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Automated Information System Life-Cycle Management Manual

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March 1990

Office of the Comptroller of the Department of Defense

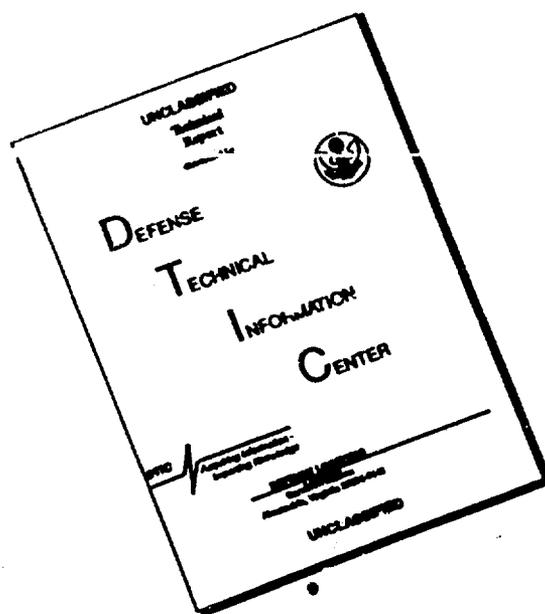
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FOREWORD

This Manual is issued under the authority of DoD Instruction 7920.2, "Automated Information System (AIS) Life-Cycle Management Review and Milestone Approval Procedures," March 7, 1990 (reference (a)). Its purpose is to implement uniform procedures for the conduct of AIS LCM activities and to provide guidelines for the preparation and submission of documentation for LCM reviews.

The Department of Defense Deputy Comptroller (Information Resources Management) is responsible for developing, coordinating, issuing and maintaining this Manual. This Manual will be updated and amended as required, consistent with the authorizing DoD issuance and the scope of the Manual.

This Manual applies to the Office of the Secretary of Defense (OSD), the Military Departments (including the National Guard and Reserve components), the Joint Staff, the Unified and Specified Commands, the Inspector General of the Department of Defense (IG, DoD), the Defense Agencies and DoD Field Activities (hereafter referred to collectively as "DoD Components"). AIS's that are integral to or embedded in a weapon system, or that are used exclusively for cryptologic activities, are exempted from the provisions of this Manual.

This Manual is effective immediately, is mandatory for use by all DoD Components, and is designed for direct use at operating levels without supplementary instructions.

Send recommended changes to the Manual through channels to:

Office of the Deputy Comptroller
(Information Resources Management)
Room 3E843
The Pentagon
Washington, D. C. 20301-1100

DoD Components may obtain copies of this Manual through their publications channels. Other Federal Agencies and the public may obtain copies from the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

C. Kendall

Cynthia Kendall
Deputy Comptroller (Information
Resources Management)

REFERENCES

- (a) DoD Instruction 7920.2, "Automated Information System (AIS) Life-Cycle Management Review and Milestone Approval Procedures," March 7, 1990
- (b) DoD Directive 7920.1, "Life-Cycle Management of Automated Information Systems (AISs)," June 20, 1988
- (c) DoD Directive 5000.1, "Major and Non-Major Defense Acquisition Programs," September 1, 1987
- (d) DoD 5200.1-R, "Information Security Program Regulation," June 1986
- (e) DoD Instruction 7920.4, "Baselining of Automated Information Systems (AIS)," March 21, 1988
- (f) DoD Instruction 7045.7, "Implementation of the Planning, Programing, and Budgeting System (PPBS)," May 23, 1984
- (g) DoD 7110.1-M, "Department of Defense Budget Guidance Manual," July, 1988, authorized by DoD Instruction 7110.1, October 30, 1980
- (h) DoD Directive 7740.2, "Automated Information System (AIS) Strategic Planning," July 29, 1987
- (i) DoD Instruction 7041.3, "Economic Analysis and Program Evaluation for Resource management," October 18, 1972
- (j) DoD Directive 5200.28, "Security Requirements for Automated Information Systems (AISs)," March 21, 1988

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AUTOMATED INFORMATION SYSTEM LIFE-CYCLE MANAGEMENT

DOCUMENTATION FOR MILESTONE REVIEWS

A. PURPOSE

1. This chapter identifies major AIS program management documentation that must be completed satisfactorily before an AIS LCM Milestone review. That documentation is the basis for effective direction and implementation of the AIS program and a sound program management approach. The MAISRC staff reviews and analyzes program management documentation to identify issues, resolve issues, if possible, before the meeting of the MAISRC principals, or recommend, to the MAISRC principals, steps to resolve those issues.

2. Readiness for a Milestone review requires the completion of specific planning and analysis tasks performed by program management. Those planning and analysis tasks are described throughout this manual. The documentation of task results describes the AIS program purpose and progress against approved and proposed plans. In addition, documentation provides facts to assess compliance with DoD LCM policy (reference (b), (e), and (h)), indicates AIS affordability (reference (i)), illustrates plans to minimize program and technical risks, and demonstrates the quality and completeness of program planning. The relationship of LCM Phases and Milestones is illustrated at Figure 1-1.

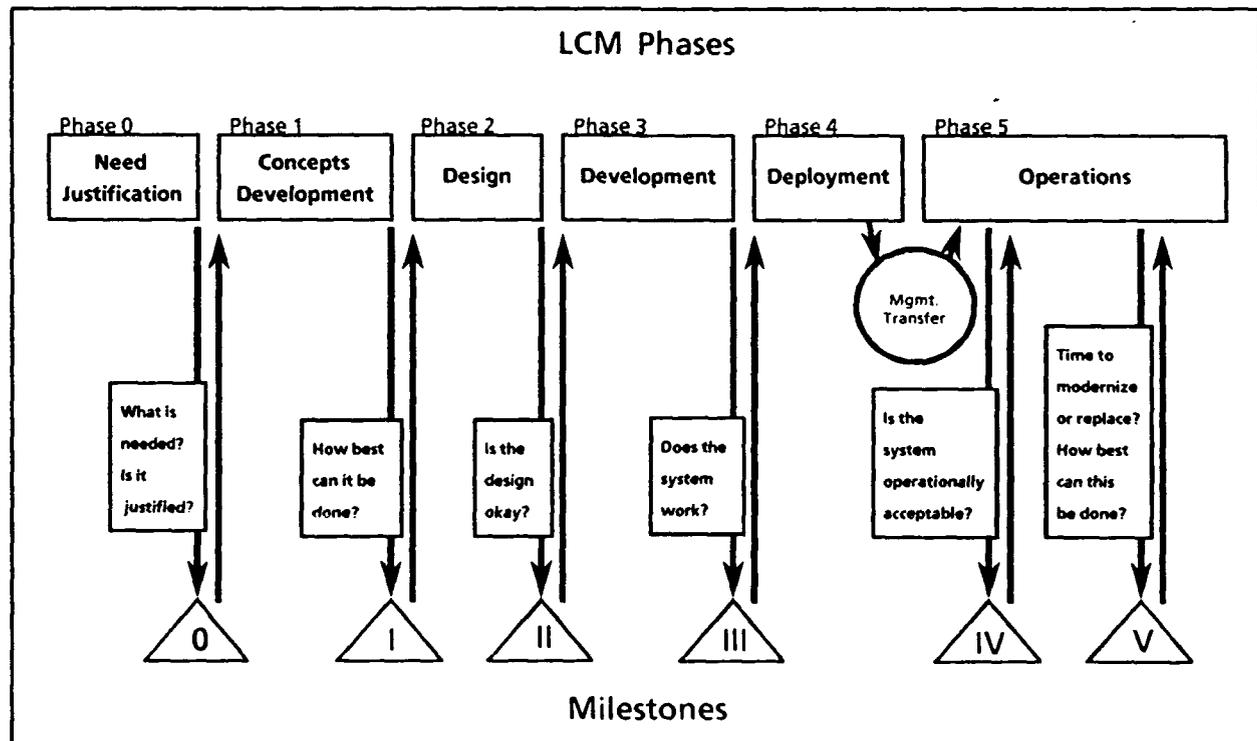


Figure 1-1. LCM Phases and Milestones

B. MILESTONE 0

1. Purpose. The Need Justification Phase, LCM Phase 0, leads to Milestone 0. The purpose of Milestone 0 is to determine whether or not to proceed to the Concepts Development Phase based on the identification and successful justification of the mission need. The Mission Need Statement (MNS) is validated and approved at Milestone 0. Milestone 0 approval authorizes functional management to program resources for a new AIS or existing AIS modernization program, to proceed to the Concepts Development Phase, and to expend resources for the activities of that Phase.

2. Documentation for Review. The principal documentation provided for Milestone 0 review is the MNS that is validated by appropriate senior functional management officials. The MNS provides Milestone review officials with a clear statement of the problem to be solved in functional business terms, the urgency of allocating resources to address the mission deficiency or opportunity, and assumptions about and constraints on potential solution options. The MNS summarizes the results of the following planning and analysis activities completed in the Need Justification Phase.

a. Summary of the existing functional concept (the way the mission is accomplished, business methods and practices) and capabilities. State the relationship of the existing functional concept and capabilities to relevant DoD functional area plans, objectives, and goals.

b. Statement of the mission need, a deficiency in the current situation or an opportunity to improve efficiency or effectiveness.

c. Statement of the impact, in quantitative terms and/or in terms of expected improvements, of the mission need on mission performance.

d. Description of efforts to optimize functional processes and procedures.

e. Summary of the essential functional, technical, operational, and financial constraints and assumptions that may impact potential alternative solutions.

f. Description of efforts, and their results, to satisfy mission need through the use of existing DoD capabilities and resources.

g. Statement of the requirements for standardization, integration, or interoperability among other AISs; safeguarding vital management and operational information; AIS mobility, effectiveness, survivability and/or continuity of operations; and, AIS capacity during peace, mobilization, and war.

h. Statement of approved, and prioritized if possible, functional requirements.

i. Statement of the importance or priority of the mission need to the DoD Component, as compared to other mission needs competing for limited resources.

j. Description of the AIS program management structure to be implemented.

3. Tasks to be Completed. In addition to the results of planning and analysis activities that are documented for LCM review before this LCM Milestone, the successful planning, management, and execution of an AIS program requires the DoD Component to program resources to support anticipated program costs for activities that shall follow Milestone 0 approval. If a preliminary estimate of total program cost cannot be completed, the DoD Component must program sufficient resources to complete the Concepts Development Phase, and LCM review and approval at Milestone I.

C. MILESTONE I

1. Purpose. LCM Phase 1, the Concepts Development Phase, leads to Milestone I. The purpose of Milestone I is to select the best program concept to implement the required functional capabilities based on the evaluation of alternative functional and technical concepts that satisfy the approved MNS. Each combination of functional and technical concepts forms the basis for a system alternative. A system alternative, combined with other key program factors such as the method and phasing of AIS development, an acquisition plan, a AIS product delivery schedule, and resources, forms a program concept (see Figure 1-2). Each program concept implements a system

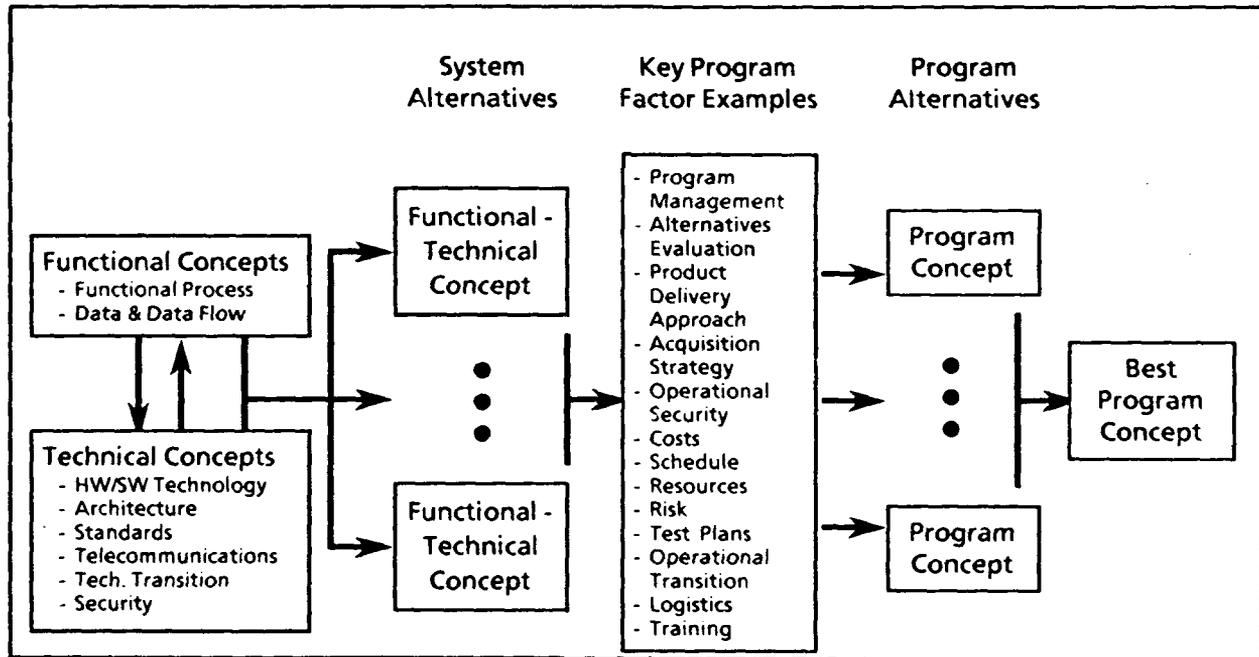


Figure 1-2. Concepts Development

alternative differently. Milestone I approval revalidates the mission need, reviews program alternatives, approves a selected program alternative, and authorizes program management to proceed to the Design Phase and to expend resources for the activities of that Phase.

2. Documentation for Review. The principal program management documentation provided for Milestone I review is the System Decision Paper (SDP) which is reviewed by appropriate senior management officials. In the SDP, program management incorporates or summarizes the results of the following documentation completed in the Concepts Development Phase.

- a. Updated and revalidated MNS.
- b. Program manager's charter.
- c. Test and Evaluation Master Plan (TEMP).
- d. AIS program baselining plan in accordance with reference (e).
- e. Prioritized functional objectives, and a list of functional requirements including requirements identified in reference (b).
- f. Summary of the alternative functional concepts evaluated.
- g. Summary of the general functional description that served as the basis for defining and evaluating alternative functional and technical concepts.
- h. Summary of the alternative technical concepts and architectures evaluated that could satisfy the preferred functional concept.
- i. Summary of the alternative program concepts evaluated providing additional detail and rationale for the preferred program concept.
- j. Summary of AIS program risks, results of risk management actions taken, and actions underway and planned.
- k. Exhibits and description of AIS program and life-cycle cost estimates, independent cost estimates prepared by the DoD Component, and cost-benefit analysis results for each viable alternative program evaluated.
- l. Description and illustration of the proposed AIS architecture.
- m. Statement on the relationship of the planned AIS to the DoD Component AIS Strategic Plan, which is required by DoD Directive 7740.2 (reference (h)), its supporting information architecture, and functional standards and interoperability requirements.
- n. Summary of the transition strategy to implement the selected functional concept if different from the existing functional concept.
- o. Summary of the development strategy and acquisition plan selected for the preferred program including proposed schedule of AIS major product deliveries.
- p. Summary of the current status and plans for configuration management, test and evaluation, telecommunications, security, audit and design reviews, operational reviews with users, and other AIS support.

g. Summary of planning to comply with DoD Directive 5200.28 (reference (j)).

r. Summary of the current status and planning to: make maximum use of existing Government owned AISs, other information resources management systems, and available commercial products; and use information processing standards, modern hardware and software technology, and modern methods and tools for AIS design and development.

s. Summary of program management controls and DoD Component oversight to identify potential technical, resource, and schedule problems in the AIS program.

t. Summary of demonstration results, or the current status and planning for completion of demonstrations.

u. Summary of the concepts for training, logistics support, organizational interdependencies, and operation of the AIS.

3. Tasks to be Completed. In addition to the results of planning and analysis activities that are documented for LCM review, the following additional tasks are required for the successful management and execution of the AIS program before this LCM Milestone.

a. Issue a program manager charter, assign a program manager, and allocate program management resources.

b. Allocate functions to the elements of the AIS architecture.

c. Document completely the functional requirements and validate resource availability to execute the acquisition plan.

d. Place all functional and technical elements of the AIS under configuration control.

e. Program resources in the Five Year Defense Program (FYDP) to adequately support the program plan and proposed schedule.

f. Submit the SDP to the LCM Milestone approval authority for LCM Milestone I review and approval.

D. MILESTONE II

1. Purpose. LCM Phase 2, the Design Phase, leads to Milestone II. The purpose of Milestone II is to validate the selected program alternative based on completion of the AIS design and detailed technical specifications. That validation involves:

a. Verifying that technical specifications are traceable to the mission need and prioritized functional requirements,

b. Assessing both the suitability of each system design alternative that was considered by program management and the quality of the system design selection process,

c. Evaluating the quality and completeness of AIS program and implementation planning at this point of the AIS program, and

d. Assessing readiness to proceed with development activities.

Additionally, refinement and greater accuracy in AIS program schedules, program cost estimate, and life-cycle cost estimates are expected and verified. Milestone II approval authorizes program management to proceed to the Development Phase and expend resources for the activities of that Phase.

2. Documentation for Review. The principal program management documentation provided for Milestone II review is the updated SDP, which is reviewed by appropriate senior management officials. In the SDP, program management incorporates or summarizes the results of the following documentation completed in the Design Phase.

a. Updated and revalidated MNS.

b. Approved AIS program Baseline Agreement prepared in accordance with reference (e).

c. Statement reaffirming the relationship of the planned AIS to the DoD Component AIS Strategic Plan, its supporting information architecture, and functional standards and interoperability requirements.

d. Summary of completed acquisition plans.

e. Exhibits and description of refined life-cycle cost estimate, independent cost estimate, and quantification and evaluation of benefits.

f. Updated and approved TEMP.

g. Updated plans for telecommunications, quality assurance, system integration, logistics support, training, AIS development, and program support from other organizations.

h. Summary of functional requirements and completed functional description.

i. Summary results of completed competitive demonstrations and prototyping activities.

j. Statement of the security concept for the total AIS environment based on threat and vulnerability analyses and resulting security requirements, and a summary of the security plan to ensure continuous use of approved security safeguards.

k. Summary description of the selected design and development technologies, methods, and tools to be used for AIS development.

1. Summary of AIS program risks, results of risk management actions taken, and actions underway and/or planned.

m. Summary plans and status of AIS internal management, operations, and application controls.

n. Plan for implementing procedures to collect and evaluate benefits, correct AIS malfunctions, and respond to functional user needs.

o. Summary of the updated transition strategy, including plans for digitizing existing data forms, capture of new data in digital form, and development of data bases required by the selected functional concept.

3. Tasks to be Completed. In addition to the results of planning and analysis activities that are documented for LCM review, the following additional tasks are to help assure successful management and execution of the AIS program before this LCM Milestone.

a. Continue program management support.

b. Revalidate the functional concept, interfaces and interoperability requirements, and development strategy.

c. Implement the selected program management controls to identify and correct potential technical, cost, and schedule problems.

d. Determine the risks of the AIS development effort using risk analysis techniques.

e. Implement the configuration management discipline.

f. Develop AIS security specifications.

g. Complete design specifications.

h. Program resources in the FYDP to adequately support the program plan and proposed schedule.

E. MILESTONE III

1. Purpose. LCM Phase 3, the Development Phase, leads to Milestone III. The purpose of Milestone III is to ensure that the completed and operationally capable AIS satisfies the mission need, that the AIS is ready for deployment, and that preparations for AIS deployment justify Milestone III approval. Milestone III approval authorizes program management to expend resources for the activities of the Deployment Phase, to begin AIS deployment, begin AIS operations upon completion of Deployment Phase activities at each AIS site, and transfer AIS management responsibility from the AIS program manager to the AIS post-deployment manager.

2. Documentation for Review. The principal program management documentation provided for Milestone III review is the updated SDP, which is reviewed by appropriate senior management officials. In the SDP, program

management incorporates or summarizes the results of the following documentation completed in the Development Phase.

- a. Updated and revalidated MNS.
- b. Updated AIS program Baseline Agreement.
- c. Updated and approved TEMP documenting the need for additional or follow up tests necessary to confirm the correction of deficiencies identified during tests before Milestone II.
- d. Statement reaffirming the relationship of the planned AIS to the AIS Strategic Plan, its supporting information architecture, and functional standards and interoperability requirements.
- e. Refined life-cycle cost estimate, independent cost estimate, and reconfirmed benefits.
- f. Summary of plans for deployment, operational transition and transfer of management responsibility, training, operations, maintenance, logistics support, continuity of operations, and capturing actual benefits.
- g. Summary of updated acquisition plan.
- h. Report of operational testing results to the OSD, Director, Operational Test & Evaluation, and certification that the AIS satisfies the mission need and functional user requirements for effectiveness and suitability. Include a statement, based on existing experience, of the effectiveness and suitability of training, operations, maintenance, logistics support, and continuity of operations.
- i. Report on the test results of physical, technical and procedural security measures.

3. Tasks to be Completed. In addition to the planning and analysis activities that are documented for LCM review, the following additional tasks are required for the successful management and execution of the AIS program before that LCM Milestone.

- a. Continue program management support.
- b. Complete development and testing of software and data bases.
- c. Continue the use of program management controls.
- d. Complete the functional configuration audit, the physical configuration audit, the product verification review and documentation. Verify that all support products and AIS documentation have been reviewed and certified by their users as acceptable.
- e. Complete and document system support planning for deployment, operational transition, training, operations, maintenance, logistics support, and continuity of operations.

- f. Determine the adequacy of AIS sizing.
- g. Implement procedures for correcting AIS malfunctions, responding to functional user needs, and ensuring continuous use of approved security safeguards.
- h. Program resources in the FYDP to adequately support the program plan and proposed schedule.

F. MILESTONE IV

1. Purpose. Milestone IV occurs during LCM Phase 5, the Operations Phase. The purpose of Milestone IV is to evaluate the effectiveness and suitability of the deployed and operational AIS, and to approve plans for short-term post-deployment AIS modernization. For that Milestone review, AIS post-deployment management submits the SDP to the approval authority designated by the Milestone III decision memorandum. Milestone IV approval reaffirms the mission need, endorses continued AIS operations, and authorizes the expenditure of resources for short-term post-deployment AIS modernization.

2. Documentation for Review. The principal program management documentation provided for Milestone IV review is the updated SDP, which is reviewed by appropriate senior management officials. AIS post-deployment management incorporates or summarizes the results of the following documentation completed in the Deployment and Operations Phases.

- a. Updated and revalidated MNS.
- b. Report of results of follow up operational T&E.
- c. Statement of the effectiveness and suitability of training, operations, maintenance, logistics support, and continuity of operations.
- d. Summary of operational AIS malfunctions, audits, and AIS performance and acceptability during military exercises.
- e. Summary of new functional user needs that have been identified since the beginning of AIS operations.
- f. Report of post-deployment AIS operational assessment, including a comparison of the benefits planned and the benefits realized.
- g. Plan for short-term AIS modernization that addresses, at a minimum, AIS responsiveness to evolving user requirements, an evaluation of hardware and software capability obsolescence, technology insertion based on a cost-benefits justification, existing AIS maintenance and system supportability, strategies for short-term modernization, and hardware and software maintenance.

3. Tasks to be Completed. In addition to the results of planning and analysis activities that are documented for LCM review, the following

additional tasks are required for the successful management and operation of the AIS before that LCM Milestone.

a. Complete transition of AIS management responsibility from the AIS program manager to the AIS post-deployment manager, cancel the program manager's charter, and disestablish the program management organization after ensuring that operational duties and responsibilities have been formalized and are in place.

b. Complete planned conversion of software and data from the existing information system to the new AIS, as appropriate.

c. Continue approved AIS management practices, correcting AIS malfunctions, responding to functional user needs, and ensuring continued enforcement of approved security safeguards.

d. Record identified functional user needs or requirements for added or changed AIS support.

e. Complete post-deployment AIS operational assessment based on the following:

(1) A qualitative analysis of AIS operations and operational support based on functional management, technical management, and functional user experience that considers the effectiveness and suitability of training, operations, maintenance, logistics support, continuity of operations, supporting documentation, and use of approved security safeguards.

(2) A quantitative analysis of AIS affordability and performance.

f. Program adequate resources in the FYDP to provide for full AIS operations and maintenance.

g. Initiate planning for Milestone V.

G. MILESTONE V

1. Purpose. Milestone V occurs during LCM Phase 5, the Operations Phase. The purpose of Milestone V is to evaluate and approve a plan for long-term AIS modernization or replacement, or to terminate the AIS if the mission need no longer exists. For that Milestone review, AIS post-deployment management submits the SDP to the approval authority designated by the Milestone IV decision memorandum. Milestone V approval authorizes AIS post-deployment management to program resources for long-term AIS modernization or AIS replacement. Milestone V shall be scheduled in accordance with reference (b).

2. Documentation for Review. The principal program management documentation provided for Milestone V review is the SDP, which is reviewed by appropriate senior management officials. Program management incorporates or summarizes the results of the following documentation completed in the Operations Phase.

- a. Fully updated and revalidated MNS.
- b. Statement of the effectiveness and suitability of training, operations, maintenance, logistics support, and continuity of operations.
- c. Updated summary of operational AIS malfunctions, and AIS performance and acceptability during military exercises.
- d. Updated summary of functional user needs since the beginning of AIS operations.
- e. Report of post-deployment AIS operational assessment.
- f. Plan to terminate the AIS if the mission need no longer exists.
- g. Plan for AIS long-term modernization or replacement that addresses, at a minimum, a general description of anticipated benefits from modernization or replacement, plans to ensure maximum practical operational responsiveness to essential user requirements with the existing AIS, and the status and plans for providing essential maintenance and system support for the existing AIS. That plan shall include a provision to proceed to the Concepts Development Phase.
- h. Plans for an additional LCM Milestone V review within 4 years, if existing AIS effectiveness and suitability are within acceptable parameters and AIS hardware or software obsolescence are not forecasted to occur for at least 5 years.

3. Tasks to be Completed. In addition to the planning and analysis activities that are documented for LCM review, the following additional tasks are required for the successful management and execution of the AIS program before that LCM Milestone.

- a. Continue approved AIS management practices, correct AIS malfunctions, respond to functional user needs, and ensure continued enforcement of security safeguards.
- b. Verify that operational support of the AIS is acceptable, and that AIS affordability and performance are within acceptable parameters.
- c. Program adequate resources in the FYDP to ensure continued AIS operations and maintenance and to satisfy the requirements of the AIS long-term modernization plan.

CHAPTER 2

MISSION NEED STATEMENT

A. PURPOSE

The Mission Need Statement (MNS) defines and documents a mission need, justifies resource expenditures for the identification and exploration of solutions to satisfy the need. The MNS is updated and revalidated at each LCM Milestone and provides the basis to ensure the system developed satisfies the requirement, as stated in the MNS. This chapter describes the requirement for a MNS, MNS contents, and processing and coordination procedures.

B. REQUIREMENT

1. A MNS shall describe a need for functional process improvement that:

a. Fulfills a previously unidentified function or requirement;

b. Corrects an error, shortcoming, or deficiency in the current functional concept or in the application of information technology;

c. Describes clearly the impact of a deficiency on mission performance; or,

d. Justifies the exploration of functional or technical alternatives to existing operations and capabilities that will improve mission effectiveness or efficiency (an opportunity).

2. When a new AIS or existing AIS modernization is not expected to be designated a major AIS, a DoD Component adaptation of the MNS shall be used. After Milestone 0 approval, the MNS shall be updated for each succeeding LCM Milestone review, with update changes being clearly identified. The presentation of the mission need must be accurate and concise.

C. CONTENT

1. Mission Area. Identify the mission area and authority for accomplishment. If applicable, identify a specific reference in the Defense Guidance, specific functional strategic plans, or DoD Component information system plan to which the need responds.

2. Mission Environment. Describe the current organization and operational information system environment pertinent to the mission need. Include a succinct description of the existing:

a. Functional concept (functions and operating methods) used to accomplish the mission.

b. Information; information flow(s); and information handling capabilities, both manual and automated, that are used to capture, process, transmit, store, and present information.

c. Practices for safeguarding classified, sensitive unclassified, and unclassified information.

d. Cooperative opportunities, such as a program addressing a similar need at another DoD Component, Federal Agency, or an Allied nation.

3. Mission Need

a. Describe the scope of the mission need in functional business terms. Avoid doing so in terms of the capabilities and explicit characteristics of automatic data processing equipment or of an AIS. Address any readiness, reliability, maintainability, deployability, survivability, interoperability, or security issues associated with the mission need.

b. Describe proposed functional concept changes that create the mission need, or which, with information technology support, are expected to improve mission effectiveness or efficiency.

c. Describe and quantify the need in terms of the impact on mission performance, anticipated benefits, results or outcomes. These benefits, results or outcomes could indicate improvement in the effectiveness or efficiency of mission, or, could accrue from the use of improved information technology. Address, for example, estimates and the supporting rationale for reduced operating costs or manpower; the attributes and estimates of improved information accuracy and timeliness, or error reduction for specific functions; and, the characteristics of other anticipated functional performance improvements.

d. State information security requirements.

e. Describe functional goals or other factors that contribute insight to the operational benefits of potential solutions to the mission need.

f. Describe the relative priority of the need within the DoD Component in relation to other mission needs.

4. Existing and Programmed Capabilities

a. Describe the ability of existing or programmed DoD capabilities to satisfy the mission need.

b. Assess the mission impact of maintaining the status quo.

c. Describe efforts to optimize the existing method of operations (functional concept) and the results of such efforts.

5. Constraints and Assumptions. Identify functional, technical, operational, and financial constraints that could apply to the exploration and acceptance of alternative potential solutions to the mission need.

Identify functional, technical, operational, and financial assumptions that could affect potential solutions. Consider constraints and assumptions such as:

- a. Operational and logistics limitations; mobility; effectiveness; survivability; continuity of operations; capacity requirements during peace, mobilization, and war; organizational or other special considerations;
- b. Organizational, geographic, or environmental location;
- c. Standardization and standards requirements;
- d. Interface and interoperability requirements with existing and planned AISs;
- e. Affordability limits on investment that could or will be placed on the possible development and acquisition of the new AIS or an existing AIS modernization over the period covered by the FYDP, or over the estimated new or modernized AIS life-cycle;
- f. Goals for limitations on recurring or operating costs;
- g. Requirements for safeguarding vital or sensitive management and operational information; and
- h. Program structure, competition and contracting, streamlining, the use of development prototypes or demonstrations.

6. Resource Implications

- a. Identify resources required and programmed to maintain the status quo through the Five Year Defense Program (FYDP) period.
- b. Identify resources the DoD Component is prepared to program to further develop solution alternatives in LCM Phase 1.

D. PROCESSING AND COORDINATION

1. In accordance with DoD Component LCM review and Milestone approval procedures, the DoD Component shall ascertain whether or not a MNS will likely result in an AIS program that meets the criteria for the designation of a major AIS in accordance with DoD Directive 7920.1 (reference (b)). If a major AIS program is likely, the DoD Component shall validate the MNS and officially forward it to the appropriate OSD functional proponent.
2. DoD Components should send a draft MNS to the appropriate OSD functional proponent for informal assistance during MNS preparation.
3. For Milestones I through V, the MNS shall be updated, revalidated by the DoD Component, and submitted as an annex to the System Decision Paper (SDP).

Chapter 3

SYSTEM DECISION PAPER

A. PURPOSE

1. The System Decision Paper (SDP) consolidates and presents essential information for evaluating the quality and completeness of program planning products, and progress against those approved plans. It is the primary document supporting the LCM Milestone review and approval process. The SDP may be viewed as a comprehensive summation of the program for management consumption as well as a decision paper.

2. For each major AIS program, the SDP represents the DoD Component coordinated position for the AIS program. When a Milestone is approved by the MAISRC, the SDP then constitutes an agreement between the MAISRC and DoD Component management. The SDP is tailored to each LCM review and the size and complexity of the AIS program. An SDP for a major AIS program is submitted through appropriate DoD Component channels to the MAISRC Executive Secretary.

3. The Program Manager will have analyzed and documented the specific SDP topics well in advance of the LCM review to effectively manage and execute the program. Therefore, the work previously done should be summarized in the SDP. As appropriate or required, program documentation may be included as SDP appendices.

4. This chapter describes the appropriate content of the SDP for major and non-major AIS programs; and the procedures for submitting a major AIS program SDP for review.

B. REQUIREMENT. An SDP, or an updated SDP, shall be submitted to the designated LCM Milestone approval authority for each LCM review after Milestone 0. The LCM Milestone approval authority, in preparation for the LCM Milestone review, will determine the adequacy of current AIS program plans and progress against plans approved by the approval authority before committing to further resource expenditures for AIS activities. The SDP shall remain in existence throughout the life of an AIS.

C. CONTENT. The SDP will be structured as a three part document. The first part is an executive summary of the AIS program. The second part describes current management considerations. The third part describes current technical considerations. Refer to Chapter 1, "AIS LCM DOCUMENTATION FOR MILESTONE REVIEWS," for major AIS program management documentation that must be completed satisfactorily before the LCM review at each Milestone. The representative topics described in this chapter are not inclusive of the AIS LCM products and tasks required for review at each LCM Milestone. Table 3-1 contains the representative topics to be addressed in the SDP for each LCM Milestone review.

1. SDP Transmittal Memorandum. This memorandum formally transmits the SDP from the DoD Component to the MAISRC Executive Secretary.

2. Part One: Executive Summary. This AIS program summary addresses the minimum set of SDP topics (see Table 3-1) appropriate to the activities leading to an LCM Milestone review. The summary should not normally exceed 6 to 8 pages. At a minimum, the Executive Summary should contain the following:

- a. Originator. Name and address of the originating organization. Name and telephone number of the point of contact.
- b. Program Name. Name of the AIS program and/or system.
- c. Milestone. Identify the next AIS program LCM Milestone.
- d. Function. Title and brief description of the function being automated, the expected system life, and why the AIS is being acquired.
- e. Acquisition. Outline of how the system will be or is being acquired. Include identification of supporting acquisition agency and/or office.
- f. Location. Where the AIS will be operated.
- g. Schedule. When the next LCM Milestone(s) should be reached and when the AIS should be operational.
- h. Benefits. Summarize the major benefits expected from installation of the AIS.
- i. Cost of the AIS. Summarize the estimated life-cycle cost, program cost and ownership cost by fiscal year. Figure 3-1 illustrates the relationship of these costs, cost categories, and fiscal appropriations.

3. Part Two: Management Considerations

a. Mission Need. State the validated mission need with changes since the previous LCM Milestone clearly indicated. Describe efforts to satisfy the need through the use of existing DoD capabilities and resources. Reference source documentation identifying requirements for safeguarding vital management and operational information, and assuring needed AIS mobility, effectiveness, survivability, continuity of operations, and AIS capacity during peace, mobilization and war.

b. Alternatives. This discussion focuses on the LCM review for Milestone I. Adjust the detail of the written submission to its appropriateness for the relevant LCM Milestone.

(1) Functional concepts. Summarize the major functional requirements and list the prioritized functional objectives. Describe the alternative concepts identified and considered for satisfying the mission need. Summarize the constraints and criteria used, the results of analyses and evaluations. Provide amplifying rationale to contribute insight to the

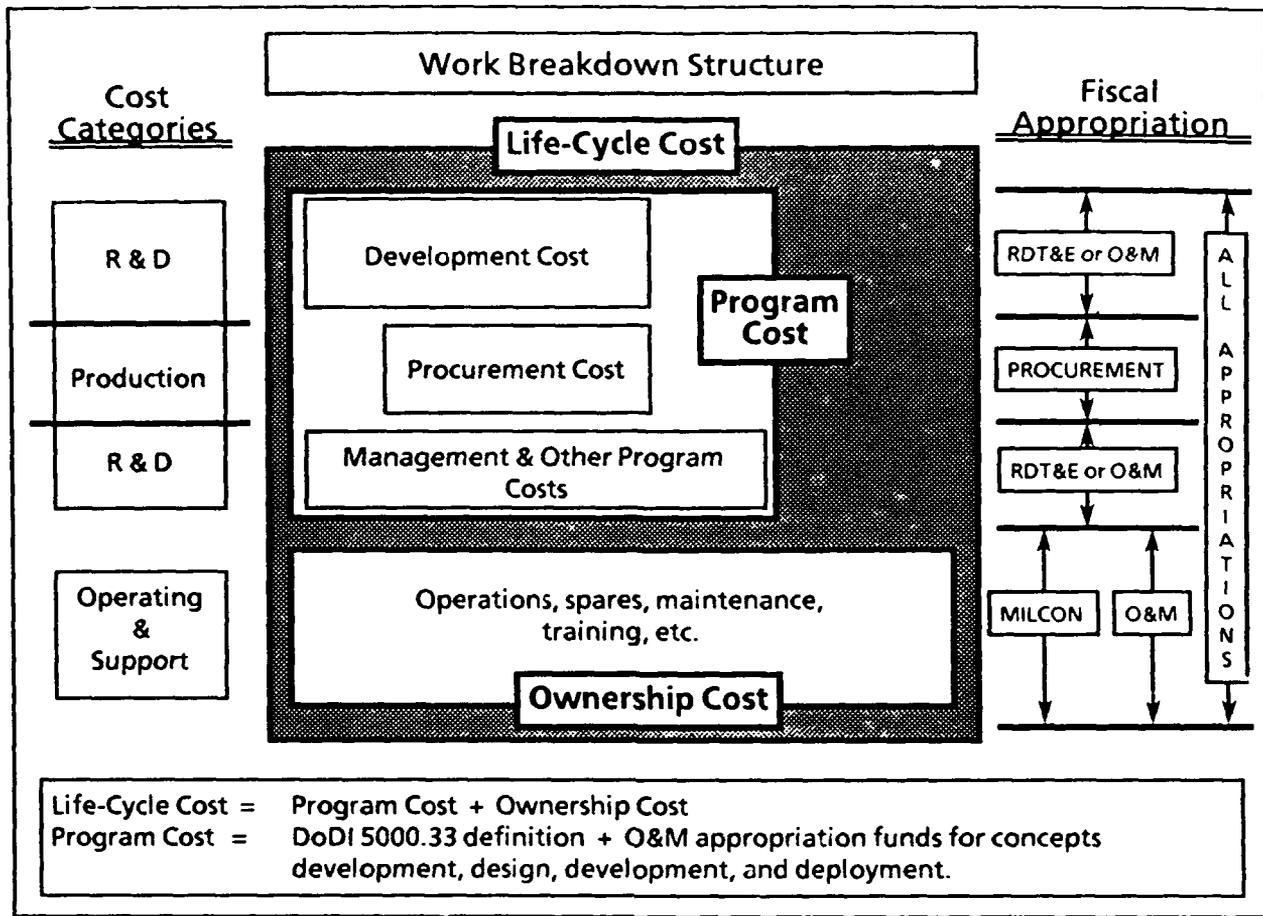


Figure 3-1. AIS Costs (adapted from DoDI 5000.33).

selection of the target functional concept and include assurances that the solution is consistent with the planned skill mix of the workforce and potential AIS users. Summarize changes in the functional decision process, information flow, or information handling procedures. Summarize the strategy for safeguarding classified, sensitive unclassified, and unclassified information.

(2) **Technical concepts.** Describe the alternative technical architectures considered for satisfying the MNS as adjusted by any changes in the functional concept. Illustrate the major components of each technical alternative considered and describe how it provides a coherent focus for critical design issues. The major architecture components include elements such as applications or functional software, hardware, and telecommunications. Critical design issues may include factors such as technical standards, interoperability, capacity, technical security requirements, user skills, and technology refreshment.

(3) **Program concepts.** Describe the system alternatives considered and the other key program factors, and provide the justification for recommending the preferred AIS program concept. Describe other

considerations such as phased or incremental development and implementation, and the use of various prototyping techniques to refine and clarify requirements and to evaluate design options. Summarize the program risks for each program alternative.

c. Management Approach. Describe the program management structure to include resources, authority, responsibilities, and reporting channels. Address how activities using a matrix approach will be guided and how contractor progress and deliverable status will be controlled. Indicate how other vital management controls such as program baselining, independent assessments, program integration, product quality management, and configuration management will be performed. Include an assessment of risk areas and program efforts underway to eliminate or minimize those risks. Indicate the status of any incomplete actions directed by the LCM Milestone approval authority, and any unresolved issues with the DoDIG, General Accounting Office, or Congress.

d. Acquisition Strategy. Clearly present the acquisition strategy. Address areas such as competition, preliminary releases of source solicitation documents for industry review, contractual vehicle, contractual technology refreshment, prototyping, demonstrations, program transition, preplanned product improvement, and the plan for streamlining the acquisition process. The acquisition strategy should also address contractor and government responsibilities, and indicate how system engineering functions, such as Independent Verification and Validation and system integration, will be performed.

e. Schedule. Illustrate the AIS program LCM Milestones and the schedule for DoD Component LCM Milestone reviews. Also, illustrate the major internal programmatic events such as release of acquisition packages, contract award, development, prototyping, testing, initial and final deployment, key internal AIS program decision points, and other indicators.

f. Resources

(1) Present the program requirements by fiscal year and appropriation, and a comparison of these requirements to programmed resources and resource deficiencies. The approval authority expects that AIS programs will be fully executable. At Milestone 0, resources must be available for all required activities through Milestone I. Indicate what actions are being taken to resolve resource deficiencies. Provide resource tables (as enclosures) for AIS program costs, the life-cycle cost estimate, and the DoD Component independent cost estimate. Provide specific reference for AIS program resources to the current DoD Budget Submission.

(2) Indicate the resources associated with the next LCM Phase assuming that LCM Milestone approval is granted. Provide narrative about the continuing or future affordability of the AIS program to the DoD Component.

(3) List other required resources such as manpower, facilities, and Government Furnished Equipment (GFE). Indicate the current status of agreements for these resources.

(4) This section may require, as the AIS program matures, an enclosure which tracks the record of previously allocated DoD Component resources. Provide the current AIS program cost and life-cycle cost estimate, and identify changes since the last LCM review.

g. Economic Analysis. Discuss the approach to be used in identifying and quantifying costs and benefits for program alternatives. Identify the timeframes for completing operational and cost-benefits analyses. Present those benefits that have been quantified and audited.

h. Test and Evaluation. Present the provisions for preparation and update of the Test and Evaluation Master Plan (TEMP) and the role of the DoD Component independent test office in the development and final determination of test provisions. Summarize the testing concept indicating how and where system testing (developmental, operational and acceptance) will be performed, sequenced, and validated.

i. Logistics and Post-Deployment Support. Outline logistics requirements including plans and responsibilities for system maintenance and configuration management. Describe how the AIS software and hardware will be supported and maintained during the Operations Phase. Indicate any special provisions required for AIS operation and maintenance support.

j. Deployment. Summarize the strategy for AIS deployment including management and resource responsibilities, and the major deployment steps planned to verify operational capability and status. Major deployment steps include a summary of plans for site preparation and system installation. Summarize the coordinated provisions for transfer of AIS management responsibility, functional management and user acceptance of the AIS at each site.

k. Other Plans. Provide a summary description of the various program products and plans that are available or are being prepared. Provide availability dates for those plans not yet available.

4. Part Three: Technical Considerations

a. Architecture. Describe how the proposed AIS will meet the provisions of the DoD functional and Component technical and information architectures. Describe the AIS architectural design, its operational environment, the use of data management, and which components are allocated to the various system functions. Illustrate the allocation of system functions to major components.

b. Standards. Summarize planning for the use of appropriate nongovernmental, Federal, and DoD standards, and identify standards used including those used to facilitate information processing and interoperability.

c. Training. Summarize the training plan and training provisions for functional users, and supporting and servicing organizations. Include program management training needs. Identify the funding responsibilities of

functional and AIS program offices for training through the Deployment Phase. Indicate what, how, when, and where training will be available.

d. Interoperability. Summarize the need for AIS interoperability, planned methods and techniques for accomplishing interoperability, and how interoperable capabilities will be defined and documented.

e. Telecommunications. Summarize the telecommunications plan. Describe the intrasystem and intersystem communication concepts and standards. Identify the need for or expected application of Local Area Networks (LANs), bridges, gateways, the Defense Data Network (DDN) or special purpose telecommunications capability. Illustrate the network and telecommunications notional design.

f. Security. Indicate the sensitivity range of information the AIS will process and summarize the threat analysis. Summarize the security protection strategy planned and describe the technical security capabilities with respect to logical, physical, personnel, procedural, TEMPEST, and other protection measures in accordance with reference (j).

g. Software. Summarize the software engineering plan. Describe the extent of functional redesign, languages, databases, conversion and development methods to be used. Also indicate plans for the use of approved higher order languages, available commercial software, modern software methods, tools and techniques, as well as actions being taken to manage software cost and also reduce the maintenance of software and associated costs. Present the management and technical approaches that are planned to assure adequate quality control and Independent Verification and Validation. Identify the organizations responsible for software development, completing integration of software with the hardware, and maintaining operational software.

h. Demonstrations. Explain the need for and how live test demonstrations, evolutionary acquisition, prototyping, flyoffs, or other risk reduction methods will be conducted.

i. Technical Transition. Summarize objectives and plans for hardware and software transition to the new or modernized AIS. Describe other software and data base conversion requirements and summarize conversion plans. Include statements of potential problems and steps taken to minimize their impact of the technical transition on operational cutover, continuity of support to users, and user workload.

5. Enclosures. Include any required enclosures (see Table 3-1) such as the MNS, program manager's charter, the Milestone I plan for baselining, the Baseline Agreement at LCM Milestones II and III, the TEMP, the life-cycle and independent cost estimates, and cost-benefits analysis.

D. SUBMISSION PROCEDURES AND PROCESSING. The SDP presents the status and direction of an AIS program. Its effective preparation and timely submission are key to minimizing delays in the LCM review.

1. Milestone Planning Meeting. The Milestone planning meeting establishes events and a target schedule leading to the MAISRC principals

meeting. A representative schedule for SDP submission and processing is illustrated at Figure 3-2. The events and schedule will define required DoD

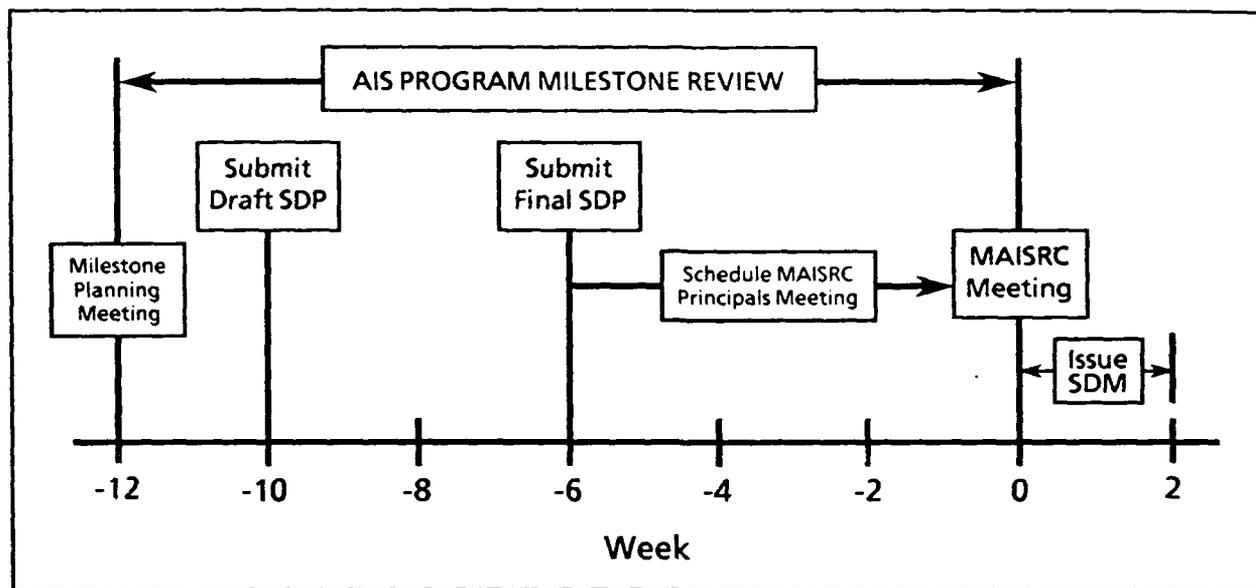


Figure 3-2. Target Schedule of Events and Activities

Component and program management preparation for a meeting of the MAISRC principals, SDP submission, objectives and actions to be completed by MAISRC staff, procedures for identifying and resolving AIS program issues, and a proposed date.

a. The MAISRC Executive Secretary shall schedule a Milestone planning meeting when the DoD Component or the OSD functional proponent notifies the MAISRC Executive Secretary of the need for a Milestone review. The MAISRC Executive Secretary is the major AIS program manager's principal point of contact in the Office of the Secretary of Defense on MAISRC matters. The Milestone planning meeting will occur approximately twelve (12) weeks before a meeting of the MAISRC principals.

b. Program management shall prepare an SDP outline proposal for discussion at the Milestone planning meeting.

2. Draft SDP Submission. The draft SDP will include all elements identified in the SDP outline. The MAISRC staff will use the draft SDP to perform a quick-look analysis, and to conduct a full Milestone review in the absence of the final SDP. The quick-look analysis of the draft SDP will identify areas of omission, an incomplete submission, and potential program issues.

a. The MAISRC Executive Secretary shall distribute copies of the draft SDP to the MAISRC staff to conduct a Milestone review in accordance with references (a) and (b).

b. The program manager shall submit the draft SDP through appropriate DoD Component channels to the MAISRC Executive Secretary no less than ten (10) weeks before the proposed meeting of the MAISRC principals.

c. The MAISRC Executive Secretary shall formally provide the results of a MAISRC staff quick-look analysis of the draft SDP to the DoD Component and the program manager no later than two (2) weeks after receipt of the draft SDP.

3. Final SDP Submission. The DoD Component shall submit the final SDP to the MAISRC Executive Secretary within two (2) weeks of receiving the MAISRC staff comments. The Executive Secretary must have the final SDP no less than six (6) weeks prior to the proposed meeting of the MAISRC principals.

4. Additional Milestone Review Information.

a. The MAISRC Executive Secretary shall coordinate MAISRC staff requests for additional information from the DoD Component.

b. The MAISRC Executive Secretary shall coordinate additional meetings between the MAISRC staff and program management. Those meetings provide both the MAISRC staff and program management with AIS program and MAISRC process information and insight on potential program, technical, or resource issues.

c. Issues developed by the MAISRC staff will be shared with the MAISRC Executive Secretary and the program manager in an effort to resolve the issues prior to the meeting of the MAISRC principals.

d. After receipt of the final SDP from the DoD Component, the MAISRC Executive Secretary shall determine, with the assistance and support of the MAISRC staff and based on the results of their analyses, the overall readiness of the AIS program for review by the MAISRC principals. The MAISRC Executive Secretary will then schedule an LCM review and Milestone approval meeting of the MAISRC principals.

5. MAISRC Principals Meeting. The MAISRC principals review the major AIS program based on program management documentation, the MAISRC staff review and analysis, and the program manager's briefing of the program at the MAISRC meeting. The MAISRC will decide major AIS program disposition in executive session upon completion of the program manager's briefing. The LCM Milestone approval decision, direction to the DoD Component and program management, and recommendations of the MAISRC principals will be documented in a System Decision Memorandum (SDM). The SDM shall be drafted by the MAISRC Executive Secretary. If Milestone approval is granted, the SDM constitutes an endorsement of the planning and plans represented in the SDP, modified by conditions stated in the SDM.

TABLE 3-1

SAMPLE LIST OF INFORMATION TO BE PRESENTED TO THE MAISRC

INFORMATION CATEGORIES	MILESTONES					
	<u>0</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>
PART ONE - EXECUTIVE SUMMARY		X	X	X	X	X
PART TWO - MANAGEMENT CONSIDERATIONS						
a. Mission Need	X	X	X	X	X	X
b. Alternatives						
(1) Functional	X	X	X	X	X	X
(2) Technical	X	X	X	X	X	X
(3) Program		X	X	X	X	X
c. Management Approach	X	X	X	X	X	X
d. Acquisition Strategy		X	X	X	X	X
e. Schedule	X	X	X	X	X	X
f. Resources	X	X	X	X	X	X
g. Economic Analysis		X	X	X	X	X
h. Test & Evaluation		X	X	X	X	X
i. Logistics		X	X	X	X	X
j. Deployment			X	X	X	X
k. Other Plans		X	X	X	X	X
PART THREE - TECHNICAL CONSIDERATIONS						
a. Architecture		X	X	X		X
b. Standards		X	X	X		X
c. Training			X	X		X
d. Interoperability		X	X	X		X
e. Telecommunication		X	X	X		X
f. Security	X	X	X	X		X
g. Software		X	X	X		X
h. Demonstrations		X	X			X
i. Technical Transition		X		X	X	X
ENCLOSURES (Examples)						
Mission Need Statement	X	X	X	X	X	X
Program Mgr. Charter		X	X	X		X
Functional Description		X	X	X	X	X
Resource Tables		X	X	X	X	X
Economic Analysis		X	X	X	X	X
Plan for Baselineing		X				
Baseline Agreement			X	X		
TEMP		X	X	X		
Operational Test Plans			X	X	X	
Test Results (by independent testor)				X	X	X
Post-Deployment Support Plan				X	X	X

CHAPTER 4

PROGRAM MANAGER'S CHARTER

A. PURPOSE. The Program Manager's Charter fixes responsibility, authority, and accountability for an AIS program. An approved Charter is prerequisite to resource expenditures for a major AIS program. The Charter provides authority to ensure that the development and operational transition of a new AIS or an existing AIS modernization are conducted within a clearly established management framework. This chapter lists chartering authorities, defines the recommended contents of a program manager's charter, and identifies the general qualifications desired for a DoD AIS program manager (PM).

B. REQUIREMENT. The AIS PM is the principal official responsible for planning and directing AIS program activities during the Concepts Development, Design, Development, and Deployment LCM Phases. In accordance with reference (b), the PM shall be designated and chartered at a time no later than the beginning of the Concepts Development Phase. Existing DoD Component program management directives, that are consistent with the scope and intent of this chapter, may be followed to satisfy the requirement for chartering an AIS PM.

C. CHARTERING AUTHORITY

AIS PM charters are issued by the:

1. Deputy Secretary of Defense, or designee, for a major AIS program involving multiple DoD Components;
2. DoD Component Head for a major AIS program sponsored by the DoD Component;
3. Heads of participating DoD Components or by the OSD functional proponent for a non-major AIS program involving multiple DoD Components; or

An AIS PM charter for a non-major AIS program is issued in accordance with DoD Component procedures and guidelines.

D. PROGRAM MANAGER'S CHARTER

1. Scope. The Charter is developed for each AIS and serves as a written contract between the PM and the chartering authority. The Charter clearly delineates the PM's responsibility, authority, accountability, resources, and constraints.

2. Essential Considerations for a PM Charter

a. The PM should be designated as the single official to provide daily direction, supervision, and control of the AIS program and should be given authority commensurate with assigned accountability and responsibility.

b. The PM normally should not be encumbered by additional duties, but should be permitted to devote full-time and attention to the AIS program commensurate with the magnitude of the resources to be expended and the complexity of the AIS. The PM should assure that adequate personnel resources will be available.

c. The PM should have sufficient tenure to provide the continuity necessary to carry the AIS program from inception to completion of AIS transition to operational status.

d. When developing the Charter, careful attention must be given to addressing any unique characteristics of the AIS program to be undertaken.

3. Charter Contents. The following represent the minimum set of topics that shall be included in a PM Charter:

a. Program Identification. Cite the title, and any short title, of the AIS. Names should have a connotation to the function and DoD Component being served. Specify the conditions for which the Charter will be reviewed and updated.

b. Mission and Objectives

(1) State mission and objectives in terms of mission need to be satisfied, and cite extent of program management authority to consider all alternatives that could fulfill the need.

(2) Delineate the scope of the AIS program, including the number of installations affected, the boundary of the mission encompassed by the program, constraints, the specific functions to be included and excluded from the program, and interface and interoperability requirements with other AISs.

c. Responsibilities and Accountability

(1) Identify the position of the person to whom the PM reports.

(2) List duties and responsibilities of the PM in sufficient detail to fully describe the job requirements. See DoD Directive 5000.1 (reference (c)) for the minimum set of program manager responsibilities.

(3) State specific accomplishments that are expected, estimated timeframes, and products for which the PM is accountable.

(4) Identify the responsibilities of the PM to the functional manager, AIS user field activities, and other organizations that have a direct development or operational interest in the AIS.

(5) Include any special responsibilities that are peculiar to the program. Cite any authorized waivers from current regulations.

(6) Specify reporting and recommendation responsibilities when cost, schedule, or technical performance thresholds are breached.

(7) Define responsibility for preparing the performance appraisal of any personnel designated to support the program management office from a separate support organization.

d. Authority. Delineate, as applicable, the extent of latitude in:

(1) Controlling and allocating program resources.

(2) Contacting other Federal Agencies, the Congress, and private sector.

(3) Tasking other DoD Components and consummating inter-Service support agreements and memorandums of agreement.

(4) Creating subordinate offices.

(5) Obtaining consulting or commercial ADP services.

(6) Initiating contracts and/or obligating resources.

(7) Authorizing per diem, travel, and overtime.

(8) Exercising other delegated authorities, such as preparing Agency Procurement Requests for equipment, software, maintenance services and commercial ADP services to the General Services Administration.

e. Organization and Location

(1) Indicate name and grade of the PM.

(2) Define the required composition of the program management team or organization, and describe the program management structure including functional or work breakdown assignments and initial staffing.

(3) Designate technical, administrative, and contracting support functions and user representation.

(4) Indicate physical location of program management office.

f. Relationships and Channels of Communication

(1) Define the PM's reporting channels for accomplishing the program, including review, reporting, and intermediate approval levels for LCM management review and milestone approval, and frequency and organization levels for progress reporting.

(2) Describe relationships to the chartering authority, DoD Component senior executive management oversight authority, steering and advisory groups, and the organization expected to assume responsibility for AIS operations.

(3) Make arrangements for an independent audit or assessment of life-cycle cost estimates and benefits analysis, when required.

(4) Define cost and schedule thresholds which, when exceeded, require the notification to the program oversight authority.

(5) Identify the organizational source of functional requirements.

g. PM Changes. Specify procedures for reassignment of AIS PM responsibility. Procedures should require that the AIS program status be documented at the time of the PM change. The program status documentation should be validated by the functional manager, with the concurrence of the outgoing PM and the incoming PM, within 30 days of the change.

h. PM Charter Cancellation. Specify the event at which PM responsibilities will be terminated or circumstances under which the responsibilities will continue after completion of AIS deployment.

E. PM QUALIFICATIONS

The successful definition and execution of an AIS program is dependent, to a large extent, on the capability and authority of the PM. A PM must possess a range of management, technical, fiscal, and acquisition skills and experience to effectively accomplish assigned duties and responsibilities. The PM should have:

1. Management experience with a multidisciplinary background including the mission area defined in the MNS.

2. Experience in the development, acquisition, deployment and use of information technology to enhance functions similar to those addressed in the MNS.

3. Experience with the PPBS and acquisition regulations, policies and procedures.

4. Formal program management training from either the Defense Systems Management College, the National Defense University/DoD IRM College, or other institutions offering graduate level information system program management education.

5. Verbal and written communication skills.

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