

## MILITARY

## Army Digitization Master Plan '96

# 10. JOINT AND MULTINATIONAL DIGITIZATION

### Further Reading

## 10.1 Joint

The focus of the Army to attain joint interoperability in the digitized battlespace has three components.

- First, the Army and the other Services are working to achieve technical interoperability by migrating their current C4I systems to the Joint Staff's *C4I for the Warrior* concept. In accordance with the migration, the ADO will coordinate Army efforts to ensure that the ATA for information systems is in compliance with the DII COE.
- Second, the ADO will closely coordinate digitization efforts, to include the review and approval of information standards and data transport profiles, with the other Services, the Joint Staff, and OSD through MOA and proactive participation in joint working group panels that comprise the MCEB. To ensure senior level involvement from the other Services, the HTI GOWG will invite appropriate flag rank personnel from the other Services when joint interoperability issues are scheduled for discussion. This is in addition to the other-Service flag rank personnel that make up the membership of the newly created Joint Battlefield Digitization GOWG.
- Third, other Services will be invited to participate in planned AWEs, BLWEs, and other experiments. These events will be used to identify, address, evaluate, and resolve interoperability effectiveness issues.

### 10.1.1 Memoranda of Agreement (MOA)

Bilateral MOAs have been signed between the Army and the other Services to focus their interoperability efforts. The MOAs express each Service's senior leadership's full support for achieving interoperability in the digitized battlespace. The MOAs define Service digitization efforts and describe the management structures used to monitor, coordinate, and guide the efforts of each Service to achieve joint interoperability.

The goal of each MOA is to establish mutual, cooperative development that will achieve integration between the digitized forces of each Service on future maritime, air/space, and land battlefields/battlespace at all echelons of command. The objective of the MOAs is to achieve interoperability among the Services across all three architectures—Operational, System, and Technical—through compliance with the DII COE. Management structures defined in each MOA enable operational and system interoperability issues to be identified and resolved. The efforts of each Service are interrelated, allowing Service-specific mission applications while ensuring interoperability among all Services.

As part of the MOAs, the other Services are authorized and encouraged to conduct direct liaison with TRADOC, AMC, OPTEC, and the AAE structure for exchange of technical, user, and operational requirements to further define and scope unique interoperability tasks and requirements. Both the ADO and the other Services will effect liaison with each other to ensure frequent opportunities for dual-Service interaction and expeditious resolution of problems, issues, and conflicts.

### 10.1.2 The Military Communications and Electronics Board (MCEB)

The MCEB coordinates military communications and electronics matters among DoD components and is the key organization to obtain resolution of interoperability issues. The ADO will work within the MCEB structure of functional panels and working groups to obtain Joint/OSD approval of Army digitization interoperability efforts. Since the MCEB review and approval process is extensive and lengthy, the role of the ADO will be to obtain consensus among the Services through MOAs, WGs, and fora of flag rank level personnel prior to submission of the issue to the MCEB process. This expeditious *front loading* of the review/approval process is necessary to ensure that the process of achieving joint interoperability is on a parallel timeline with the aggressive Force XXI milestone schedule.

### 10.1.3 Management Structure

A three-tier management structure is used to identify issues and problems requiring resolution. At the top tier, the Joint Battlefield Digitization (JBD) GOWG is responsible for providing direction to the overall interoperability efforts of the Services. It meets as required to resolve conflicts; establish priorities in resources and direction of digitization development; and assist in the coordination and execution of battlefield/battlespace digitization initiatives.

Membership in the JBD GOWG is defined in the MOAs as follows:

- Army:
  - Director, Army Digitization Office.
  - Deputy Chief of Staff (Combat Development), TRADOC.
  - Deputy Chief of Staff for Operations and Plans (Force Development), HQDA.
  - Deputy Director, Information Systems for C4.
- Air Force:
  - Director of Requirements (AF/XOR), HQ USAF.
  - Director of Mission Systems (AF/SCM), HQ USAF.
  - Director of Fighter, Command and Control, and Weapon Programs (SAF/AQP), Office of the Secretary of the Air Force.
- Marine Corps:
  - Commander, Marine Corps System Command (MARCORSYSCOM).
  - Deputy Commander, Marine Corps Combat Development Command (MCCDC).
- Navy:
  - Director, Space and Naval Warfare Systems Command (SPAWAR/30).

The middle tier consists of a JBD Council of Colonels/Captains (CoC/C) with members from each of the Services. This CoC/C is responsible to identify issues and problems; make recommendations to the JBD GOWG; and ensure that the GOWG's direction is implemented. The Council meets at least quarterly. Minimum membership consists of a materiel developer, a combat developer, and a budget/funding member from each Service. Additional Colonels/GM15s from OSD, the Joint Staff, and other programs attend as non-voting members and observers.

The bottom tier consists of a series of WGs comprised of action officers and subject matter experts from each Service. The groups are responsible for monitoring of digitization efforts and gathering of information in response to GOWG and CoC/C issues. These groups are:

- Training

- Architectures
- Evaluation and Assessment
- Service Participation in TF XXI
- Communications/Data Links
- ATCDs

A series of interoperability issues have been identified and assigned to the appropriate working group for resolution. Additional ad hoc working groups are formed as required by the CoC/C.

#### 10.1.4 Joint Initiatives and Experiments

The ADO will use planned digitization experiments to evaluate and assess joint digitization efforts. The first target of opportunity is the TF XXI AWE in 1997.

All other Services are invited to participate in TF XXI. Each Service will develop its experimental objectives that will be reviewed and incorporated in the Army's experiment concept (See Section 8.1.2.8). Based on the extent of participation, each Service will receive a sufficient number of software and hardware appliques through the Army's FBCB2 contract to ascertain interoperability connectivity and compatibility. Based on the results of this AWE, a baseline for joint interoperability will be established and used as a comparison for joint interoperability during follow-on AWEs.

There are many opportunities for leveraging digitization programs of other Services. The Army intends to make full use of JWIDs to assess interoperability in the joint digitized battlespace, and the ADO will coordinate with the other Services to identify applicable digitization initiatives and concepts. The Air Force has identified approximately 75 concepts that apply to the digitized battlespace. They include communications, navigation, identification, information management, and Local Area Network (LAN)/Wide Area Network (WAN) functions. The Navy and Marine Corps are also being surveyed for potential digital battlespace concepts that can be evaluated by the Army for possible inclusion in AWEs and/or ATDs. Resulting data will be made available to the Services through management and coordination structures previously described.

The Army's DIL provides the preliminary examination of prototype hardware and software to verify ability to perform critical functions and meet interoperability requirements. The DIL is accessible to all the other Services, with the Marine Corps slated to be the first to link with it. The DIL will also be connected to selected multinational partners. Use of the DIL will be based on an incremental concept of *build a little, test a little*.

## 10.2 Multinational

### 10.2.1 Background

Faced with the challenge of maintaining and modernizing military forces to meet a variety of unpredictable worldwide threats, the U.S. will rely heavily on multinational cooperative actions to meet future mission requirements. DoD Directive 4630.5 states that forces for joint and multinational operations must be supported through compatible, interoperable, and integrated C4I systems that can support operations worldwide throughout the entire spectrum of conflict. As Army plans for digitizing the battlefield move forward, this requirement becomes more pressing.

TRADOC Pamphlet 525-5 (*Force XXI Operations*) states as a goal that these operations be conducted under conditions where U.S. forces— supported by coalition partners, enjoy a qualitative technical, training, leadership, and, most important, information advantage. Digitizing the battlefield—one of the objectives of the *Army Enterprise Strategy*—will lead toward the realization of this goal by providing an integrated digital information network to support warfighting systems and ensure command and control decision-cycle superiority.

Battlefield digitization efforts must also be aligned with the *Army Enterprise Implementation Plan*, which is based on the current and evolving doctrine emanating from Field Manual 100-5 (*Operations*).

### 10.2.2 Purpose

The *International Digitization Strategy (IDS)* is designed to focus the international activities of the Army in support of the goals and objectives outlined in the *ADMP*. The *IDS* comprises the overall strategy for international cooperation in the application of doctrine and technology to facilitate acquisition, exchange, and employment of digital information throughout the combined battlespace. The priorities and processes outlined in the *IDS* will enhance the ability of the U.S. and its coalition partners to field inherently interoperable systems.

### 10.2.3 Concept

The concept for achieving multinational force compatibility is illustrated in Figure 10-1. It is based on the underlying concepts of adopting commercial standards to achieve open systems; using existing C4I fora to promote the integration of the Army's digitization initiatives; leveraging foreign advances in technology; and pursuing the application of emerging technologies to support coalition warfare and multinational operations.

#### Figure 10-1 International Digitization Concept

### 10.2.4 Process

The *IDS* defines a systematic process to extend U.S. digitization efforts to the international arena. The process is based on establishing an understanding of U.S. digitization efforts, achieving interoperability with potential coalition partners, and pursuing long-term cooperative opportunities. The process includes a number of elements designed to:

- Define the strategy to achieve interoperability of C4I systems between key allies, to include broad agreements on policy and procedures concerning information exchange, architecture definition, and architecture development processes.
- Identify the key forum/fora in which to coordinate national digitization positions.
- Define and implement technical and system architectures applicable to all participating nations which will enable seamless information flow during coalition warfare.
- Develop cooperative multinational programs to share technology (e.g., components, systems, and standards) for the automated exchange of information.
- Establish priorities for existing international fora to further the aims identified by the Quadrilateral Army Communications and Information Systems Interoperability Group (QACISIG), which is responsible for coordinating the position of all participating nations on the passage and exchange of information between Army systems.
- Evaluate multinational C4I systems and ATD products in operational/lab environments.

### 10.2.5 Strategy

The specific strategy is to:

- Develop a C4I operational architecture that will satisfy operational requirements for interoperability with multinational forces.
- Focus the efforts of existing multinational fora involved with the interoperability of C4I systems on goals established by the QACISIG.
- Identify other key international fora whose efforts will contribute to meeting the goals established by the QACISIG.
- Ensure that prototype systems developed by current/planned international cooperative programs meet interoperability goals.

- Pursue the consolidation of related efforts through an annex to the *Senior National Representative (Army) Memorandum of Understanding* between the U.S., U.K., Germany, and France to facilitate the pursuit of multinational cooperative digitization projects under the coordination of the QACISIG.
- Present the ATA to international standardization groups and C4I fora through the designated U.S. representatives and—using established processes—acquaint the international community with its concept, approach, and underlying standards.
- Invite allies to observe U.S. Army ATDs, BLWEs, and AWEs.
- Use the CECOM DIL and the JITC to simulate and confirm interoperability.

### 10.2.6 Key International Fora

Army participation in key international fora is essential for coordination and cooperation with coalition partners. These fora provide a mechanism for harmonizing the operational, system, and technical architectures of the member armies. Participation in international fora also facilitates the leveraging of advanced and emerging technologies identified as candidates for meeting future Army requirements.

NATIONS	FORUM	DIGITIZATION PRODUCT	LEAD	COMMENT
US/GE /FR/UK	QACISIG	Interoperability Strategy (six-step process) for corps and below . Appropriate forum for establishing goals of digitization process	DISC4	AMC/TRADOC support
NATO	ATCA (Land)	Tactical communications interconnectivity	DISC4	TRADOC/SIGCEN/ USAREUR support
	TSGCE, SG/9	Variable Message Format-Tactical	DISA/JIE0	CECOM participation
	TSGCE, SG/11	Internet Standards-Tactical	DISA/JIE0	CECOM participation
	NAAG, PG/25	Battalion and below C2/NATO Digitization	CECOM	TRADOC/TACOM participation
	ATCCIS (SHAPE-sponsored)	Minimum standards for NATO Level 5 system interconnectivity: corps through brigade	DISC4	Proof of concept demo 1QFY96 High-level data exchange demo late 96
	ADSIA	Messages & multinational message standards	TRADOC	
	ATP 4 5CWG	Automated NBC warning and reporting	USANCA	TRADOC support
	Combat ID WG	Demonstration 1997	PEO IEW	
US/UK/ CAN/AUS	ABCA	Extends standards approach for interoperability to Canada and Australia	CECOM	DISC4 participation
	Quadripartite WG Comm and Info Systems			
	TTCP/SG X	Computing Technology/Architecture	ARL	
GE/FR /UK	Staff talks	Combined doctrine (including digitization)	TRADOC	DCSOPS/AMC/ DISC4 support
GE	AAWG	Harmonization of development programs with digitization objectives	AMC	TRADOC support
FR	CEWG/TWG	Identification of cooperative programs supporting	CECOM/ ARL	

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digitization			
UK	Home on Home	ID of cooperative technology programs	ARL
Korea	CEWG	ID of cooperative pgms supporting digitization	CECOM

Figure 10-2 Key International Fora

The strategy concerning international fora is to first identify key groups with the greatest potential for contributing to the digitization effort and then to focus those groups on addressing relevant digitization efforts. Figure 10-2 presents a list of these key international fora. The ADO will work with the designated lead activity for each forum to ensure that the goals and objectives of the ADMP and IDS are represented and consistently presented. The QACISIG—which includes representatives from the policy directorates of the key nations—is an appropriate forum for establishing overall goals for the international digitization process.

10.2.7 Major International Digitization Programs

International digitization programs promote multinational force compatibility consistent with the objectives of the strategy. Key digitization initiatives and technology opportunities have been identified and will receive the priority needed to ensure that applicable international agreements are established and implemented.

Data/Information Exchange Annexes (D/IEAs) to appropriate MOAs facilitate the exchange of information related to digitization between nations. This information is essential for identifying potential collaborative efforts and technology leveraging opportunities. D/IEAs are conducted on a *quid pro quo* basis and have clearly defined objectives.

The international digitization strategy includes a number of cooperative programs currently in place or being planned. These include:

- The Battlefield Interoperability Program (BIP) with Germany and France (formerly the International Command and Control Systems Interoperability Project (IC2SIP)).
- The Supreme Headquarters Allied Powers Europe (SHAPE)-sponsored Army Tactical Command and Control Information System (ATCCIS) project
- The Combat Identification program with Germany, France, and the United Kingdom.
- The Interoperability for Land Tactical Communications project with Canada.
- The Theater Automated Command and Control System (TACCIMS) for extending digitization in the confined battlespace of the Korean Peninsula between U.S. Forces Korea and the Republic of Korea Army.

International programs allow the U.S. to leverage the research and development investments of multinational partners. Worldwide technology trends and specific C4I technology leveraging opportunities are identified and referenced in the IDS. ARL's Federated Laboratory will provide dynamic avenues (e.g., teaming) for initiation and execution of international technology programs focusing on digitization.

10.2.8 Demonstrations and Experiments

A key component of the international digitization strategy is the use of demonstrations and experiments to evaluate developed capabilities in an operational environment, determine requirements for interoperability, and make allied partners aware of U.S. digitization efforts.

Multinational partners will be invited to observe U.S. Army ATDs, BLWEs, and AWEs. The TRADOC Battle Lab Integration Technology and Concepts Directorate will coordinate the scope, nature, and duration of foreign observation. Further coalition participation will be pursued on a selective basis so as not to adversely impact any U.S. program. Future multinational exercises will be designed to confirm concepts, doctrine, and technical solutions.


### 10.2.9 Organizational Responsibilities

The ADO has overall responsibility for implementing and executing the international digitization strategy through the Principal Deputy for Technology at AMC, its Executive Agent for International Digitization, with cooperation and support from all participating organizations.

#### 10.2.10 Summary

The U.S. Army international digitization strategy is to extend current digitization efforts to allies and potential coalition partners through information exchange; cooperative programs; commitment to common operational, system, and technical architectures; and technology leveraging. International programs/initiatives involved in digitization will be assessed in accordance with TRADOC Pamphlet 525-5, the *Army Enterprise Implementation Plan*, and the ADMP to ensure that all aspects of DTLOMS and technology issues are addressed. The strategy will evolve to reflect changes in the global environment; science and technology; and political and economic forces.

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