ACQUISITION STRATEGY REPORT

for

TRANSPORTATION COORDINATORS'- AUTOMATED INFORMATION FOR MOVEMENTS SYSTEM II (TC-AIMS II) PROGRAM

SEPTEMBER 1, 2003

ACQUISITION STRATEGY

PROGRAM: Transportation Coordinators' Automated Information for Movements System II (TC-AIMS II)

PROJECT MANAGER: Robert W. Morris

PROGRAM ACAT: 1AM

OMA PE432612

RDTE 655013 137

OPA SSN BZ8900

This acquisition strategy report updates the previous strategy, dated November 4, 2002, outlined for the TC-AIMS II Program. A Milestone III review was held for Block 1 and a full deployment decision was granted for Army and Navy in an Acquisition Decision Memorandum dated 4 Nov 02.

The Department of Defense (DoD) requires an automated capability to provide real-time visibility of movements to support deployment, redeployment, and sustainment of US Forces. TC-AIMS II will be used by transportation agents and deploying units of each Service and other agencies to automate the processes of planning, organizing, coordinating, and controlling deployment, redeployment and sustainment activities worldwide during peace and war. It will provide a modernized, integrated, and easily deployable Automated Information System (AIS) that supports re-engineered functional processes throughout DoD. TC-AIMS II will link all DoD Component unit movement and Installation Transportation Office/Traffic Management Office (ITO/TMO) functionality into one consolidated deployment and transportation management system.

APPROVAL

I have read the TC-AIMS II Acquisition Strategy described herein and approve its content as representing the strategy for this program.

Robert W. Morris
Project Manager
Transportation Information Systems

26 AUG 03
Date

KEVIN CARROLL
Program Executive Officer
Enterprise Information Systems

8/28/03
Date

CLAUDE M. BOLTON, JR.
Assistant Secretary of the Army
(Acquisition, Logistics and Technology)

20 NOV 2003
Date

JOHN P. STENBIT
Assistant Secretary of Defense
(Networks and Information Integration)

Date

PART 1 -EXECUTIVE SUMMARY

PROGRAM: Transportation Coordinators'- Automated Information for Movements Systems II (TC-AIMS II)

PROGRAM MANAGER: Lee DeArmond (Acting PM)
ACQUISITION OFFICE: Office of the Program Executive Officer, Enterprise Information Systems (PEO EIS)

1.1 Introduction. The TC-AIMS II Acquisition Strategy is prepared in accordance with the requirements of Chapter 2 of DoD 5000.2-R for Major Automated Information Systems (MAIS) as described in the following parts:

- PART 1-- Executive Summary
- PART 2-- Acquisition and Development Approach
- PART 3-- Management Strategy
- PART 4-- Business Strategy
- PART 5-- Support Strategy
- Attachment 1—TC-AIMS II Program Points of Contact
- Attachment 2—Glossary

1.2 System Description. TC-AIMS II automates the processes of planning, organizing, coordinating, and controlling unit-related deployments, sustainment, day-to-day Installation Transportation Officer/Transportation Management Officer (ITO/TMO) operations, redeployment, and retrograde operations in support of the Defense Transportation System (DTS). It will interface with installation, unit and depot-level supply systems, the Global Transportation Network (GTN), and the Joint Operational Planning and Execution System (JOPES) through the use of the Joint Force Requirements Generator II (JFRG II), and will be capable of supporting both peacetime and wartime movements. TC-AIMS II will produce movement documentation and unit move information, and furnish timely information to major commands (MAJCOMs/ MACOMs), Transportation Component Commands (TCCs), USTRANSCOM, and the Joint Deployment Community. As a DoD source movement information system, TC-AIMS II will be the primary source of information for in-transit visibility and transportation management over cargo and passenger movements. TC-AIMS II will integrate the functionality of selected Service-unique transportation legacy systems into a single AIS migration system. It will consist of a scaleable, deployable, distributed system environment, compliant with the Joint Technical Architecture (JTA), and Defense Information Infrastructure (DII)/Common Operating Environment (COE).

1.3 Requirements Definition. TC-AIMS II requirements are documented in the Aug 97 Mission Need Statement (MNS) and the Mar 99 Operational Requirements Document (ORD). A revised ORD, incorporating an Interoperability Key Performance Parameter (IKPP), was revalidated in Feb 03. TC-AIMS II must be capable of:

- Processing shipment information received from CONUS, OCONUS, theater origin shipping (i.e., General Services Administration (GSA), Defense Logistics Agency (DLA) Distribution Standard System, TC-AIMS II, etc.), and port systems
- Passing unit movement data to the JOPES feeder system
- Exchanging data with supply, finance, personnel and manpower, deploying unit and load planning systems
- Integrating with commercial carrier information systems to streamline ITO/TMO operations
- Tracking containers and pallets
- Reading and applying Automatic Identification Technology (AIT) systems data
- Interfacing with the Global Transportation Network (GTN)
- Generating documentation for deploying and redeploying unit cargo and personnel, sustainment, and retrograde cargo.

TC-AIMS II must also provide theater transportation management functions and supports:

- The Chairman Joint Chiefs of Staff (CJCS) 72-hour Time-Phased Force and Deployment Data (TPFDD) standard
- DRID 54 requirement for Web capable systems by FY04
- Office of the Secretary of Defense (OSD) Management Reform Memorandum (MRM)-#15 initiative
- DoD Information Assurance standards
- A Joint Data Library (JDL) providing users with a common set of standard reference data used by the deployment and transportation community

1.4 Chairman Joint Chiefs of Staff (CJCS) Instructions. The requirement to support the 72-hour standard for development of the TPFDD is documented in CJCSI 3020.01. This instruction implements a decision of the CJCS, recommendations of the Joint Requirements Oversight Council (JROC) and DoD Joint Deployment Process Owner (JDPO). The instruction documents a measurable objective time standard for validating TPFDD during crisis action planning and establishes a framework to manage, integrate and use the emerging and next generation of joint deployment information systems. TC-AIMS II is designated as the source data feeder to the Joint Force Requirements Generator (JFRG II), which then passes classified data to JOPES.

1.5 Approved Source Documents and Status of In-Process Source Documents.

- The Mission Need Statement (MNS) was approved 7 Aug 97
- The ORD was approved Mar 99 and an IKPP was added and validated Feb 03
- The Acquisition Strategy and Acquisition Program Baseline (APB) for Block 1 were approved 4 Nov 02
- The Test and Evaluation Master Plan (TEMP) was approved for Blocks 1 and 2 and is being updated and revised for Block 3

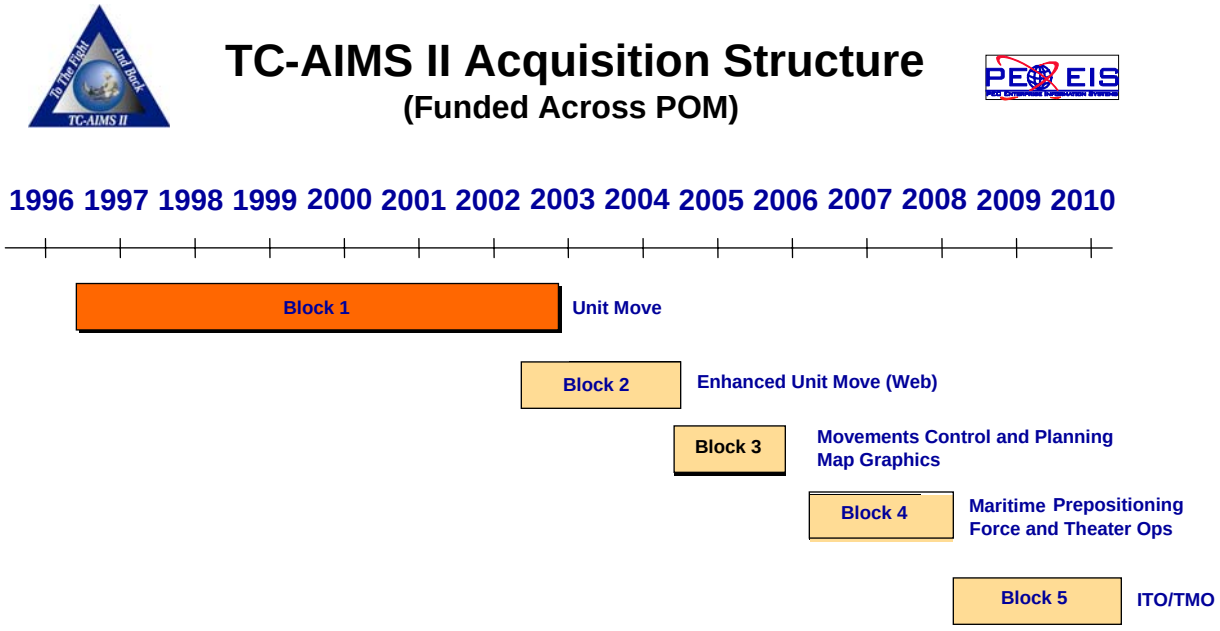
- The CIO certification of compliance with the Clinger-Cohen Act was granted for Block 1 by the Nov 02 ADM and is anticipated for Blocks 2 and 3 in Jan 04
- ISEC completed its System Security Accreditation review in Dec 03 with an approval recommendation to the DAA
- The Command, Control, Communications, Computers and Intelligence Support Plan (C4ISP) successfully completed Stage 1 and 2 reviews by OSD in Jan 04.
- The Economic Analysis is validated for Blocks 2 and 3. OSD review of Life Cycle Costs and Benefits Analysis is anticipated in Jan 04.
- The Acquisition Program Baseline (updated for the Block 2 and 3 Milestone decisions) has an approved Joint Cost Position and schedule. OSD approval is expected in Jan 04.

1.6 Program Structure. The ORD identifies requirements for Initial Operating Capability (IOC) and Full Operational Capability (FOC). The program office is executing an evolutionary acquisition strategy to achieve these capabilities. TC-AIMS II will be developed and fielded in five Block upgrades. IOC will be achieved upon the completion of fielding of Block 1. The subsequent four Blocks will add capabilities via system and software upgrades and will culminate in FOC upon completion of fielding of Block 5. Figure 1.1 illustrates this block approach highlighting key capabilities to be included with each upgrade.

Of the original 7 Blocks, two of the Blocks significantly overlapped when the affordable excursion was developed. Rather than have two separate and simultaneous efforts, it was decided to combine the functionality of Blocks 4 and 5 into a single Block 4. Block 6, ITO/TMO, was redesignated as Block 5.

The original Block 7 functionality was to provide a map graphics capability and "other pre-planned product improvements". These included additional interfaces and reporting requirements that have been picked up to a large degree in other Blocks. Since there was no clear concept of any additional improvements, it was decided to move the Map Graphics capability into Block 3 and eliminate Block 7. Any product improvements would be performed under maintenance of the delivered TC-AIMS II software.

Figure 1.1


TC-AIMS II Acquisition Structure
(Funded Across POM)
PEO EIS
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
Block 1
Unit Move
Block 2
Enhanced Unit Move (Web)
Block 3
Movements Control and Planning
Map Graphics
Block 4
Maritime Prepositioning
Force and Theater Ops
Block 5
ITO/TMO

PART 2 – ACQUISITION & DEVELOPMENT APPROACH

2.1 Overview. The TC-AIMS II system will include Commercial Off-The-Shelf (COTS) software products, Government Off-The-Shelf (GOTS) software products, and Block software. TC-AIMS II will conform to the JTA, DII/COE, and implement Shared Data Environment (SHADE). TC-AIMS II software will facilitate C2 security implementation for the TC-AIMS II system. TC-AIMS II will be developed incrementally. The initial increment, Block 1, supports basic capabilities necessary to plan, coordinate, and execute deployment or re-deployment. This capability includes support of the CJCS 72-hour TPFDD initiative. Block 2 enhances the capabilities of Block 1 and allows for access to the application via the internet using a standard browser. Block 3 builds upon Block 2 by incorporating capabilities of RSO&I, Movement Control and Planning, and Map Graphics. Follow-on development consists of two block upgrades, each scheduled for an 18-month development period from Milestone B approval through a Milestone C decision. Block upgrades build upon the functionality and architecture of previously fielded blocks and must secure Milestone B decision approval prior to beginning development.

2.2 Requirements.

2.2.1 Mission Essential Functions. The following are mission essential functions as defined by the ORD.

a) The system must allow units, deployment support activities, movement control and coordination organizations, and traffic management organizations to maintain equipment and personnel databases; and to manage, control, and direct organic and common user transportation assets.

b) The system must automate movement planning processes as defined by information flows for matching TPFDD cargo and personnel detail with actual unit deployment lists, convoy movement data, organic equipment availability reports, and DTS cargo movement procedures.

c) The system must provide an automated ability to organize unit and organizational deployment list data into aircraft, ship, rail (including CINC-specific rail car data), trucks, and container load planning data, such as air cargo chalks or ship team assignments. For rail and truck movements, it will be the automated tool to assist load planners in developing actual load plans.

d) The system must automate movement coordination and control activities as defined by joint tactics, techniques, and procedures for movement control and convoy operations. The activities that TC-AIMS II automates will be based on standard movement forms, reports, requests, and tasking procedures from the legacy migration systems or the manual forms and information flows currently used to accomplish movement coordination.

e) The system must automate traffic management functions or theater distribution as defined by DTS procedures for cargo and personnel movement. The activities that TC-AIMS II automates will be based on DoD standards and theater specific movement forms, freight bills, processes, information flows, electronic interfaces, and documentation used to tender tactical, organic, or commercial transportation support.

f) The system must read and write AIT media as identified in paragraph 4.a. (1) of the ORD.

g) TC-AIMS II must possess the capability to notify the origin terminal if information sent to it is not readable.

2.2.2 Key Performance Parameters (KPPs). The following are KPPs as defined by the ORD.

Joint Interoperability. The top level Information Exchange Requirements (IER) for the initial capability will be satisfied by meeting 100 percent of the interface requirements identified as thresholds. As capabilities are subsequently added, interoperability requirements will change thus requiring adjustment to the top-level IERs. The top level IERs for the objective system will be satisfied by meeting 100 percent of the interface requirements identified as Objective.

Automatic Identification Technology. The system must have a capability to receive input from peripheral AIT devices capable of reading from the following AIT media: Linear bar codes, 2D bar codes, Radio Frequency ID Tags, Optical Memory Cards (OMC), and Common Access Cards; and send data via LAN/WAN by using an internet interface.

Data Automation. The system must be able to import, store, process, update, and export operational data volume in support of Major Theater War deployment scenarios and traffic management operations. The threshold is that TC-AIMS II provides the ability for users to accomplish job related tasks efficiently or as well as the best of breed of existing systems. The objective is for functional activities defined in this ORD to be automated in such a way as to reduce time required to perform those functions by at least 20 percent. This KPP assumes that competent and trained users who understand how to prepare required documents, are using the system as part of their normal duties.

Report Generation. TC-AIMS II must properly generate reports, forms, labels, tag data, OMC and Common Access Card data.

2.2.3 Requirements Management.
The Joint Requirements Office (JRO) manages the identification and analysis of detailed functional requirements within the scope of the TC-AIMS II ORD and MNS for development. The JRO validates and prioritizes these requirements in

coordination with the JPMO and presents them to the Configuration Management Board (CMB) for approval. A General Officer level Joint TC-AIMS II Management Board (JTMB) establishes the long-term executive vision, goals, and guidance for TC-AIMS II. It provides executive decisions for requirement issues elevated by the CMB. Changes in requirements are also coordinated through the acquisition process. The Information Technology Overarching Integrated Product Team (IT OIPT) assesses the acceptability of the impact that requirements changes will have on established baselines.

2.3 Development Strategy. TC-AIMS II will be developed incrementally. Block 1 provides the basic unit move capability and fields that capability to units designated as "early deployers" by their respective Service headquarters. Block 1 also provides the technical architecture and functional foundation for the objective system.

2.3.1 Hardware Strategy. Block 1 TC-AIMS II architecture consists of standalone workstations, garrison or deployed client/server, regionalized servers, or a hierarchy of "deployable" peer-to-peer connected servers networked throughout the operational chain of command, with the servers connected to client workstations and laptop computers at staff and organizational unit levels. TC-AIMS II is Web-enabled in Block 2 and beyond. The Transportation Information Systems (TIS) Program Office (formerly TC-AIMS II Program Office) will provide minimum and optimum hardware configurations for operating TC-AIMS II. Web-enablement and Enterprise Management System (EMS) results in server consolidation and an overall reduction in the initial hardware estimate. Each Service is responsible for procuring and installing TC-AIMS II hardware in accordance with Component distribution plans.

2.3.2 Software Development Strategy. TC-AIMS II software is developed incrementally. Block 1, the initial increment, supports basic capabilities necessary to plan, coordinate, and execute deployment or re-deployment. Follow-on software development consists of four block upgrades. Each block is scheduled for an 18-month development period from contract award to a full-fielding decision. Each Block, beginning with Block 3, requires MS B approval prior to development. The following are summaries of the major software capabilities to be developed, tested, and fielded. Times for each Block represent the time from the initiation of Block development to the full fielding decision.

2.3.2.1 Block 1 – Basic Unit Move capabilities provide the ability to plan, coordinate, and execute unit movements. This includes maintaining equipment and personnel databases, organizing unit equipment and personnel list for air, rail, ship, truck, or container load planning, determining transportation requirements, and interfaces with designated supply, personnel, transportation, and C2 systems. This capability also supports the CJCS requirement for a 72-hour TPFDD standard and replaces the following Component Unit Move legacy system:

- Transportation Coordinator – Automated Command and Control Information System (TC-ACCIS). This is the Army unit move planning and movement system.

2.3.2.2 **Block 2 – Enhanced Unit Move** (2nd Qtr, FY02 through 2nd Qtr, FY04) provides overall system enhancements to the basic unit movement functionality. These enhancements include Web-enablement, text sensitive help, interactive calendar in date fields, additional reference data source options, and initiating print products from remote handheld terminals. Block 2 will provide the capability to read Common Access Cards into the system. Included are the requirements deferred from the 3.01 release of Block 1. This capability replaces the following Service component legacy systems:

- TC-AIMS is a Marine Corps unit move planning system.

- MAGTF Deployment Support System II (MDSSII). This is the Marine Corps deployment system.

2.3.2.3 **Block 3--Movements Control and Planning/Map Graphics.** (2nd Qtr, FY04 through 4th Qtr FY05) provides movements control, plan sourcing, port operations visibility, theater reception, staging, onward movement and integration (RSO&I) and multiple convoy tracking. Provides the Map Graphics capabilities previously planned in Block 7.

2.3.2.4 **Block 4--Maritime Prepositioning Force/Theater Operations.** (4th Qtr, FY05 through 1st Qtr, FY08) provides Maritime Prepositioning Force Management, unit dispatch, additional reports, vehicle driver ability, and prepositioning stock management.

2.3.2.5 **Block 5--ITO/TMO.** (1st Qtr, FY08 through 1st Qtr, FY10) provides ITO interfaces, CONUS/OCONUS, ITO/TMO Enhancements, and TMO Interfaces. This block replaces the Air Force legacy system – Cargo Movement Operations System (CMOS) which supports Installation Transportation Office/Traffic Management Office functions.

2.3.3 **System Interface and Interoperability Considerations.** TC-AIMS II will fully integrate with port operations systems and will be interoperable with other automated transportation, logistics, operations, personnel, and finance systems. The system will be in compliance with GCSS and DII/COE standards. TC-AIMS II must comply with applicable information technology standards contained in the JTA and obtain interoperability certification from the Joint Interoperability Test Command (JITC)

2.3.4 Security Considerations. TC-AIMS II will operate at the unclassified level and will contain multiple levels of access control to ensure sensitive but unclassified information is not compromised. TC-AIMS II will receive or process information according to guidelines set forth by DoD and Components, including the protection of data aggregation at a higher level as necessary. The TC-AIMS II System Security Accreditation Plan was signed by PEO EIS, the Designated Accreditation Authority (DAA), and fulfills C2 level security accreditation requirements. Accreditation will be addressed with each Block upgrade.

2.3.5 Global Information Network and CIO Compliance. The CIO certification of Clinger-Cohen Act compliance was obtained for Block 1 in Jun 02. Certification for Block 2 (Milestone C) and Block 3 (Milestone B) has been granted by CIO/G-6.

2.3.6 Manpower and Personnel Integration (MANPRINT) Strategy

2.3.6.1 Training Strategy. The developing contractor will prepare programs of instructions with supporting lesson plans based on the capabilities of each software increment. Course materials will be provided to Component schools for the development of Component specific training. Instructors will teach each course as a part of Instructor and Key Personnel (IKP) training, and to users during initial fielding. Each component is responsible for developing specific institutional, unit, and sustainment training in accordance with Component policies.

2.3.6.2 Manpower and Personnel Strategy. The introduction of TC-AIMS II does not impact the military or civilian manpower of any Component and new Military Occupational Specialties are not required; however, TC-AIMS II may require additional skill identifiers in accordance with Component policies.

2.3.6.3 Human Factors Strategy. The principal human factors consideration is the human-computer interface to be developed in accordance with established DoD directives and standards. Human factors elements are incorporated as part of all Government developmental and operational testing.

2.3.6.4 Environmental, Safety, and Health Strategy. The principal environmental, safety, and health issues relate to TC-AIMS II hardware and peripheral devices. Each Component is responsible for procuring hardware and peripheral devices that conform to DoD and Component environmental, safety, and health regulations and policies and must obtain system safety releases for the specific configurations procured in support of TC-AIMS II.

2.3.7 Testing Strategy. Developer (contractor) testing, government development testing, and operational testing are included in the TC-AIMS II test program. Qualification and operational testing is combined to the maximum extent to reduce test redundancy, schedules, and costs. The Government monitors developer testing to ensure adequacy of testing and reduce the lag time between developer and qualification testing. Testing is accomplished IAW the approved Test and Evaluation Master Plan (TEMP).

2.3.7.1 Developer Testing. The developer conducts three levels of testing to ensure that each build performs as specified without degradation to previously delivered software increments.

2.3.7.1.1 Component Integration Testing. The developer conducts unit integration and testing of two or more software components to ensure that the resulting software components works together as intended and continues until all software in each Computer Software Configuration Item (CSCI) is integrated and tested. The final stage of this process is CSCI integration test. The JPMO Independent Verification and Validation (IV&V) team verifies test results.

2.3.7.1.2 CSCI Qualification Testing. The developer demonstrates to JPMO that the software meets the requirements of the specifications. Test results are verified by the JPMO IV&V team.

2.3.7.1.3 CSCI/Hardware Configuration Item (HWCI). The Government witnesses the developer internal system test. HWCI integration and testing demonstrates to the JPMO that each CSCI and related HWCI work together as intended. This process continues until all CSCI and HWCI are integrated and tested. The JPMO IV&V team verifirs test results. The last stage of this process is developer-internal system testing.

2.3.7.2 Developmental Testing is conducted by the JPMO to demonstrate that the system meets the specifications and provides the data required by the ATEC independent developmental evaluator. Test results are the basis for the Independent Evaluation Report presented to the Deputy Director, DT&E, OUSD(AT&L) prior to a milestone decision.

2.3.7.3 Operational Testing. ATEC determines TC-AIMS II operational effectiveness, suitability and survivability using the Critical Operational Issues and Key Performance Parameters in the ORD as they relate to the Block under test.

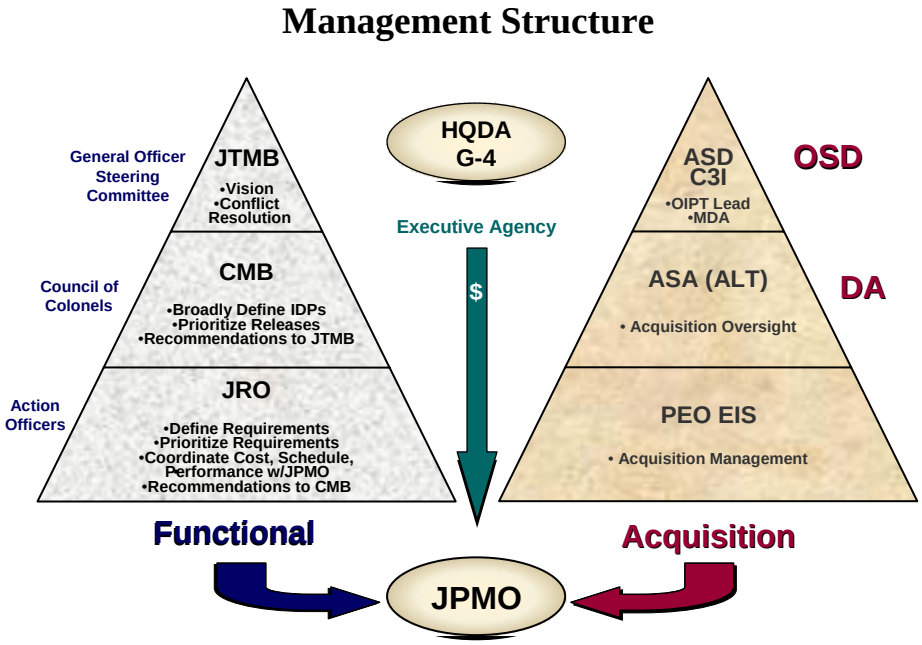
2.3.8 Critical Path Issues. Each Block is to be developed and tested in approximately 18-month periods. Critical path elements for each Block include the completion

of an Economic Analysis, OSD (PA&E) affordability assessment, and ATEC operational test results. Program specific critical path markers include design, development implementation, testing, and fielding.

PART 3 - MANAGEMENT STRATEGY

3.1 Management Structure. The Under Secretary of Defense for Acquisition & Technology (USD (A&T)) designated the Army as the TC-AIMS II Executive Agent in Nov 95. Within the Army, the Assistant Secretary of the Army for Acquisition, Logistics, and Technology ((ASA(ALT)), provides acquisition oversight and technical direction. The Army G4 (DALO-FPC) executes TC-AIMS II Executive Agent responsibilities. JFCOM is the joint functional proponent for TC-AIMS II. The JPMO manages the development, testing, fielding, and initial post deployment software support. The Assistant Secretary of Defense for Command, Control, Communications and Intelligence (ASD (C3I)) chairs the TC-AIMS II Information Technology Acquisition Board (ITAB) and is the Milestone Decision Authority (MDA). The ADUSD (TP) is the OSD Principal Staff Assistant (PSA) for TC-AIMS II. The Assistant Deputy Under Secretary of Defense for Transportation Policy ((ADUSD (TP)) also chairs the JTMB, which provides JPMO guidance and vision. Each Component, the Joint Staff J4, USTRANSCOM, USJFCOM, PEO EIS and PM TIS provide representation to the JTMB. The TC-AIMS II Project Manager reports to the Program Executive Office Enterprise Information Systems (PEO EIS). The JPMO chairs working level Integrated Product Teams (WIPT) for testing, security, cost, and benefits. The PM TIS chairs the Integrating IPT (IIPT). The TC-AIMS II management structure is depicted in Figures 3.1.1.

Figure 3.1.1



3.2 Management Decisions. The following significant events have occurred:

- The January 1997 Acquisition Decision Memorandum (ADM) documents program initiation.
- Fielding authorized to EUCOM in 1997
- Subsequent ADMs documented IT-OIPT in-process reviews in July 1997 and November 1998.
- Milestone III approval for Block 1 was granted 4 Nov 02 by the IT-OIPT (ASD C3I).

3.3 Participants.

3.3.1 Joint Program Management Office. The JPMO manages the design, development, testing, fielding and logistics support planning for TC-AIMS II. The Project Manager reports to the PEO EIS. The program office is staffed by the participating components in accordance with the May 1997 Joint Staffing MOA and Army policies for program office staffing. This staff is augmented by matrix support from various Army activities and program support contractors.

3.3.2 PEO EIS. Provides management and acquisition oversight of the JPMO, representation to the JTMB, and staffing IAW the May 97 approved Joint Staffing MOA.

3.3.3 Army G4 (DALO-FPC). Executive Agent and Army staff proponent for TC-AIMS II and represents the Army on the JTMB and JRO.

3.3.4 ASA (ALT). Provides acquisition oversight through PEO EIS to the JPMO. ASA (ALT) is the Army Acquisition Executive and exercises Army acquisition management responsibilities for information and C4 systems.

3.3.5 ASD (NII). The TC-AIMS II Milestone Decision Authority, as defined in DoD 5000, chairs the ITAB, and is the decision authority for performance, cost and schedule baseline adjudication.

3.3.6 ADUSD (TP). Exercises the DUSD (L&MR) OSD Principal Staff Assistant (PSA) responsibilities for TC-AIMS II. Additionally, JFCOM represents the user community during IT-OIPT sessions and chairs the JTMB, which provides overall vision and broad guidance for development and implementation.

3.3.7 OSD (PA&E). Reviews the Analysis of Alternatives (AoA) and Economic Analysis and provides an affordability assessment, comments and recommendations to the MDA as appropriate for program affordability.

3.3.8 USTRANSCOM. Represents the Transportation Component Commands (TCC) at the JTMB.

3.3.9 Joint Staff J-4. Represents the Combatant Commanders at the JTMB and CMB.

3.3.10 ATEC. Exercises the program's operational test and evaluation responsibilities to plan and conduct TC-AIMS II operational tests and report results, and to provide evaluations of effectiveness, suitability, and survivability. Marine Corps Operational Test and Evaluation Agency (MCOTEA) conducts test and evaluation responsibilities for the USMC under the purview of ATEC.

3.3.11 The Army Cost and Economic Analysis Center. Provides an independent assessment of the TC-AIMS II EA and develops the Joint Cost Position for coordination with other Components, prior to approval by the Army Chief Financial Officer.

3.3.12 USAF. Represents its respective user communities at JTMB and JRO sessions. USAF stated at the Block 1 MS III review that it does not plan to use TC-AIMS II or JFRG II for its deployment operations because it prefers to use its alternative system.

3.3.13 USMC. Represents its respective user communities at JTMB and JRO sessions. USMC is responsible for funding, procuring, and installing hardware to operate TC-AIMS II, and providing JPMO staffing IAW the May 97 approved Joint Staffing MOA.

3.3.14 USN. Represents its respective user communities at JTMB and JRO sessions and is responsible for funding, procuring, and installing hardware to operate TC-AIMS II and providing JPMO staffing IAW the May 1997 approved Joint Staffing MOA.

3.4 Funding Approach. Army funds the entire program except for Service hardware requirements and replacements. The program funding source lines include RDT&E, OPA, and OMA (Figure 3.4.1). POM requirements are submitted to the Army G4 each year for review by the Sustaining Program Evaluation Group (PEG). The RDT&E portion, which supports system development, is provided within the Deployment Automation Management Decision Package (MDEP) to support all services. The OPA provided in the MDEP procures the Army hardware, while other Services are responsible for their own hardware procurement. OPA also supports other fielding requirements such as training for all Services. OMA supports the Army legacy systems and maintenance of TC-AIMS II software. System development costs from FY96-FY00 were funded with Army O&M funds. Starting in FY01, all system development costs are funded with RDT&E. The Life Cycle costs depicted in Figure 3.4.1 differ from those in the Block 1 Acquisition Strategy Report and Acquisition Program Baseline. Those documents were populated with draft numbers prior to a line item review of the Economic Analysis which revealed a two year deficit of Program Management costs for all Services for FY 19-20.

Figure 3.4.1
(As of 10 December 2002, based on FINAL Program Economic Analysis documents)

	Constant FY04 $ in K's	
LCC	**Objective**	**Threshold**
RDT&E	224,033	246,437
Procurement		
USA	132,767	146,044
USAF	24,279	26,707
USMC	12,025	13,228
USN	5,302	5,832
Total Procurement	174,373	191,811
Acquisition O&M		
USA	398,061	437,867
USAF	29,796	32,775
USMC	39,289	43,218
USN	6,853	7,539
Total Acquisition O&M	473,999	521,399
Total Phase I Acquisition Cost-(RDT&E+Procurement+Acquisition O&M)	872,406	959,646
Operations & Support		
USA	671,712	738,883
USAF	123,186	135,505
USMC	54,789	60,268
USN	15,074	16,581
Total Operations & Support	864,761	951,237
Total Life Cycle Cost	**1,737,167**	**1,910,884**

3.5 Integrated Digital Environment. The program office makes extensive use of an integrated digital environment for managing the TC-AIMS II program. Internally, program documentation is reviewed, edited, and stored electronically on local area network drives. Program office personnel access is granted through permissions controlled by the proponent office for the document under review. Configuration Management (CM), IV&V, and test preparation and execution are managed through electronic controls. The developer provides program updates and metrics via email. Externally, the program office maintains a web site hosting current program information. Program meeting announcements and minutes are distributed by email.

3.6 Acquisition Process Relief. In Dec 01, TC-AIMS II was selected as the Army program for the Information Technology Acquisition Rapid Improvement Team. The charter of this team is to streamline IT Acquisition to deliver capability to the user within 18-month spirals. Participation in this pilot has resulted in significant changes to some of our acquisition processes and reporting requirements. The RIT process allows for acquisition document processing and the submission of reports through a virtual media

3.7 Best Practices. Contracts for software development require development practices conforming to MIL-STD 498 and its commercial equivalent, ISO 9000. Additionally, competing contractors must demonstrate a Software Engineering Institute (SEI) Software Capability Maturity Model (SW CMM) Level 3 or higher rating.

3.8 Independent Expert Review. The JPMO currently uses an IV&V team that reports findings to the PM. The team reviews and reports on technology and development risk, schedule, design, development, project management processes and the application of systems and software engineering best practices.

3.9 Cost and Performance Metrics. The JPMO employs an Earned Value approach to measure program cost and schedule and has devised and currently employs detailed metrics to track the following variables:

- Requirements Growth and Stability
- Design Maturity
- Quality
- Product Size and Complexity

3.10 Program Risks.

3.10.1 Technical.

3.10.1.1 Requirements Management Risk. Joint Requirements management is a risk for any joint program. Each Service has its own unique requirements and these requirements are often in competition with each other. The challenge for requirements management is to set requirements such that capability is delivered to meet the needs of each Service and joint community. Aside from competing requirements, the program must also deal with the inevitable growth and instability of Service requirements as concepts of operations and associated force and infrastructure evolve. In particular, the baseline requirements for TC-AIMS II were established based upon the component transportation infrastructure and concept of operations that existed in 1995-1998. Since that time, we have already experienced an evolution in requirements.

Mitigation. The integration of the functional management structure with the acquisition structure through a JPMO as outlined previously in Figure 3.1.1 is the key to mitigating requirements management risk. Each Service is represented in the JRO and JTMB. They all played integral roles in defining the requirements and Incremental Development Packages (IDPs) that form Blocks 3-5. Delivering capabilities in multiple Blocks gives the functional management flexibility to incorporate emerging requirements once vetted through the JRO and JTMB. If requirements are too complex or controversial to be incorporated in an IDP currently in development, they can be prioritized into subsequent Blocks without

delaying immediate capability delivery. In short, by breaking capability into Blocks, the JPMO gives the user community the flexibility it needs to address, prioritize and resolve emerging requirements.

3.10.1.2 Evolving Commercial Technology Risk. TC-AIMS II makes extensive use of commercial technology to maintain pace with technological evolution.

Mitigation. TC-AIMS II employs a flexible architecture making it adaptable and scalable to accommodate changes in technology. Further, by potentially competing the development of each Block, we create the contractual freedom necessary to introduce new requirements and allow commercial contractors to propose best value solutions for utilizing and adapting new technologies.

3.10.1.3 Data Standards Risk. DoD and Service components incorporate unique business practices requiring unique data standards. Customization to accommodate these unique standards erodes the advantages of using commercial technology.

Mitigation. Utilize the Analysis of Alternatives (AoA) process to influence the DoD infrastructure to adjust business processes to optimize the incorporation of commercial technology and systems while simultaneously accommodating essential DoD unique business processes.

3.10.2 Funding Risk. Blocks 1 and 2, Unit Move and Enhanced Unit Move capabilities, deliver 60 percent of the objective functional requirements stated in the ORD with the remainder being delivered in Blocks 3-5. Blocks 2 and 3 are adequately funded for completion.

Mitigation. The mitigation of this issue lies in the Block development approach. By prioritizing increments, maximum capability delivery is mapped to available funding levels and is delivered in a usable state even if future Blocks are delayed due to funding shortfalls.

3.10.3 Cost and Benefit Risk. Costs and benefits of TC-AIMS II are based on estimates and assumptions documented in an EA. Cost is a risk to the extent that there are errors in the estimate or proper management control is not exercised over program execution. Benefit risk is present to the extent that EA assumptions are not accurate or not met, such as when replaced legacy systems are not decommissioned as planned. This also significantly impacts economic benefits. This may occur for two primary reasons. First, if TC-AIMS II fails to deliver required capabilities, the legacy systems requirement remains. Second, if the legacy system baseline is mismanaged, requirements creep may result in a divergence from its baseline and TC-AIMS II could be built to an obsolete specification.

Mitigation. Cost risk is mitigated by careful review of the estimates and assumptions shown in the EA. This is accomplished through IPTs and independent Service Cost Center reviews as well as OSD PA&E review. Cost risk in terms of development execution is mitigated by employing Earned Value techniques to ensure the development effort is performing as planned. Benefit risk, associated with TC-AIMS II capability delivery, is mitigated by employing Earned Value controls to ensure adherence to the Cost, Schedule and Performance Objectives and Thresholds contained in the Acquisition Program Baseline. Benefit risk, associated with legacy system requirements creep, is mitigated by ensuring that the subject process is applied to legacy systems that TC-AIMS II is scheduled to replace.

3.10.4 Schedule Risk. Beginning with Block 3, MS B approvals are required. Each review is predicated on a favorable EA, which is on the critical path for each Block.

Mitigation. The Block approach to development and fielding mitigates this risk. With each Block, we will be able to accomplish the EA more efficiently and effectively due to lessons learned. Also, the EA does not have to be an all or nothing analyses, since each Block allows for EA refinement. For Block 4 and 5, EA preparation can be initiated earlier, thus providing a larger than 18 month completion window.

PART 4 - BUSINESS STRATEGY

4.1 Critical Technology and Products. TC-AIMS II uses the following critical products/technologies: Windows 2000 operating system, Sybase ASE 12.5 Database, PowerBuilder 7.0 for application development, TIPS (GOTS) software, AIT technology.

4.2 Sources of Critical Technology and Products. Microsoft, Inc; Sybase, Inc; DLA, Symbol Technologies AIT contract.

4.3 Commercial and Non-Developmental Items. COTS computers (PCs, laptops), servers, MS Outlook email.

4.4 Contracting Approach.

4.4.1 Use of Competition. The TIS JPMO manages the TC-AIMS II acquisition efforts and its JPMO operations using competitively awarded contracts. Separate contracts are in place for TC-AIMS II system development, training, hardware procurement, and JPMO support. The JPMO utilizes competition to lower costs in all procurements, regardless of whether the procurement is for hardware, software, or technical services. Awards for technical services are based on "best value" criteria, whereas awards for hardware are based on "technical compliance, lowest price" to include warranty services and standard terms and conditions.

4.4.2 System Development and Maintenance. TC-AIMS II is an Evolutionary Development Program structured in Block upgrades in accordance with the Federal Acquisition Regulation (FAR) Part 39 using competition to select the developer. Block 1 was developed under a Task Order awarded to DynCorp, Inc., using an IDIQ type contract, sponsored by the Department of Transportation (DoT). The contract was a Cost plus Award Fee type contract. For the procurement of COTS software licenses, in support of this development, the program office utilized a Firm Fixed Price integrated contract software engineering contract. The complexities involved in the Block 1 development, including but not limited to the actual software development, the reengineering of business processes, and the joint data standardization task, required numerous modifications to the task order's statement of work and pricing structure, which resulted in a less than effective incentive approach, normally experienced with a Cost Plus Award Fee contract arrangement. In fact, the contractor never received an award fee during the Block 1 development.

Even though various contract types were considered, based on lessons learned from the development of Block 1, it was determined that a Time and Materials contract type would be more appropriate for the Block 2 development effort than the Cost Plus Award Fee employed for Block 1. The TC-AIMS II system development effort for Block 2 and maintenance effort for Block 1 are contracted through a Task Order against a GSA Schedule 70 contract with Computer Sciences Corporation. The PM chose to use the GSA schedules because they

afforded greater opportunities for competition than that afforded through ITOP. This Task Order was competitively awarded in Feb 02 with a period of performance extending until award of the Block 3 development contract in FY04.

Since a time and materials contract provides no positive cost control of labor efficiency or costs being expended, the PM instituted measures that would provide oversight. The developer is on site, subject to daily technical direction by the PM staff. The oversight process includes a shared management approach and a common view into all development processes and an integrated technical approach. This oversight has resulted in contractor personnel changes including changes in the labor/skill mix required for Block 2 as well as a change in the contractor's program manager. Further, the contractor is provided incentive to succeed to ensure its competitiveness for future Block development and maintenance efforts.

Block 3, and future Block requirements, will be performance-based Cost Plus Award Fee type contracts. The current strategy of utilizing competitively awarded Task Orders against existing Government Contract vehicles will continue to be followed since development schedules for subsequent Block upgrades are short in duration (less than 18 months). Additionally, it is desirable to consider various developers for each Block upgrade due to varying functional content between the Blocks. For example, Contractor "A" may be the best value for Block 4, but may not be the best value for Block 5, whereas the converse may be true for Contractor "B". The TC-AIMS II functional and user community also require flexibility with the remaining Block upgrades because their business processes are evolving to leverage Information Technology and the functionality currently within each Block may be subsequently reprioritized and reallocated among the Blocks.

The Block 3 development contract will have an option for maintenance of the Block 2 system. As an overall strategy for each Block upgrade, competition is planned for each Block upgrade, to include a maintenance option for the previously fielded Block. Integration risk between Block upgrades as a result of changing developers will be evaluated as part of the source selection process. The current contract is being managed with an Earned Value Management System, tracking cost and schedule performance based on the developer's work breakdown structure and program project plan.

4.4.3 Training. The TC-AIMS II New Equipment Training (NET), associated with system fielding, is contracted through SRA, Inc. This contract was competitively awarded in Aug 2000. This training contract provides NET for all Services during TC-AIMS II fielding. This is an Indefinite Delivery Definite Quantity, Firm Fixed Price contract based on a fixed price per training course.

4.4.4 Hardware Procurement. Each Service procures its own hardware for TC-AIMS II fielding. The JPMO is only responsible for procuring hardware for Army

fielding. In June 2002, the JPMO competitively awarded a Firm Fixed Price hardware procurement contract to The Portable Warehouse, Inc., for laptops, servers and associated operating system software licenses for its first Army fielding efforts. Additional fielding hardware requirements will be competitively awarded using Firm Fixed Price task orders issued against an IDIQ, which will have been chosen after due consideration to Section 803 dictates.

4.4.5 JPMO Program Support. The JPMO Program Support contract, with Titan Systems Corp., provides the TIS Program Manager with non-personal program management, technical, logistical, and business management services. These services are contracted through a competitively awarded task order administered by the US Army Information Technology E-Commerce and Commercial Contracting Center (ITEC4). This task order began 29 Sep 01 and continues until 28 Sep 08 with annual options. The contract is currently a Time and Materials contract that is in the process of transitioning to Performance Based Service Contracting.

PART 5 - SUPPORT STRATEGY

5.1 Support Planning and Studies. No specific studies have been accomplished. Support planning for software is being tailored to incorporate concepts used in commercial software products. Hardware concepts integrate the minimum military "go to war concepts" with commercial warranty and extended maintenance capabilities.

5.2 Strategies to Reduce TOC. The following strategies have been used and will continue to be used to reduce TOC:

- Use of DoD license agreements and COTS products.
- Use of Functional Management Boards to verify and prioritize requirements.
- Earned value and metrics-based performance monitoring of the development process.
- Use of commercial hardware and extended commercial repair service in lieu of Government repair.
- Focus training on distance learning techniques, Web-based training and tutorials integrated with the application.
- Implementation of an Enterprise Management System to provide network-based access to applications and databases, thereby reducing the requirement for fielding servers and computers. Also provides the ability to remotely distribute software upgrades and new releases.

5.3 Personnel Impacts. The introduction of TC-AIMS II does not impact the military or civilian manpower of any Component. New Military Occupational Specialties are not required. TC-AIMS II may require additional skill identifiers in accordance with Component policies.

5.4 Hardware Maintenance. Each Component is responsible for providing maintenance support for their Service-specific hardware procured in support of TC-AIMS II in accordance with applicable Component directives.

5.5 Post Deployment Software Support.

5.5.1 Customer Support. Customer support will be provided through the JPMO. Initial services provided below may be expanded to include configuration management and software distribution.

5.5.1.2 Tier I (Help Desk). This tier consists of manned operations providing swift resolution to known problems stemming from customer knowledge deficits and identified systemic problems. Customers with problems will first contact the Help Desk via phone, fax, e-mail or the TC-AIMS II Web site. Problems addressed will include system login, navigation, and interpretation of screens, interoperability, and preparation and transmission of reports. The Tier I organization will educate the customer

about known problems and their workarounds in the interest of reducing overall help desk calls and developing customer knowledge, and collect and report statistics pertaining to the life cycle of all TC AIMS II trouble calls. The Help Desk will use a Case-Based Reasoning System to provide support to customers and will provide direct resolution as soon as possible. This tier should resolve the majority of software, hardware and functional problems. Problems which cannot be resolved will be elevated to Tier II in a documented problem report. These will typically be previously undiscovered problems related to computation, display, storage, transfer, database synchronization/normalization, or input/output.

5.5.1.3 Tier II (Developer Support). This tier will be used when help desk personnel are unable to provide problem resolution. Help desk personnel will document and log in the problem report and then submit the Problem Report to the appropriate Tier II subject matter experts or proponent located with the developer, contractor or supplier. All inputs to the Tier II organization should come from the Tier I organization. It is likely the Tier II organization will respond to novel problems dealing with errors in computation, display, storage, transfer, database synchronization/normalization, or input/output. Problems for which no immediate solution can be found will be conveyed to the Tier I organization, which can inform the customer about how to adapt to the problem until permanent solutions can be found. Tier I and Tier II personnel will access a common Customer Resource Management (CRM) software tool to enable full accountability of a trouble call throughout its life cycle.

5.5.2 Software Maintenance. Emergency software maintenance will be limited during the Block upgrade development timeframe to repairing priority 1 and 2 problem reports. These fixes will be distributed either as part of next scheduled Block upgrade or as an interim change package. Request for enhancements, problem reports classified as enhancements, and modifications will be referred to the JRO. After the Block upgrade development period, fixes to priority 1 and 2 problem reports will continue to be distributed as interim change packages. Priority 3, 4, and 5 problem reports and other requests for system enhancements and modifications will be included in periodically scheduled system change packages based on prioritization of the CMB.

5.6 Post Deployment Evaluations. Users will surface issues from the field by way of the TC-AIMS II Help Desk for support. Those issues which form the basis of new requirements will need to be submitted by the requisite Service to the Joint Requirements Office for prioritization of development. Additionally, the JPMO will petition an independent organization to conduct a post fielding assessment of the initial fielded units about one year after completion of the fielding at that location. The assessments will focus on supportability and training issues, and to a lesser degree, recommended system

enhancements. Results will be used as the basis for improving overall system support and fielding process for subsequent blocks.

5.7 Strategy for Long-Term Access to Data. System design information will be retained in various magnetic and digital media forms on the JPMO configuration management server. As a minimum, the following sets of documentation will be available for the fielded system (all Blocks approved for fielding) plus documentation for the Block under development. These document sets will be made available for review by interested vendors during the Request for Quote/Proposal of each block.

- Requirement Specifications
- Interface Specifications
- System Design Specifications
- Interface Design Specifications
- Database Design Specifications
- Software Development Plans
- Approved Deviations and Waivers
- Product Support Documentation
- User and Operations Manuals
- Training Course Materials

Attachment 1 - TC-AIMS II Program Points of Contact

Joint Program Management Office, Transportation Information Systems (TIS)
Mr. Robert W. Morris, Project Manager, 703-752-0756

Program Executive Office Enterprise Information Systems (PEO EIS)
Mr. Kevin Carroll, Program Executive Officer, 703-806-4235

Army G4
Mr. William P. Neil, Chief, Force Projection and Distribution (Acting), 703-693-8062
Col John Brown, O6 Service Representative
Mr. Robert Osborn, Service Representative

ASA(ALT)
The Honorable Claude Bolton, 703-695-6742
Ms. Elizabeth Borum, 703-604-7124

ASD (C3I)
Mr. John Landon, 703-602-0980 ext. 140
Mr. Leo Milanowski, 703-602-0980 ext. 115

ADUSD(TP)
Mr. Earl Boyanton, 703-601-4478
Ms. Lisa Roberts, 703-601-4461 ext. 105

OSD (PA&E)
Mr. Scott Comes
Dr. Ron Wilson, 703-601-0417

USTRANSCOM
Ms. Trish Young (Dep J5), 618-229-2479
Ms. Marlene Fridley, 618-229-1587

CJCS J-4
BrigGen Henry Taylor, USAF, VJ4 703-695-1145
Col Terry Beynon, Log Intel Fusion 703-695-2308
LtCol Arnold Holcomb
Mr. John Rephlo, 703-697-0595

ATEC
Mr. Lloyd Pickering, 703-681-4670
Dr. Ann Maddux, 703-681-9002

Army Cost and Economic Analysis Center (CEAC)
Mr. John Carroll, 703-601-4180

Mr. Tom Dang

US Marine Corps
LtCol George Lauve, 703-695-5434
Capt Gary Clement

US Navy
RADM Linda Bird, 703-604-9941
Ms. Dorothy McLeod, 757-443-5404

JFCOM
Maj Fred Stroker, 757-836-0908

Attachment 2 – Glossary

ADM	Acquisition Decision Memorandum
AIS	Automated Information System
ADUSD (TP)	Assistant Deputy Undersecretary of Defense (Transportation Policy)
AIT	Automatic Identification Technology
AoA	Analysis of Alternatives
APB	Acquisition Program Baseline
ASA (ALT)	Assistant Secretary of the Army (Acquisition Logistics & Technology)
ASD (C3I)	Assistant Secretary of Defense (Command, Control, Communications & Intelligence)
ATEC	Army Test and Evaluation Command
C4ISP	Command, Control, Communications, Computers & Intelligence Support Plan
CAIV	Cost as an Independent Variable
CDD	Capabilities Development Document
CEAC	Cost and Economic Analysis Center
CIO	Chief Information Officer
CJCS	Chairman Joint Chiefs of Staff
CJCSI	Chairman Joint Chiefs of Staff Instruction
CM	Configuration Management
CMB	Configuration Management Board
COTS	Commercial Off-The-Shelf
CSCI	Computer Software Configuration Item
DAA	Designated Accreditation Authority
DAMMS-R	Department of Army Movement Management System-Redesign
DII / COE	Defense Information Infrastructure / Common Operating Environment
DLA	Defense Logistics Agency
DoD	Department of Defense
DTS	Defense Transportation System
DUSD (L&MR)	Deputy Undersecretary of Defense (Logistics & Materiel Readiness)
FOC	Full Operational Capability
GOTS	Government Off the Shelf
GTN	Global Transportation Network

HWCI	Hardware Configuration Item
ICASE	Integrated Contract Software Engineering
IER	Information Exchange Requirement
IIPT	Integrating Integrated Product Team
IKP	Instructor and Key Personnel
IKPP	Interoperability Key Performance Parameter
IOC	Initial Operating Capability
IT OIPT	Information Technology Overarching Integrated Product Team
ITO/TMO	Installation Transportation Office/Traffic Management Office
IV&V	Independent Verification and Validation
JDL	Joint Data Library
JDPO	Joint Deployment Process Owner
JFRG II	Joint Force Requirements Generator II
JITC	Joint Interoperability Test Command
JOPES	Joint Operations Planning and Execution System
JPMO	Joint Program Management Office
JRO	Joint Requirements Office
JROC	Joint Requirements Oversight Council
JTA	Joint Technical Architecture
JTMB	Joint TC-AIMS II Management Board
KPP	Key Performance Parameter
MAIS	Major Automated Information System
MAJCOM / MACOM	Major Command
MCOTEA	Marine Corps Operational Test & Evaluation Agency
MDA	Milestone Decision Authority
MDSSII	MAGTF Deployment Support System II
MMT	Multimedia Training
MNS	Mission Needs Statement
MRM	Management Reform Memorandum
OIPT	Overarching Integrated Product Team
OMC	Optical Memory Card
ORD	Operational Requirements Document

OSD (PA&E)	Office of Secretary of Defense (Program Analysis and Evaluation)
PEO EIS	Program Executive Office for Enterprise Information Systems
PSA	Principal Staff Assistant
RSO&I	Reception, Staging, Onward movement and Integration
SA/DBA	System/Database Administrators
SEI SW CMM	Software Engineering Institure Software Capability Maturity Model
SHADE	Shared Data Environment
TC-ACCIS	Transportation Coordinators' Automated Command and Control Information System
TC-AIMS	Transportation Coordinators' Automated Information for Movements Systems
TC-AIMS II	Transportation Coordinators' Automated Information for Movements Systems II
TCC	Transportation Component Command
TEMP	Test and Evaluation Master Plan
TOC	Total Ownership Cost
TPFDD	Time Phased Force and Deployment Data
USD (AT&L)	Undersecretary of Defense (Acquisition, Technology and Logistics
USJFCOM	US Joint Forces Command
WIPT	Working-Level Integrated Product Team