programs*. 23 February 1991.

Field Manuals

8-10. *Health Service Support in a Theater of Operations*. 1 March 1991.
8-42. *Combat Health Support in Stability Operations and Support Operations*. 27 October 1997

8-55. *Planning for Health Service Support*. 9 September 1994.
11-32. *Combat Net Radio Operations*. 15 October 1990.
11-37. *MSE Primer for Small-Unit Leaders*. 14 November 1990.
24-1. *Signal Support in the AirLand Battle*. 15 October 1990.
24-35. (O) *Signal Operation Instructions "The SOI."* 26 October 1990.
100-5. O*perations*. 14 June 1993.
100-6. *Information Operations*. 27 August 1996.
101-5. *Staff Organization and Operations*. 31 May 1997.

Department of the Army Form

2028. *Recommended Changes to Publications and Blank Forms*. 1 February 1974.

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References are to paragraph numbers except where specified otherwise.

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3 SEPTEMBER 1998

By Order of the Secretary of the Army:

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