

DEPARTMENT OF THE ARMY  
U.S. Army Corps of Engineers  
Washington, DC 20314-1000

ER 25-1-2

CECI-P

Regulation  
No. 25-1-2

31 August 1999

Information Management  
LIFE CYCLE MANAGEMENT OF INFORMATION SYSTEMS (LCMIS)

1. Purpose.

This regulation provides a disciplined, yet flexible, management approach for developing quality automated Information Systems (IS) within the US Army Corps of Engineers (USACE). The principal part of this regulation delineates LCMIS roles, responsibilities, and policies within the Corps. Figure 1 shows a graphic view of the LCMIS process. It implements the acquisition precepts of DoDD 5000.2-R and AR 70-1 in alignment with DoDD 8000.1 and DoDD 7740.1 for promotion of coordinated and integrated information management functions. Pertinent references are in Appendix A.

LCMIS has two principal goals:

a. To ensure that all IS programmatic decisions are based on the best value and on the total anticipated benefits that will be derived over the life of the IS or IS modernization.

b. To control expenditures on IS, yet ensure the satisfaction of mission needs to the greatest extent possible and in a manner producing best value.

2. Applicability.

a. This regulation is applicable to:

(1) All HQUSACE staff elements, and all USACE Commands having an interest in any phase of development, operation or management of IS as defined in Appendix B.

(2) Corps-owned IS, that is, IS which are developed as USACE projects and/or will be retained by the Corps as Information Technology (IT) assets after project completion.

b. This regulation does *not* apply to:

(1) IS developed for non-Corps customers. However, the customer is responsible for complying with the appropriate regulations and statutes related to IT;

(2) IS or other IT specifically designed as integral parts of Corps-owned Facility Support systems (see Appendix B); and

(3) IS having developmental and deployment (program) costs of less than \$500K or total life cycle costs estimated to

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This regulation supersedes ER 25-1-2, Life Cycle Management of Automated Information Systems (LCMIS), issued 30 Nov 1993.

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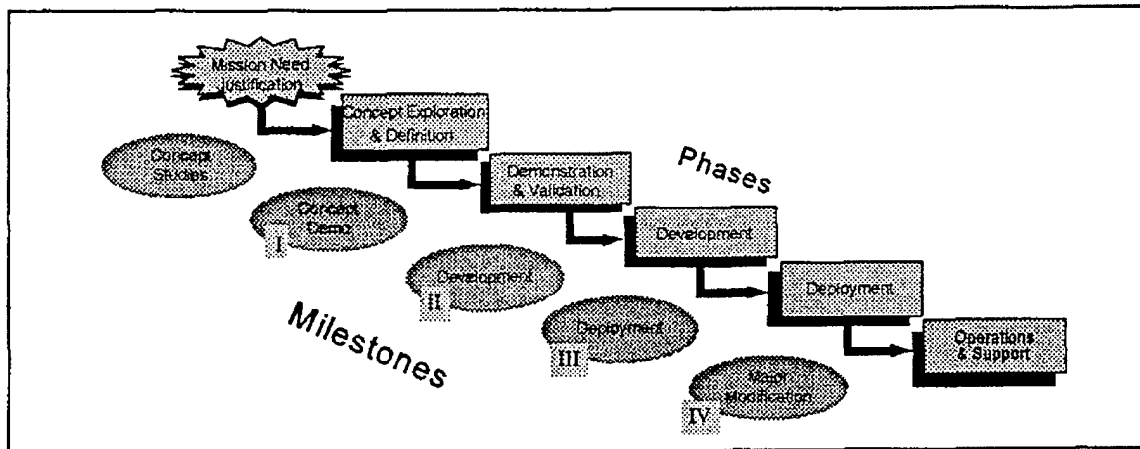


Figure 1. Milestones in Life Cycle Management of Information Systems

be less than \$1M. In these Class IV C systems, LCMIS oversight will be the responsibility of the local DIM/CIM.

c. This regulation applies to the Acquisition CATegory (ACAT) IV (total program costs of less than \$30 million). Detailed descriptions of the three component classes of ACAT IV Information Systems (IS), are provided in this regulation, as well as the decision criteria Minimum Exit Requirements (MER) for each phase and the Milestone Decision Authorities (MDAs) for each class. ACATs are an integral part of AR 70-1 for Army materiel and is the predominant guidance for any IS, or other acquisitions coming under ACAT program cost and life cycle cost thresholds.

d. Implementation of LCMIS for existing USACE AIS will go into effect at the next milestone, or at an In-Process Review (IPR). All AIS currently deployed are considered to be in the Operations and Support Phase. Milestone IV (Major Modification Decision) reviews will be

conducted no later than four years after Milestone III approval (Production Decision) and every three years thereafter, or earlier, to effect mission changes.

### 3. References.

See Appendix A for references.

### 4. Distribution.

Approved for public release, distribution is unlimited.

### 5. Policy.

a. Funds shall not be obligated, nor solicitations released for any IS that has not successfully completed an appropriate management oversight review as required by this regulation. This requirement for a successful oversight review is met when the designated MDA makes a management judgment on what program activities may be permitted and specifically authorizes, in writing, those activities.

b. Business Process Analyses (BPA).

*Before* making significant information technology investments in support of Corps business processes, proponents will analyze missions and revise mission-related and administrative work processes as required. Specifically, mission analysis and appropriate work process revision is required prior to making IT investments of \$2M or more in a fiscal year or \$30M or more in total life cycle costs. The Functional Proponent (FP) will attest to the above actions through review and validation of the Mission Needs Statement (MNS).

c. Integrated Product Teams (IPT).

IPTs will be established by the MDA for each ACAT IV IS. The IPT will consist of empowered individuals appointed by the MDA, meeting together and individually with the System Manager (SM) throughout the program's progress. The IPT will act to raise and resolve issues early, provide recommendations for tailoring and streamlining the program.

The IPT will help the SM successfully achieve each milestone decision and will develop a memorandum documenting the issues/risks raised, for the MDA with a recommendation as to whether an actual In Progress Review (IPR) or a "paper IPR" should be held.

d. General LCMIS Principles.

A full five-phase LCM process has been developed to plan and manage IS projects and is outlined in Appendix C. The full process will usually apply to larger multi-

site IS projects in ACAT IV Class A. The majority of IS projects, with smaller resource requirements will involve fewer required plans and formalized decisions as well as less documentation overall.

The following principles apply to all Corps-developed IS:

(1) Streamline the IS life-cycle management process by minimizing management oversight layering, and by delegating review and milestone approval authority to the lowest organizational level commensurate with the resources and risk involved, and the provisions of this regulation. The SM, with the concurrence of the MDA, may tailor the five-phase LCM process - and any documentation requirements involved - to accommodate the individual IS project. The MDA must concur with a SM's specific tailoring strategy prior to the project obtaining Milestone I approval. MDA's are authorized to waive any non-statutory requirements and take action, when warranted, to submit waivers for statutory requirements. Appendix C also provides guidelines on tailoring.

(2) IS milestone review by the appropriate MDA is required at a level commensurate with the Program and Life Cycle cost estimates contained in the current updated economic analysis (EA). Such an updated EA is a minimum exit requirement from each phase. The MDA review and approval is needed prior to allocation of funding for execution of each successive LCMIS phase.

(3) FPs and SMs will develop IS in accordance with, and specifically to

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support, the USACE Command Strategic Plan as well as their own organizational strategic/performance plans.

(4) Ensure electronic record keeping requirements are an integral part of any IS to include appropriate retention and disposition instructions for records in the system.

(5) Determine when information in the system affects legal rights and interests of agency personnel and take appropriate action to ensure these rights and interests are protected.

(6) Incorporate peacetime, mobilization, and wartime operational requirements for readiness, deployability, security, survivability, and sustainability in all IS.

(7) Maximize the use of modern technologies and methodologies to achieve flexibility in responding to evolving functional requirements. These are necessary to improve software quality, maximize software reusability and portability to minimize software development and maintenance costs, and to reduce current or future operation and costs.

(8) Design and development of ACAT IV class B or higher systems will comply with the USACE Command Data Model (CDM); however, data standardization is encouraged for all ACAT levels.

(9) To facilitate migration to an Open Systems Environment (OSE), SMs and MDs shall follow the standards listed in the Joint Technical Architecture-Army (JTA-A) as supplemented by Corps of Engineers

extensions.

(10) All IT costs for any Corps IS will be duly recorded according to the current Information Technology Investment Portfolio System (ITIPS) guidance. The USACE Information Technology Portfolio thus generated will be the basis for making IT capital planning and investment decisions.

(11) The Functional Proponent for an IS is responsible for all financial aspects of the project - including the programming and budgeting responsibilities - throughout all LCMIS phases. Such programming and budgeting includes not only development costs, but also the preparation of estimates for all other associated IS costs, e.g., local fielding, operations and maintenance. USACE IS FPs will use planning, programming, budgeting, and execution system (PPBES) practices IAW AR 1-1, and implementing Corps guidance found in Appendix C of this regulation.

e. Modifications to IS which exceed 15% of the approved program cost require an IPR by the next higher level of MDA approval authority.

f. An official file of LCMIS approval documents will be maintained by the appropriate LCMIS MDA. A complete file, including required annexes, will be maintained by the SM, and will contain all project documentation required by this directive. This file will be kept available for inspection and review.

g. IS projects at USACE laboratories and the associated IT are specifically included under this directive. However,

the special Research and Development (R&D) role performed by the Corps laboratories requires some latitude in viewing the internal R&D projects of those laboratories and centers. Accordingly, after attaining Milestone 0 approval, those internal R&D projects which are *in development* at a USACE laboratory may request an MDA deferral of Phase I (Demonstration & Validation) documentation and Milestone I approvals - and combine them with the required Milestone II (Development Decision) documentation and approvals.

h. This regulation does not directly apply to IS which are integral to Corps-owned facilities.

i. IAW the general guidelines of DODI 5000.2-R and AR 70-1, USACE policy is to encourage approval of tailoring by the MDA for any IS where the Concept Exploration Phase demonstrates that commercially available software and hardware, without additional programming or other code modification, will fully satisfy the requirement. In such cases, if requested by the SM and approved by the MDA, the LCMIS procedures may be condensed or modified to reflect this Commercial Off-The-Shelf (COTS)-type acquisition strategy. The ensuing Milestone review documentation must satisfy the requirements for the combined phases or milestones.

## 6. LCMIS Procedures

a. The LCMIS phases summarized in Figure 1 are detailed in Appendix C. Pamphlets, manuals and policy memoranda cited in Appendix A provide useful

guidance on acquisition, configuration management, and other IM topics.

b. AR 70-1 provides detailed descriptions of the four Acquisition CATegories (ACATs) for all Army materiel including Information Systems (IS) and Information Technology (IT). USACE has further defined ACAT IV IS into *three classes and thresholds, class A, B, and C*. The approval authority, degree of management oversight, and documentation requirements differ for each class.

c. The information system class threshold is determined, for IS being developed, by program costs (costs incurred from project initiation through full deployment to each operational site) as given in the most recent update of the IS economic analysis.

d. The information system class threshold is determined, for IS already in operation, by estimating total life cycle costs (costs incurred from project Concept Exploration and Definition (Phase one) through its Operations & Support (Phase four) and Milestone Decision to terminate or initiate major modification (Milestone IV)).

e. Table 1 gives the ACAT IV classes and approval authorities. These approval authorities may not be delegated except where noted.

f. Any information system, at any acquisition level, can be designated as an ACAT III (special interest system) by the DA Chief Information Officer (CIO) or higher authority. The Corps CIO can designate any ACAT IV IS as a special

interest system.

g. ACATs I and II (program costs exceeding \$30 million) may concern a Corps-wide or standard information system (for which USACE is proponent) that supports the larger Army, other DoD, or Federal agencies. Management oversight will be assigned by the Commander, USACE, for these Corps-wide or standard systems. These systems are implemented through directives from higher authority, primarily AR 70-1.

h. IS having developmental and deployment (program) costs of less than \$500K or total life cycle costs estimated to be less than \$1.0M (ACAT IV Class C) are not directly bound by the policies in this regulation. Adequate oversight for such smaller systems will be the responsibility of the appropriate CIM or DIM.

i. Special cases for LCMIS management responsibility:

(1) IS of any size or costs which will be deployed at multiple sites beyond the jurisdiction of the organization originating the LCMIS proposal (e.g., outside the source USACE MSC or other sub-command), or outside USACE will be treated and managed as an ACAT IV Class A.

(2) For IS developed by the Corps for other DoD agencies that are the Functional Proponent (FP), the FP will assume full LCMIS management responsibility according to the LCMIS program of that component or agency.

j. **Reviews.**

(1) **In Progress Reviews (IPR).**

The IPR is the review forum for all ACAT IV programs. Reviews will be conducted at milestones and at other times deemed necessary by the MDA. The IPR will be chaired by the MDA and will include specifically invited representatives as appropriate.

(2) **Milestone Decision Reviews (MDR).** At each MDR, the MDA must have a balanced assessment of a program's readiness to proceed into the next phase. The forum for MDRs of Corps IS will be IPR. The IPR may be formal or informal ("paper IPR") per recommendation of the Integrated Product Team (IPT) and at the discretion of the MDA.

(3) The MDA has the authority to tailor, or waive, documentation requirements for any IPR or MDR.

k. **Cost Tracking.**

Appropriate procedures will be established and tailored for each project to track actual costs, benefits, and savings accurately. These costs and savings will be compared to the projected costs and savings as identified in the Financial Analysis and will be reported in the LCMIS System Decision Papers (SDP).

l. **Sustainment costs.**

USACE IS will be designed to optimize total system performance and minimize the cost of ownership. SMs, FPs and MDAs will take all required actions to minimize estimated sustainment (operations and support - (O&S)) costs of developmental systems and reduce the actual sustainment

costs of deployed ACAT IV IS. Specific requirements are to:

(1) Include operating and support O&S costs in IS economic analyses;

(2) Address O&S costs in milestone exit criteria;

(3) Baseline O&S cost for each *deployed* system; and

(4) Prepare sustainment budgets for the system that accurately state the true needs of the system and are aligned with the schedule of implementing improvements.

m. During the system development process, the USACE Audit Office is to review system design, development and modification to ensure that management policies are carried out in the system development process and provide a reasonable assurance that the necessary controls and audit trails are included.

n. The USACE Inspector General should consider the review of IS life cycle management actions as potential special interest items for the Deputy Commanding General (DCG).

o. Reimbursable IS projects. MSC, Districts, Laboratories, and FOA performing reimbursable information system development work for other activities or agencies will perform this work based on a written agreement. The written agreement will specify the role of each party for reporting requirements under DoD, Army and the Corps IM Planning and LCMIS processes. Ordinarily, the reimbursed MSC, Laboratory, or FOA will

not be responsible for LCMIS approvals and reporting requirements associated with the Army and Corps IM planning process, or LCMIS for information system development done for MACOMs or for agencies outside Department of the Army (DA).

## 7. Responsibilities.

### a. Deputy Commanding General (DCG).

The DCG will ensure that the broad trend and continuity of the LCMIS program, including resource allocations, are in alignment with Command Executive priorities.

### b. Deputy Chief of Staff for Corporate Information (DCSCI).

The DCSCI will:

(1) As delegated by the Commanding General (CG) serve as IS Milestone Decision Authority (MDA) for the ACAT IV Class A as specified in Table 1. As the MDA, establish: any LCMIS process tailoring for each IS; the exit criteria for that IS to successfully complete the present LCMIS phase; and the review criteria of the ensuing milestone decision.

(2) Form an Integrated Product Team (IPT) for each ACAT IV Class A IS to raise and resolve issues with the Systems Manager.

(3) Establish policies and standards for the planning, programming, life cycle management, and use of USACE information resources including information technology.

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Table 1

Classes of ACAT IV Systems, Milestone Decision Authorities, Mandatory Documentation

| ACAT IV | PROGRAM COST THRESHOLD (All fund types) | Total Life-Cycle Costs | MILESTONE DECISION AUTHORITY (MDA)               | Mandatory Documentation  |
|---------|---|------------------------|--|--|
| Class A | \$ 2.5 M to \$ 30 M <sup>1,5</sup>      | \$10.0 M to \$ 159 M   | USACE C IO <sup>2</sup>                          | Economic Analysis (EA),<br>Systems Decision Paper (SDP) <sup>3</sup> |
| Class B | \$ 500 K to \$ 2.5 M <sup>6</sup>       | \$ 1.0 M to \$ 10.0 M  | MSC, Labs, Centers, FOAs<br>DIM/CIM <sup>4</sup> | Economic Analysis (EA),<br>Systems Decision Paper (SDP)              |
| Class C | to \$ 500 K <sup>6</sup>                | to \$ 1.0 M            | At option of<br>CIM/DIM <sup>5</sup>             | At option of CIM/DIM <sup>6</sup>                                    |

1. ACAT's I and II (program costs exceeding \$30 million) are managed and implemented through directives from higher authority, e.g. DoDD 5000.1, AR 70-1.

2. As delegated by the CG (in his role as materiel command commander) per AR 70-1.

3. See Appendix C for SDP contents.

4. MDA authority may be delegated.

5. IS of any size or cost which will be deployed at multiple sites beyond the jurisdiction of organization originating the LCMIS proposal will be managed as ACAT IV Class A IS.

6. Adequate oversight for smaller IS having developmental and deployment (program) costs of less than \$ 500K or total life cycle costs estimated to be less than \$ 1.0M shall follow the principles and approach in this regulation. The oversight function for these smaller IS shall be the responsibility of the appropriate CIM or DIM.

(4) Establish and implement USACE Information Systems management review and milestone approval processes and procedures, consistent with this regulation and AR 70-1.

(5) Oversee the review and approval of new IS and existing IS modernizations.

(6) Ensure that the policies and procedures of the Defense Federal Acquisition Regulation Supplement (DFARS), and applicable Office of Management and Budget directives are followed in acquisition of IS.

(7) Develop, implement through instruction, and monitor LCMIS procedures and guidelines for HQ Staff elements, MSCs, Laboratories and FOAs.

(8) Conduct periodic visits to review, evaluate and ensure that the LCMIS process is functioning effectively and to instruct field personnel in LCMIS best practices. Support IRM oversight actions within USACE.

(9) Nominate to the CG those IS which require special interest review and approval (ACAT III) by USACE MDAs or higher authorities.

(10) Facilitate all Corps IS and business processes analyses.

**c. Data Architecture Control Committee (DACC).**

(1) Receive and analyze from the Command Data Administrator (CDA), proposed changes in the formal data model for new or modernized IS.

(2) Manage the Command Data Model (CDM).

(3) Recommend changes to the CDM, and recommend alternative actions.

**d. Commanders, Laboratory, Center and FOA Directors.**

Commanders and Directors will:

(1) Designate the Director/Chief of Information Management (DIM/CIM) or senior information resources management official to approve information system developments and/or acquisitions within their respective delegated approval thresholds.

(2) Form, if necessary, local management boards, steering committees and IPTs for IRM initiatives.

(3) Ensure that a Systems Manager (SM) is appointed for each IS managed under this regulation.

(4) Ensure that appropriate staff are accomplishing their oversight and support of LCMIS in accordance with DoD Directive 5000.2-R, AR 70-1 and this regulation.

**e. Directors/Chiefs of Information Management (DIM/CIM) of MSC, Districts, Laboratories and FOA.**

The DIM/CIM will:

(1) Serve as IS Milestone Decision Authority (MDA) for ACAT IV Class B as specified in Table 1. As the MDA, establish: any LCMIS process tailoring for

each IS; the exit criteria for that IS to successfully complete the present LCMIS phase; and the review criteria of the ensuing milestone decision.

(2) Ensure that functional users and/or project managers identify, define and prioritize needs throughout all phases of the IS life cycle.

(3) Formally assess the operational adequacy of new and/or modernized systems and evaluate alternative IS approaches, and validate the selected system approach.

(4) Ensure that the IS development is consistent with all USACE policy and guidance.

**f. Functional Proponents (FP) for Information Systems (IS) will:**

(1) Designate a Systems Manager (SM) to serve as the IS life cycle manager, and instruct the SM to implement policies and procedures in compliance with the AR 70-1 and this regulation throughout the life cycle of the system.

(2) Designate a Material Developer (MD) or technical manager to serve as the officer responsible for development and maintenance of the information system, and instruct the MD to implement policies and procedures in compliance with DoD Directive 5000.2-R, AR 70-1, and this regulation.

(3) Ensure that existing systems, as well as those in the developmental stages, are managed in compliance with DoD Directive 5000.2-R, AR 70-1, and this

regulation.

(4) Select and document an appropriate Acquisition Strategy (AS) and associated method of development that will support the development and deployment of the proposed IS.

(5) Require that functional users identify, define, and prioritize needs; participate in all LCM phases; and formally assess the operational adequacy of a new or modernized IS.

**g. Systems Managers (SM).**

The default decision maker in all IS developments is the SM. The SM may make all project operational and developmental decisions which are not specifically reserved to the MDA by this regulation.

**h. USACE Contracting Officers.**

Prior to commencing any contracting actions involving Information Technology (IT) resources or issuing any delivery order against an umbrella contract, will:

(1) Verify that appropriate LCMIS approvals have been obtained in accordance with this regulation.


(2) Process only acquisition actions, leading to procurement authorizations, that have obtained appropriate approvals as detailed in this regulation.

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(3) Confirm that an appropriate Acquisition Strategy (AS) and associated method of development that will support the development and deployment of the proposed IS have been selected.

FOR THE COMMANDER:

3 Appendices  
App A - References  
App B - Definitions and Acronyms  
App C - Procedures and Implementing  
Guidance



RUSSELL L. FUHRMAN  
Major General, USA  
Chief of Staff

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## APPENDIX A References

### A-1. Required Publications

DoDD 5000.1, Defense Acquisition.

DoDD 5000.2-R, Mandatory Procedures for Major Defense Acquisition Programs and Major Automated Information Systems.

DoD Directive 7740.1, DoD Information Resources Management Program.

DoD Directive 7740.2, Automated Information Systems (AIS) Strategic Planning.

DoD Directive 8000.1, DoD Information Management (IM) Program.

DoD-STD-2168, Defense System Software Quality Program.

DoD-STD-7935A, DoD Automated Data Systems Documentation Standard.

ASA(RDA) memo "Management of the Total Life Cycle for Acquisition CAtegory (ACAT) Systems", 29 Apr 97.

SAIS-PAA, memo, 11 Sep 97, Subj: Implementation of the Joint Technical Architecture - Army, Version 5.0.

AR 1-1, Planning, Programming, Budgeting, and Execution System.

AR 11-18, The Cost & Economic Analysis Program.

AR 25-1, The Army Information Resources Management Program.

AR 70-1, Army Acquisition Policy.

AR 71-9, Materiel Requirements.

EP 25-1-6, Command Data Model and Dictionary.

HQUSACE CEIM-P Memo, 23 Feb 98, Subject: USACE Application Development and Open Systems Environment Policy.

HQUSACE CEIM/CERM Memo, dated 10 Nov 94, subject: Established Procedures and Accounting Structure for Capturing Information Management (IM) Costs.

HQUSACE CEIM-L memo, 23 Mar 98, Subject: Information Technology Investment Portfolio System (ITIPS).

### A-2. Related Publications

Paperwork Reduction Act of 1995 (PRA), Public Law 104-13.

Clinger-Cohen Act of 1996 Public Law 104-106, (formerly titled the Information Technology Management Reform Act (ITMRA), Division E.

Government Performance and Results Act (GPRA), Public Law 103-62.

Executive Order 13011. "Federal Information Technology", 16 Jul 96.

OMB Circular No. A-130, Management of Federal Information Resources.

FAR, Federal Acquisition Regulation.  
DFAR, Department of Defense Federal Acquisition Regulation.

DOD Directive 5000.1, Defense Acquisition.

DODD 5000.59, DoD Modeling and Simulation (M&S) Management.

DODD 5000.61, DOD Modeling and Simulation Verification, Validation and Accreditation.

OSD Memo - Implementation of Subdivision E of the Clinger-Cohen Act of 1996 (Public Law 104-106), 2 Jun 1997.

AR 73-1, Test and Evaluation Policy.

AR 380-19, Information Systems Security.

"Functional Economic Analysis Manual," version 2.2a. Institute for Defense Analysis, 1801 N. Beauregard St, Alexandria, VA 22311.

DA Pam 25-6, Configuration Management for Automated Information Systems.

DA Pam 25-8, Army Information Standards Management Program.

DA Pam 70-3, Army Acquisition Procedures.

DA Economic Analysis Manual (USACEAC).

DA Memo. BPR Interim Guidance Message, disseminated 15 Jan 98.

Manager's Guide to LCMIS Version 2.0, Apr 96.

Automated Information Systems (AIS) Economic Analysis Handbook, Oct 95.

IM/IT Strategic Plan FY 1998-2003, Jan 1998.

## APPENDIX B Definitions and Acronyms

### **Acquisition Program.**

A directed, funded effort that is designed to provide a new, improved, or continuing weapons system or automated information system (AIS) capability in response to a validated operational need. Acquisition programs are divided into categories (ACATS), which are established to facilitate decentralized decision-making and execution and compliance with statutory requirements.

### **Acquisition Program Baseline (APB).**

Established to document the cost, schedule, and performance objectives and thresholds of that program beginning at program initiation. Performance shall include supportability and, as applicable, environmental requirements.

### **Automated Information System (AIS).**

A combination of computer hardware and software, data, or telecommunications, that performs functions such as collecting, processing, transmitting, and displaying information. Excluded are computer resources, both hardware and software, that are: physically part of, dedicated to, or essential in real time to the mission performance of weapon systems.

### **Acquisition Strategy (AS).**

Documents the appropriate planning process and provides a comprehensive

approach for achieving goals established in materiel requirements. It serves as a principal long-range document, charting the course of a major acquisition program over its life-cycle.

### **Business Process Analysis.**

A systematic, disciplined improvement approach that critically examines, rethinks, and redesigns mission-delivery processes in order to achieve dramatic improvements in performance in areas important to customers and stakeholders.

### **Commercial Off-The-Shelf (COTS) Software.**

Software developed at private expense, marketed commercially to military and non-military agencies. Available for immediate use without code modification.

### **Defense Acquisition Deskbook.**

The Defense Acquisition Deskbook is an automated repository of information that consists of an electronic Desk Reference Set, a Tool Catalog, and a Forum for the exchange of information. The Reference Set organizes information into two main categories: mandatory guidance and discretionary information.

### **Exit Criteria.**

AIS-specific demonstrable results, established at each milestone approval,

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which must be attained prior to completion of the next LCM phase. Exit criteria include minimum accomplishments required by policy and are specific to each phase. Exit criteria are essential to Milestone approval to begin subsequent LCM actions.

### **Facility Support Systems.**

A system containing Information Technology components and/or services whose primary purpose is to control mechanical support apparatuses rather than to support a USACE Corporate business process. Some examples include: intrusion detection systems; energy monitoring and control systems; utility control systems; heating, ventilation and air conditioning systems; fire alarm and detection systems; box conveyor systems; nurse call systems in hospitals; and electrical and mechanical systems such as elevator controls and lock performance monitoring systems. Although the FAR may apply to facility support system acquisitions, these systems do not qualify as AIS for the purposes of this regulation.

### **Full Costs.**

The term "full costs," when applied to the expenses incurred in the operation of an information processing service organization (IPSO), is comprised of all direct, indirect, general, and administrative costs incurred in the operation of an IPSO. These costs include, but are not limited to, personnel, equipment, software, supplies, contracted services from private sector providers, space occupancy, intra-agency services from within the agency, interagency services from other Federal agencies, other

services that are provided by state and local governments, and Judicial and Legislative branch organizations.

### **Functional Proponent (FP).**

The staff element, Command, or agency designated by the MDA to serve as proponent for the functional requirements of the AIS. USACE is the FP for all Army-wide systems supporting these business classes: Manage Civil Works Program, Acquire Facilities, Maintain Facilities, and Manage Facilities Disposition. (For USACE-wide or FOA-wide systems, USACE directorates are the designated FP by business process).

### **Human Systems Integration (HSI).**

A comprehensive management and technical strategy to ensure that human performance, the burden the design imposes on manpower, personnel, and training, and safety and health aspects are considered throughout the system design and development processes.

### **Information.**

Any communication or representation of knowledge such as facts, data, or opinions in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual forms.

### **Information Management.**

The planning, budgeting, manipulating, and controlling of information throughout its life cycle.

**Information Resources.**

Includes both government information and information technology.

**Information Resources Management (IRM).**

The process of managing information resources to accomplish agency missions. The term encompasses both information itself and the related resources, such as personnel, equipment, funds, and information technology.

**Information System (IS).**

A discrete set of information resources organized for the collection, processing, maintenance, transmission, and dissemination of information, in accordance with defined procedures, whether automated or manual.

**Information System Life Cycle.**

The phases through which an information system passes i.e.,  
Concept Exploration & Definition;  
Demonstration & Validation;  
Development;  
Deployment;  
Operations & Support.

**Information Technology (IT).**

Any equipment or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. IT includes computers, ancillary equipment, software,

firmware and similar procedures, services (including support services), and related resources. Telecommunications and communications equipment and national security systems (NSS) are also included in IT.

**IT Programs.**

A definition devised to facilitate the reporting and tracking of IT costs in USACE. One of the IT classifications set up for the purpose of entering and tracking IT information and costs in the Information Technology Investment Portfolio System. Such an "IT program" designation is solely for ITIPS cost accounting and other uses and has no direct relationship to Information Systems under this Regulation.

**Integrated Concept Team.**

An integrated team made up of people from multiple disciplines formed for the purposes of developing operational concepts, developing materiel requirements documents, and resolving other requirements determination issues.

**In Process Review (IPR).**

Review body for ACAT III and IV Programs. Convened at each formal milestone and at other critical points to evaluate status and make recommendations to the MDA.

**Integrated Product and Process Development (IPPD).**

A management technique that simultaneously integrates all essential activities through the use of

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multidisciplinary teams to optimize the design, manufacturing and supportability processes. IPPD facilitates meeting cost and performance objectives from product concept through production, including field support. One of the key IPPD tenets is multidisciplinary teamwork through integrated product teams (IPTs).

#### **Integrated Product Team (IPT).**

A team of representatives from all appropriate functional disciplines working together to build successful and balanced programs, identify and resolve issues, provide recommendations to facilitate sound and timely decisions. IPTs may include members from both Government and industry, including program contractors and sub-contractors. Mandatory procedures for IPTs in the oversight and review process are described in DoD Directive 5000.2-R.

#### **Life-Cycle Cost.**

The total project development cost plus operations and support costs over the life of a project.

#### **Life-Cycle Management (LCM).**

An analysis and control process which is applied throughout all phases of the life of an AIS or AIS modernization. It bases all programmatic decisions on the anticipated mission-related and economic benefits derived over the operating life of an AIS.

#### **LCMIS Phase.**

All the tasks and activities needed to bring a program to the next major milestone

occur during a development/acquisition phase. Phases provide a logical means of progressively translating broadly stated mission needs into well defined system-specific requirements and ultimately into operationally effective, suitable, and survivable systems. An example of a development/acquisition phase is Concept Exploration & Definition.

#### **Major Information System.**

An information system that requires special management attention because of its importance to an agency mission; its high development, operating, or maintenance costs; or its significant role in the administration of agency programs, finances, property, or other resources.

#### **Manpower and Personnel Integration (MANPRINT).**

The comprehensive technical effort to identify and integrate all relevant information and considerations regarding the full range of manpower, personnel capabilities, training development and delivery, human factors engineering, system safety, health hazards, and soldier survivability into the system development and acquisition process to improve soldier performance, total systems performance, and reduce the cost of ownership to an acceptable level throughout the entire life cycle of a system. MANPRINT is the Army's Human Systems Integration process for systems acquisition.

#### **Materiel Developer (MD).**

Office assigned responsibility for the system under development or being

acquired. The term may be used generically to refer to the RDA community in the materiel acquisition process.

#### **Milestone Decision Authority (MDA).**

The individuals designated in accordance with criteria established by the Assistant Secretary of Defense for Command, Control, Communications and Intelligence and this regulation to approve entry of an AIS into the next phase. The MDAs are senior officials within the Command who have been appointed in writing as responsible officials who can authorize expenditures for a LCMIS managed project. The MDA will also sit as the approving authority at each milestone decision.

#### **Mission Need Statement (MNS).**

(Formerly Mission Element Needs Statement). The MNS is a statement of operational capability required to perform an assigned mission or to correct a deficiency in existing capability to perform the mission.

#### **Modeling and Simulation.**

The development and use of live, virtual, and constructive models including simulators, stimulators, emulators and either (1) conceptual systems that do not exist or (2) real life systems which cannot accept experimentation or observation because of resource, range, security or safety limitations. This investigation and understanding in a synthetic environment will support decisions in the domains of RDA and analysis, or transfer necessary experiential effects in the education,

training and military operations domain.

#### **Overarching Integrated Product Teams (IPT).**

The IPT is a team appointed by the MDA, commensurate with the ACAT level, to provide assistance, oversight and independent review for the MDA, as the program proceeds through its acquisition cycle.

#### **Program Cost.**

The total of all expenditures, in any appropriation and fund, directly related to the AIS definition, design, development, and deployment, and incurred from the beginning of the Concept Exploration and Definition phase through deployment at each separate operational site. Program costs differ from Life Cycle Costs (LCCs) in that LCCs include all costs incurred throughout the project life cycle, including the operations phase.

#### **Operational Requirements Document (ORD).**

The ORD is the statement of war fighting requirements which might be met by an IS developmental effort. *Most ACAT IV base operations materiel are not warfighting requirements, will not have ORDs*, and can be procured following Corps (MACOM) standard acquisition procedures, after meeting the LCMIS informational requirements of this regulation.

#### **Post Production Software Support (PPSS).**

PPSS is the sum of all activities required to

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ensure that the implemented and fielded software system continues to support its original operational mission and subsequent mission modifications once production of the system is completed.

#### **Records Management.**

The planning, controlling, directing, organizing, training, promoting, and other managerial activities involved with respect to records creation, records maintenance and use, and records disposition in order to achieve adequate and proper documentation of the policies and transactions of the Federal Government and effective and economical management of agency operations. (44 U.S.C. 2901(2))

#### **Software Maintenance Technologies.**

The set of tools and techniques specifically developed and defined to reduce the software life cycle costs associated with Post Development Software Support, for example, a widely used, commercial software engineering environment such as the Integrated Computer Aided Software Environment (ICASE), robust comments in the source code, extensive utilization of software reuse.

#### **Sustainment Costs.**

The operating and support (O&S) costs of deployed IS. In the total system approach for acquisition programs mandated by DoDD 5000.1, the O&S cost management to minimize overall system sustainment costs is detailed for MACOMs and their Systems Managers.

#### **System Decision Paper (SDP).**

The primary document supporting LCMIS milestone review and approval for ACAT Class IV IS. The SDP is transmitted to the appropriate approval authority at designated milestones.

#### **Systems Manager.**

Generic term for the individual responsible for managing ACAT IV Programs.

#### **Strategic Planning.**

A structured, designed process that produces an integrated plan of action for accomplishing an organization's missions and objectives over a 5-year or longer period. AIS strategic planning develops and documents the agency's direction and specifies the AIS programs and resource requirements necessary to support stated missions and objectives.

#### **Tailoring.**

The concept of tailoring allows for the modification of the formal five phased LCMIS process, based on the specific requirements of the IS project being developed or modified. Actions permitted by tailoring are: combining milestones; rapid prototyping; phased development; phased deployment; and, the reduction of documentation required to reach each milestone decision. See Appendix C, Section II for more detail.

In all cases, the applicable MDA must formally approve, in writing, the tailoring concept to be used. This tailoring approval must be given *prior* to obtaining Milestone I approval.

**Technical Architecture (TA).**

TA is comparable to a building code, not telling you what to build (Operational Architecture (OA)) nor how to build (System Architecture (SA)), but rather delineating the standards which to build to and to pass inspection. The TA identifies a framework of standards and includes top level system specifications, architectural diagrams for technical interface specifications.

**Validation.**

The review of documentation by an operational authority other than the user to confirm the need or operational requirement. As a minimum, the operational validation authority reviews the MNS, confirms that a nonmaterial solution is not feasible, assesses the joint service potential, and forwards a recommendation to the MDA for MS 0 action.

**Validation - CIO.**

A representative of the USACE CIO participates in the requirements determination process and validates requirements against business process reengineering, compliance with the Joint Technical Architecture-Army (JTA-A), and ensures they are in compliance with emerging information technologies.

## APPENDIX C

### PROCEDURES AND IMPLEMENTING GUIDANCE

#### SECTION I. PREFACE

An Information System (IS) is supported by two types of documentation --managerial and technical. The managerial portion is referred to as the Life Cycle Management (LCM) documentation, and is similar to project management (PM) documentation in other disciplines. This appendix primarily addresses the LCM documentation requirements. *LCM documentation can be significantly tailored for IS under the ACAT IV approval authority of USACE.*

The second type of documentation for an IS is the technical documentation. This technical documentation is based on MIL-STD-498 with its Data Item Descriptions (DIDs). DIDs can range from operations manual development to interface requirement specifications.

#### SECTION II. TAILORING

One of the main purposes of LCM is to define a standardized process for managing the development and subsequent operation of an IS. An IS has various formal phases and milestones. Each of these phases contains key *planning* and *evaluation* considerations, as well as *exit criteria* that must be met before the next phase can be entered.

The formal, five phase LCM approach is targeted at the larger IS development efforts which require extensive planning in a wide variety of both management and technical considerations. For such large development efforts, it is not possible to define all the events and tasks that need to be addressed at any one point in the system's life. The phased approach, therefore, is usually a linear progression which allows each phase to build upon the new or refined information obtained in a previous phase.

For the majority of IS within USACE (ACAT IV primarily), the concept of tailoring allows for the modification of the formal five phased process, based on the specific requirements of the IS project being developed or modified. Actions permitted by tailoring are: combining milestones; rapid prototyping; phased development; phased deployment; and, the reduction of documentation required to reach each milestone decision. However, certain portions of the phased process may *not* be compromised by the tailoring concept. The Mission Need Justification Phase (prior to Milestone 0) and the Concept Exploration and Definition Phase (prior to Milestone I) may not be combined with each other and must be completed in their entirety. Testing of the system must be completed prior to requesting a Milestone III production decision. Milestone III approval must be obtained prior to deployment of the IS.

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In all cases, the applicable MDA must formally approve, in writing, the tailoring concept to be used. This tailoring approval must be given *prior* to obtaining Milestone I approval. (*See Section III for a more detailed discussion of phases and milestones.*)

### SECTION III. LCM PHASES and MILESTONES

#### A. FUNCTIONAL PROCESS IMPROVEMENT

Life cycle management of an IS --particularly, a major modernization effort, must be preceded by an evaluation of the functional business area. *This is a critical first step.* Through streamlining and elimination of non-value added activities, this analysis can be used to change the way missions and functions are accomplished, i.e., the "as is" and "to be" worlds. The results of this process build a business case for development, redesign, or modernization of an individual IS. Functional Proponents, that is, business process owners, are accountable for ensuring business process analysis and revision, as appropriate, for any anticipated information technology (IT)/Information System (IS) investment of \$2M or more in a fiscal year, or \$30M or more in total life cycle costs.

#### B. MISSION NEED JUSTIFICATION

The LCM process begins with a justification of the mission need --a statement of why the organization needs to expend resources to develop, deploy, and operate the proposed IS. This is one of the most often neglected, yet one of the more crucial of all phases. *The Mission Need Justification formally starts the life cycle of an IS.* During this process the functional user defines and documents a mission need and validates that need, such as an opportunity to improve mission performance.

The Mission Needs Justification Phase ends, if, during the discovery process, the Functional Proponent determines that IS development or major modification is not required for one or more of the following reasons:

- The need can be satisfied by a streamlined or improved manual process.
- The need can be accommodated through an existing IS.
- A new/modified IS is not cost-effective.

This phase is intended to primarily focus on functional business requirements, without specifically addressing technical solutions. However, it may be determined early in the process that a Commercial Off-the-Shelf (COTS) package (software and/or hardware) fully satisfied the required functional application. This approach would eliminate the need (and the cost) to develop custom software for the application. However, even if COTS products --whether

modified or not, satisfy the requirements, the Mission Need Justification phase investigation will still have to be performed, although some of the steps may be abbreviated. That investigation is formally documented through a Mission Need Statement (MNS) document. MNS contents are addressed in the following table, *and can be tailored*.

The MNS is presented by the Functional Proponent to the MDA for approval. The FP is then authorized to initiate the Concept Exploration and Definition Phase to expend resources for activities of that phase *after* MNS approval. *This is also the appropriate time to enter the planned IS and related data into the USACE Information Technology Investment Portfolio System (ITIPS)*. The ITIPS data should be updated as the IS proceeds through its various phases.

## MISSION NEED STATEMENT (MNS) CONTENTS

| Element                               | Description  |
|---------------------------------------|--|
| Mission Area                          | Describe the purpose, scope and specific applicability of the Mission Need Statement (MNS) for the proposed AIS, including its relationship to the Corps business area or activity it is intended to support. Identify specific references or requirements for meeting the mission need, such as DoD directives/guidance publications, DA regulations and policies, and Corps planning documents (e.g., IMA Planning Guidance).  |
| Mission Environment                   | Describe the applicable Corps business area or activity's current organization and operational environment, with emphasis on existing business processes. This should include a concept of operation of the existing business processes, procedures, and capabilities. Describe any cooperative opportunities, such as a program addressing a similar need in other MACOMs, military services, DoD agencies, or other Federal departments.   |
| Mission Need                          | <p>Describe the procedures for assessing existing business processes to identify opportunities for improvement with emphasis on business process reengineering and evaluation activities, including as a minimum:</p> <ul style="list-style-type: none"> <li>• Description of how business processes are currently being done and how these processes might be improved;</li> <li>• Relation of identified mission need to current IM strategic plans, implementing strategies, and business area direction;</li> <li>• Identification of proposed business process improvement in order of priority;</li> <li>• System location(s) and general schedule for implementation of where the functionality will be deployed;</li> <li>• Identification of the planned mode of operation, classification level(s), and level of assurance required for the system.</li> </ul> |
| Mission Deficiencies                  | Describe existing deficiencies, and the methods used to validate and prioritize deficiencies.  |
| Impact of Deficiencies on the Mission | Describe the impacts on mission performance of not correcting existing deficiencies. Describe how proposed improvements will enhance current operations and increase user satisfaction.  |
| Migration Planning Process            | Describe how the mission need relates to the Corps migration planning strategy.  |

| Element   | Description  |
|---|--|
| Security, Interface and Interoperability Requirements | Describe the anticipated security, systems interface(s), and interoperability requirements.  |
| Projected Functional Benefits                         | Describe the projected functional benefits of implementing the need versus keeping the status quo.   |
| Return-On-Investment (ROI)                            | Provide an expected return-on-investment associated with the proposed functional improvement.  |
| Constraints and Assumptions Impacting Alternatives    | Describe any functional, technical and financial constraints and assumption that could impact the acquisition, operations and logistics; mobility; effectiveness; survivability; and continuity of operations. |
| Resources   | Describe all funding requirements.   |

### C. PHASE 0 - CONCEPT EXPLORATION AND DEFINITION PHASE

The overall goal of Phase 0 is the development of a valid and optimized system concept that supports the required business process(es) and defines alternative functional and technical solutions for supporting those processes. These alternatives must be mission supportive and exhibit favorable cost benefit ratios. Phase 0 organizes the activities associated with IS development effort into *managerial* and *technical* considerations.

Here are some of the activities associated with Phase 0:

| MANAGERIAL CONSIDERATIONS  | TECHNICAL CONSIDERATIONS   |
|--|--|
| <p>Appoint a Systems Manager (SM) and an Integrated Product Team (IPT).</p> <ul style="list-style-type: none"> <li>● Develop initial System Decision Paper (SDP). <u>See Section IV for SDP format.</u></li> <li>● Refine and prioritize functional requirements for proposed IS. Activity and data modeling are useful tools for this purpose.</li> <li>● Perform financial analysis for selected IS option(s).</li> <li>● Determine Demonstration and Validation objectives and criteria.</li> <li>● Obtain MDA approval to proceed to Phase I.</li> </ul> | <ul style="list-style-type: none"> <li>● Assess universe of potential technical solutions, e.g., other IS, data/software reuse, etc.</li> <li>● Select program strategy, e.g., Grand Design, Incremental, Evolutionary.</li> <li>● Select acquisition strategy, e.g., build versus buy.</li> <li>● Identify additional technical factors, e.g., security and internal controls, data management, configuration management, electronic recordkeeping, and interoperability and interface requirements.</li> </ul> |

The SDP is presented by the Functional Proponent to the MDA for approval. Based on this approval, the FP is then authorized to proceed into the Demonstration and Validation Phase I. The following table is representative of the exit criteria that must be satisfied to demonstrate that Phase 0 has been completed. Phase 0, Concept Exploration and Demonstration, is a *transitional* phase between the identification of a mission need and the execution of specific steps taken to satisfy that need.

| Exit Criteria   | Status |
|---|--------|
| 1. Identification and prioritization of functional requirements.  |        |
| 2. Assessment of alternative functional concepts for performing needed mission activities, including modernization of the business methods. Activity and data models used.  |        |
| 3. Assessment of alternative technical concepts and architectures that could satisfy the required needs, including reuse of existing software and data assets.  |        |
| 4. Selection of best program strategy to satisfy the mission need, based on the results of combining the evaluation of functional and technical alternatives with other key program factors (e.g., acquisition strategy, development approach, etc.) and their related risks, costs, and benefits.      |        |
| 5. Evaluation, selection, and approval of the appropriate program acquisition strategy to implement the selected program concept.   |        |
| 6. Initial planning for the design, development, testing, deployment, configuration management, maintenance, and technology refreshment of the proposed AIS.  |        |
| 7. Creation of an initial risk area analysis, including definition of risk reduction measures, management approaches and plans.   |        |
| 8. Development of the AIS Operational Concept Description, to the extent possible, given the selected program concept.  |        |
| 9. Consistency between the proposed program concept and the organization's strategic plans and mission statements.  |        |
| 10. Definition of the activities to occur for the program concept demonstration(s) and the criteria to evaluate the demonstration(s). The demonstration program(s) will be designed, coded, tested and implemented to provide basic, or elementary, capabilities across the full range of requirements. |        |
| 11. Appointment of a Project Manager (PM) and Systems Manager (SM) by the Functional Proponent (FP), and approval of the PM's/SM's Charter(s).  |        |
| 12. Creation of a preliminary IS life cycle financial analysis in support of the AIS performance and recommended overall program approach.  |        |
| 13. Presentation of the SDP/ASDP for MDA approval.  |        |

#### D. PHASE I - DEMONSTRATION AND VALIDATION PHASE

The IS life cycle process uses this phase to demonstrate/validate candidate technological concepts, including non-development solutions such as COTS. This phase is a crucial step in the LCM process, for this is when the PM, supporting staff and partnering organizations, establish the basis and rationale for migrating from documented requirements and concepts to actual development and implementation of the IS. From this phase, the *best* program concept is selected.

| DEMONSTRATION and VALIDATION PHASE ACTIVITIES  |
|--|
| <ul style="list-style-type: none"><li>● Develop Demonstration and Validation requirements, depending on the selected program strategy, e.g., Grand Design, Incremental, or Evolutionary.</li><li>● Identify environmental constraints, i.e., corporate computing infrastructure, and risk areas, i.e., new platforms, network, software availability, etc.</li><li>● Identify prototyping considerations.</li><li>● Develop a test/demonstration approach, e.g., the Test and Evaluation Master Plan.</li><li>● Develop the prototype application.</li><li>● Conduct tests and demonstrations.</li><li>● Collect and evaluate demonstration/test data.</li><li>● Document IS Development Phase requirements.</li></ul> |

An *updated SDP* and *updated financial analysis* is presented by the Functional Proponent to the MDA for approval. See Section IV for a more detailed discussion of the SDP and financial analysis documentation requirements. Based on this approval, the FP is then authorized to proceed into the Development Phase II.

#### E. PHASE II - DEVELOPMENT PHASE

The development phase is the LCM segment used to complete code generation and successfully conduct system tests and evaluation of the IS configuration to be initially produced for operational use. Depending upon the program strategy selected, e.g., Grand Design, Incremental, Evolutionary, aspects of development and demonstration/validation may be combined, and the entire process may be *iterative* in nature. During this phase the FP and PM must prepare for IS deployment. This activity includes the conduct of a number of pre-deployment activities, such as preparation of deployment and training plans, and determination of the appropriate Post Deployment Software Support (PDSS) strategy for the upcoming Operations and Support Phase.

#### DEVELOPMENT PHASE ACTIVITIES

- Perform software development, including generation and integration of code. This takes into consideration software engineering, software metrics, interface, integration and bridging requirements, security, data integration, electronic records management, and the Joint Technical Architecture-Army (JTA-A), including USACE extensions.
- Conduct software level, system level, and user level testing.
- Review and approve test results.
- Modify/convert legacy systems, as appropriate.
- Prepare IS documentation.
- Plan IS deployment and transition into the Operations and Support Phase.
- Plan IS training.

Again, an *updated SDP* and *updated Financial analysis* is presented by the Functional Proponent to the MDA for approval to deploy. **See Section IV for a more detailed discussion of the SDP and financial analysis documentation requirements.** The MDA is looking for verification that operational testing has been completed with validation that the IS supports functional requirements and is ready for deployment. Based on the MDA approval, the FP is then authorized to proceed into the Production and Deployment Phase III.

#### F. PHASE III - PRODUCTION AND DEPLOYMENT PHASE

The purpose of this phase is to complete the deployment of the IS in accordance with the approved program plan. The Production and Deployment Phase marks the end of the development, testing, and acceptance phases of either the IS, a module, or an increment. Unlike the preceding phases, this phase does not require a formal MDA review. The Production and Deployment Phase does require significant planning and skillful coordination between all affected parties. However, *management reviews* become important to ensure that scheduled activities are being executed on time and that problems and issues are being recognized, and resolved in a timely manner.

#### PRODUCTION AND DEPLOYMENT PHASE ACTIVITIES

- The production process, e.g., IS delivery, installation, and checkout.
- Site preparation and infrastructure assessment, e.g., adequate space, security preparations, sufficient network communications, workstation upgrades, etc.
- Training and staffing.
- Operational assessment, i.e., collecting and evaluating IS benefits, and resource planning.
- Post Deployment Software Support (PDSS) Plan, including development of a detailed Software Support Plan (SSP).
- Preparation of a Continuity of Operations Plan (COOP).

Both the **SDP** and **financial analysis** need to be updated by the Functional Proponent, in preparation for a Milestone IV Operations and Support Phase MDA review and approval. See Section IV for a more detailed discussion of the SDP and financial analysis documentation requirements. The MDA considers the post-deployment IS operational assessment and validates that the mission need is being satisfied, operational support of the IS is acceptable, and that IS affordability, performance, and benefits are within acceptable limits. Based on the MDA approval, the FP is then authorized to proceed into the Operations and Support Phase IV.

#### G. PHASE IV - OPERATIONS AND SUPPORT PHASE

The implementation of IS life cycle management culminates in the Operations and Support Phase. This phase is where the shift to Post Deployment Software Support (PDSS) occurs, the IS or IS increments are continuously evaluated for effectiveness, and plans are undertaken for modernization of the IS or IS increments.

#### OPERATIONS AND SUPPORT PHASE ACTIVITIES

- Provide continuous, efficient and cost effective operation of the IS, including archiving, back-up, and electronic records disposition functions.
- Control changes to the IS configuration (configuration management), performance capabilities, interfaces, operation and training materials, and requirements documentation.
- Provide continuous monitoring and evaluation of IS performance, and factors affecting that performance.
- Enhance IS performance in response to user requests and technology opportunities within approved LCM cost parameters.
- Provide sustainment training to IS users and support staff.
- Maintain the IS hardware and software.
- Provide IS administration functions, e.g., budgeting, security controls, scheduling, reporting, planning, etc.

The Operations and Support Phase begins when the production version of the IS is deployed to the *first* user site, and the IS enters into maintenance. This phase ends when there is a management decision to dispose of the IS, or when the IS is completely replaced. A decision to perform major modernization generally requires a *return* to the Milestone I point in the LCM process, to initiate the Concept Exploration and Development Phase 0 level of activity. Milestone IV reviews will be conducted by the MDA no later than four years after Milestone III approval and every three years thereafter, or as required when other significant changes, e.g., mission, policy, legal requirements, etc., necessitate.

#### **SECTION IV. SYSTEMS DECISION PAPER (SDP) AND ECONOMIC ANALYSIS (EA) FOR ACAT IV INFORMATION SYSTEMS**

##### **A. ACAT IV SDP DOCUMENTATION.**

The SDP consolidates and presents essential information for evaluating the quality and completeness of IS program planning products and progress against approved plans. The Functional Proponent is responsible for updating the SDP during each LCM phase. The SDP is the primary document supporting LCM milestone reviews and approvals. The SDP may be viewed as a comprehensive management level summation of the program as a decision paper. *The SDP can also be tailored with the agreement of the MDA.* The SDP format follows as paragraph C.

##### **B. ACAT IV INFORMATION SYSTEM (IS) PLANNING, PROGRAMMING, BUDGETING, and EXECUTION SYSTEM (PPBES).**

There are several important resource management aspects of an IS.

**1. PLANNING.** Beginning with planning for an IS, and continuing throughout an IS life cycle, IS program and cost information will be tracked through the USACE Information Technology Investment Portfolio System (ITIPS). The details of what is to be included in ITIPS is published by the Directorate of Information Management under separate HQUSACE memoranda. ITIPS serves as a Command IS/IT inventory, as well as forming the basis of IS/IT portfolio management by the Chief Information Officer (CIO). ITIPS supports the IT capital planning and investment decision process which provides consistent decision criteria to make comparisons of costs, benefits, risks, and returns across IT project/program proposals, as well as providing Corps senior executives with the performance measurements needed to take action to continue, modify, or cancel specific IS. *In terms of individual IS, ITIPS will serve as the basis for budget allocation decisions.*

**2. FINANCIAL ANALYSIS.** Milestone decisions for a specific IS are based, in part, on a financial analysis. Placed in context, financial analysis can be seen as a *complement* to the functional and technical evaluations which are also integral parts of the LCM process. The financial analysis supports the evaluation of alternative investment decisions based on cost considerations. *The financial analysis gets updated as an IS proceeds through each life cycle decision point.*

Summary information is reported as part of the Abbreviated Systems Decision Paper (SDP) documentation (see Section IV C, ACAT IV SDP Format).

Regardless of their relative levels of complexity, all forms of financial analysis incorporate common elements. These steps include: 1) defining an objective, 2) formulating assumptions and constraints, 3) identifying alternatives, 4) determining costs and benefits, and interfacing costs and benefits for each alternative, 5) comparing alternatives, 6) performing sensitivity analysis, and 7) reporting results and recommendations.

From simplest to the more sophisticated, the three types of financial analysis are: *Cost Analysis*, *Cost Benefit Analysis*, and *Economic Analysis*. The higher the likely costs of a proposed IS, the more extensive is the financial analysis.

**3. PROGRAMMING AND BUDGETING.** The Functional Proponent (FP) has the primary responsibility for funding costs associated with *each* IS life cycle phase.

A. Funding Sources. The FP will program and budget for all costs through each LCM phase using either of the following funding sources:

(1) If the total program costs exceed \$25,000 and the IS meets all other Plant Replacement and Improvement Program (PRIP) criteria, the costs can be programmed and budgeted through the PRIP. However, PRIP funding should be pursued only if the IS can be shown to directly support specific projects. [See ER 1130-2-500 and ER 37-2-10]. The PRIP budget submittal will show the allocation of payback charges to each benefitting project, program or activity. The allocation will be based on the projected usage of the IS by each targeted activity.

(2) An IS not utilizing PRIP funds will be funded against the appropriation(s) funding from the project/program/activity that will benefit from the IS. The allocation among project/program/activities will be based on the projected usage of the IS by each entity. This method of funding could also include programming and budgeting against a single direct appropriation, e.g., General Investigations or Military Construction, Army, to pay all costs.

(3) The FP will also budget for all approved changes to data, database tables, data definitions, data structures, data models, and business rules for the IS, as well as for the changes that have to be made in any other IS which is impacted by the proposed change and for which the proponent of the impacted IS is USACE. Impacts to IS outside of the jurisdiction of HQUSACE will be handled individually based on written agreements or memoranda of understanding. To the extent that these changes qualify as enhancements to previous, PRIP-funded packages, the value of these changes will be programmed and budgeted through PRIP; otherwise, the cost of these changes will be included in Operations and Maintenance costs.

B. Cost Recovery. Cost recovery is necessary to recoup expenses associated with activities such as IS program and project management; adding new IS functionality; integrating an IS with other

Command IS; IS operations and maintenance; supporting customer hot lines/help desk; performing capacity and technical testing for major system releases; and payback of capitalized charges (PRIP).

Costs are recovered via fee for service when multiple organizations or appropriations are involved, either through a fee-for-service [preferred option] based on actual usage (metered) or a site license. When the IS is associated with a single user and/or a single appropriation, the cost will be charged to the user's operating account or the associated appropriation. Fee-for-service is collected as follows:

(1) Fee-for-Service (metered). Fee-for-Service is a charge to a user of an IS based on actual metered usage. The charge for the session consists of the costs to use the CEAP-IA processing resources, plus the IS rate developed by HQUSACE Deputy Chief of Staff for Resource Management. The rate for use of the CEAP-IA processing resources is also developed corporately and reviewed annually. The IS rate is developed based on the total IS operations and maintenance costs divided by the expected processing resources to be used during a given year. If historical usage data is not available, then a best estimate will be established before the beginning of the fiscal year. The HQUSACE Directorate of Information Management is responsible for processing the automated bills for this service; the HQ Finance Office (HECSA) is responsible for receiving payments and maintaining accounting records.

(2) A site license will be used when fee-for-service cost recovery cannot be applied through metered usage. Normally, the license would be issued for user software and services that are not dependent, or do not reside, on a central platform such as CEAP-IA, e.g., proprietary LAN and PC-based systems. The site license can be viewed similarly as a "subscription fee" --a one-time annual flat charge and calculated by dividing the total annual IS costs by the number of "subscribers." Who or what is a subscriber is defined by the FP, but, it will be a fixed number, such as number of districts, number of users, etc. The FP will provide the HQUSACE Deputy Chief of Staff for Resource Management with a breakout of total subscribers and cost for subscription by June 1 preceding the targeted fiscal year.

C. Cost Accounting. IS cost accounting/tracking will be done through the Corps of Engineers Financial Management System (CEFMS) in accordance with guidelines jointly established by the HQUSACE Deputy Chief of Staff for Resource Management and Directorate of Information Management.

**C. ACAT IV SYSTEMS DECISION PAPER (SDP) FORMAT.**

The following is the suggested SDP format:

| I. SDP Transmittal Memorandum   |   |
|---|---|
| SDP SECTION   | Notes   |
| <p><b>II. Synopsis</b></p> <p>a. Functional Proponent (FP)</p> <p>b. Project Name</p> <p>c. ACAT CATegory and Milestone</p> <p>d. Systems Manager (SM)</p> <p>e. Business Process Analysis</p> <p>f. Mission Need</p> <p>g. Mission Performance</p> | <p>Include project acronym.</p> <p>Specify the ACAT CATegory and milestone to be considered by the Milestone Decision Authority (MDA). Provide a synopsis of previous Milestone time lines and MDA approval dates/exit criteria.</p> <p>Specify SM by name and organization. If MOAs/MOUs have been develop, provide brief description.</p> <p>Describe the business process analysis (Improvement/Reengineering) efforts which lead up to this IS requirement.</p> <p>Describe the purpose, scope, and specific applicability of the proposed IS and its relationship to the USACE business area(s) which it is intended to support.</p> <p>Describe how this IS investment will enhance the performance of the business process and how this investment will contribute to improvement in mission performance. Planned performance measurements should also be discussed.</p> |

| SDP SECTION   | Notes  |
|---|--|
| <p><b>III. Project Concept</b></p> <p>a. Project Management.</p> <p>b. Developmental Strategy</p> <p>c. Acquisition Strategy</p> <p>d. Describe the target users of this IS.</p>  | <p>Describe the management concept and approach, including a discussion of the Integrated Product Team (IPT).</p> <p>Describe the IS developmental strategy, e.g., Grand Design, Incremental, Evolutionary, etc.</p> <p>Describe the IS acquisition strategy, e.g., build versus buy, and contract vehicles to be used.</p> <p>Discuss in terms of number of users and their organizational placement.</p>   |
| <p><b>IV. Resource Management</b></p> <p>a. Has this IS been entered into the USACE Information Technology Investment Portfolio System (ITIPS)?</p> <p>b. IS Life Cycle Cost Summary, including a summary of both quantifiable benefits (e.g., cost savings, productivity improvement savings, etc.) and/or non-quantifiable benefits (e.g., employee morale, public image, etc.)</p> <p>c. What are the IS funding sources and basis of cost recovery?</p> | <p>Yes or No. If Yes, date last updated in ITIPS.</p> <p>Summarize the projected IS life cycle costs, based on a budget analysis, cost benefit analysis, or economic analysis. Provide date which analysis was done.</p> <p>Describe sources of funds (e.g., Civil Works, R&amp;D, Military Programs, Reimbursable, PRIP, etc.) used to support IS through its various life cycle phases. Also discuss basis of cost recovery (e.g., fee-for-service, site licenses, etc.)</p> |

| SPD SECTION   | NOTES   |
|---|---|
| <p><b>V. Technical Considerations</b></p> <p>a. Joint Technical Architecture – Army (JTA–A) and USACE extensions.</p> <p>b. Interoperability, Interface, and Integration Considerations.</p> <p>c. Demonstration Requirements.</p> <p>d. Year 2000 compliance.</p> <p>e. Electronic Record Keeping Plan.</p> <p>f. Configuration Management Plan.</p> <p>g. Data Management Plan.</p> | <p>Describe the IS general architecture, e.g., required client–server platforms, web based, technical standards such as DBMS, COTS/GOTS products, communications requirements, etc.</p> <p>As specifically as possible, describe the IS interfacing, integration, and bridging requirements of the proposed IS with other information systems.</p> <p>Describe technical concepts to be used for demonstration and validation and/or prototyping. Describe risk(s) which demonstration is intended to explore and test plan.</p> <p>Is the IS Year 2000 compliant?</p> <p>Describe IS records management requirements, including on–line and off–line records retention, and how information integrity will be assured.</p> <p>Describe the IS configuration management process, including managing the Engineering Change Proposal (ECP) Process.</p> <p>Describe planned testing and evaluation by LCM phases, including application of software metrics.</p> <p>Describe approach to data management (e.g., archiving data, data security, data conversion, use of the Command Data Model (CDM), etc.). Include specific requirements for data sharing and data integration.</p> |

| SPD SECTION  | Notes   |
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| <p>h. Testing and Evaluation Master Plan.</p> <p>i. Internal Controls and Security.</p> <p>j. Post Deployment Software Support (PDSS) Plan.</p> <p>k. IS Technical Documentation.</p> <p>l. Other.</p>   | <p>Describe the testing strategy and evaluation requirements during the IS life cycle, e.g., software testing, system level testing, user level testing, etc.</p> <p>Describe both IS security and internal control requirements.</p> <p>Describe the IS PDSS plan in terms of project management, data management, applications management, and hardware and systems software management.</p> <p>Describe the availability and depth of the IS technical documentation following MIL-STD-498 guidelines.</p> |
| <p><b>VI. Signatures and Approvals</b></p> <p>a. Typed Name, Signature of IS Functional Proponent and date signed.</p> <p>b. Typed Name and Signature of Milestone Decision Authority (MDA). Should also be dated.</p> <p>c. MDA Approved/Disapproved Statement.</p> | <p>Includes any guidance or specific exit criteria.</p>   |

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| CECI-P<br>Engineer Regulation<br>25-1-2 | Department of the Army<br>U.S. Army Corps of Engineers<br>Washington, DC 20314-1000                     | ER 25-1-2<br><br>31 August 1999 |
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