AD A124 332 WEAPON SYSTEM MANAGEMENT TO DIRECTORATE OF LOGISTICS MANAGEMENT SYSTEMS R..(U) BATTELLE COLUMBUS LABS OH K V MILLER 14 MAY 82 F33600-80-C-0414 1/4

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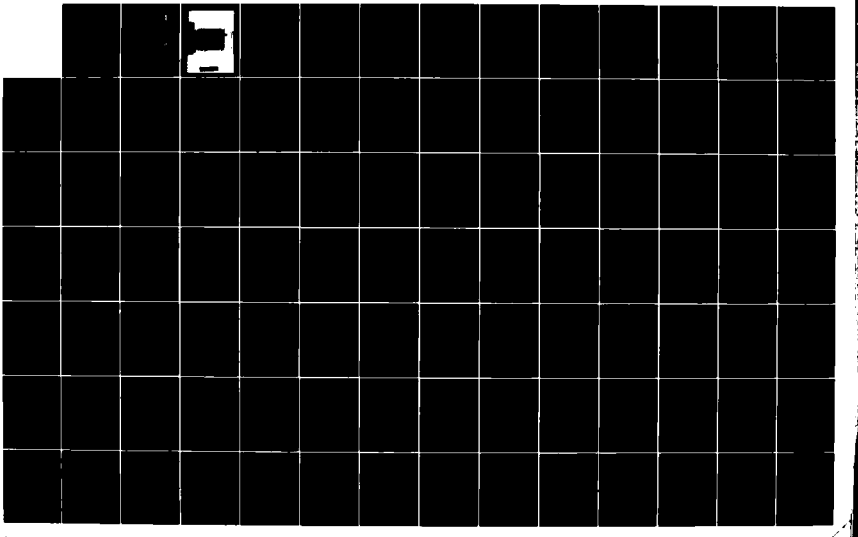

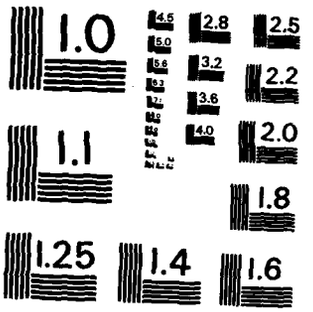

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LEVEL

INVENTORY

Weapon System Management

DOCUMENT IDENTIFICATION Final Rpt., 14 May '82

Contract F33600-80-C-0414

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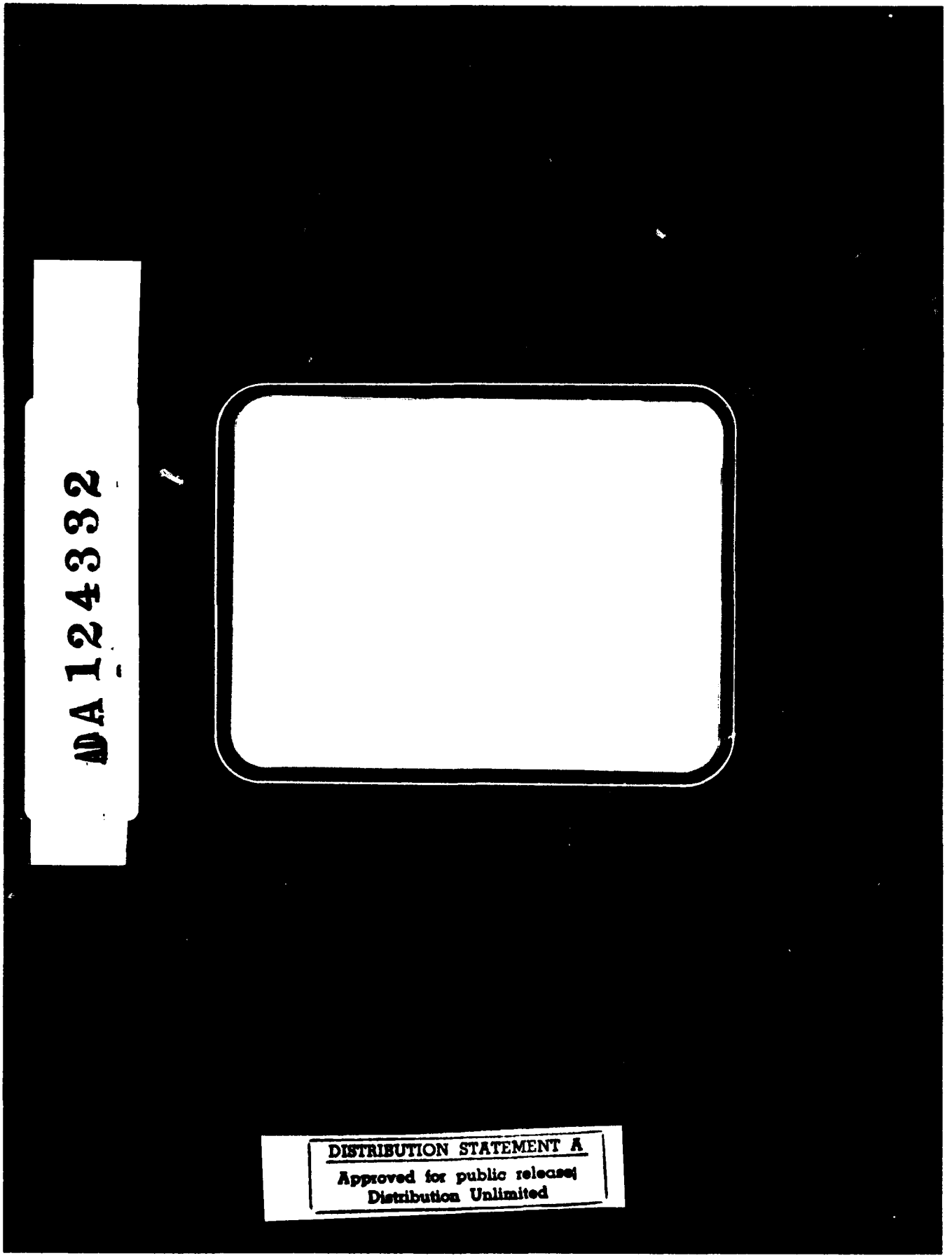

FINAL REPORT

on

WEAPON SYSTEM MANAGEMENT

to

DIRECTORATE OF LOGISTICS MANAGEMENT
SYSTEMS REQUIREMENTS (XRB)
DCS/PLANS AND PROGRAMS
AIR FORCE LOGISTICS COMMAND
WRIGHT-PATTERSON AFB, OHIO 45433

(Contract No. F33600-80-C-0414)

May 14, 1982

by

K. V. Miller

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Columbus, Ohio 43201

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May 14, 1982

Directorate Logistics Management
Systems Requirements (XRB)
DCS/Plans & Programs
Air Force Logistics Command
Attn: Col. A. G. McConnell
Director
Wright-Patterson AFB, Ohio 45433

Dear Sir:

Contract No. F33600-80-C-0414

Enclosed are four copies (one reproducible master and three bound copies) of the final output for Weapon System Management planning activities completed under Paragraph F-3 of this contract. These outputs fulfill the requirement referenced in Paragraph F-6a.

Although not all the planning activities were completed originally as planned, BCL submits the following research products which document the completion of activities and which substantially fulfill the requirements of the provisions. Lessons learned are included wherever it was reasonable to report on them, specifically in those instances in which BCL participated fully in the planning activities as scheduled.

The entire effort was divided into three major portions:

- Level II Weapon System Management
- Level III Weapon System Management
- Readiness Control Center (RCC) Evaluation

Attachment 1 contains the schedules and task descriptions which were submitted at the beginning of the Weapon System effort.

Attachment 2 contains the reports and lessons learned which resulted from the Level II Weapon System Management activities.

Attachment 3 contains the reports and lessons learned which resulted from the Level III Weapon System Management activities.

Attachment 4 contains the plans and lessons learned which resulted from the RCC Evaluation activities.

I am pleased to deliver these outputs to you.

Very truly yours,

Kathleen V. Miller

Kathleen V. Miller
Research Scientist

Attachments (4)

KVM:db

xc: 2750th Air Base Win - PMA
Specialized Procurement Branch
Building 1, Area C
Wright-Patterson AFB, Ohio 45433

Attn: W.J. Parker
Contracting Officer (1/o)

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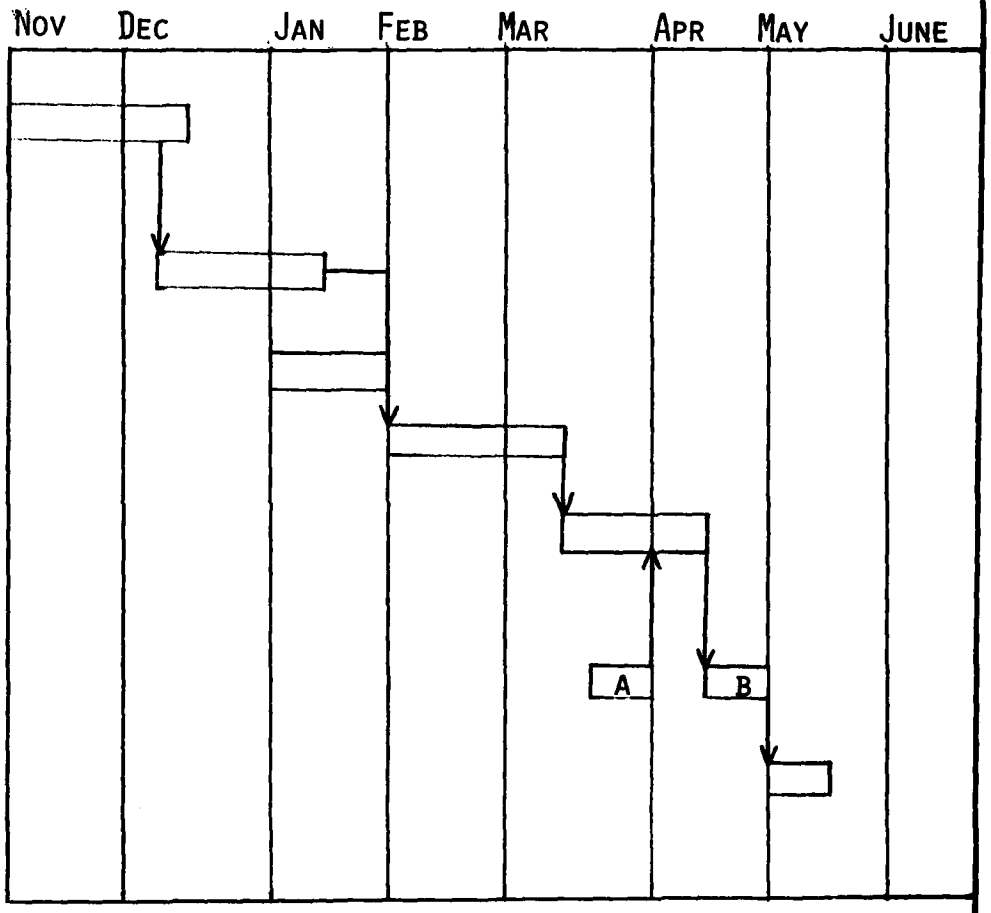
ATTACHMENT 1

Schedules and Selected Activity Outlines
for Weapon System Management

LEVEL II SCHEDULE AND ACTIVITY OUTLINES

LEVEL II. WEAPON SYSTEM MANAGEMENT PLANNING PROCESS

1. DEFINITION OF CURRENT ROLES AND RESPONSIBILITIES OF SM
2. DESCRIPTION OF SM ROLE FOR THE FUTURE
3. DEVELOPMENT OF PRINCIPLES
4. DEVELOPMENT OF ALTERNATE STRATEGIES
5. DEVELOPMENT OF PLAN FOR UPDATING WEAPON SYSTEM MANAGEMENT AREA
6. DEVELOPMENT OF CONFIGURATION CONTROL PLAN
7. REVIEW AND APPROVAL OF WEAPON SYSTEM MANAGEMENT PLANNING



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Columbus Laboratories

October 8, 1980

Block # 1 (2.1, 2.2, 2.3, 2.4, 2.5, 2.7, B.1) Title Definition of Current Roles and Responsibilities of the SM

Objective: To determine functions of the SM and to identify the environment within which he operates.

Purpose: To fully understand the current structure so that meaningful steps can be outlined to develop his desired capabilities.

Inputs: Knowledge of SM experiences; Knowledge of the budget process; Knowledge of AFLC org. structure; AFLCR 23 series; Knowledge of DLA & other services; Defense acquisition policies; Existing data systems & information flow

Process: Develop "strawman" definition of current SM roles, responsibilities, and position within AFLC and distribute to invitees. Invite current and former SM's to a three-day meeting to amend/revise definitions for all stages of life cycle. Document findings. Submit to LO/XR for approval.

Outputs: Description of current roles and responsibilities of SM's.

Criteria for Output: Identifies areas of decision making and/or influencing.
Identifies place within organization.
Identifies organization of SM management.
Identifies all significant functions.
Identifies currently available information.

Responsibility	Organization	Man-Days	Duration
Develop strawman description	BCL/MMA/3 SM's/XRB	33	2 wks.
Host session	XRB/MMA/BCL	22	1 wk.
Attend session	8 SM's	24	1 wk. (3 days)
Document results	BCL/XRB/MMA	21	2 wks.
Review/Approve products	XR	1	1 wk.
Make required changes	BCL/XRB/MMA	6	
		Overall Duration	6 wks.

* Indicates one-time task.

Block # 2 (2.6, 2.8, 2.9, 2.10, B.2) Title Description of SM Role for the Future

Objective: To identify new roles and responsibilities for the SM, based on assumptions about the future.

Purpose: To lay the foundation for the development of a flexible management system so that additional requirements can be met without a complete overhaul of the system.

Inputs: Scenarios; Current information structure; AFLC capabilities shortfall; Technology opportunities (WS and ADP); Knowledge of current SM roles; Logistics principles

Process: Identify drivers in war and peacetime environments that will directly influence weapon system management. Develop a "strawman" description for future SM roles and requirements. Reconvene group from "Block 1" or mail out for review and approval.

Outputs: Definition of the classes of information required to effectively manage the weapon systems.

Criteria for Output: Identifies general information requirements and required analysis outputs.

Identifies management indicators and their evaluation.

Responsibility	Organization	Man-Days	Duration
Identification of scenarios drivers	BCL/XRB/MMA	9	1 wk.
Define "strawman"	BCL/XRB/MMA	19	2 wks.
Review & approval by SM panel	SM's	8	1 wk.
Document results	BCL/XRB/MMA	8	1 wk.
Review and approve products	XR	1	1 wk.
Make required changes	BCL/XRB/MMA	3	
		Overall Duration	6 wks.

* Indicates one-time task.

Block # 3 (2.11, 2.18 / 2.19, 2.19a) Title Development of Principles of Logistics Management for Weapon System Management

Objective: To define real constraints under which the system manager operates.

Purpose: To provide designers of alternative strategies with a clear definition of the constraints under which the system manager must function to ensure that strategies developed are consistent with the overall AFLC position.

Inputs:

Public law	DoD budget process/PPBS
AF regulations	AFLC objectives
DoD regulations	AFM 1-1
Interservice funding rules	General logistics publications

Process: Selected staff members review literature and experience to generate a list of policies which apply to weapon system management. This is done in work sessions within HQ AFLC. These are reviewed and approved by supporting organizations.

Outputs: Set of constraints for weapon system management.

Criteria for Output: Limited to weapon system management consideration. Must be commonly accepted.

Responsibility	Organization	Man-Days	Duration
Review policies and develop "strawman"	BCL/XRB/MMA	15	3 wks.
Support review	MA/LO/PM/AC	2 ea.	1 wk

Overall Duration (Days) 4 wks.

* Indicates one-time task.

Block # 4 (2.12-2.17, 2.21, B.3, B.4) Title Development of Strategies for Moving from Current SM role to Desired SM Role

Objective: To set objectives for the SM role and to identify alternative means of achieving them.

Purpose: To provide a specific direction for planning in the weapon system area; to develop reasonable strategies; and to identify required information flows associated with each.

Inputs: Posture plan for AFLC; Capabilities plan; AFLC L-R objectives; Current decision structure; Current and future required capabilities; Weapon system policies; Knowledge of modern ADPE capabilities; Principles for weapon system management

Process: Develop "strawmen" descriptions of objectives and strategies. Convene a group of 8-10 SM's from mature A/C systems to further develop and refine suggestions, and identify major decisions required. Follow this with staff work to refine output and evaluate alternatives. Reconvene group for ranking of alternatives based on evaluations.

Outputs: Objectives, related strategies, and information requirements.

Criteria for Output: Identifies major decision areas.
Decision structure fits proposed organizational structure.
Evaluation sufficient to allow ranking of alternatives.

Responsibility	Organization	Man-Days	Duration
Develop "strawmen"	BCL/XRB/MMA	20	2 wks.
Host 1st session	BCL/XRB/MMA	22	1 wk.
Attend 1st session	SM's	24	1 wk.
Evaluate alternatives	BCL/XRB/MM/AC	25	2 wks.
Host 2nd session	BCL/XRB/MMA	11	1 wk.
Attend 2nd session	SM's	8	1 wk.
		Overall Duration	6 wks.

* Indicates one-time task.

Block # 5 (2.22, 2.24, 2.25) Title Development of Plan for Updating Weapon System Management Area

Objective: To select and plan for appropriate changes in weapon system LMS, in light of expected future environment.

Purpose: To ensure effective and efficient use of AFLC resources to obtain maximum utility for weapon system managers.

Inputs: Output from Block 4

Model from Block 6a

Process: Advisory group selects from alternative strategies. Define phasing of development in terms of modules. Indicate interrelationships with other LMS processes. Assess impact of ADPE/T concept. Develop schedule, cost, and performance guides for next phase.

Outputs: Project plan for development of weapon system LMS(s).

Criteria for Output: Relatable to AFLC overall strategy.

Consistent with WS objectives.

Cognizant of significant interfaces.

Reasonable given organizational and resource constraints.

Responsibility	Organization	Man-Days	Duration
Convene advisory group	BCL/XRB/MM	12	1 wk.
Attend meeting	LO/MA/PM/MM/XRB	2 ea.	
Develop criteria for prioritizing modules	BCL/XRB/MM	9	1 wk.
Provide ADPE/T plan	AC	2	
Review ADPE/T plan	XRB	2	1 wk.
Provide cost/benefits of different approaches	LO/MA/PM/MM/XRB	2 ea.	1 wk.
Write plan	XRB/MM	10	1 wk.
		Overall Duration (Days)	5 wks.

* Indicates one-time task.

Block # 6 (2.20, 2.23a, 2.23b, 2.26-2.29, B.6) Title Development of Configuration Control Plan for Weapon System Management

Objective: To develop a mechanism for maintaining the integrity of AFLC and weapon system management planning.

Purpose: To incorporate the appropriate checkpoints and reviews, as well as information system(s) required to support configuration control.

Inputs: AFLC Configuration Control plan; Factors that govern weapon system management; Master plan for weapon system planning; Modeling methods

Process: Develop a model to evaluate strategies (6a). Use criteria from this model to identify key interfaces and critical elements. Establish data elements to reflect progress or change in these areas. Set required standards. Describe data collection process.

Outputs: Configuration control system for work on modules.

Criteria for Output: Indicators in areas of cost, schedule, performance, and interfaces. Must control activities to achievement of objectives and manageability within the organization.

Responsibility	Organization	Man-Days	Duration
Develop model for evaluating strategies	BCL/MM/XRB	20	2 wks.
Identification of key elements	BCL/MM/XRB	6	
Establish data elements	BCL/MM/XRB	6	1 wk.
Set standards	BCL/MM/XRB	6	
Describe data collection process	BCL/MM/XRB	9	1 wk.

Overall Duration 4 wks.

* Indicates one-time task.

Block # 7 (2.23, 2.31, B.5, B.7) Title Review and Approval of Weapon System Management Planning

Objective: To determine the appropriateness of weapon system planning in view of AFLC posture plans.

Purpose: To confirm or change the selected strategy.

Inputs: Detailed description of plan

Backup documentation on other candidates

Description of other current LMS strategies/plans

Process: Preparation of briefing justifying this particular approach. Identification of related LMS areas. Presentation to DCS, AFLC Council, etc.

Outputs: Affirmation of selected strategy or appropriate redirection.

Criteria for Output: Firm commitment to allow commitment of resources to development at module level. Approval by CC.

Responsibility	Organization	Man-Days	Duration
Prepare briefing	XRB/MM	5	
Review/coordinate	LO/MA/PM/AC	1 ea.	1 wk.
Present briefing	XR/LO	2	
Document results	XRB/MM	1	1 wk.
Provide approval/direction	CC	1/4	

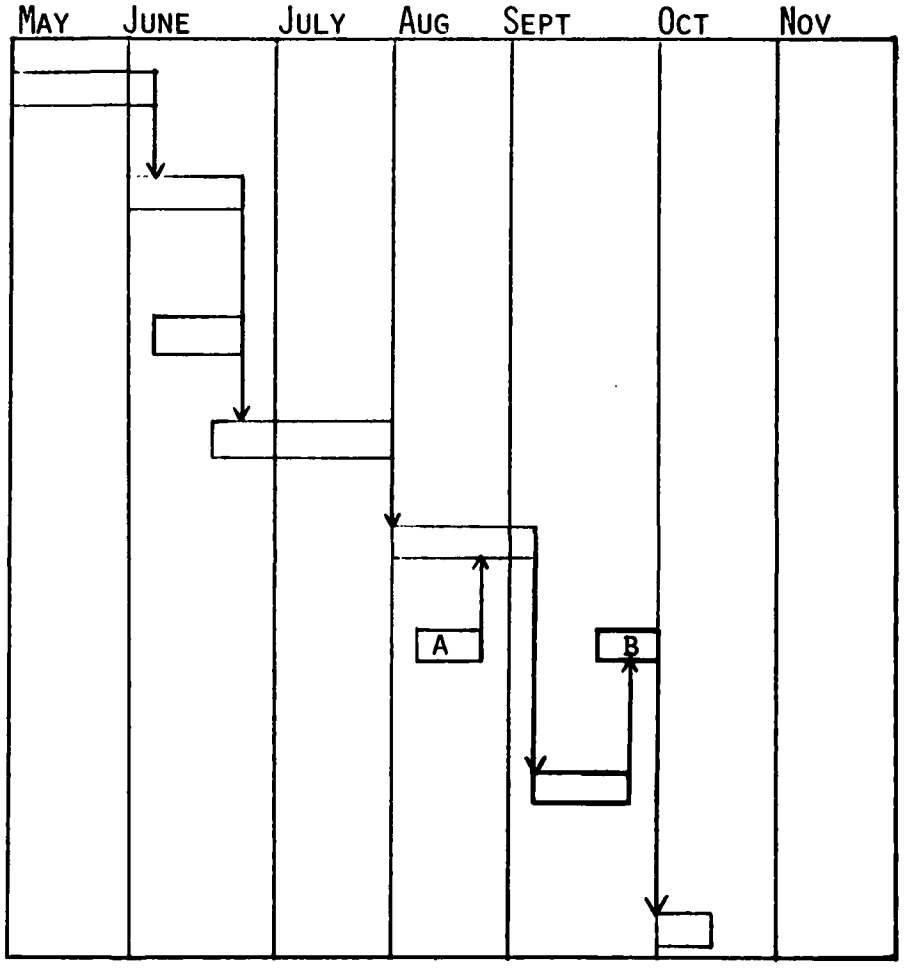
Overall Duration (Days) 2 wks.

* Indicates one-time task.

LEVEL III SCHEDULE
AND ACTIVITY OUTLINES

LEVEL III. WEAPON SYSTEM MANAGEMENT PLANNING PROCESS (OPERATIONAL VISIBILITY)

1. Definition of Current Functions and Environment
2. Definition of Operational Visibility Required in the Future
3. Identification of Logistics Principles
4. Development of Alternative Strategies
5. Evaluation of Selected Strategies
6. Development of Configuration Control Plan
7. Development of Plan for Updating Operational Visibility
8. Review and Approval



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October 8, 1980

Block # 1 (3.1-3.4, 3.6, C.1) Title Definition of Current Functions and Environment for Operational Visibility Module

Objective: To identify operational elements SM can influence, the organizational structure and interface, the current methods of performing this function, and information currently being used.

Purpose: To focus management attention on critical areas, develop a baseline from which to make improvements, and to identify information voids. This information will be used to select areas for change and to define the nature of the change.

Inputs: Definition of module

Knowledge of the function

AFLCR 23-43

Process: Visit each ALC and solicit inputs from current SM's as to information they are actually using to deal with day-to-day problems. Identify organizational interfaces and description of function being performed. Develop a decision network model which relates decisions to organizational structure.

Outputs: List of critical factors; diagram of organizational structure; description of the module; and decision network.

Criteria for Output: Comprehensive description of module.

Identifies interface with other WS modules.

Identifies data elements and decision maker for each decision.

Responsibility	Organization	Man-Days	Duration
Conduct interviews	BCL/XRB/MMA	60	3 wks.
Document results	BCL/XRB/MMA	20	1 wk.
Review and approve	LO/XR	1 ea. (2)	1 wk.
Revise as required	BCL/XRB/MMA	6	1 wk.

Overall Duration 5 wks.

* Indicates one-time task.

Block # 2 (3.5, 3.7, 3.8, 3.9, C.2) Title Definition of Operational Visibility Required in the Future

Objective: To recognize variance between current and desired system capabilities.

Purpose: To ensure that all unmet needs, current and projected, are addressed and described.

Inputs: Theme scenario drivers
War scenario drivers
Understanding of technology of information systems
People knowledgeable about SM's

Process: Define probable future environment, particularly drivers. Convene small group of experienced SM's (not all current SM's) to determine required future capabilities. Identify areas of increasing or decreasing importance.

Outputs: Assumptions about future; description of future functions, decisions, and information requirements.

Criteria for Output: Recognition of range of possibilities, with assigned probabilities of occurrence and risk estimates.
Recognition of interaction.

Responsibility	Organization	Man-Days	Duration
Define assumptions about future	BCL/XRB/MMA	11	1 wk.
Host group of SM's	BCL/XRB/MMA	14	1 wk.
Attend session	5 SM's	15	1 wk.
Document findings	BCL/XRB/MMA	15	1 wk.
Review and approve	LO/XR	2	1 wk.
Revise as required	BCL/XRB/MMA	6	

Overall Duration 4 wks.

* Indicates one-time task.

Block # 3 (3.10, 3.17, 3.17a, 3.17b, 3.18) Title Identification of Logistics Principles That Guide Operational Visibility

Objective: To recognize outside constraints on possible changes in Operational Visibility.

Purpose:

Inputs:

DoD policies/Public law	Knowledge of SM area
Weapon system policies	Knowledge of operational requirements
Customer policies	AFM 1-1; AFM 400-2
ADPE/T input	Knowledge of ADP

Process: Staff review of literature in areas that impact operaticnal visibility.

Outputs: List of principles related to operational visibility.

Criteria for Output: Must be consistent with AFLC and weapon system principles. Must be commonly accepted.

Responsibility	Organization	Man-Days	Duration
Review policies/principles	BCL/XRB/MM/AC/PM/LO	12	1 wk.
Relate to operational visibility	BCL/XRB/MM	6	1 wk.
Develop/identify specific principles	BCL/XRB/MM	6	
Document results	BCL/XRB/MM	6	1 wk.

Overall Duration 3 wks.

* Indicates one-time task.

Block # 4 (3.11-3.16, C.3, C.4) Title Development of Alternative Strategies

Objective: To set objectives for operational visibility and to identify alternate means of achieving them.

Purpose: To provide a specific direction for planning in the operational visibility area; to develop reasonable strategies; and to identify required information flows associated with each.

Inputs: Knowledge of operational activities
Knowledge of available resources
AFLC posture plan
Knowledge of other WS modules
Weapon system policies

Process: Develop "strawmen" objectives and strategies. Convene group of SM's to amend/revise objectives, considering policies, and suggest strategies. Meet with representatives from major weapon system analysis groups to determine implications of suggested strategies in terms of information requirements.

Outputs: Objective, related strategies, and information requirements.

Criteria for Output: Consistent with AFLC and weapon system management objectives.
Identifies major decision areas.
Reasonable in light of available resources.
Interfaces with other modules identified.

Responsibility	Organization	Man-Days	Duration
Develop "strawmen"	BCL/XRB/MM/LO	17	2 wks.
Attend session	SM's/MAC/TAC/SAC	33	1 wk.
Host session	BCL/XRB/MM	22	2 wks.
Meet with analysis groups	BCL/XRB/MM	15	2 wks.
Support analysis	5 SM's	2 ea.	2 wks.
Document results	BCL/XRB/MM	6	1 wk.
		Overall Duration	6 wks.

* Indicates one-time task.

Block # 5 (3.20-3.25) Title Evaluation of Selected Strategies

Objective: To establish a basis for comparison of strategies based on relative consumption of resources and benefits achieved.

Purpose: To be able to rank the strategies based on efficient use of resources to achieve some operational objective, e.g., decrease response time.

Inputs: Knowledge of resource use rates
Understanding of ADPE/T input
Description of strategies
Knowledge of generally available ADP
Knowledge of operational requirements

Process: Small group of logistics analysts reviews suggested strategies and evaluates in each of the required areas. Output is reviewed by knowledgeable SM'a (not all current SM's) and analysts for accuracy and completeness.

Outputs: Schedules of resource consumption; table of benefits; communications data processing implications; manpower estimates.

Criteria for Output: Measurable, or at least comparable.
Accurate depiction of strategy.
Provides basis for tracking progress after implementation.
Trade-offs identified.
Interfaces identified.

Responsibility	Organization	Man-Days	Duration
Evaluate strategies	BCL/XRB/MMA/AC	72	4 wks.
Review output	MA/LJ/AC	6	1 wk.
Document results	XRB/MMA/AC	6	

Overall Duration 5 wks.

* Indicates one-time task.

Block # 6 (3.19, 3.29, 3.31-3.34, C.6) Title Development of Configuration Control Plan for Operational Visibility Module

Objective: To develop prescribed set of criteria to be used to measure achievement of objectives.

Purpose: To incorporate appropriate checkpoints and reviews, as well as information system(s) to support configuration control.

Inputs: AFLC posture plan; ADPE/T concept and plan; Understanding of operational area; Selected strategies; Modeling expertise; Organizational structure; Management control system design experience

Process: Develop a model to evaluate strategies (a). Use criteria from this model to identify key interfaces and critical elements. Establish data elements which measure progress. Define standards for these elements. Describe data collection process.

Outputs: Configuration control system for Operational Visibility Module.

Criteria for Output: Consistent with desired objectives.
Manageable within the organization.
Measures progress in areas of cost, schedule, and performance.

Responsibility	Organization	Man-Days	Duration
Develop model	BCL/XRB/MM/AC	25	2 wks.
Identification of key elements	BCL/XRB/MM/AC	20	1 wk.
Establish data elements	BCL/XRB/MM/AC	20	
Set standards	BCL/XRB/MM/AC	8	
Define data collection process	BCL/XRB/MM/AC	8	1 wk.

Overall Duration [redacted] 4 wks.

* Indicates one-time task.

Block # 7 (3.25a, 3.26-3.28, 3.30, 3.35, C.5) Title Development of Plan for Updating Operational Visibility Management Systems

Objective: To select for and plan implementation of appropriate improvements in Operational Visibility area.

Purpose: To ensure effective and efficient use of AFLC resources to obtain optimum increase in operational visibility.

Inputs: Model from Block 6

Output from Evaluation (Block 5)

Knowledge of operational area

Knowledge of available resources and skills

Process: Small group review of output from Block to developed schedules and expenditure curves. Plan should be reviewed by SM's.

Outputs: Generate an RSC, with prioritized list of systems to be developed and project plan.

Criteria for Output: Consistent with AFLCR 400-5.

Compatible with achievement of objectives.

Consistent with parallel modules.

Compatible with ADPE/T concept and plan.

Responsibility	Organization	Man-Days	Duration
Document plan	BCL/XRB/MM/A	31	2 wks.
Review and approve	LO/SM's	4	1 wk.

Overall Duration 3 wks.

* Indicates one-time task.

Block # 8 (3.36-3.39, C.7) Title Review and Approval of Operational Visibility Planning

Objective: To determine appropriateness of planning in view of parallel efforts being done.

Purpose: To confirm or change the selected strategy.

Inputs: Detailed description of plan

Backup documentation of other candidates

Description of other LMS activities

Process: Preparation of a briefing justifying this particular approach.

Identification of related LMS areas. Presentation to CV.

Outputs: Affirmation of selected strategy or appropriate redirection.

Criteria for Output: Firm commitment to allow allocation of resources to LMS design approval by CV.

Responsibility	Organization	Man-Days	Duration
Prepare briefing	XRB/MM		
Review briefing	AC		1 wk.
Compare to other modules	XRB		
Review	CV		1 wk.
Document results	XRB/MM		

Overall Duration 2 wks.

* Indicates one-time task.

ATTACHMENT 2

Lessons Learned
for Level II Weapon
System Management

LESSONS LEARNED: WEAPON SYSTEM MANAGEMENT BLOCKS 1 AND 2

Meeting Approach to Combining Level II Activities

Introduction

Objective. In response to the requirement to complete Level II activities for Weapon System Management in a relatively short time, BCL recommended combining several Level II activities into one meeting. This approach was accepted by XRB and the LO representatives. The Level II activities combined were the definition of the current status (Block 1); the definition of future requirements and the identification of shortfalls (Block 2); the identification of policies and principles guiding the development of approaches to solve shortfalls (Block 3); and the preliminary prioritization of shortfalls (part of Block 4).

Attendees. Although the broad definition of Weapon System Management includes areas and organizations outside of LO, the LOAR sponsors determined that their needs would be best met by limiting attendees to those representing groups within the Headquarters, specifically the LO directorates. Attachment 1 is a list of attendees.

Preparation Procedures

Letter of Invitation. A letter of invitation was sent out by LO to all directorates involved. A subsequent letter included the agenda. One of the difficulties during the meeting was that the letter of invitation did not adequately describe the purpose of the meeting and the commitment required of participants. Although it would have been difficult to explain the objectives completely to people unfamiliar with the planning effort, more insight should have been provided.

Materials. BCL prepared most of the materials used in the meeting. Although a great deal of mission involvement had occurred in the months

preceding the meeting, because of the short preparation time the final copies were not coordinated with the functional planners or XRB prior to the meeting. In some cases, the vocabulary used was not meaningful to the participants.

Improper use of terms with specific meanings for the participants caused some disruptions during the meeting. For example, the term "inventory control" was used as a title for decisions being made on weapon system inventory. Participants were adamant that inventory control was not a system management function but an item management function. All agreed, however, that the decisions described under the title were applicable to system management. The title was changed to the correct AFLC terminology and the meeting proceeded. Review of materials by mission personnel prior to the meeting could have avoided this type of problem.

Another problem was insufficient explanation of the expected use, source, and development of several meeting inputs. Participants became involved in arguments about the accuracy or legitimacy of documents meant only to stimulate their thinking. Again, a critical review of the materials before the meeting might have indicated where concerns might arise, and would have simplified dealing with those concerns.

Meeting Site. The meetings were held in Headquarters AFLC. Although the accommodations were adequate, there was a strong tendency for participants to arrive late/leave early to spend time at their desks. This enabled them to keep abreast of their daily work, but sometimes necessitated repeating or summarizing discussions to bring them up to date on what they had missed.

This location did give the capability to call in experts for brief periods if no one present felt comfortable dealing with a particular area.

Meeting Format. Accomplishment of objectives of the meeting required covering a great deal of material. Attachment 2 is the meeting agenda. The early part of the meeting was designed to acquaint the attendees with the planning process and the materials to be used. The schedule then moved into the various content areas and was designed to allow discussion of each one completely before moving on to the next area. It became obvious early that it was preferable to go through the complete Weapon System Management area lightly once so that participants could get a better feel of the material to be covered, then double back and go into more detail in subsets of the whole.

The fourth day had been set aside for summarization, and the fifth for a presentation to management. As it turned out, all five days were required to complete the effort, and the presentation took place the following week. In the future we recommend using the full five days to allow sufficient time to draw conclusions and prepare the summary briefing, which can be scheduled for 1-2 hours the following week.

Session Content

Summary Observations. The introductory sessions were somewhat redundant, and yet still did not adequately explain the purpose and procedures of the meeting. Weapon System Management is a very difficult area to discuss in a short time. Several participants felt they did not fully understand their charter until the third day. We feel it will be impossible to remove all early confusion, but more work must be done to give participants a feeling of purpose.

Several participants felt that the diagrams were too complicated but, again, there was a great deal of information to be conveyed in a short time. More of a tutorial must be developed to facilitate material usage in future sessions. Again, this implies more pre-meeting involvement of knowledgeable mission personnel.

Once the participants started actively using materials the confusion cleared. Alternative methods of presentation should be examined for clear presentation, however.

Introduction. The meeting introduction was accomplished in two steps. The first step was a statement by General J. W. Waters on the importance/necessity of the meeting and its associated project. The second step was a review of the long-range LMS planning project, its goals, its status, its depth, and the reason why Weapon System Management was chosen as a first-start area.

The overview material, although lengthy, appeared insufficient for the meeting participants. Few participants had previous experience in long-range planning for LMS. One participant stated that he understood the introduction on the third day of the meeting.

The introduction would have been more effective if additional time had been spent in explanation or if results of the previously held Maintenance meeting could have been shown, with explanations on the benefits of the outputs. It should be noted, however, that a learning period will be required for any new participants. Part of this could be accomplished prior to a meeting by involving the participants in the preparation of the strawman model of the current process or perspective. Such participation was not possible in this case, due to the abbreviated schedule.

Meeting Overview. The meeting overview continued presentation of the introductory material for the meeting. It consisted of a definition of Weapon System Management, a review of the expected products of the meeting, a review of the current status of products, and the methodology to be used in the meeting.

The meeting overview became repetitive between the expected outputs of the meeting and the meeting methodology, but participants still asked repeatedly what the purpose of the meeting was and what the expected outputs were to be.

The overview involves a learning procedure and, like the introduction, would have been clearer with prior involvement of participants. Short of that, examples from the Maintenance meeting, with explanations, might have proved beneficial. Presentation of how the outputs were to be used and the benefits of having the products could have been communicated more effectively with such examples.

Overview of Inputs. Each of the materials to be used was briefly introduced in the early part of the meeting. It would have been preferable to introduce the material when it was to be used, since at this stage in the meeting the participants were not able to relate the materials to their use in the subsequent planning activities.

Measures of Merit. Two attempts were made to define some "measures of merit" during the meeting. Both times the term was defined as a system management objective and its associated measure of achievement. Examples were given. Both attempts were unsuccessful. The measures of merit that were to

be developed during the meeting were to be used on prioritizing the shortfalls. The participants found it impossible to relate a long-range shortfall, such as not having long-range planning capabilities within LO, to a short-range shortfall, such as lack of funds, through a common measure of merit. The benefits have two different measurement scales.

Simple measures of merit are not sufficient for Level II shortfall prioritization. More extensive evaluation criteria will be applied in ranking the approaches that will be developed in a subsequent Weapon System Management meeting. These criteria will be used to evaluate the approaches to overcoming shortfalls. In Level III, individual shortfalls will have measures of merit associated with them. For example, the adequacy of a modification tracking system may be measured by time to receive desired information. This would be used to rank only alternative modification tracking approaches.

Although the measures of merit were not applicable in Level II, they will be useful in Level III. Discussions of shortfalls should include the identification of measures of merit that may be used to discriminate between approaches. The mission planners are the only ones who can adequately identify the measures of merit that are appropriate for a given shortfall.

Futurity Document. In the limited time available, it was difficult to deal with this document in great depth. XRB representatives had extracted from the document those areas most applicable to Weapon System Management. Due to the nature of the activities in the area, the LO participants had difficulty relating to the management functions. They felt that most of their activities were in a reactive mode, since the processes performed most of the functions and they acted primarily as integrators. With more time they might have recognized more roles resulting from the corporate functions.

As it turned out, they spent a good deal of time arguing with the trends identified in the document. As expected, they had a great deal of difficulty dealing with the future, wanting to deal only with their current problems. Certain participants were very reluctant to acknowledge the possibility of any significant changes from the way they currently do business.

More time is required to adequately deal with this area. It is too important to be brushed over lightly. The expected future must be translated into impacts on the functions in terms of additional inputs, outputs, etc.

Principles and Policy. Although some preliminary principles had been identified prior to the meeting, they were not used. They were intended to be guidelines in the development of approaches, and the approaches identified were stated in very general terms. The principles and policies will be used in the Block 4 planning session.

Command Shortfalls. The complete command shortfall was made available to participants, but an extract of that document listing shortfalls particularly applicable to Weapon System Management had been prepared.

This topic was quite controversial. The participants felt that the shortfall derivations were not adequately explained. They felt some were simply not true, and others were unrelated to their areas of responsibility. More tailoring will have to be done in the future to see that the Level I shortfalls are adequately explained and so that participants can relate to them.

Long-Range System Management. The long-range area was dealt with first in order to ensure that it would be addressed. Since LO deals primarily with near-term activities and problems, it was felt that it would be difficult for them to relate to the long-range area. Their reaction was as expected. Initial comments were to the effect that they don't do long-range planning.

After reviewing the description of long-range functions and rewording several areas to meet with their approval, the participants addressed the mid-range area where they were more comfortable.

In the discussions of the mid-range area, and later the short-range area, they gradually recognized the requirement for long-range planning. They then went back to the long-range area and completely restructured it. The final definition was a single integrating function requiring inputs from each of the areas they represented. The output of this function was a set of concepts for logistics and management which should be recognized and incorporated into plans required to support specific weapon systems.

Their recognition of the need for this concept precipitated the identification of several shortfalls. One shortfall was that LO has no resources committed to long-range planning. They further recognized that there is insufficient logistics input to long-range decisions. They recognized planning roles in XR, AQ, and MI, but were unsure of the exact relationships.

Although the long-range area needs to be developed in much greater detail, the participants' initial recognition of this as an area to be concerned about was a giant step forward.

There was some blurring between the long-range area of Weapon System Management and the discussion of the future. Basically, the future of weapon systems was addressed in the long-range area, but in addition to that future, there is a need to address the future of Weapon System Management itself. This was only briefly addressed in this meeting, through the identification of possible changes in the Weapon System Management concept in the long-range planning area.

In some perspectives, the introduction of the long-range area may not be as difficult. The approach was generally sound, but more participation by mission personnel in identifying the functions, or at least rewording the function to trigger the right thoughts, would be helpful.

Consideration of foreign military sales was eliminated from the revised long-range description.

Mid-Range System Management. As expected, the mid-range subject area was much easier for the participants to deal with. Having warmed up with the long-range, however, they threw out the mid-range strawman descriptions almost immediately and rewrote them. Although the final results more correctly identified the mid-range functions, in reviewing the output it was determined that the functions identified dealt only with new systems and that existing systems' requirements had not been identified.

Because of the lack of available time, decision factors were not identified for the mid-range functions. This must be done. Foreign military sales were not included in this area either.

The group had difficulty divorcing themselves from the system manager (SM) activities. They agreed that someone performed the mid-range functions but did not want to concern themselves with them since the SM did not perform them, and they involve several outside agencies. Again the group had difficulty dealing with FMS. It was in the definition of the limits placed on the development of the Integrated Logistics Support Plan (ILSP) for a specific weapon system that the participants began to recognize the effect of long-range planning on their activities. They themselves put hard numbers into the

Maintenance plans, for example, but it became obvious that someone had dictated the concepts that determined those plans.

Short-Range System Management. The short-range description of system management was reviewed by presenting a functional overview with functional blocks reviewed individually with associated decision factors. The future trends were used to determine any expected changes to each functional block. These changes were recorded to describe possible future requirements for short-range system management. The result was a preliminary description of the current and future short-range system management within AFLC and some of the organizational interactions.

The boundaries of system management in the day-to-day arena initially were not described adequately. The boundaries were not bounded at the start of the short-range review, but shortly thereafter the boundaries were restricted to AFLC's responsibilities, due to three major reasons. The reasons were:

- The universe of involvement in the short-range system management decisions included organizations that AFLC had no control over and included levels of decision making that could not be impacted by AFLC.
- Participants had difficulty dealing with an unbounded universe.
- The concept of short-range system management was to be used within AFLC to describe AFLC responsibilities and to capture interactions with other organizations.

The review continued with an AFLC boundary on the description.

The boundary restriction on the description led to the belief among the participants that short-range system management equated to system manager, although the boundary had to be expanded to include other AFLC decisions for some functional blocks.

Vocabulary was a major problem in the short-range area. Key words used in the presentation material in relation to responsibilities were not consistent with the participants' use of those and the current AFLC vocabulary was not always used. Titles were changed to better reflect the decisions that were being made in a functional block.

The problems described above may have been averted by earlier involvement of the participants in describing the strawman. Titles would have been developed using AFLC terminology, thus avoiding the vocabulary problem. The "universal" boundary could have been tested prior to the meeting, resulting in the more logical restriction of the short-range responsibilities to AFLC. The sponsoring organization, as a minimum, should review all meeting inputs.

Identification of Shortfalls. Shortfalls were identified in the course of describing the current situation and hypothesizing about the future. As they were identified during the discussion, they were noted and later presented as a list of shortfalls based on the particular subject area (e.g., long-range).

Prioritization of Shortfalls. A rudimentary process for prioritizing the shortfalls was used. An oral consensus was reached as to which were the more important in each category (long-range, mid-range, and short-range). These were then aggregated into a single list. The shortfalls were then paired serially and a determination was made by the group as to which in each pair was more important. The process was informal and not rigidly structured, nor were the criteria for determining importance defined. The ranking was subjective, but basically met with group approval.

Selection of a "First Start". Suggested first starts were chosen after the shortfalls were prioritized. Participants looked at each shortfall individually and decided if a management system would be an applicable approach or part of an approach to meet the shortfall. Where management systems were indicated, the participants were asked if the management system, or a stand-alone portion of the management system, could be developed in calendar year '82. The participants then selected their first and second choices for first-start management from the approaches meeting the first-start criteria. They also chose two other areas that could be solved in the near term to recommend for action other than management systems development.

The method for selecting the first-start areas was satisfactory for this meeting, but should be more structured in the future.

Roles of Key Participants

BCL presented all the materials, with the exception of General Waters' introduction. Although the sessions went very well, there should have been more visible involvement of LO. A few participants tended to dominate the discussions. A little administrative weight could have cut down some of the discussion time without reducing effective input. Outside facilitators can halt discussions, but it becomes a judgment call as to when a subject has been adequately covered. Mission representatives can better recognize the depth and sufficiency of the discussion in a given topic area.

XRB attendees represented the overall planning effort and acted as recorders for the minutes of the meeting. Due to their role in validating data system requirements, they were viewed with some distrust by participants. It is difficult for them to be seen as part of the solution instead of part of the problem.

Several of the participants were reluctant to be too supportive of the effort for fear their continued involvement would be required. They freely generated changes to the descriptions, but did not want to assume responsibility for further development of the end products. Most of the materials were seen as XRB requirements serving XRB purposes.

Conclusions/Recommendations

The meeting went very well, although differently from the way it was planned. The ability to be flexible is paramount in this type of session. At the same time, it is essential that the flexibility be applied to the techniques and order of business, but not to the subject areas to be covered.

Not enough time was spent on the future, but it was covered in some detail. This is the most difficult area to deal with. People want facts and guarantees, and find it difficult to plan for possibilities.

The general approach and combination of activities was good. More participation by the mission in the development of the strawman would have greatly reduced the initial discomfort with them. This would have allowed more time for discussion of the future impacts.

The mission took responsibility for the briefing to their management. Acceptance by the mission will be slow, but should become easier as more processes and perspectives are completed and the word gets out--if they see some near-term results.

LESSONS LEARNED: WEAPON SYSTEM MANAGEMENT

Part II: Continuation of Level II Activities

Introduction

Under Contract No. F33600-80-C-0414, Battelle's Columbus Laboratories is supporting AFLC/XRB in the full-scale development of a long-range requirements determination system. The Requirements Determination Model developed under this contract provides a guide for the activities being conducted. It is a Battelle responsibility to monitor these activities and to make recommendations for improvements to the model as a result of its application.

It is the purpose of this document to comment on the success of the Requirements Determination Model as it has been applied to Level II activities for Weapon System Management. Prior activities, reported in Part I, developed a baseline for describing the Weapon System Management function. The activities reported here used output from that meeting, but also repeated some portions of that first effort. The repetition was necessary for two reasons. The first reason was that there had been some difficulty in dealing with the early materials, so efforts were made to simplify presentation of those materials by changing format. These changes necessitated some review and approval by the functional users. The second reason for the repetition was the fact that there were different participants at the two meetings and so it was necessary to acquaint the participants at the second meeting with the activities from the first meeting.

Objectives. The objectives of this second meeting were:

- To confirm the functional description of Weapon System Management
- To identify current shortfalls and future requirements for management systems in this area
- To set objectives which would satisfy these shortfalls and requirements
- To prioritize the attainment of these objectives
- To identify appropriate project pieces (Level III's) for further development.

Attendees. Participants were selected by LOAR, with suggestions from XRB. The basic requirements for attendees was that they be fairly knowledgeable of the broad spectrum of system management activities, as opposed to functional area specialists. All attendees were from headquarters. Attachment 1 is a list of the attendees.

Preparation Procedures

The three major activities involved in the meeting were (1) making arrangements for the meeting itself, (2) preparation of materials for the meeting, and (3) conducting the meeting.

The LOAR group made the meeting arrangements and invited the attendees. The meeting was held at AFLC headquarters January 6-8, 1982. Attachment 2 is the meeting agenda.

Planning Content

Input. The basic materials prepared for the meeting consisted of flowcharts depicting the Weapon System-related functions and their interrelationships, a description of the individual functions which are primarily AFLC/LO related, and a list of shortfalls associated with those functions. These shortfalls had been identified in the prior meeting. The functional descriptions consisted of a drawing giving the function name, the major decisions made in performing the function, the organizations responsible for performing the function, the major constraints, information inputs, and information outputs.

In addition to these materials specifically developed for Weapon System Management, an adaptation of the Command Shortfalls identified in earlier planning activities was used as a source document.

Some tools for aiding the process were also developed. These included a sample aggregation of shortfalls into change objectives, a form for documenting the inpact of different approaches to achieving change objectives, and a format for evaluating alternative approaches. Attachment 3 contains the materials prepared for this meeting.

Facilities. The meeting was held in a headquarters conference room. The room was equipped with a screen and dual vugraph projectors, a blackboard, and a central table adequate to seat approximately 12 participants.

Process. The meeting was introduced by Debbie Malewich, LOAR, who briefly reviewed the purpose of the meeting. The balance of the meeting was conducted by Kay Miller of Battelle. The meeting did not follow the planned schedule. Considerably more time was spent reviewing the Weapon System description than had been planned.

The planning was conducted by reviewing and discussing the initial system description and modifying it or augmenting it as required. Changes and additions were noted on vugraphs of the materials during the discussions. The materials were then updated and distributed to the attendees after the meeting.

Output. Several changes to the initial materials were made, and several additional shortfalls were identified. The shortfalls then were aggregated into a tentative set of change objectives. The group did not address approaches to the objectives, but did address the prioritization of the objectives themselves. Attachment 4 contains the updated system description, the shortfalls identified, the change objectives developed, and the resulting prioritization.

Recommended Changes

As a result of preparation for and conduct of these activities in the planning process, a number of observations have been made that relate to improving the effectiveness and efficiency of carrying out those steps for other processes and perspectives. In the following sections the observations have been grouped and explicit recommendations made for improving the planning process.

Objective 1. To Confirm the Functional Description of Weapon System Management.

(1) Although the description of Weapon System Management was well received, much time was spent having participants become familiar with it and discussing its validity. It would have been preferable for mission (LO) experts to have participated more in the development of those materials. This might have reduced the explanation time and improved the utility of those materials.

(2) Additional development of those planning materials would also have increased their utility. Specific identification of relationships with other processes and LAGs would have helped, particularly since the Weapon System perspective was not as clearly defined as the functional processes.

(3) Conduct of the meeting by mission (LO) personnel would have enhanced the credibility of the effort and possibly eliminated some of the discussions related to the justification of the entire effort.

Objective 2. To Identify Current Shortfalls and Future Requirements. The group appeared to have no problem identifying current shortfalls related to the area. Since there are so few management systems currently available on a weapon system level, they had an easy time in this area. The group did not really address future requirements, per se. Some alternative futures specifically related to Weapon System Management (for example, some changes in organizational alignments) would have been useful. These materials were available but were not used because of time constraints.

Objective 3. To Set Change Objectives Which Would Satisfy These Shortfalls and Requirements. Shortfalls were identified in several areas and at different levels of detail. As was anticipated, some of these shortfalls were unrelated to LMS approaches. Some were related to LMS approaches, but also had other aspects. Some of the shortfalls were in areas which were the responsibility of organizations not represented at the meeting. For these reasons, it was difficult to set objectives which were at the right level of detail and appropriately indicated the problem(s) being addressed.

BCL's recommendation is that in the future this aggregation of shortfalls and requirements into change objectives should take place over a break period of several days so that several alternative structures can be developed and examined. If this statement of objectives is to go forward it is necessary that it appropriately reflect the area's concerns.

Objective 4. To Prioritize the Attainment of the Change Objectives. It was difficult to adequately compare and evaluate the objectives identified since there was still discussion as to whether they were the right ones. The evaluation criteria presented were designed primarily to compare approaches, and as a result some of the categories were inappropriate for comparing objectives. It would have been better if the mission people had identified mission objectives which could be used to prioritize LMS change objectives as a first cut. Then the application of implementation criteria might be used to assess the practicality of pursuing the objectives in view of available resources.

Objective 5. To Identify Appropriate Project Pieces (Level III's) for Further Development. Because of difficulties encountered in the definition of change objectives, we really never addressed this objective in much detail. It appears that some guidelines for sizing projects will have to be identified in such terms as organizational involvements, functional interfaces, and man-hours or dollar approximations.

Conclusions

As a result of the above observation, it appears that Level II planning needs several elements to be successful:

- Active participation by mission planners in preparatory stages
- Mission objectives to aid in project selection
- Additional guidelines for scoping objectives and selecting Level III projects.

The mission planners who did participate were excellent, and the cooperation of LOAR was very evident in the meeting.

ATTACHMENT 2-1

LEVEL II MEETING ATTENDEES

ATTACHMENT 1

WEAPON SYSTEM MANAGEMENT
Level II Meeting
6-8 Jan 82

NAME	SYMBOL	PHONE
Debbie Malewich	LOARE	77991
Bob DeSanty	LOARE	77991
Ronnie D. Vandagriff	LOARE	77991
Bob Rutkowski	LOLMC	76941
Duane Tucker	XRBP	74978
Kay Miller	BCL	(614) 424-7163
Hjálmar Sveinsson	BCL	(614) 424-4350
Daril E. Blake	LOMCP	76910
John A. Wolfe	LOMCP	76910
R. L. Fishback	LOAC	73503
M. G. Farrell	LOARE	77991
Lt Col F. E. Healea, Jr.	LOACF	76901
Lt Col Harold Williams	LOAR	77033

Item 1

ATTACHMENT 2-2

AGENDA

ATTACHMENT 2-2

AGENDA

WEAPON SYSTEM MANAGEMENT MEETING
January 6-8, 1982
HQ AFLC; WPAFB, OHIO

Tuesday, December 15

0830	Opening Remarks
0845	Presentation of Weapon System Management Description and Previously Identified Shortfalls
1015	Break
1030	Identification of additional Shortfalls and Future Requirements
1200	Lunch
1300	Development and Aggregation of Change Objective
1330	Break
1345	Structuring of Change Objective
1630	Close

Wednesday, December 16

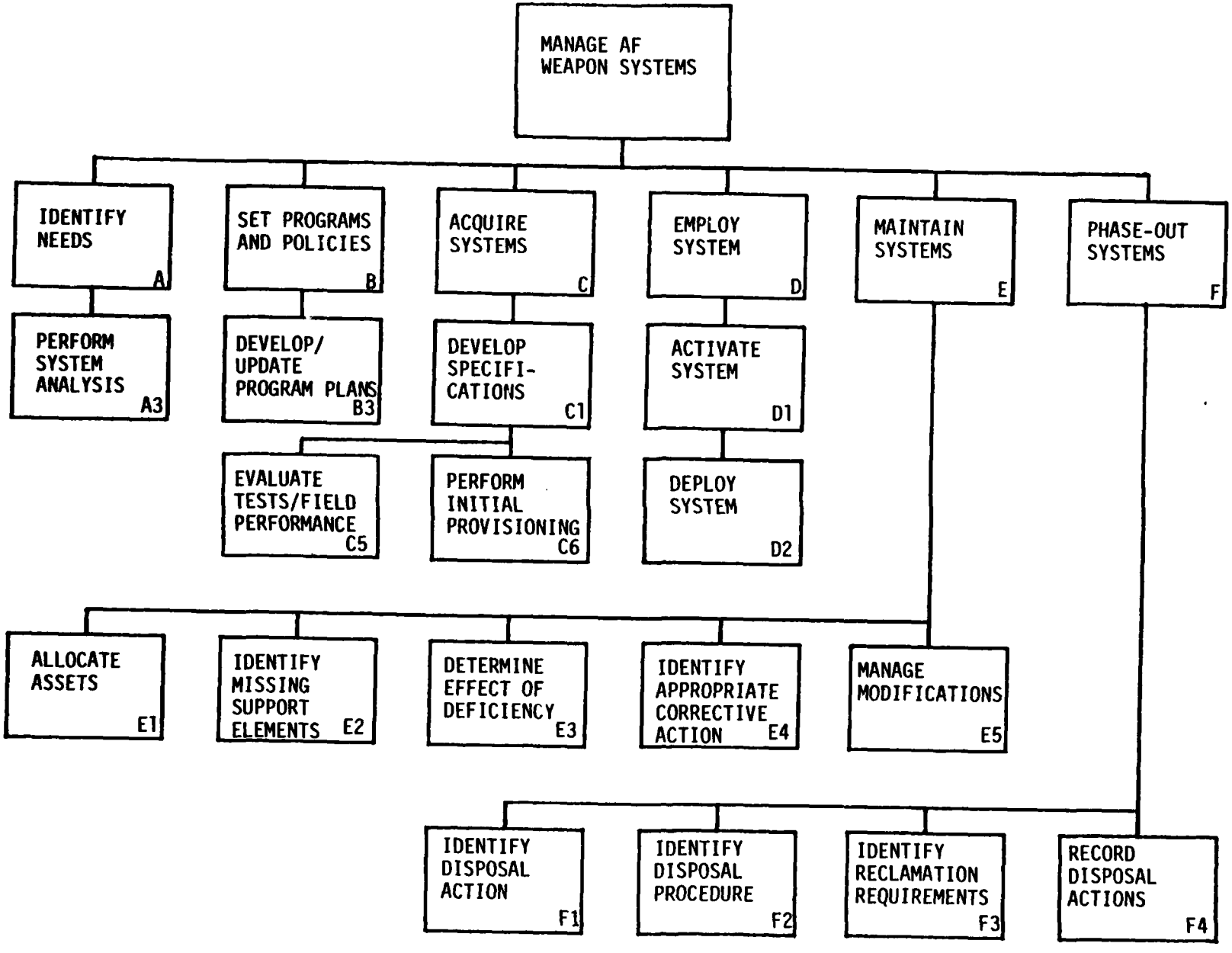
0830	Identification of Alternative Approaches
1015	Break
1030	Identification of Guidance, Functions, Organization, and Information Involved in Approaches
1200	Lunch
1300	Evaluation of Alternative Approach
	Performance Benefits
	Implementation Assessments
1630	Close

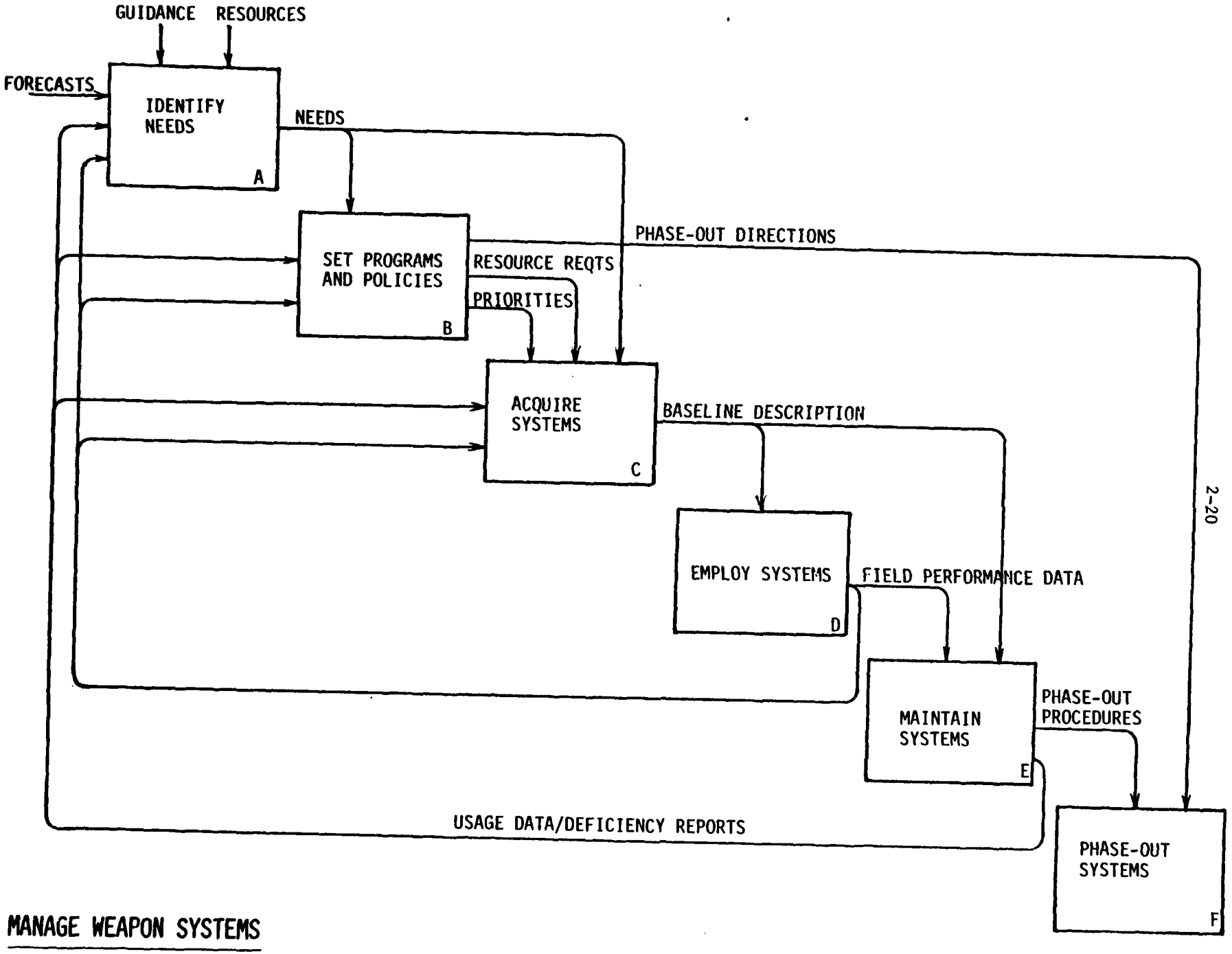
Thursday, December 17

0830	Prioritization of Approaches
1015	Break
1030	Development of Draft Plan for Implementation
	Responsible Organization
	Resource Estimates
	Schedule
1200	Close

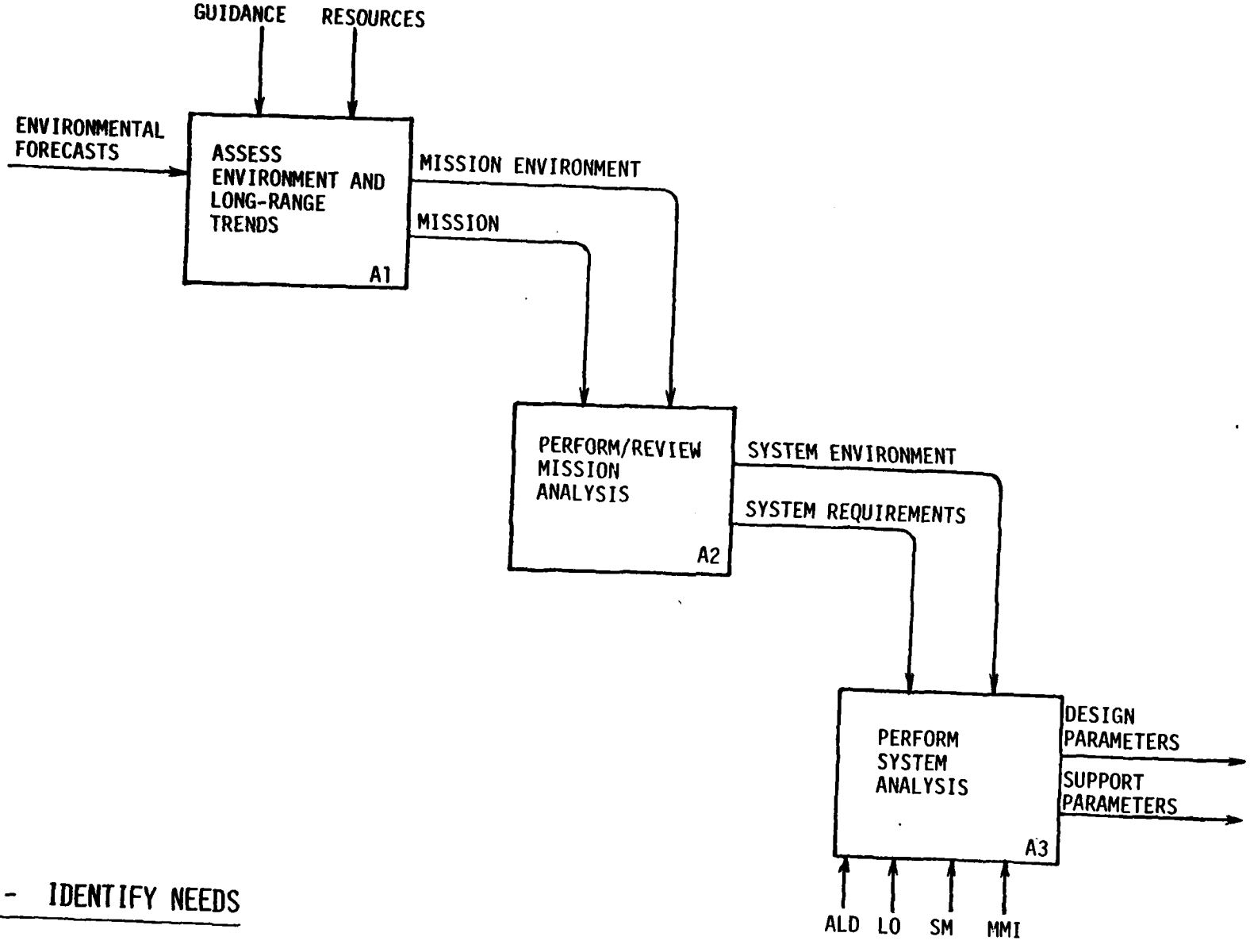
ATTACHMENT 2-3

MEETING INPUTS

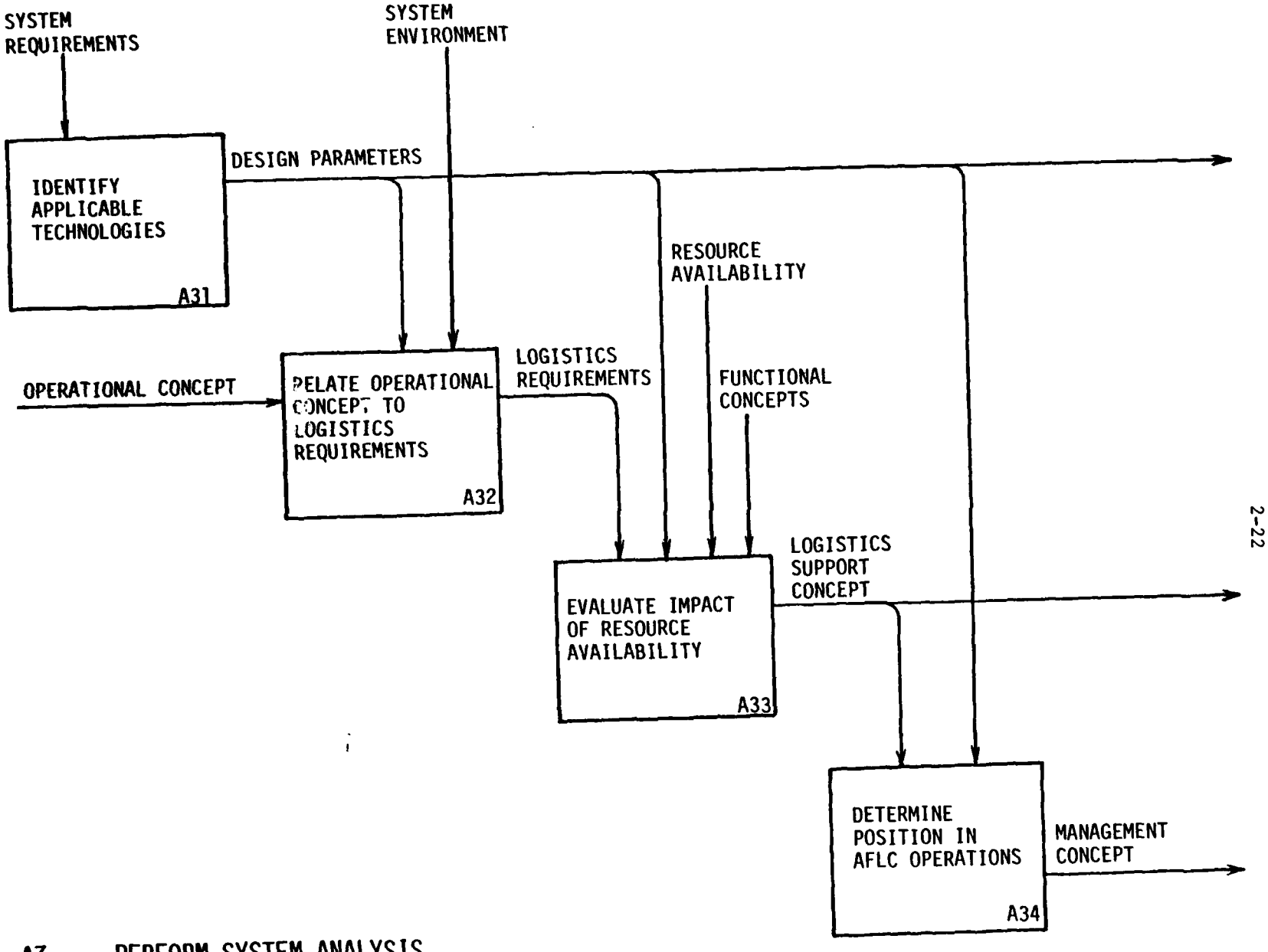

MANAGE AF WEAPON SYSTEMS
IDENTIFY NEEDS A
SET PROGRAMS AND POLICIES B
ACQUIRE SYSTEMS C
EMPLOY SYSTEM D
MAINTAIN SYSTEMS E
PHASE-OUT SYSTEMS F
PERFORM SYSTEM ANALYSIS A3
DEVELOP/ UPDATE PROGRAM PLANS B3
DEVELOP SPECIFI-CATIONS C1
ACTIVATE SYSTEM D1
EVALUATE TESTS/FIELD PERFORMANCE C5
PERFORM INITIAL PROVISIONING C6
DEPLOY SYSTEM D2
ALLOCATE ASSETS E1
IDENTIFY MISSING SUPPORT ELEMENTS E2
DETERMINE EFFECT OF DEFICIENCY E3
IDENTIFY APPROPRIATE CORRECTIVE ACTION E4
MANAGE MODIFICATIONS E5
IDENTIFY DISPOSAL ACTION F1
IDENTIFY DISPOSAL PROCEDURE F2
IDENTIFY RECLAMATION REQUIREMENTS F3
RECORD DISPOSAL ACTIONS F4



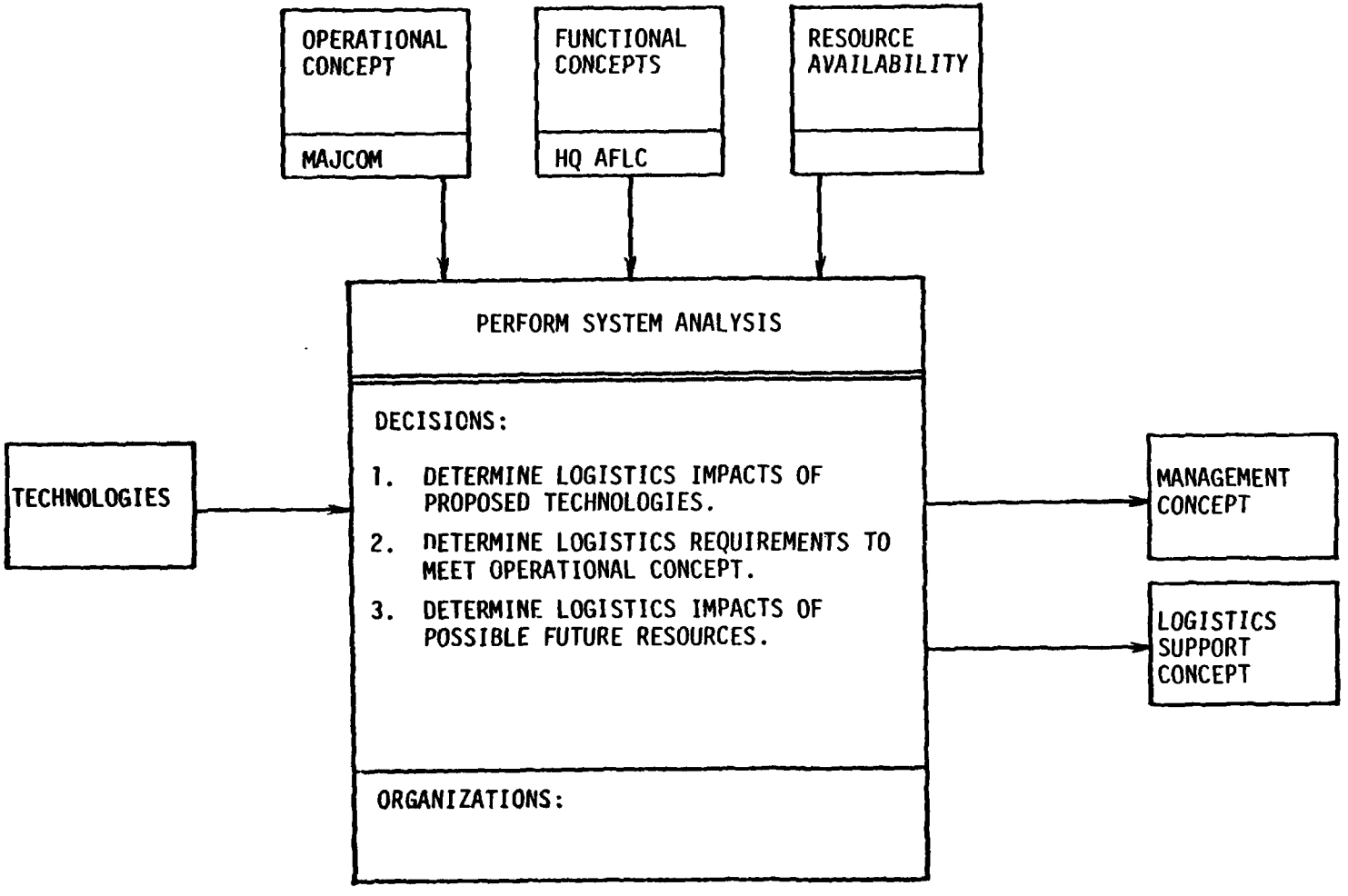
MANAGE WEAPON SYSTEMS



A - IDENTIFY NEEDS



A3 - PERFORM SYSTEM ANALYSIS

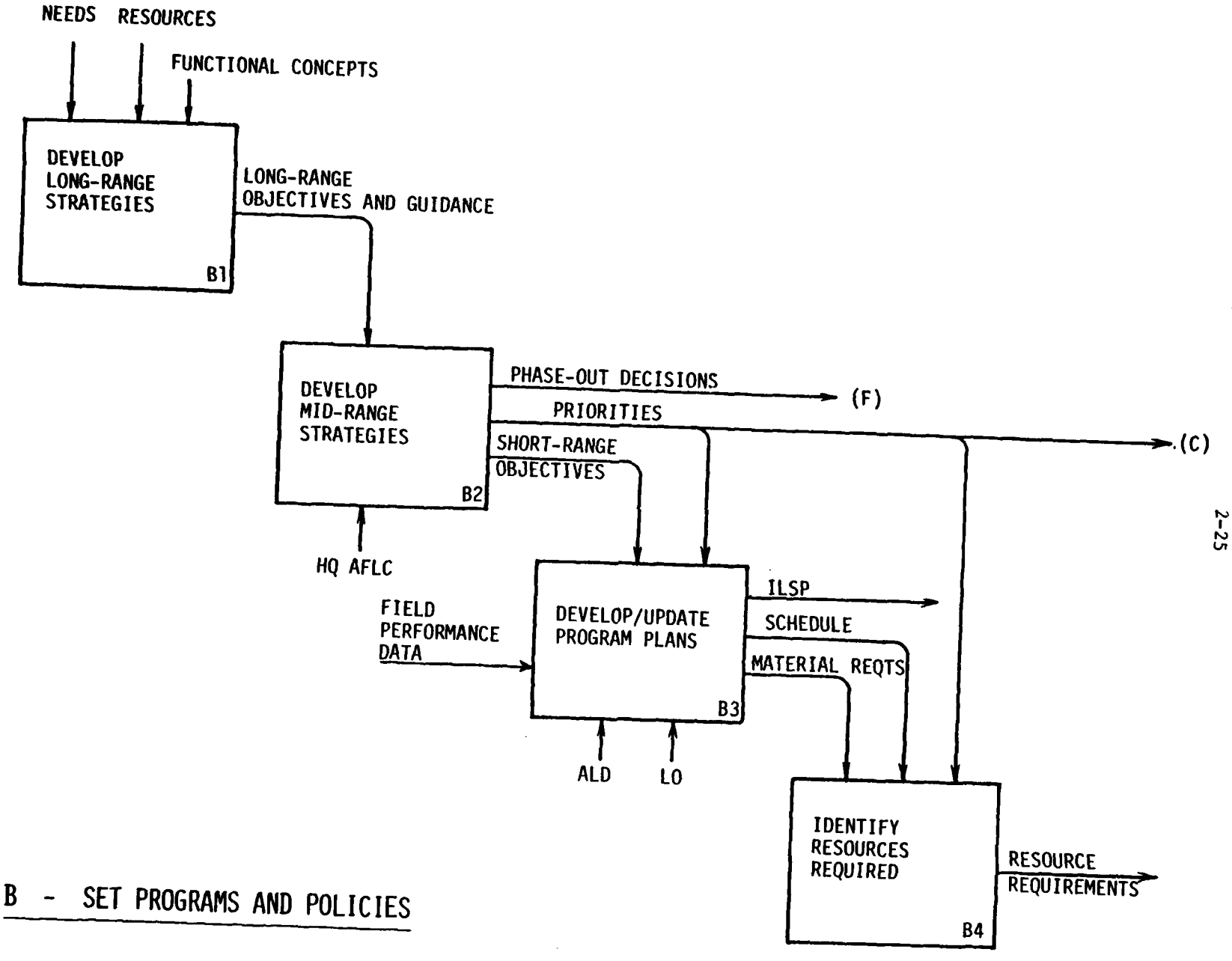


A3 - PERFORM SYSTEM ANALYSIS

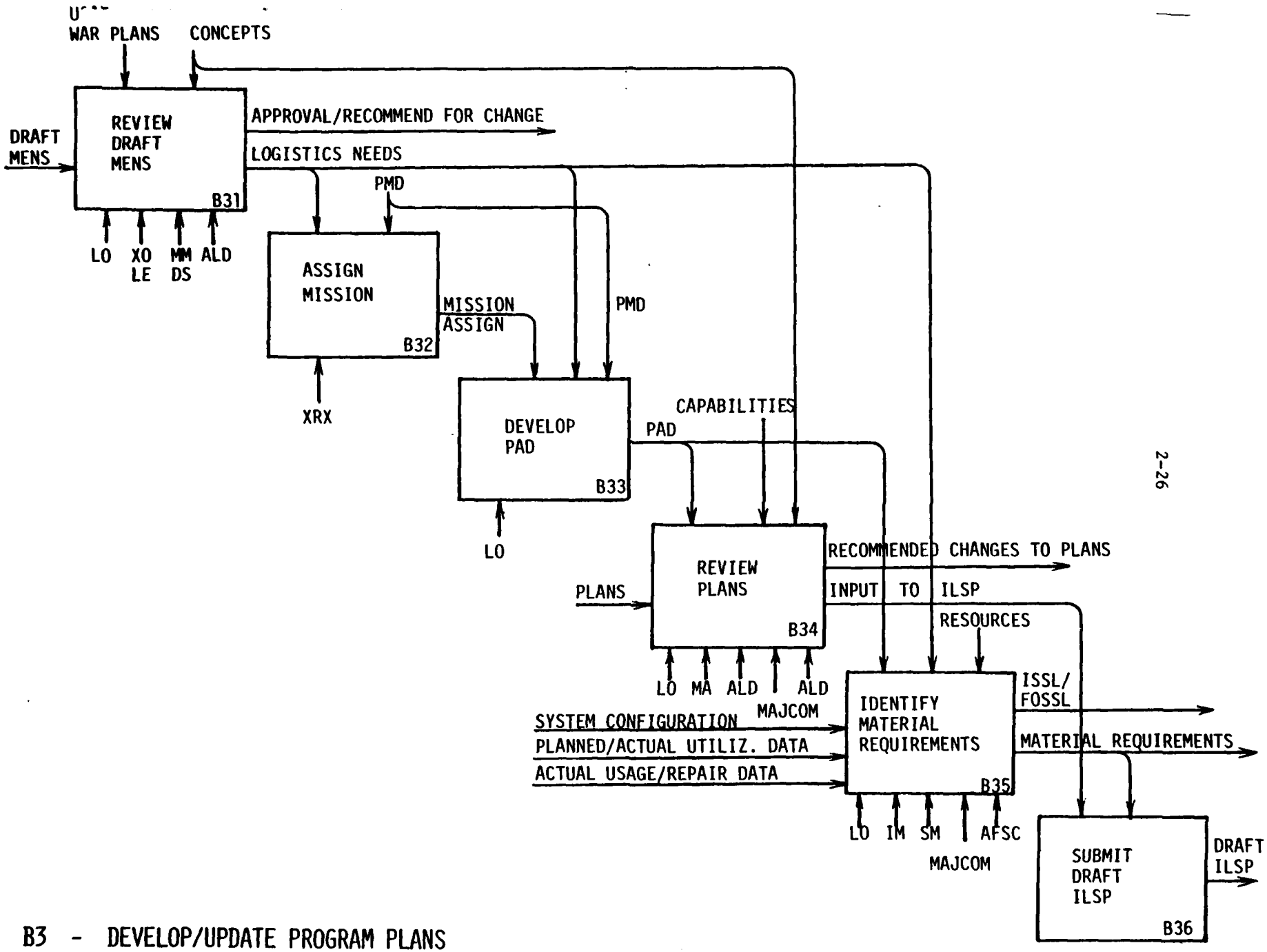
IDENTIFY NEEDS

CURRENT SHORTFALLS

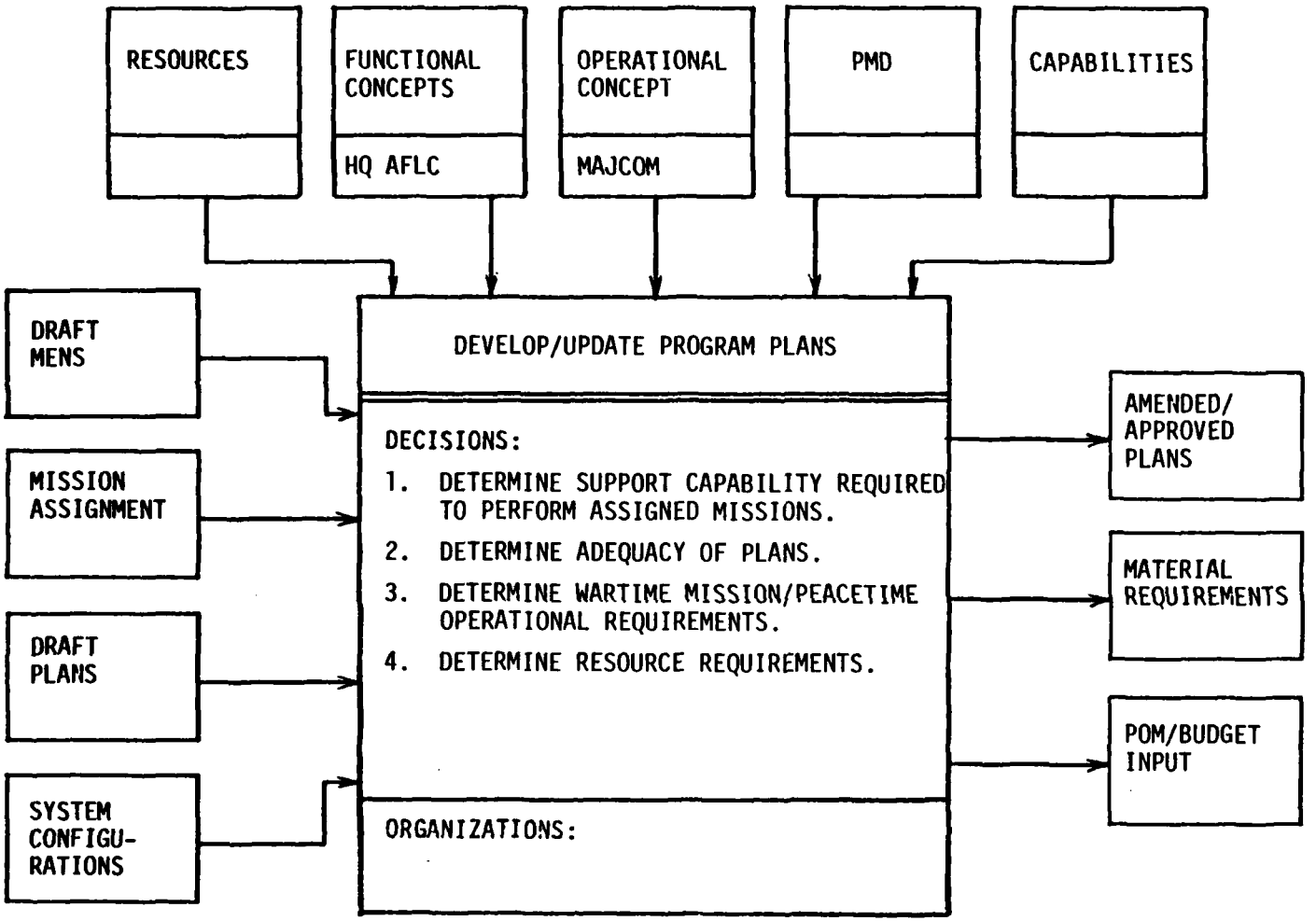
1. LACK OF FEEDBACK TO FUNCTIONAL CONCEPTS
2. LITTLE OR NO INPUT ON LESS-THAN-MAJOR SYSTEMS
3. INFORMATION ON OPERATIONS (WAR PLANS) TOP SECRET, NOT READILY AVAILABLE
4. LOGISTICS NEEDS TO HAVE GREATER IMPACT ON DESIGN
5. INSUFFICIENT CONSIDERATION OF TECHNOLOGY IMPACTS
6. NO STRONG MECHANISM TO COMMUNICATE INPUTS OF LOGISTICS INTO LONG-RANGE PLANNING



B - SET PROGRAMS AND POLICIES



B3 - DEVELOP/UPDATE PROGRAM PLANS

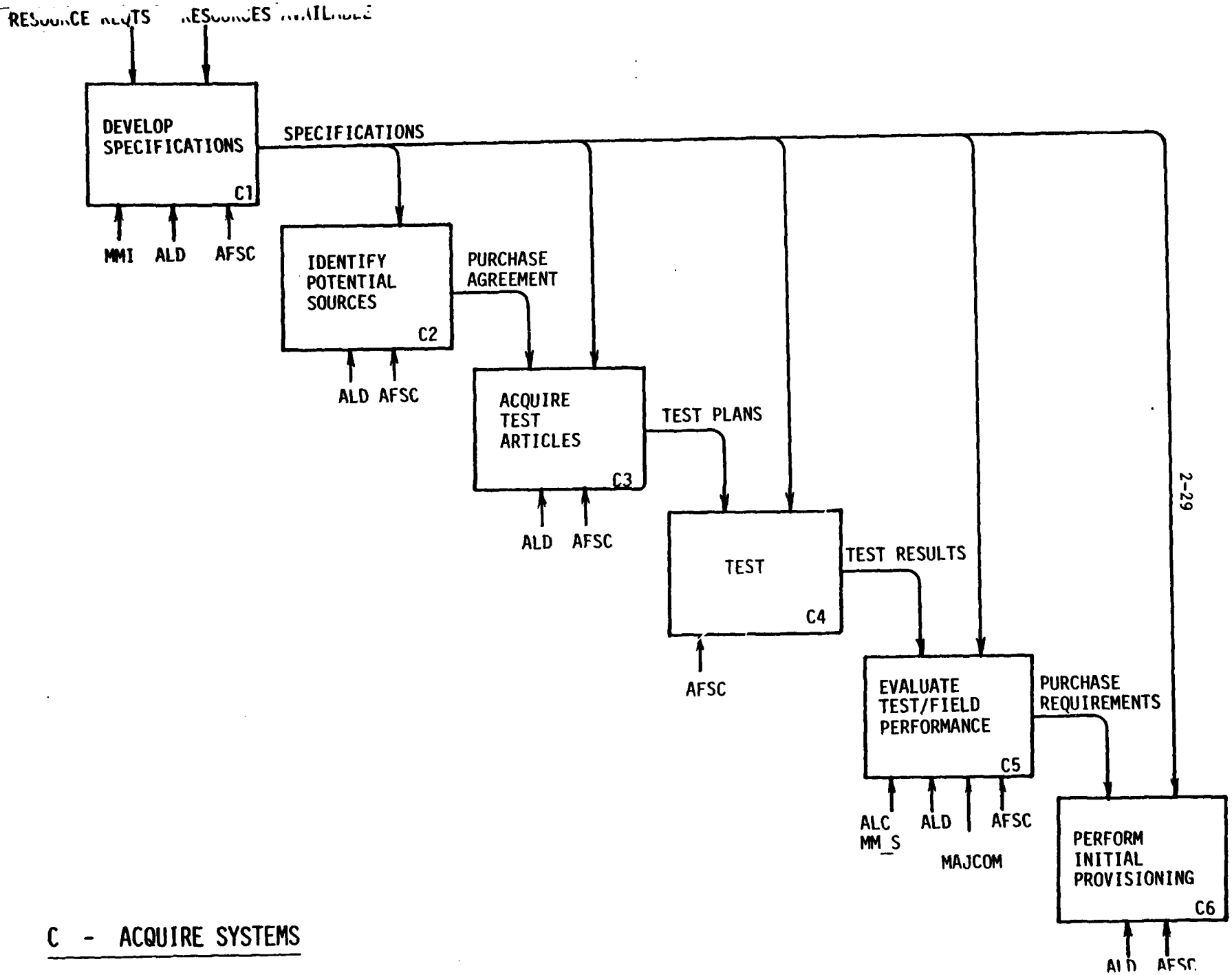


B3 - DEVELOP/UPDATE PROGRAM PLANS

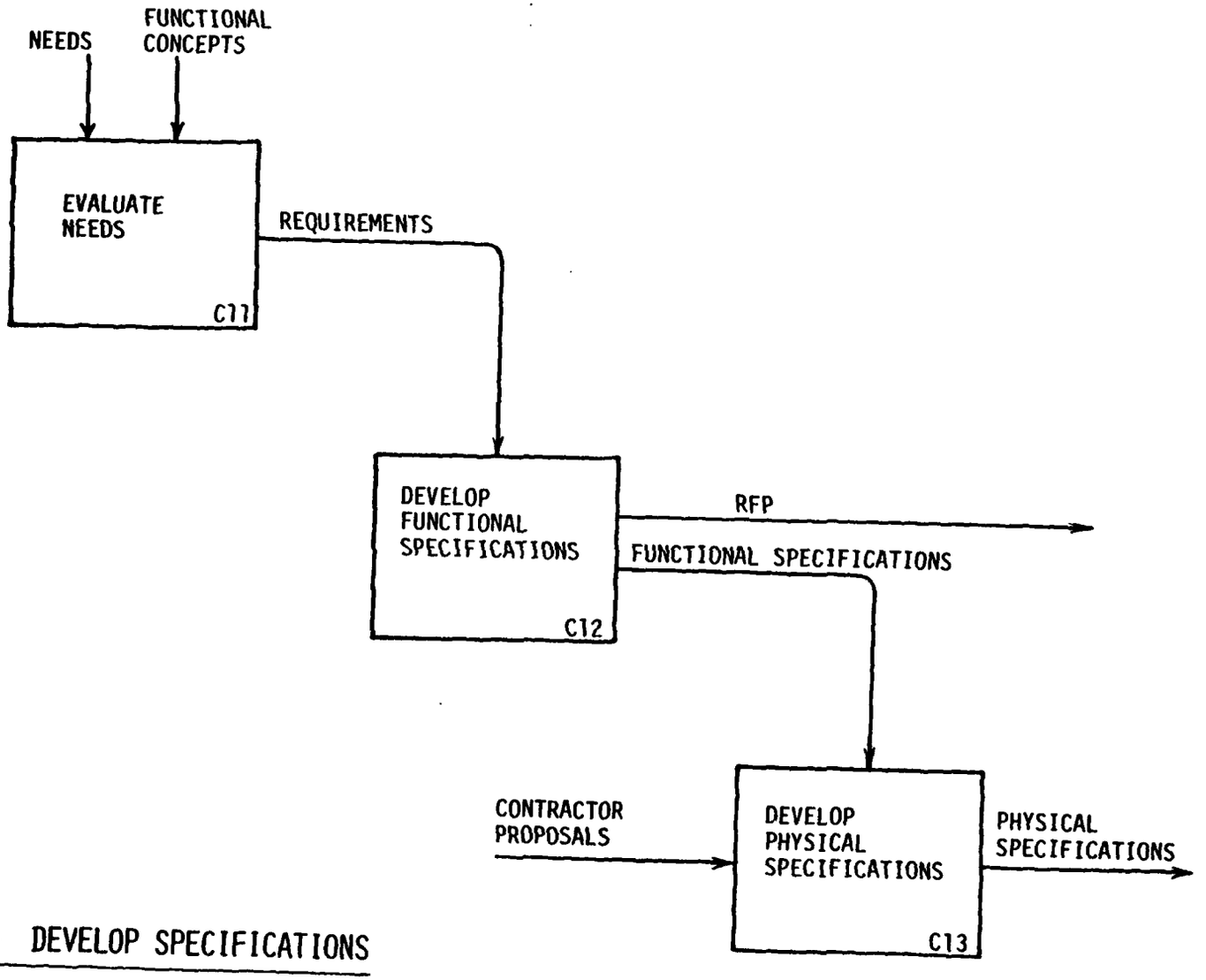
SET PROGRAMS AND POLICIES

CURRENT SHORTFALLS

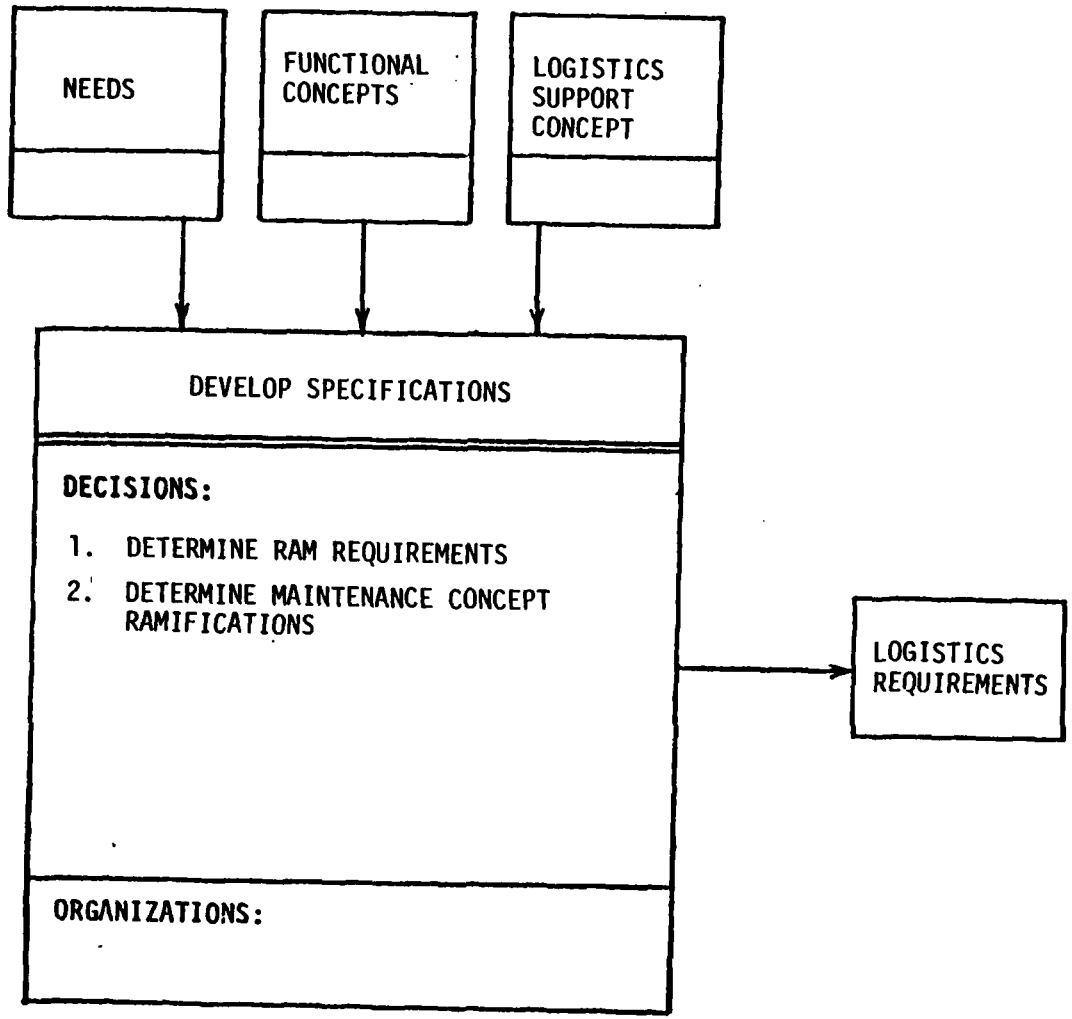
1. NO DEFINED MISSION RESOURCES IN LO COMMITTED TO LONG-RANGE PLANNING
2. NEED TO CAREFULLY CONSIDER LOGISTICS IMPLICATIONS OF CONTRACTOR SUPPORT
3. MAINTENANCE CAPABILITIES NOT ASSOCIATED WITH A WEAPON SYSTEM ON COMMON ITEMS
4. R&M REQUIREMENTS IN CONFLICT WITH DTC GOALS (UNIT FLYAWAY COST)
5. POLICY/PROCEDURE LIMITATIONS ON OPTIONS FOR MATERIAL SUPPORT
6. FUNDS NOT ADEQUATE FOR REQUIREMENTS



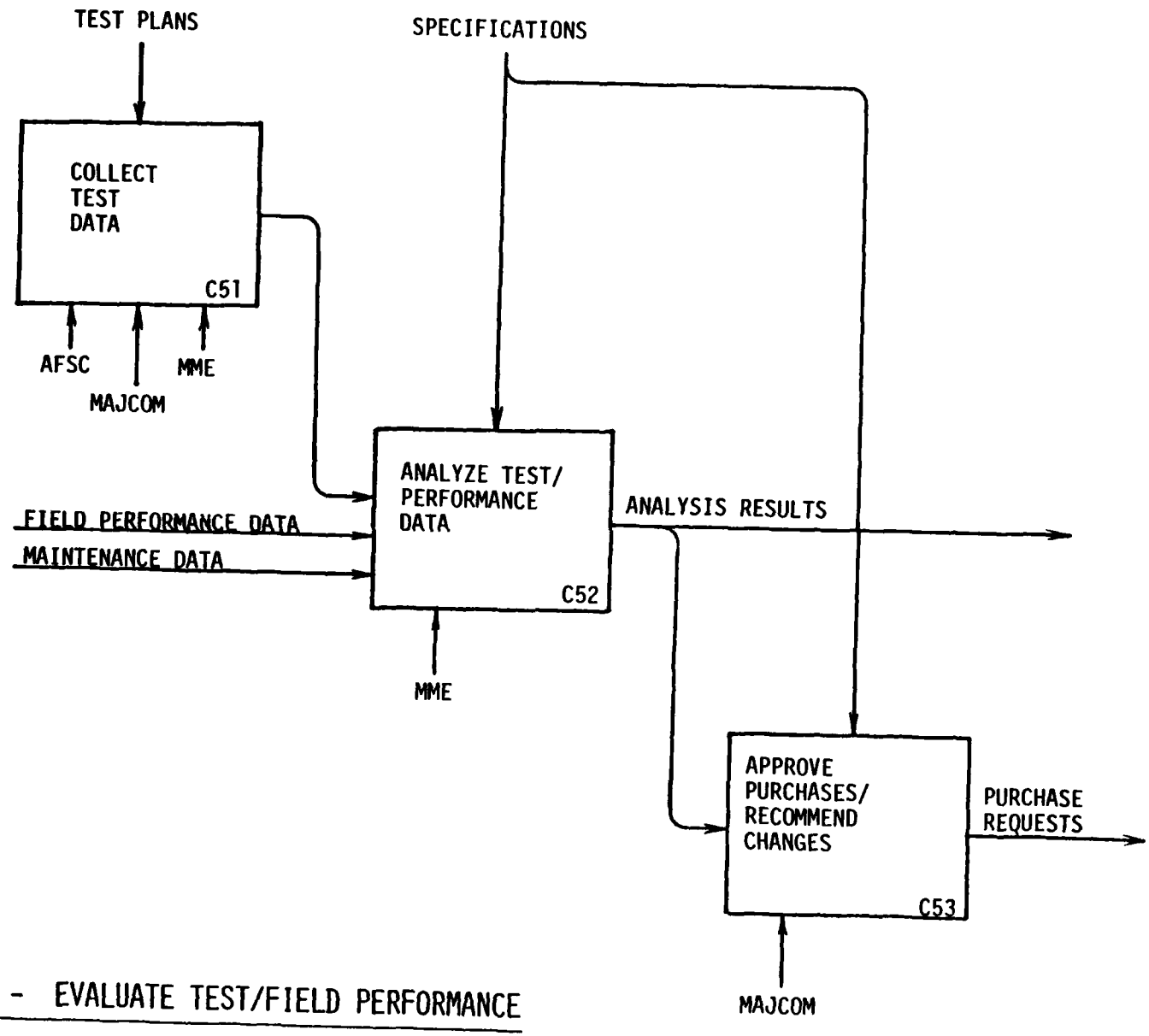
C - ACQUIRE SYSTEMS



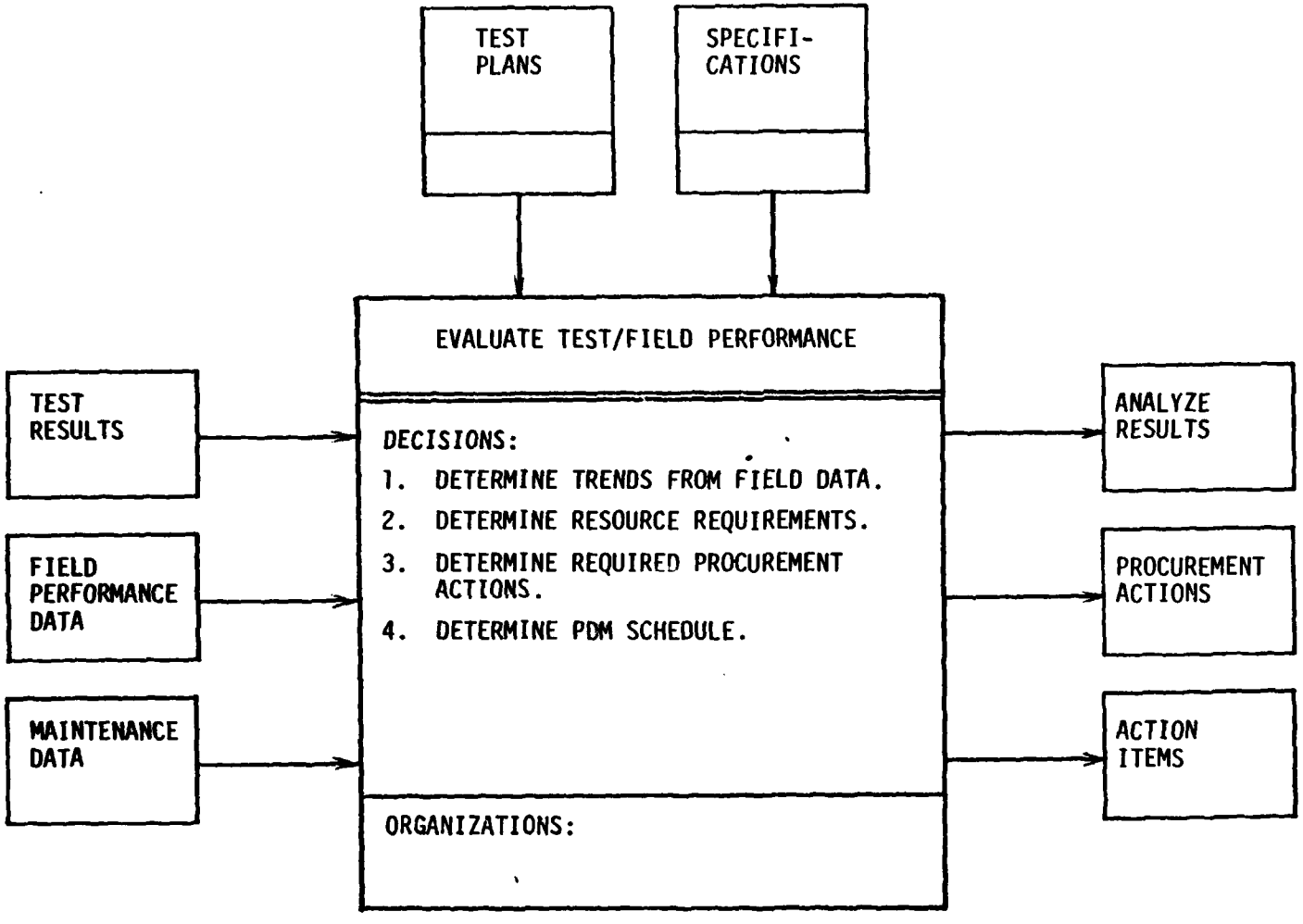
C1 - DEVELOP SPECIFICATIONS



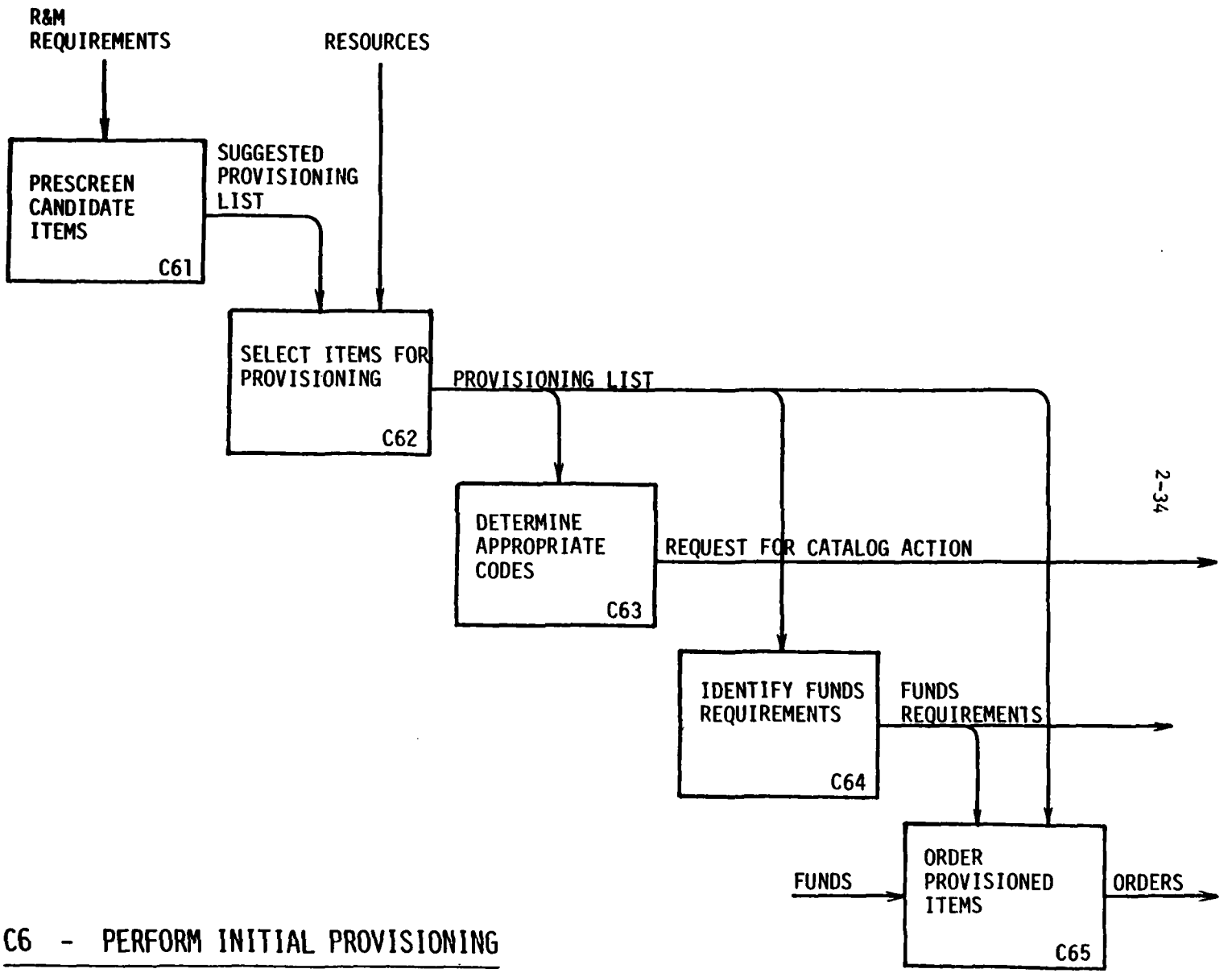
C1 - DEVELOP SPECIFICATIONS



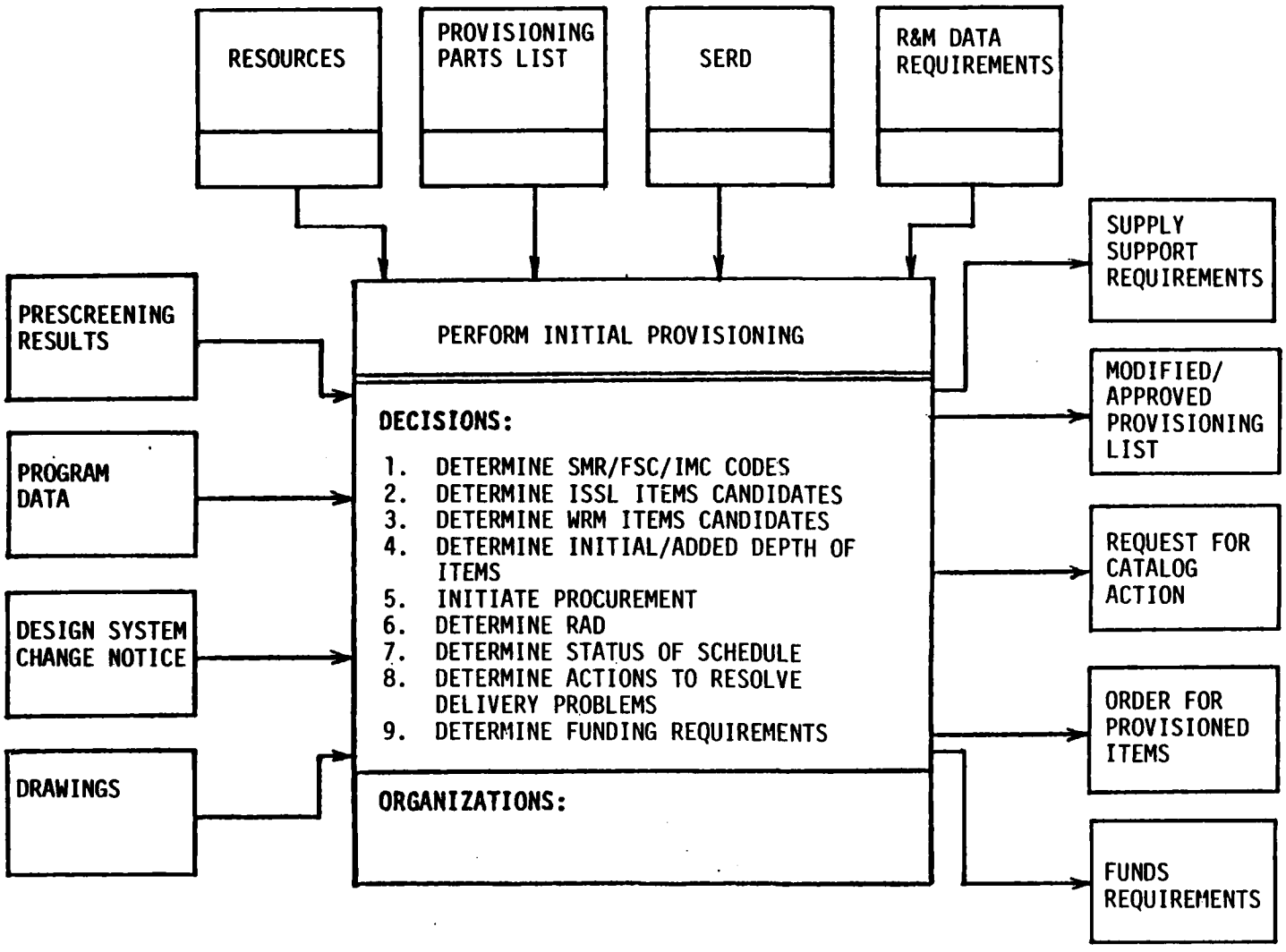
C5 - EVALUATE TEST/FIELD PERFORMANCE



C5 - EVALUATE TEST/FIELD PERFORMANCE



C6 - PERFORM INITIAL PROVISIONING

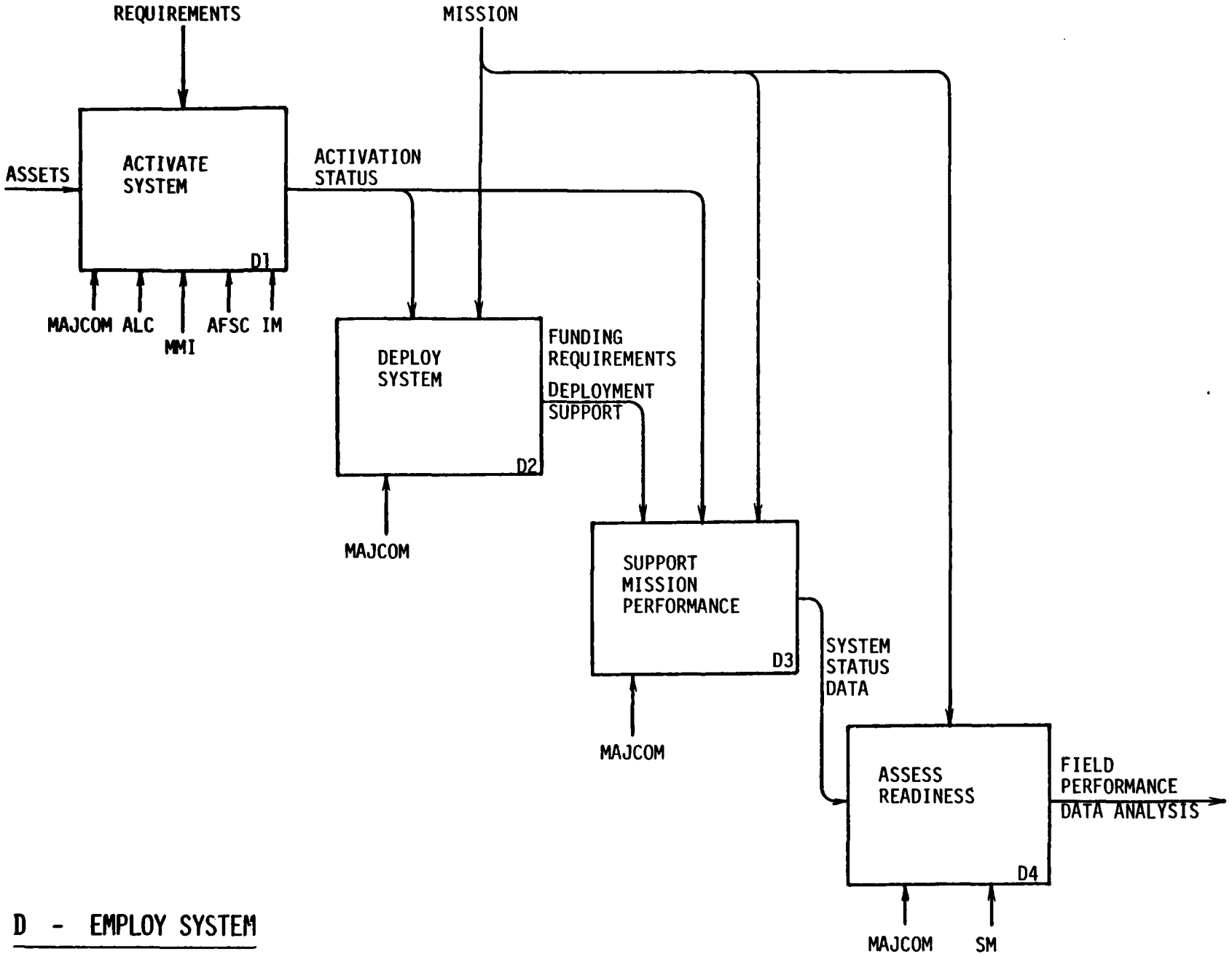


C6 - PERFORM INITIAL PROVISIONING

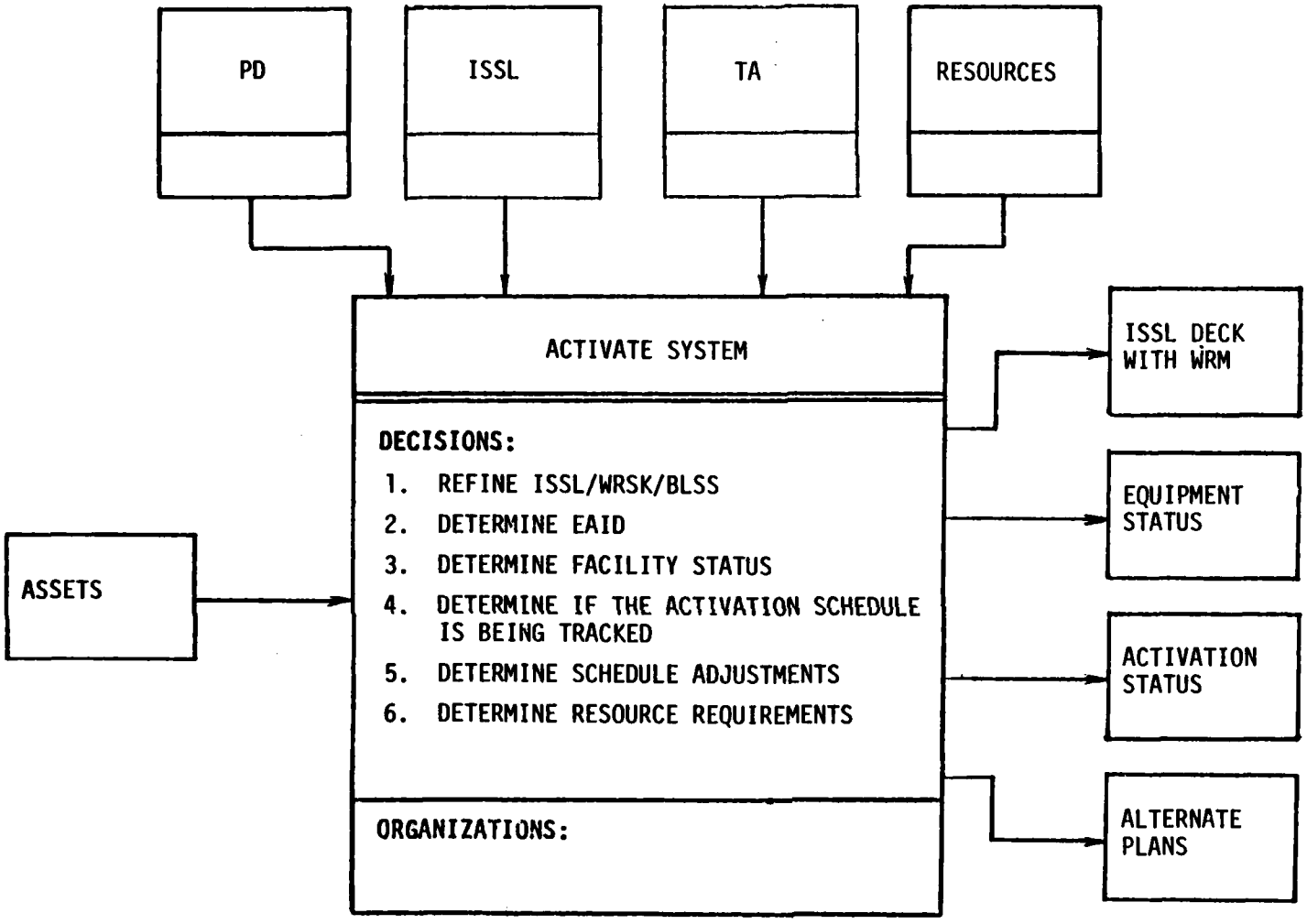
ACQUIRE SYSTEMS

CURRENT SHORTFALLS

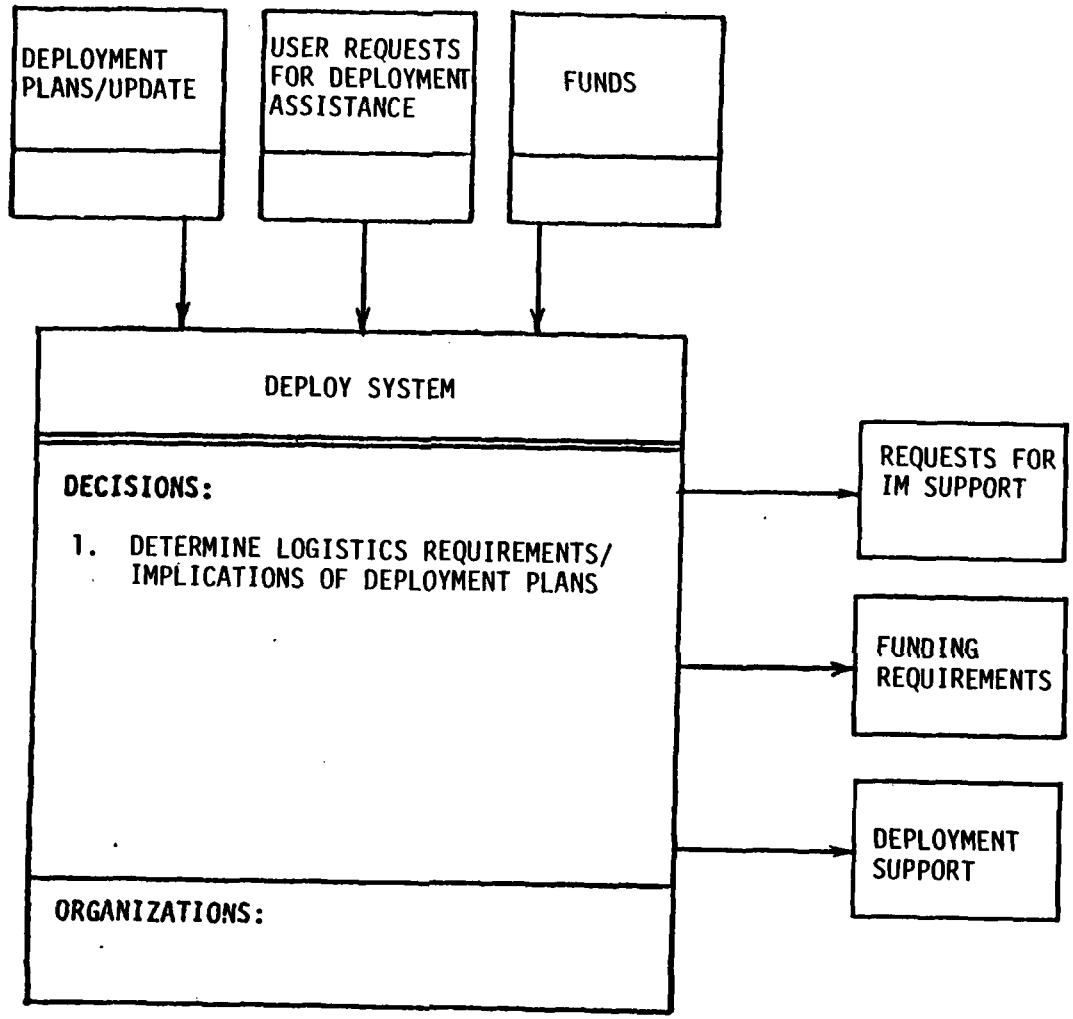
1. INADEQUATE INITIATIVES TO DEVELOP TESTING SOLUTIONS ACROSS SYSTEMS/SUBSYSTEMS COMMON FUNCTIONS (OR FUNCTIONS COMMON AMONG SYSTEMS)
2. INADEQUATE INTEGRATION OF SYSTEMS/SUBSYSTEMS IN DESIGN REQUIREMENTS
3. LACK OF QUALITY IN MAINTENANCE DATA
4. LACK OF QUALIFIED PEOPLE TO ANALYZE MAINTENANCE DATA
5. LACK OF/FAILURE TO USE MANAGEMENT INDICATORS
6. FAILURE TO STRUCTURE WARTIME EXERCISES TO ASSESS LOGISTICS CAPABILITY
7. INSUFFICIENT LOGISTICS EVALUATION DURING OT&E
8. INADEQUATE FEEDBACK FROM CONTRACTORS IN GFM ASSESSMENT



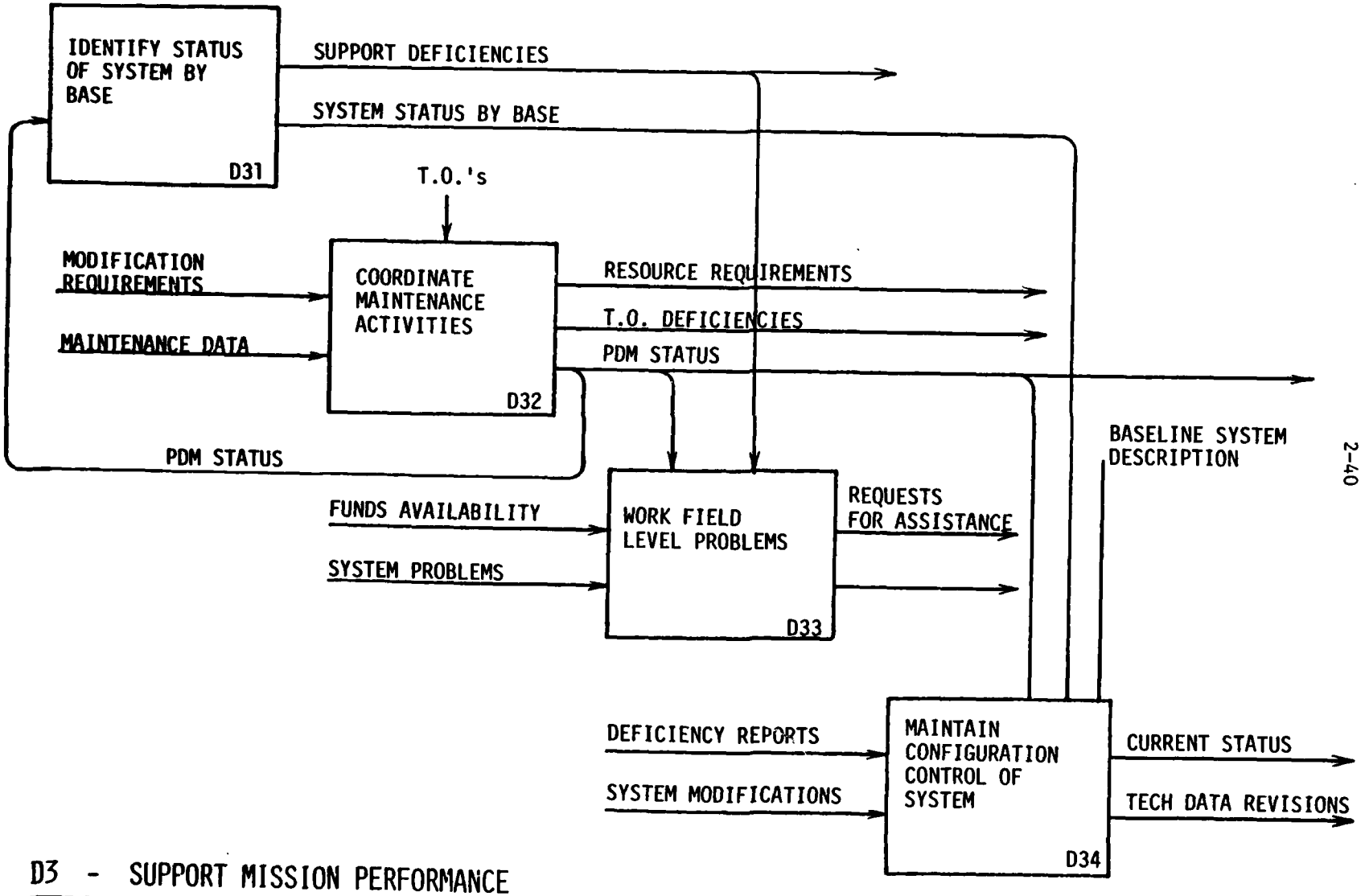
D - EMPLOY SYSTEM



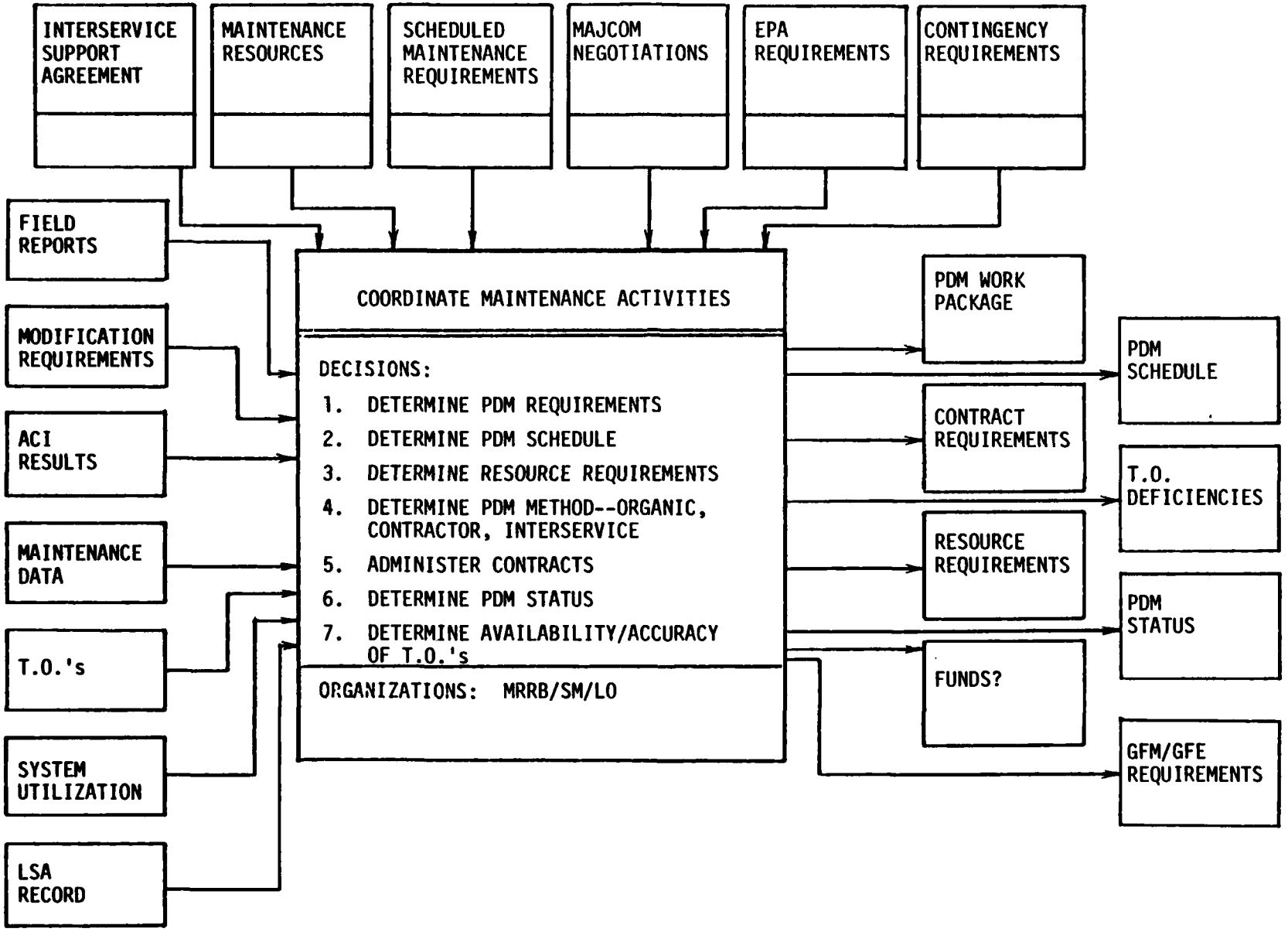
D1 - ACTIVATE SYSTEM



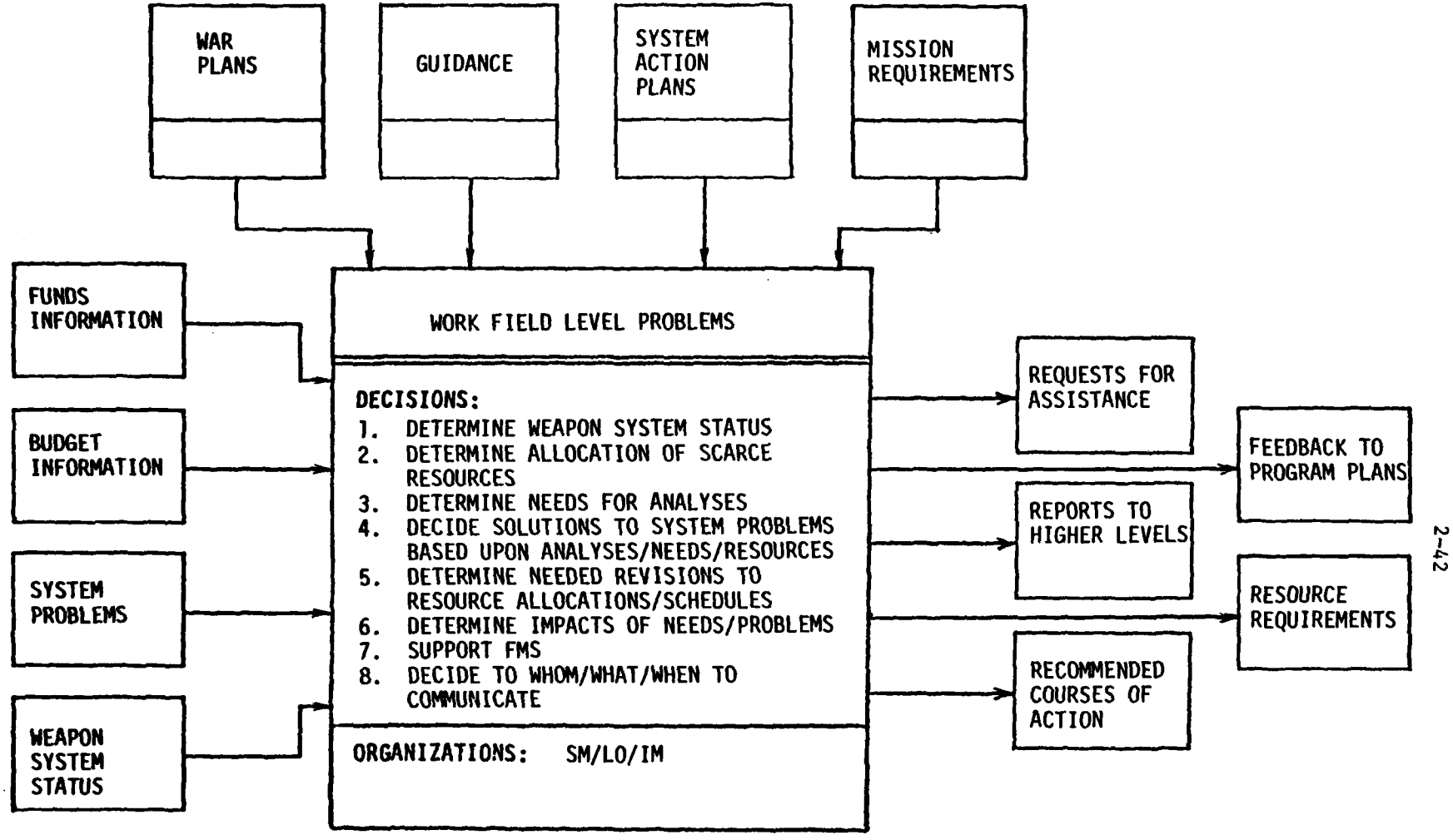
D2 - DEPLOY SYSTEM



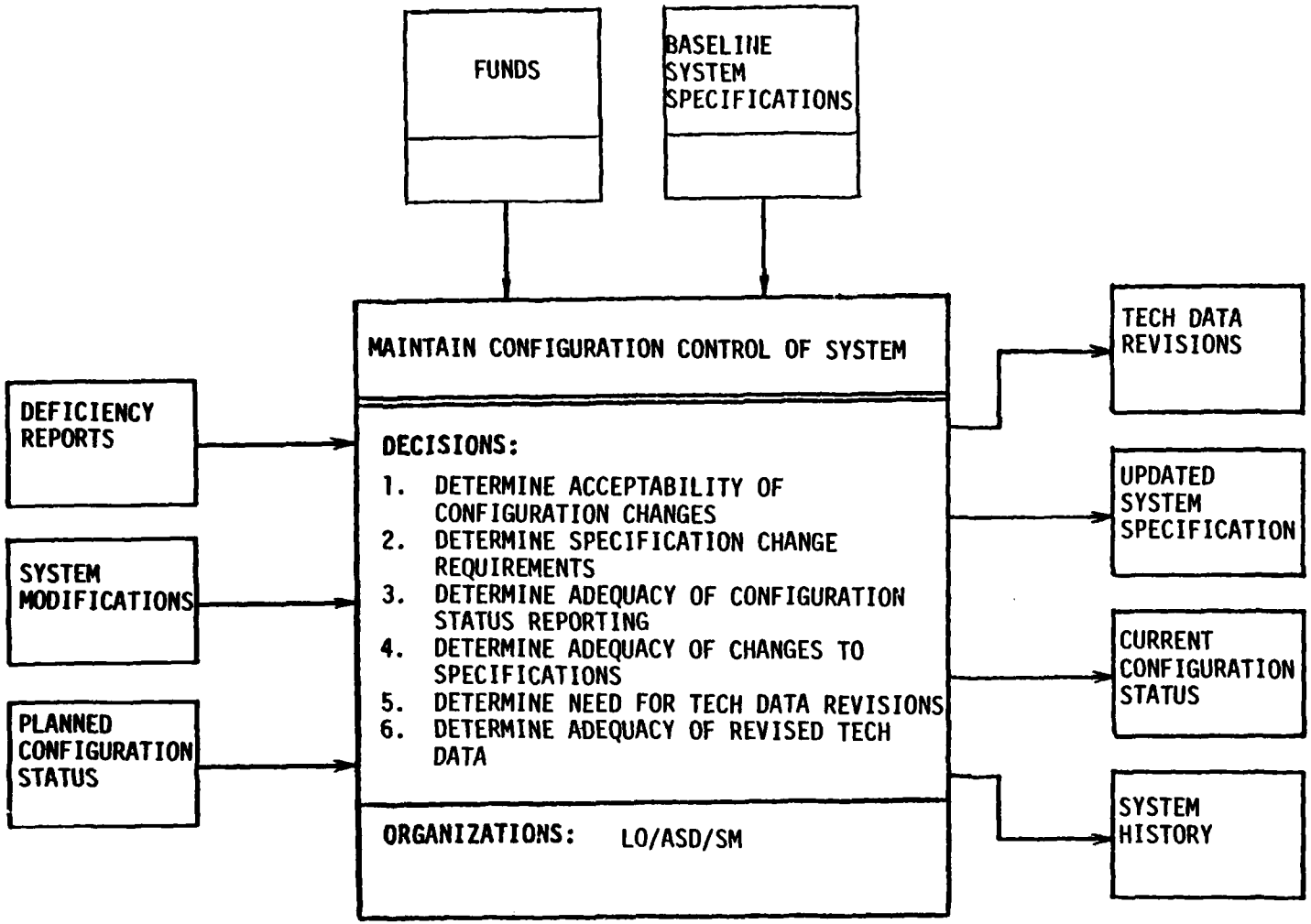
D3 - SUPPORT MISSION PERFORMANCE



D32 - COORDINATE MAINTENANCE ACTIVITIES



D33 - WORK FIELD LEVEL PROBLEMS

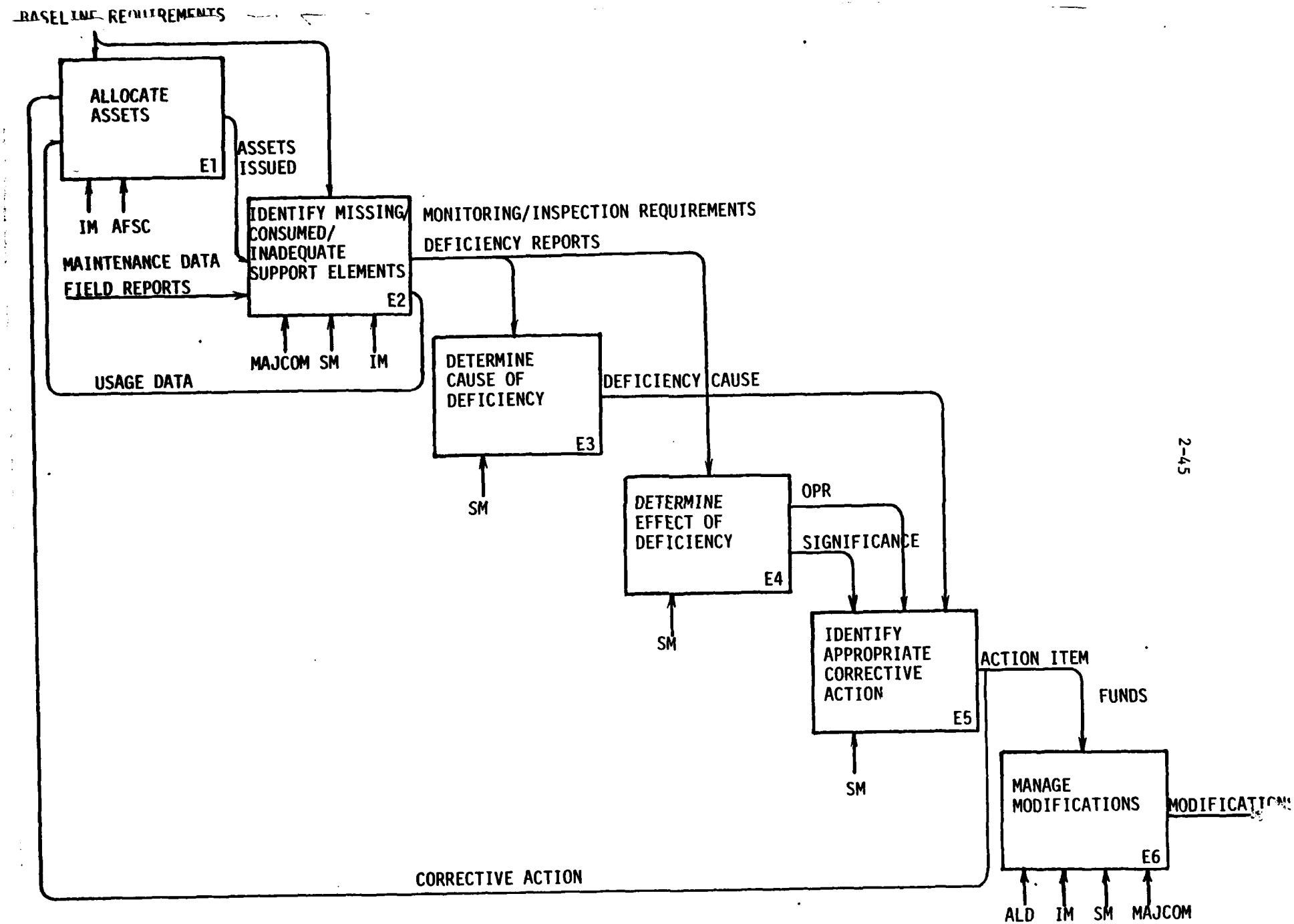


D34 - MAINTAIN CONFIGURATION CONTROL OF SYSTEM

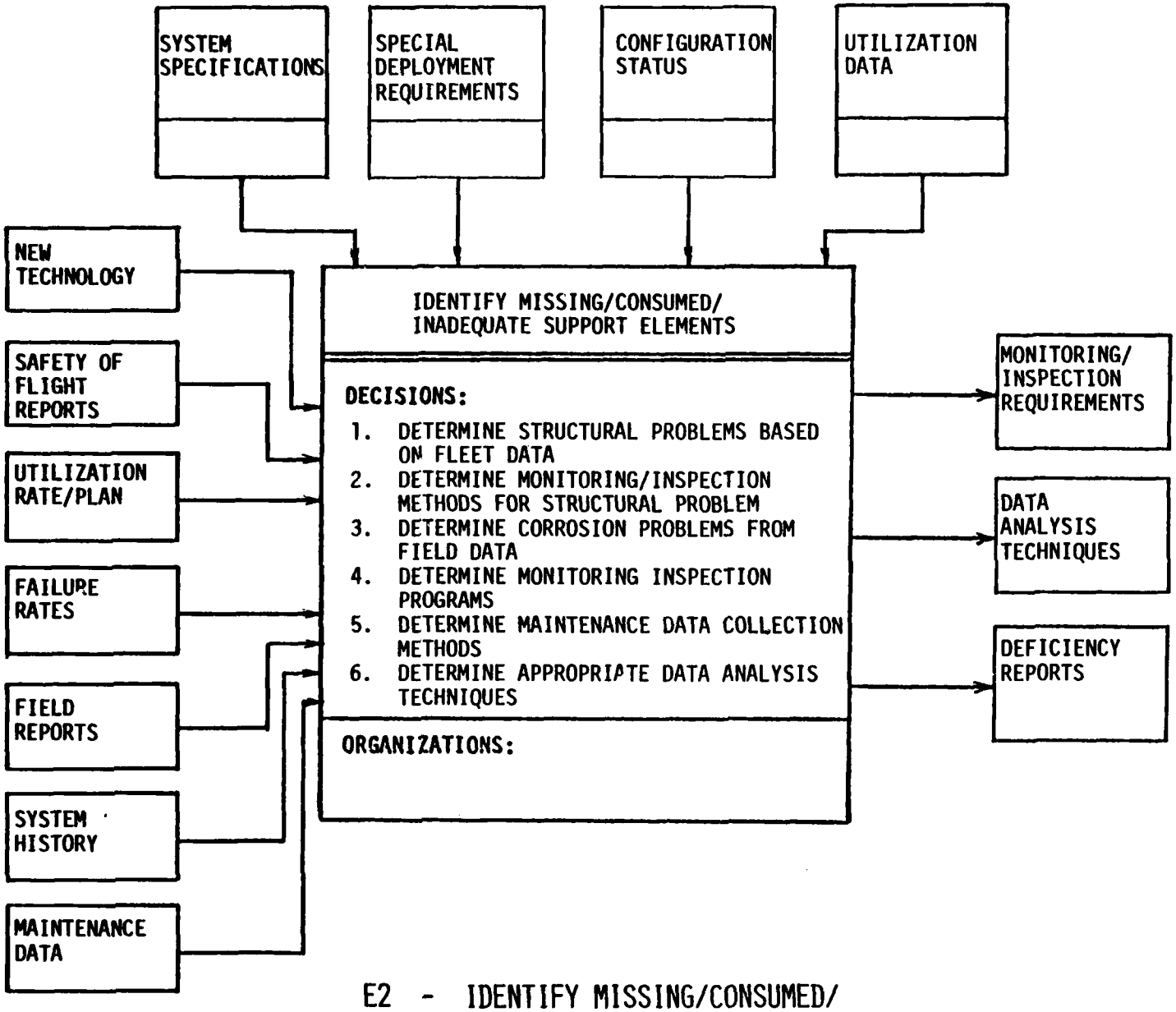
EMPLOY SYSTEM

CURRENT SHORTFALLS

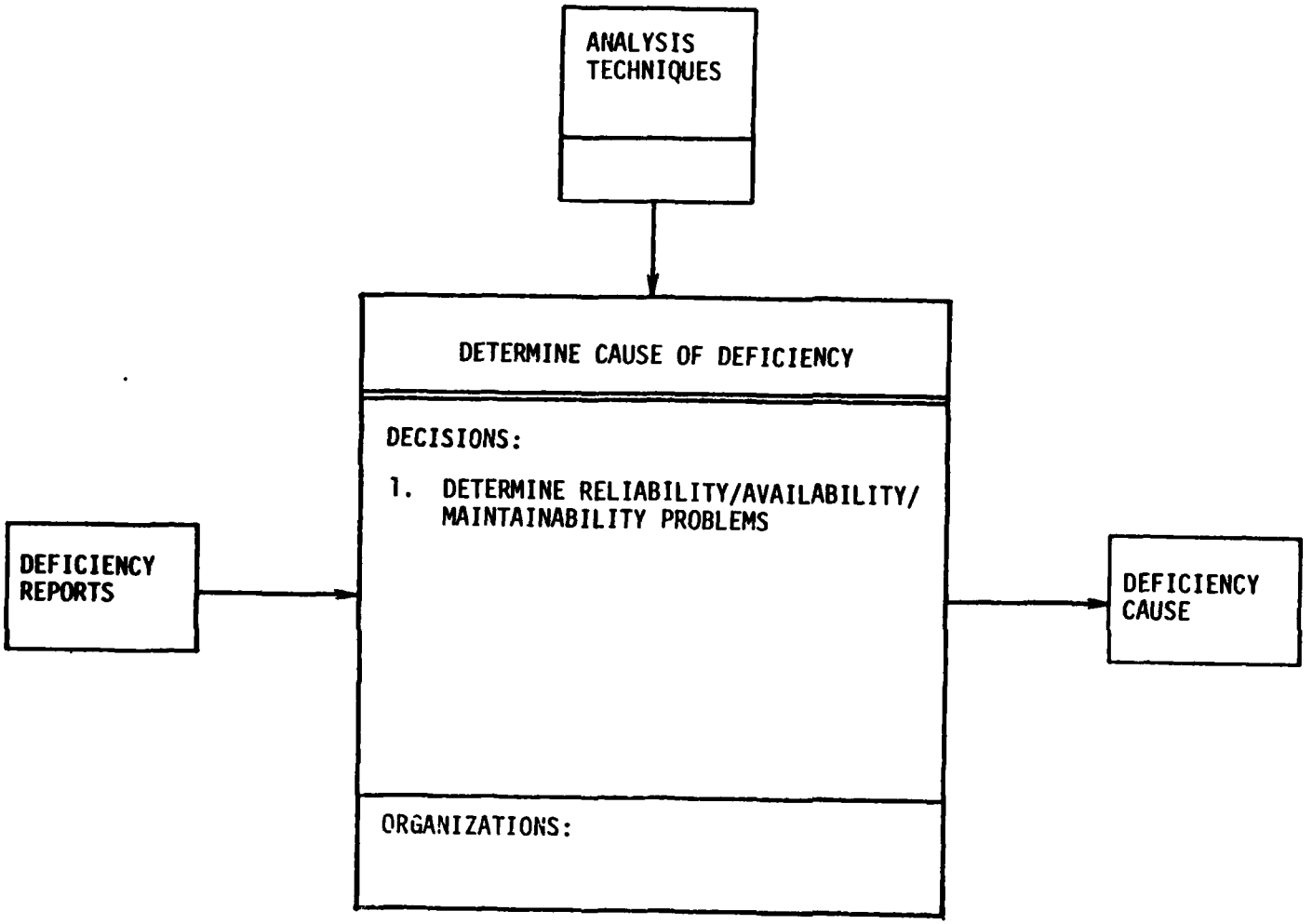
- o AFLC DOES NOT CURRENTLY HAVE FULL ACCESS TO WWMCCS.
- o AFLC CAN'T ASSESS IMPACT OF MAJOR DEPLOYMENTS ON REQUIREMENTS.
- o INCONSISTENCIES EXIST BETWEEN USER/AFLC PERCEPTION OF MEETING DOC.
- o NEED TO CONSIDER VULNERABILITY WHEN BASING SUPPORT ON FOREIGN SOIL.
- o INCOMPATIBILITY BETWEEN IOC DATA AND SUPPORTABILITY (S.E., TECH DATA, ETC.)



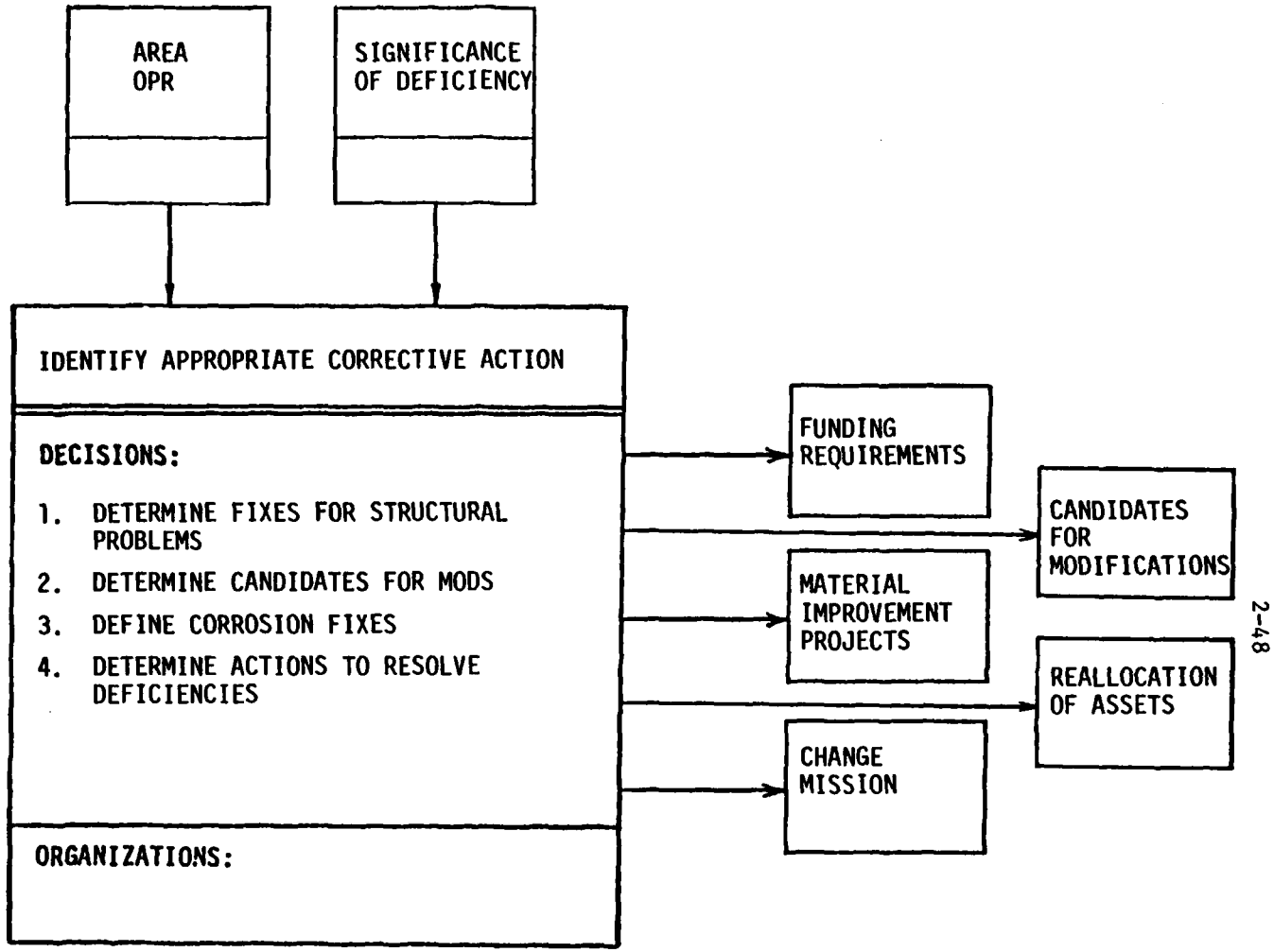
E - MAINTAIN SYSTEMS



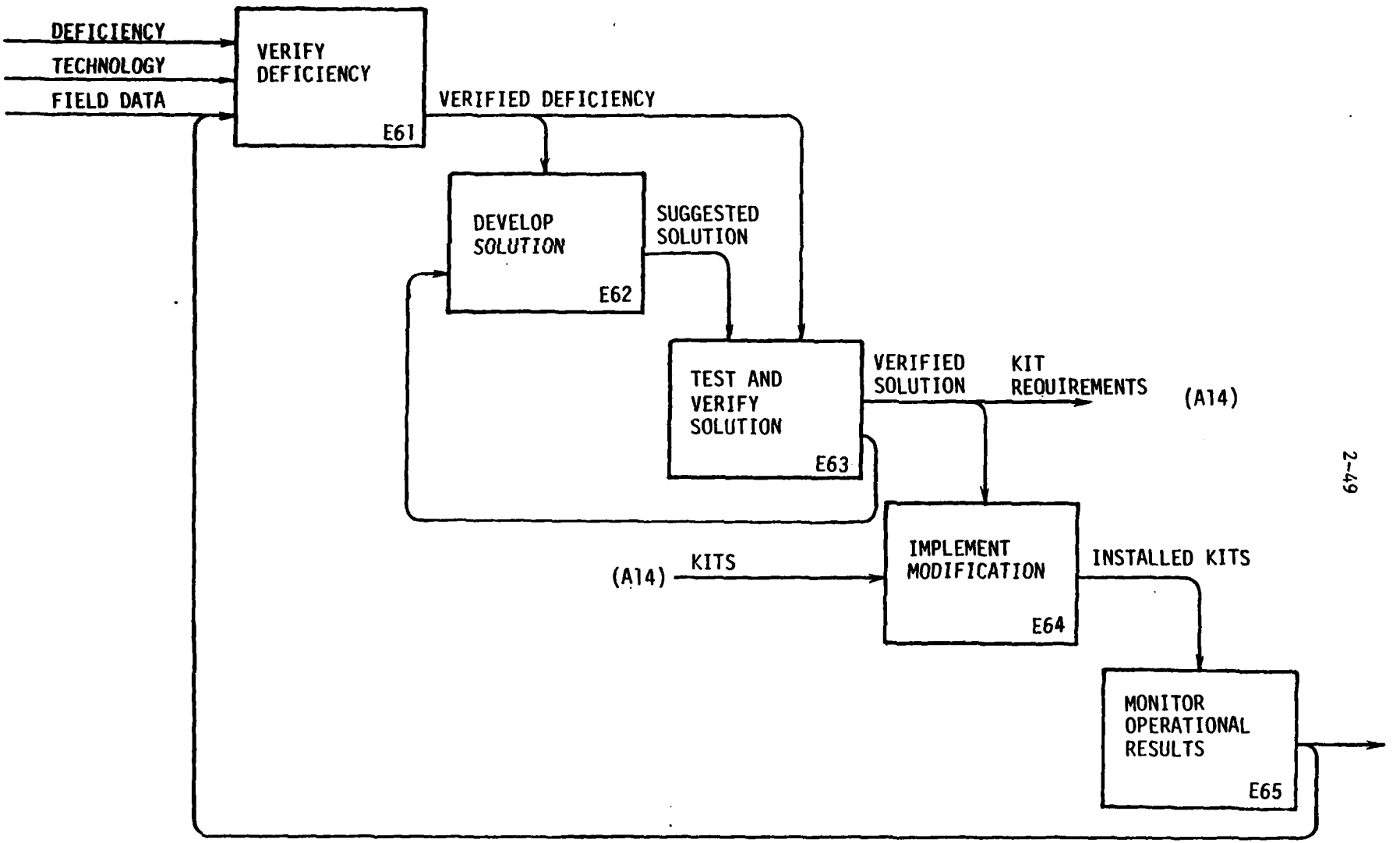
E2 - IDENTIFY MISSING/CONSUMED/ INADEQUATE SUPPORT ELEMENTS



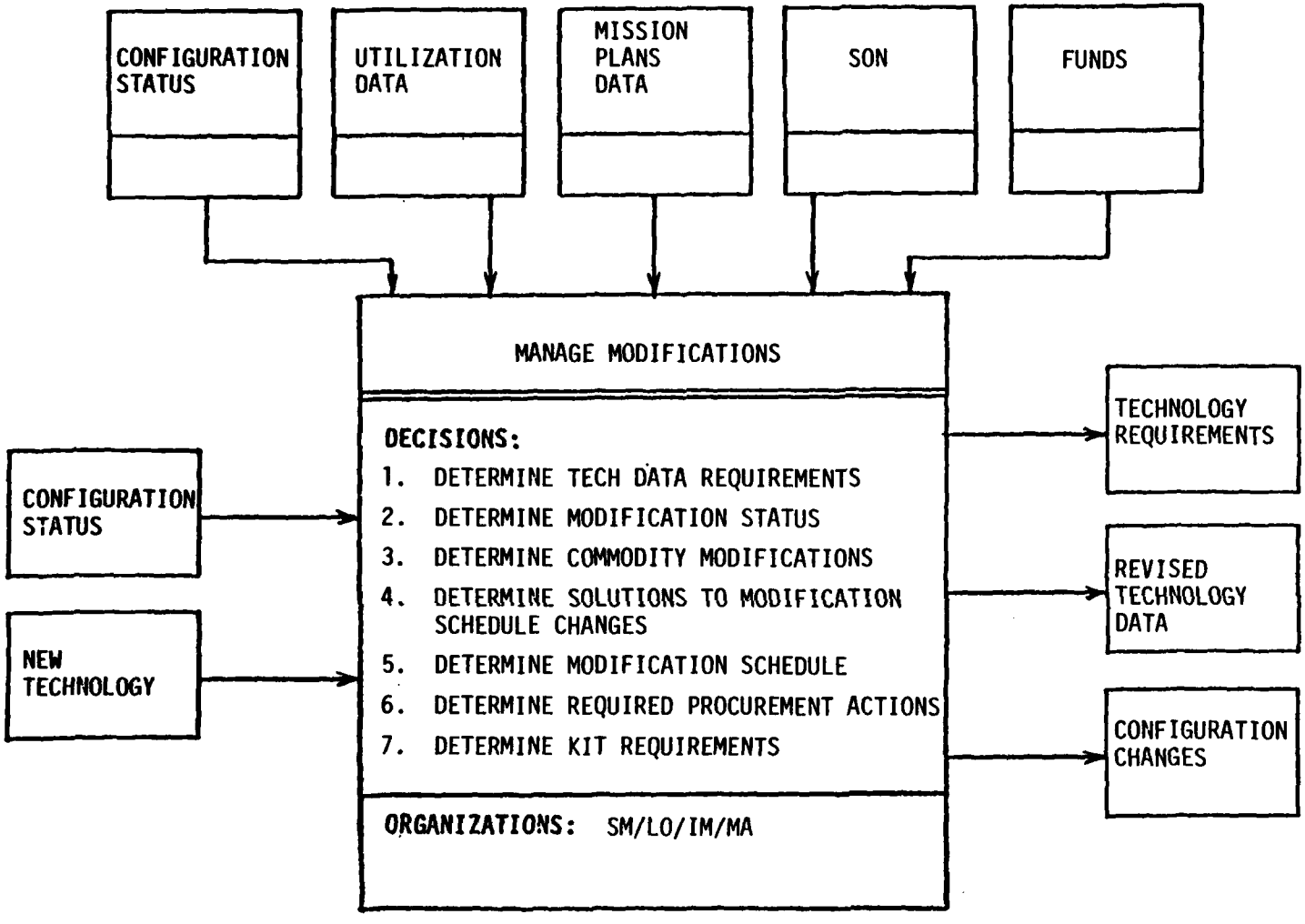
E3 - DETERMINE CAUSE OF DEFICIENCY



E5 - IDENTIFY APPROPRIATE CORRECTIVE ACTION



E6 - MANAGE MODIFICATIONS

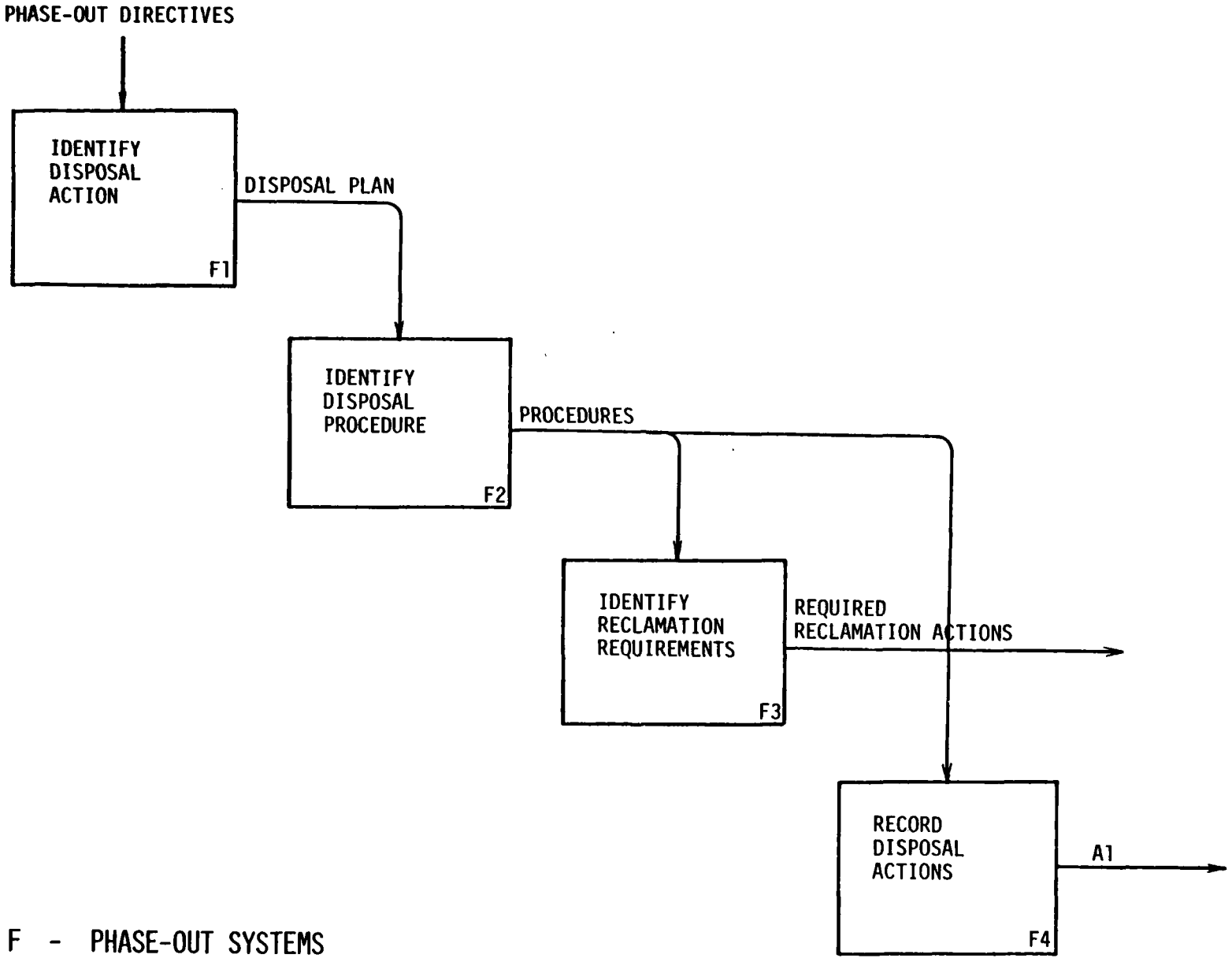


E6 - MANAGE MODIFICATIONS

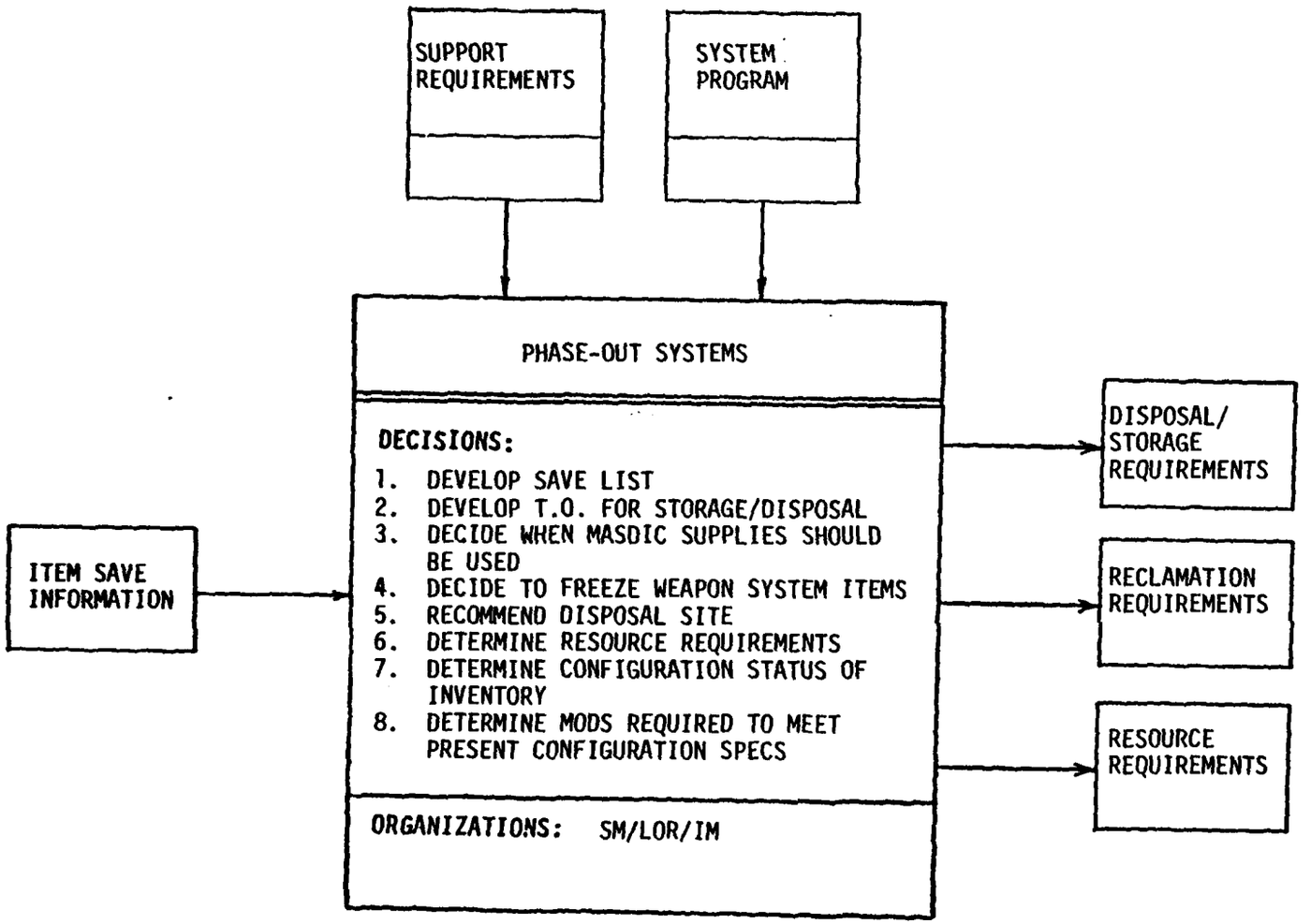
MAINTAIN SYSTEMS

CURRENT SHORTFALLS

- o DO NOT HAVE SYSTEM FOR AUDITING MODIFICATIONS
- o CAN'T DETERMINE FUNDS SPENT BY WEAPON SYSTEM
- o FUNDS ALLOCATIONS NOT ADEQUATE FOR NEEDS
- o INADEQUATE SYSTEMS FOR TRACKING MODS
- o FINANCIAL TRANSACTION REQUIREMENTS LIMIT OPTIONS



F - PHASE-OUT SYSTEMS



F - PHASE-OUT SYSTEMS

WEAPON SYSTEM SHORTFALL EXTRACTION

In the early stage of the LMS development process, a list of 17 major AFLC shortfalls was developed from several official Air Force planning documents. The purpose of this list was to provide some guidance regarding major command problems that should be considered by those identifying future LMS requirements.

This list is not considered to be all inclusive, nor should it be viewed as a constraint on the identification of requirements, but rather as additional issues that may need to be considered when designing new systems.

Each shortfall was the result of compiling problems identified from several different sources. The discussions of those problems often resulted in the identification of sub- or supporting objectives, and suggested solutions to the overall problem.

These shortfalls have been restated as objectives, and the sub-objectives and approaches have been included both to clarify the objectives and to assist in the identification of approaches to resolving the shortfalls.

In developing objectives for the Weapon System Management area, it is important to review this document and to include considerations from it wherever appropriate in the definition of new or enhanced Logistics Management Systems.

Objective 1: To provide adequate support in austere locations.

- To develop an improved weapon system information system. (6, p.D-21)
  - to assess systems logistics combat capabilities in terms of responsiveness and sustainability for given activity levels in increments of time. (6, p.D-21)
- To increase interoperability and bilateral logistics support arrangements with other friendly nations. (3, p.19)
  - to provide item substitution data and asset visibility for those items identified for interoperability between national forces. (6, p.D-20)
- To organize and structure the AF logistics system (6, p.D-3)
  - to implement IM procedures for items managed outside the AF logistics structure. (6, p.D-20)
  - to increase emphasis on logistics sustainability. (5, p.66)

Objective 2: To support interoperability between other services in the U.S. and abroad.

- To plan with Air Staff and other military agencies on interservice approach that will meet logistics requirements under all conditions.
  - to share information between services regarding assets and usage of items used by the Air Force and other services and items managed by the Air Force. (2, 7.5, p.30)
- To provide a comprehensive program of international logistic assistance to meet the needs of FMS customers without degrading support for U.S. Forces. (4, p.9) (5, p.79)
  - to support systems that are common to USAF and allies. (6, p.D-17)
  - to develop a comprehensive policy for logistics support of any USAF supplied equipment in other Air Forces. (4, p.8)
  - to define logistics support responsibilities for systems and equipment possessed by other nations. (6, p.D-5)
  - to develop wartime computation system to compute spares for allied Air Forces operating US origin equipment. (6, p.D-17)

Objective 3: To maintain adequate communications.

- o To develop lines of communication to support fixed and mobile AF operations worldwide. (6, p.D-14)
  - to have communications that provide in-transit asset visibility, item identification, and receipt notice. (6, p.D-14)
  - to have communications indicate availability of transportation modes, and condition and status of port operations. (6, p.D-14)

Objective 4: To emphasize adequate AFLC planning for logistics contingencies.

- To analyze logistics related activities associated with the pre-concept and concept formulation period of mission analysis and planning. (2, 4.2.4., p.18)

Objective 5: To adequately assess material and personnel requirements and institute proper acquisition strategy.

- To assure realistic wartime requirements computations. (6, p.D-9, 10)
  - to compensate for losses during hostilities. (6, p.D-9, 10)
  - to have wartime spares computation reflect the wartime environment. (6, p.D-9, 10)
  - to have base/depot repair rates condemnations, pipeline times etc. adjusted for wartime computations. (6, p.D-9,10)
  - to provide rapid new computations as significant factors change. (6,p.D-9, 10)
- To improve requirements computation process. (3, 2b., p.3)
  - to compute requirements for resources not managed or provided by AFLC (e.g., housing, commercial vehicle parts, local purchases). (6, p.D-9, 10)
  - to have spare computations for tactical forces that consider system effectiveness. (6, p.D-9, 10)
  - to develop a method of computing the requirements for critical materials. (1, p.16)
- To redesign, enhance, and integrate the Requirements Logistics Management Systems into a comprehensive Requirements Data Base with simulation and modeling capability as well as computational methodologies based on flying hours, sorties deployment, weapon system type, and war scenarios. (2, 3.5., p.16)
  - to develop minimum and maximum parts supportability models. (2, 9.5.4., p.37)
- To determine effects of policy or program changes, or funds shortages, on Air Force requirements logistics support; flexible methodologies for computing logistics requirements. (2, 3.5., p.16)
  - to subject AF acquisition strategy to an affordability review early in the development programs. (3, 10b., p.14)

- To improve the weapon system information system. (6, p.D-21)

  - to state logistics requirements in terms of specific force capabilities. (1, p.36)

- To be prepared to handle large modifications in a way similar to existing capability for handling large complex new acquisitions. (1, p.12)

Objective 6: To provide adequate information with which to make engineering improvements.

- o To improve AFLC's ability to assess aircraft structural performance and deficiencies. (2, 10.2.4.a, p.41)
  - to acquire data regarding aircraft structural safety limits and economic life span. (2, 10.2.4.b, p.41)
- o To support application of new technologies in data acquisition, processing, analysis, and engineering prediction to structural service life monitoring programs (ASIMIS). (2, 10.2.4.a., p.41)
  - to provide analysis of oil samples by applying mid-term, automated techniques to the collection, analysis, and predictive capabilities. (2, 10.2.4.d, p.41)
  - to apply the reliability and maintainability management information system developed for the F-16 (RAILS) to other major weapons systems. (2, 10.2.4.c., p.41)
- o To have more effective and accurate data to promote informed decisions regarding repair and overhaul of engines. (2, 10.2.4.d., p.41)
- o To improve reliability and enhance the use of improvement warranties once they are implemented on a large scale. (2, 10.3.4.a., p.42)
- o To develop better informational support of engineering decisions. (2, 5.5., p.24)
  - to develop a computer system capable of storing and retrieving engineering data and 10 million drawings now mounted on aperture cards. (2, 5.5., p.24)

Objective 7: To adequately define maintenance requirements.

- To promote centralization and automation of workload resource analysis and long-range schedule development. (2, 9.2.4., p.36)

Objective 8: To ensure adequate custody management and inventory practices.

- To improve custody management information systems. (6, p.D-13)
  - to have timely information on status and location, by serial number for selected items, for each exchangeable item, and for consumable items. (6, p.D-12-13)
  - to assure positive tracking of items to an overhaul facility. (6, p.D-12)
- To insure optimum use and availability of assets to engaged combat forces. (6, p.D-12)
  - to provide on-call visibility of item and equipment substitution for critical items required by units engaged or to be deployed in combat. (6, p.D-24)

Objective 9: To reduce vulnerability of logistics systems with regard to sabotage, terrorist activities, and nuclear attack.

N/A

Objective 10: To improve capability to deal with increasingly complex systems resulting from expanded technology.

- To manage the advanced weapon systems of the 1990's effectively. (5, p.35) (1, p.15)
  - to provide closer integration between depot and field operations for configuration control purposes. (5, p.63)
- To maintain a greater age spectrum of weapon systems in the 1990's. (5, p.36) (1, p.23)
  - to increase post development engineering changes and modifications. (5, p.36)
  - to accommodate the increase in modifications. (5, p.36)

Objective 11: To improve energy utilization.

- o To support Air Force productivity improvement. (5, p.32)
  - to support fuel-efficient weapon systems. (5, pp.23,24)

AD A124 332 WEAPON SYSTEM MANAGEMENT TO DIRECTORATE OF LOGISTICS MANAGEMENT SYSTEMS R..(U) BATTELLE COLUMBUS LABS OH K V MILLER 14 MAY 82 F33600-80-C-0414 2/4

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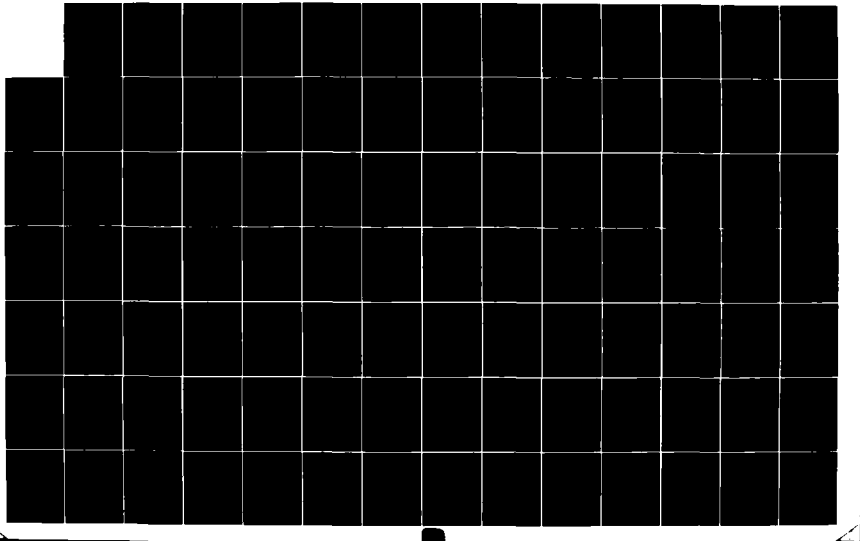
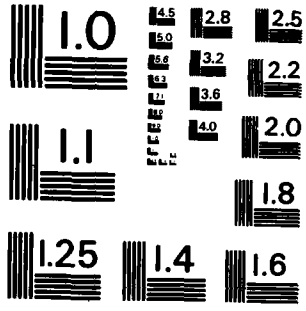




MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

Objective 12: To improve utilization of critical raw materials.

- To establish a comprehensive management program for critical and strategic raw materials. (4, p.8)
  - to improve material deficiency analysis programs (6, p.D-15)
  - to include reliability and maintainability consideration. (6, p. D-15)
  - to develop a method of computing the requirement for critical materials. (1, p.16)
- To reduce dependence on foreign or individual sources. (3, 7c, p.10-11)
  - to develop information showing weapon and force sensitivity to interruptions including alternative supplies. (1, p.32)
  - to establish contingency plans to counter increasing source dependencies for such things as materials, and finished products. To assess the impact of source dependencies.
- To develop alternative sources and substitute materials. (5, p.15) (6, p.D-11) (1, p.15)
  - to develop a substitution acquisition policy for local purchase items in forward areas. (6, p.D-11)
  - to encourage development of substitute materials to replace non-fuel mineral sources. (3, p.12)
  - to develop a management system to collect, identify and code substitute items and materials. (6, p.D-11)

Objective 13: To improve utilization of the labor required to perform needed tasks.

- To increase the emphasis on supportability and reliability in weapon system design and modification (OPR: AFSC - OCR: AFLC, AF/RD, AF/LEY). (3, p.14) (3, p.13)
  - to modify existing weapon systems rather than design entirely new ones. (3, 9c, p.14)
  - to design future weapon systems to accommodate growth and modifications (OPR: AFSC - OCR: AFLC). (3, p.14)

Objective 14: To ensure the existence of a domestic industrial base to convert to war and fulfill logistics requirements.

- To increase support for U.S. industrial base. (4, p.9)
  - to assess stability of industrial repair/supply sources and the surge capability. (6, p.D-8)
  - to develop the means to assess the national and international industrial capacity to support U.S. Air Force wartime requirements. (3, p.18) (6, p.D-8)
- To enhance the cooperation between Air Force logistics and industry to reduce production leadtime. (3, p.18)
  - to stress commonality of future weapon systems components and support equipment with commercial systems and equipment, whenever possible. (3, p.18)
- To expand the Avionics Integrated Support Facilities to include total avionics support and related weapon systems interface resulting in a System Integration Support Facilities which would act as the focal point for system technical knowledge. (2, 12.3.4. a, p.49)
- To assure ALC has the capability to interact with the prime weapon system contractor on a cradle-to-grave basis during development of avionics systems and by giving follow-on support. (2, 12.3.4.a, P.49)

Objective 15: To provide strong AFLC leadership and an efficient organizational structure.

- To develop improved performance information systems for Item Managers, System Managers, System Control Officers, and Program Control Officers. (2, 12.2.4.c, p.47)
  - to improve weapon system information system. (6, p.D-21)
  - to develop linkage between central Requirements Data Bank and peace/wartime programming data. (2, 2.2.4., p.11)
  - to support a mechanized FYRP coupled with a logistics support priorities scheme. (2, 2.4.4., p.12)
- To apply full principles of the Logistics Management by Weapon System philosophy. (2, 12.2.4.a., p.47)
  - to maintain close interface with applicable Item Manager. (6, p.D-21)
  - to pursue leadership role in single manager matters. (3, p.15)
- To optimize resource allocation within and among weapon and support systems. (2, 2.4.4., p.12)
  - to increase amount of time managers can devote to managing weapons and support systems. (2, 12.2.4.c, p.47)
- To exploit logistics opportunities by executing multi-year contracts. (3, p.15)

Objective 16: To ensure adequate software design, system access, and interaction.

- o To develop integrated logistics management information systems that will allow accurate and timely decisions and enable the Air Force to have effective visibility and control of its resources. (4, p.9)
  - to develop a single data management base serving both the Deputy Program Manager for Logistics/Integrated Logistics Support Manager and the System Manager/End Article Item Manager. (2, 4.7.4., p.20)

Objective 17: To develop and employ methods of determining trade-offs between logistics budgetary expenditures and the benefits produced.

- To ensure that military strengths and benefits can be compared in a manner acceptable to the hierarchy of the decision process.
  - to improve response to the demands of the DOD PPBS. (6, p.D-7)
  - to determine support resource requirements in PPBS. (6, p.D-21)
  - to assert the critical role of logistics throughout the PPBS. (3, 2b, p.3)
- To develop the means to assess and relate logistics needs and budgetary decisions to operational capability. (3, 2b, p.3)
  - to identify logistics requirements in specific force capability terms to show the effects of planning and programming decisions. (4, p.9)
  - to depict weapon system effectiveness at varying levels of resource availability. (6, p.D-7)
  - to improve weapon system information system. (6, p.D-7)

o To accurately identify requirements necessary to provide wartime surge capability. (6, p.D-7)

- to improve assessment of the long-range effects of near-term budgetary decisions. (3, 2b, p.3)

o To ensure that logistics planning is included as an integral part in the initial phases of all wartime tasking. (3, 2b, p.3)

- to improve the logistics measurement system to depict weapon system effectiveness at varying levels of resource availability. (6, p.D-7)

SOURCES LIST

1. AFLC Command Level Guidence for Logistics Management Systems (LMS) Planning.

2. Air Force Logistics Command

   Logistics Management Systems Capabilities Plan, 1 July 1980.

3. Logistics Long Range Planning Guide, 21 January 1981

4. AFLC Long Range Planning Guide, 6 February 1981

5. Destination 1995 - AF Logistics Command, April 1980

6. San Antonio Seminar Results, 10 July 1980

NOTE: The references are presented in the form

(1, p.23)

meaning page 23 of source number 1. Some references are presented in the form

(3, 8b, p.13)

meaning Section 8b on page 13 of source number 3. The section number is provided when it will help identify the source statement.

ACRONYM LIST

ADP - Automatic Data Processing

AFLC - Air Force Logistics Command

AF/MP - Air Force Deputy Chief of Staff, Manpower and Personnel

AF/RD - Air Force Deputy Chief of Staff, Research, Development, and Acquisition

AFSC - Air Force Specialty Code

AFSC - Air Force Systems Command

ASIMIS - Aircraft Structural Integrity Management Information System

CONUS - Continental United States

CRAF - Commercial Reserve Air Fleet

FMS - Foreign Military Sales

FYRP - Five Year Resources Program

IM - Item Manager

JCS - Joint Chiefs of Staff

LCA - Logistics Capability Assessment

LCAN - Logistics Capability Assessment Network

LET - Air Force Directorate for Transportation

LEX - Air Force Directorate for Logistics Plans and Programs

LEY - Air Force Directorate for Maintenance and Supply

LOGAIR - Logistics Airlift

LSA - Logistics Support Analysis

LSAR - Logistics Support Analysis Requirements

MAC - Military Airlift Command

MAJCOM/LG - Major Command/Logistics Directorates

MSC - Military Sealift Command

MTBF - Mean Time Between Failures

MTMC - Military Traffic Management Center

NATO - North Atlantic Treaty Organization

OCR - Office of Coordinating Responsibility

OPR - Office of Primary Responsibility

PACAF - Pacific Air Force

PPBS - Planning, Programming, Budgeting System
RAILS - Reliability Analysis of Integrated Logistics System
RSI - Rationalization, Standardization, Interoperability
SISF - System Integration Support Facilities
TCC - Transportation Control Center
USAFE - Europe Air Force
XOX - Air Force Directorate for Plans

APPROACH IMPACTS

OBJECTIVE:

APPROACH:

FUNCTIONS AFFECTED	IMPACTS			
	INFORMATION	GUIDANCE	DECISION	ORGANIZATION

ALTERNATIVE APPROACH ANALYSES

CATEGORIES OF ASSESSMENT	ALT. 1	ALT. 2	ALT. 3
1. POTENTIAL BENEFITS:			
A. IMPROVEMENTS IN PERFORMANCE - IMPROVED/ INCREASED PRODUCTION			
B. REDUCED COSTS - REDUCED PER UNIT OF PRODUCTION			
C. IMPROVED FLEXIBILITY OF CAPABILITIES - ABILITY TO RESPOND TO WORKLOAD CHANGES			
D. IMPROVED LOGISTICS READINESS - IMPROVED SUPPORT TO THE CUSTOMERS AND FIELD TEAMS			
E. SURGE RESPONSE IMPROVEMENT			
F. REDUCED VULNERABILITY TO HOSTILE ACTION AND NATURAL DISASTERS.			

ALTERNATIVE APPROACH ANALYSES (CONTINUED)

CATEGORIES OF ASSESSMENT	ALT. 1	ALT. 2	ALT. 3
2. OPERATING COSTS/RESOURCE REQUIREMENTS:			
A. PERSONNEL/SKILL REQUIREMENTS - NUMBER OF PEOPLE AND SKILL REQUIREMENTS TO UPDATE/OPERATE MAINTENANCE BASED ON STRATEGY EMPLOYED			
B. DIRECT OPERATING COST REQUIREMENTS - COST OF OPERATING EACH STRATEGY			
C. MAINTENANCE/SUPPORT REQUIREMENTS - COST OF OPERATING EACH STRATEGY			
3. INTERFACE IMPACTS:			
A. SYSTEMS (LMS) AFFECTED - DSDs IMPACTED VIA INTERFACE WITH EACH STRATEGY			
B. ORGANIZATIONAL CHANGES REQUIRED - ANY ORGANIZATIONAL REALIGNMENT (REORGANIZATION, REALIGNMENT OF FUNCTIONS/RESPONSIBILITIES) CAUSED BY EACH STRATEGY			
C. OTHER LOGISTIC PROCESSES AFFECTED			

ALTERNATIVE APPROACH ANALYSES (CONTINUED)

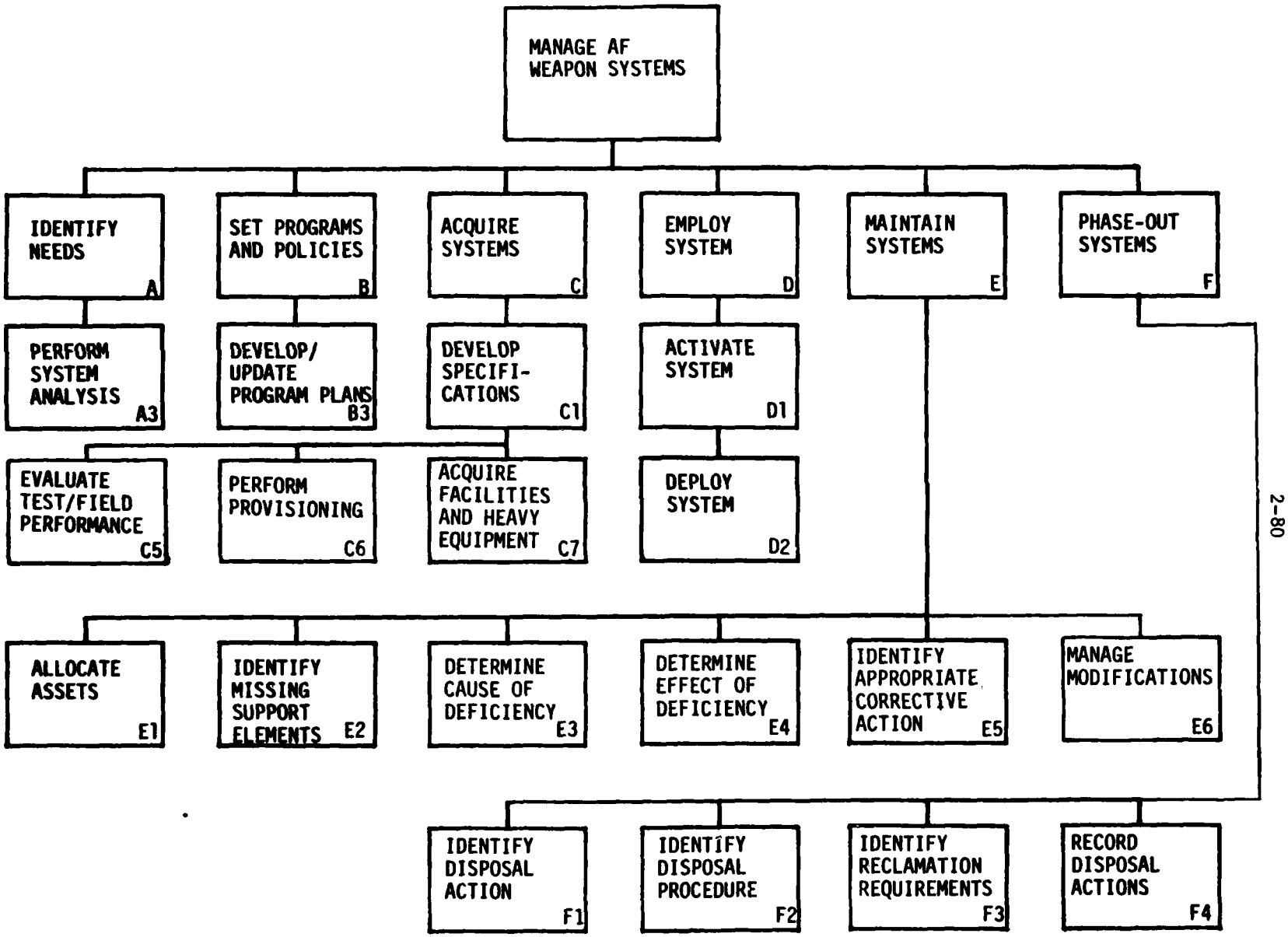
CATEGORIES OF ASSESSMENT	ALT. 1	ALT. 2	ALT. 3
4. COMMUNICATIONS SYSTEM/ADPE IMPLICATIONS:			
A. IMPACTS ON EXISTING COMMUNICATIONS CAPABILITIES - DEGREE OF IMPACT OF EACH STRATEGY			
B. CONFORMANCE TO AFLC ADPE/T PLANS			
5. DEVELOPMENT REQUIREMENTS:			
A. STAFFING - NUMBER/SKILLS REQUIRED TO DEVELOP EACH ALTERNATIVE TO ACHIEVE OBJECTIVES			
B. FUNDING LEVELS, TIMING AND SOURCES			
C. DEGREE OF USE OF EXISTING/OFF-THE-SHELF CAPABILITIES - DEGREE OF USE PER ALTERNATIVE			
D. TIMEFRAME OF DEVELOPMENT - HOW LONG IT WILL TAKE, BY COMPARISON, TO DO EACH ALTERNATIVE			

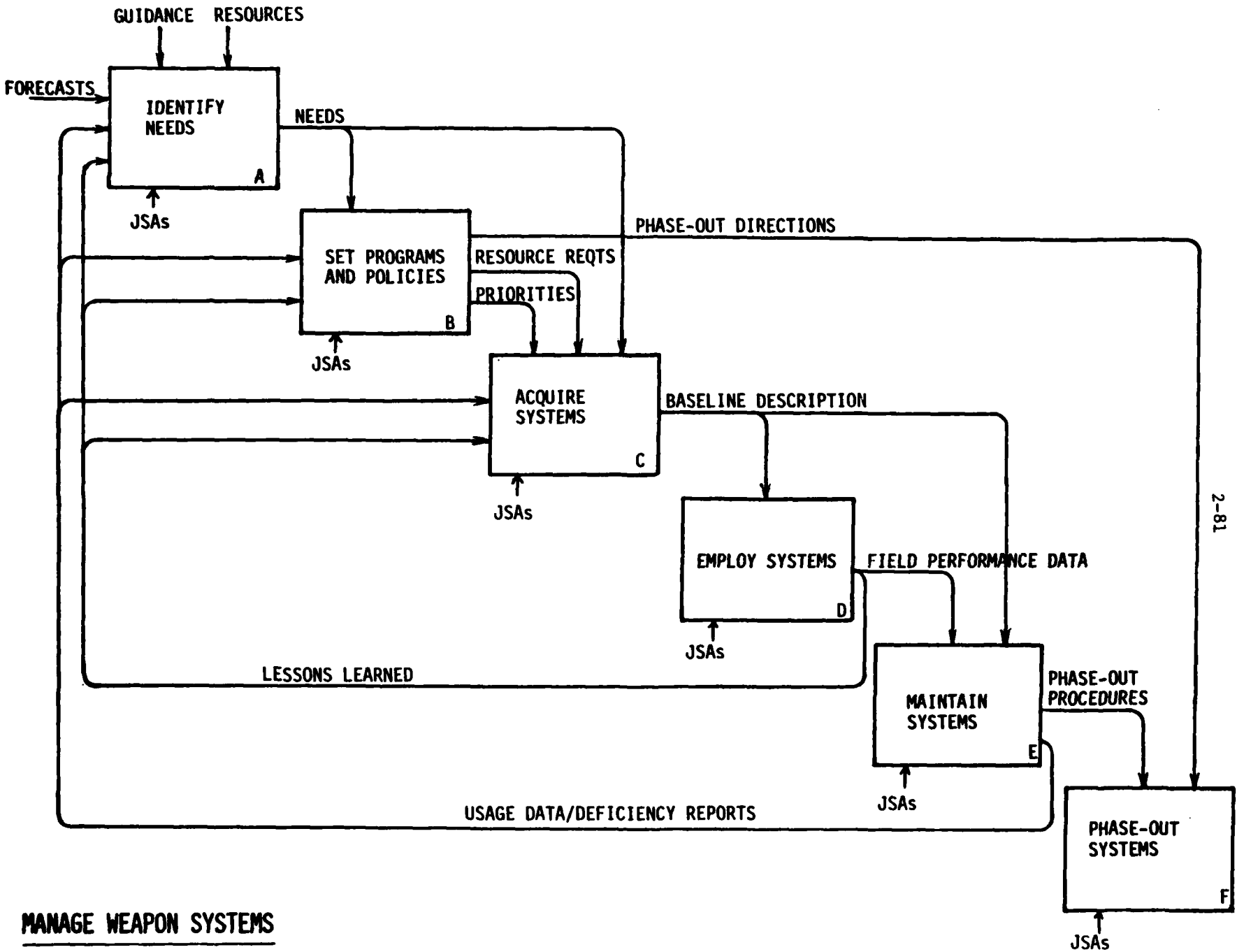
ALTERNATIVE APPROACH ANALYSES (CONTINUED)

CATEGORIES OF ASSESSMENT	ALT. 1	ALT. 2	ALT. 3
6. RISKS:			
A. TECHNICAL DEVELOPMENT RISKS			
B. OPERATIONAL PERFORMANCE RISK			
C. FINANCIAL RISK			
D. ORGANIZATIONAL RISK			
7. POLICY/MANAGEMENT IMPACT			
A. POLICY			
B. MANAGEMENT ACTION/DECISION			

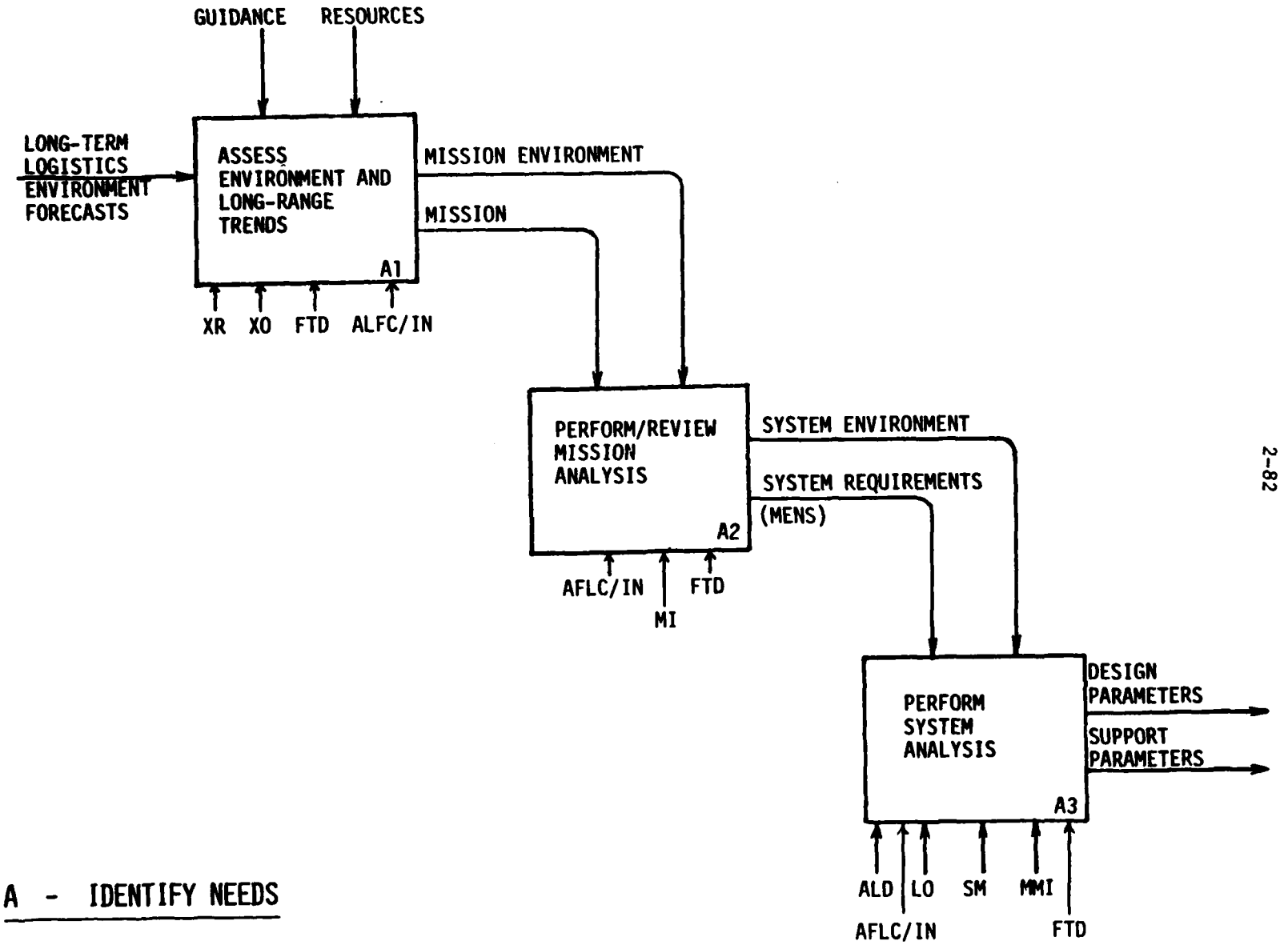
ATTACHMENT 2-4

MEETING OUTPUTS

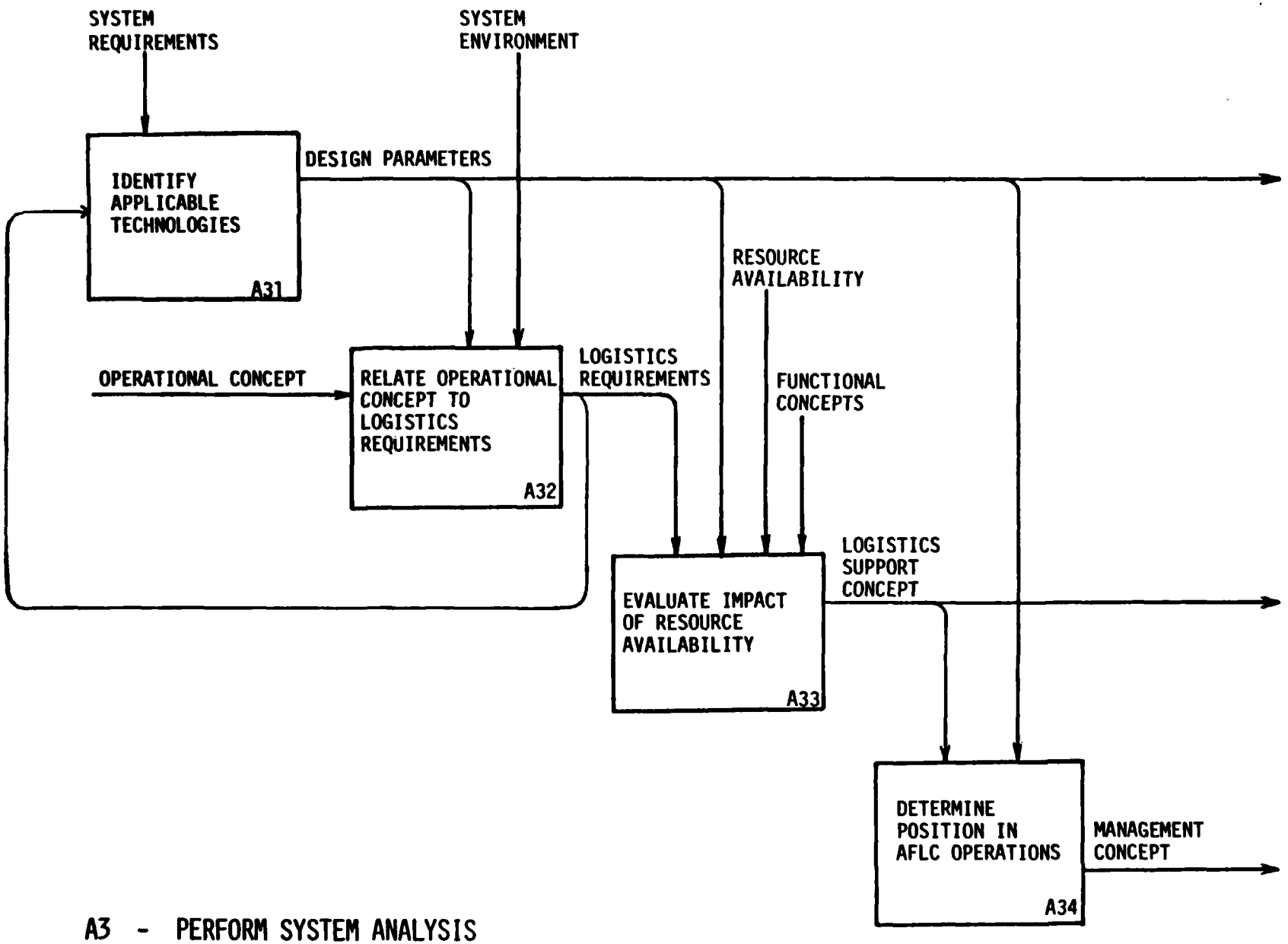

MANAGE AF WEAPON SYSTEMS
IDENTIFY NEEDS A
SET PROGRAMS AND POLICIES B
ACQUIRE SYSTEMS C
EMPLOY SYSTEM D
MAINTAIN SYSTEMS E
PHASE-OUT SYSTEMS F
PERFORM SYSTEM ANALYSIS A3
DEVELOP/ UPDATE PROGRAM PLANS B3
DEVELOP SPECIFI-CATIONS C1
ACTIVATE SYSTEM D1
EVALUATE TEST/FIELD PERFORMANCE C5
PERFORM PROVISIONING C6
ACQUIRE FACILITIES AND HEAVY EQUIPMENT C7
DEPLOY SYSTEM D2
ALLOCATE ASSETS E1
IDENTIFY MISSING SUPPORT ELEMENTS E2
DETERMINE CAUSE OF DEFICIENCY E3
DETERMINE EFFECT OF DEFICIENCY E4
IDENTIFY APPROPRIATE CORRECTIVE ACTION E5
MANAGE MODIFICATIONS E6
IDENTIFY DISPOSAL ACTION F1
IDENTIFY DISPOSAL PROCEDURE F2
IDENTIFY RECLAMATION REQUIREMENTS F3
RECORD DISPOSAL ACTIONS F4



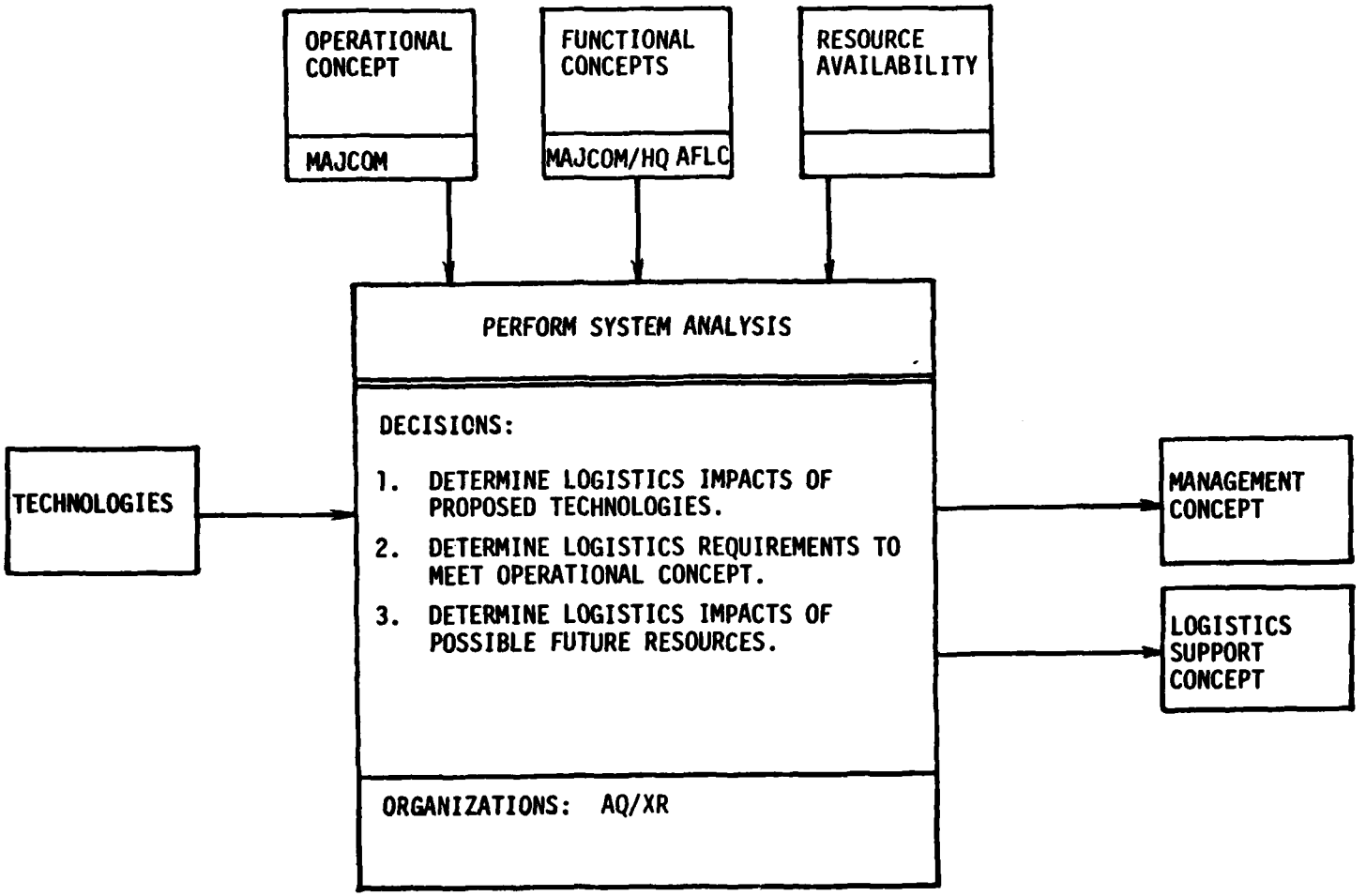
MANAGE WEAPON SYSTEMS



A - IDENTIFY NEEDS



A3 - PERFORM SYSTEM ANALYSIS

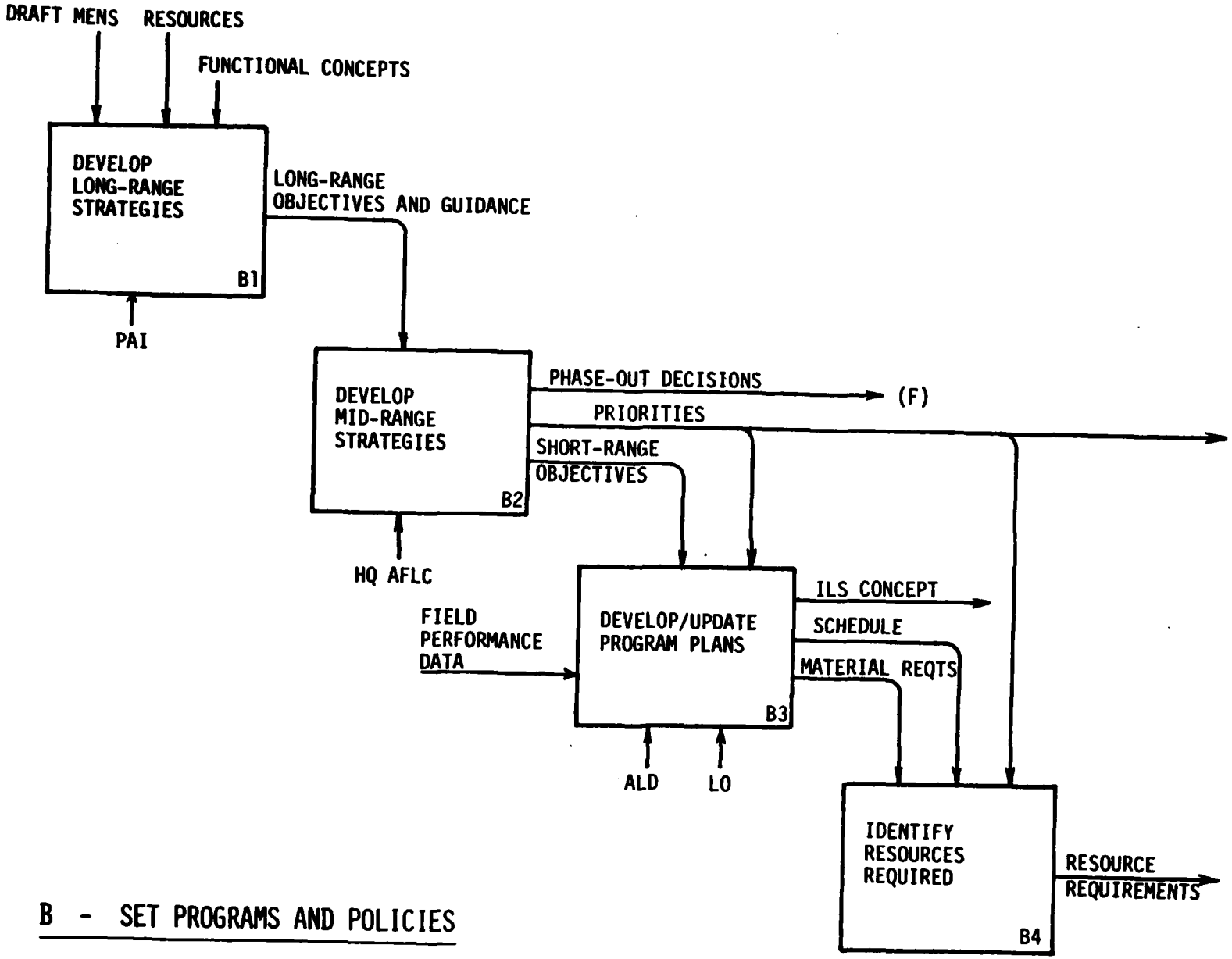


A3 - PERFORM SYSTEM ANALYSIS

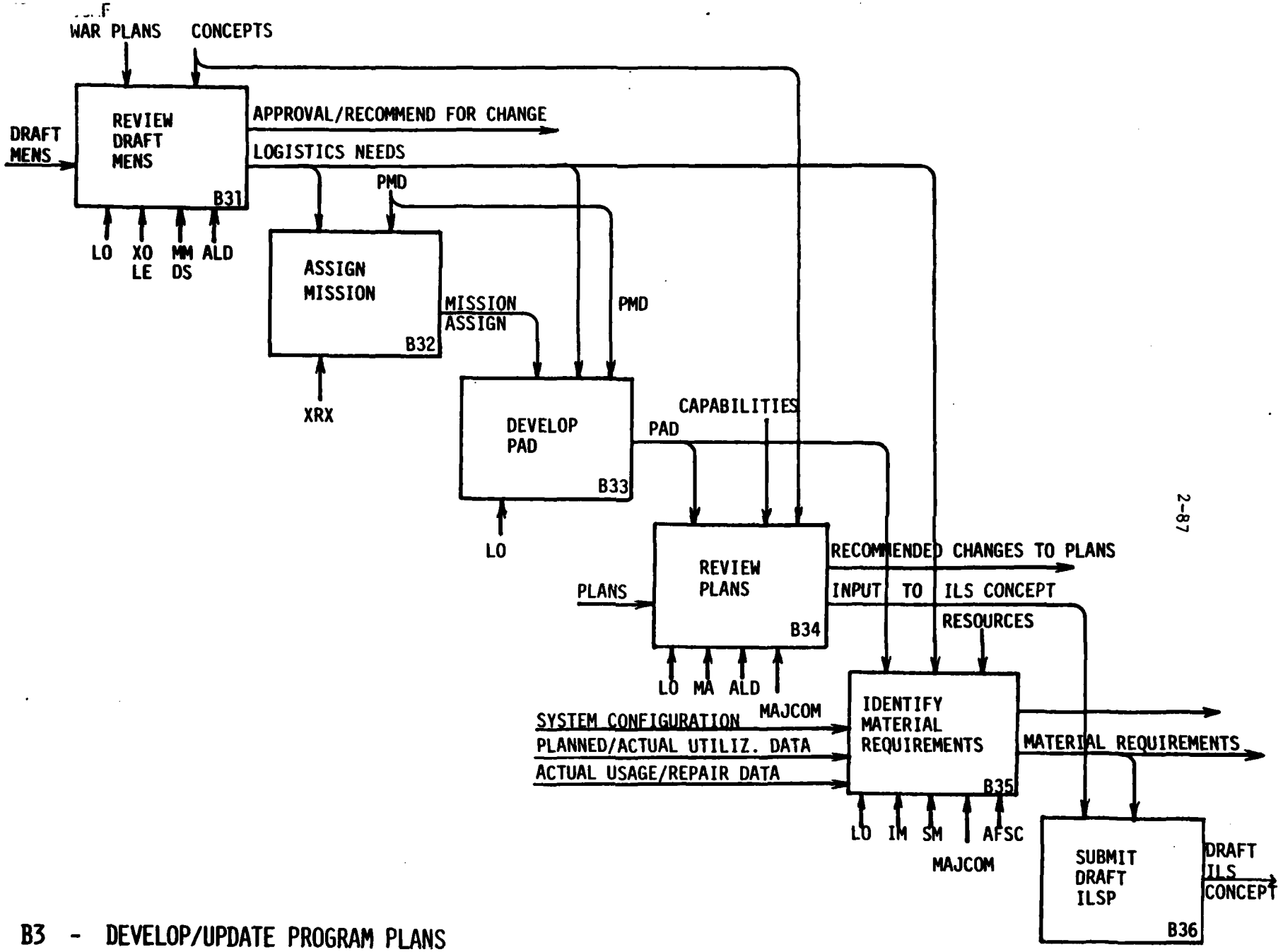
A. IDENTIFY NEEDS

CURRENT SHORTFALLS

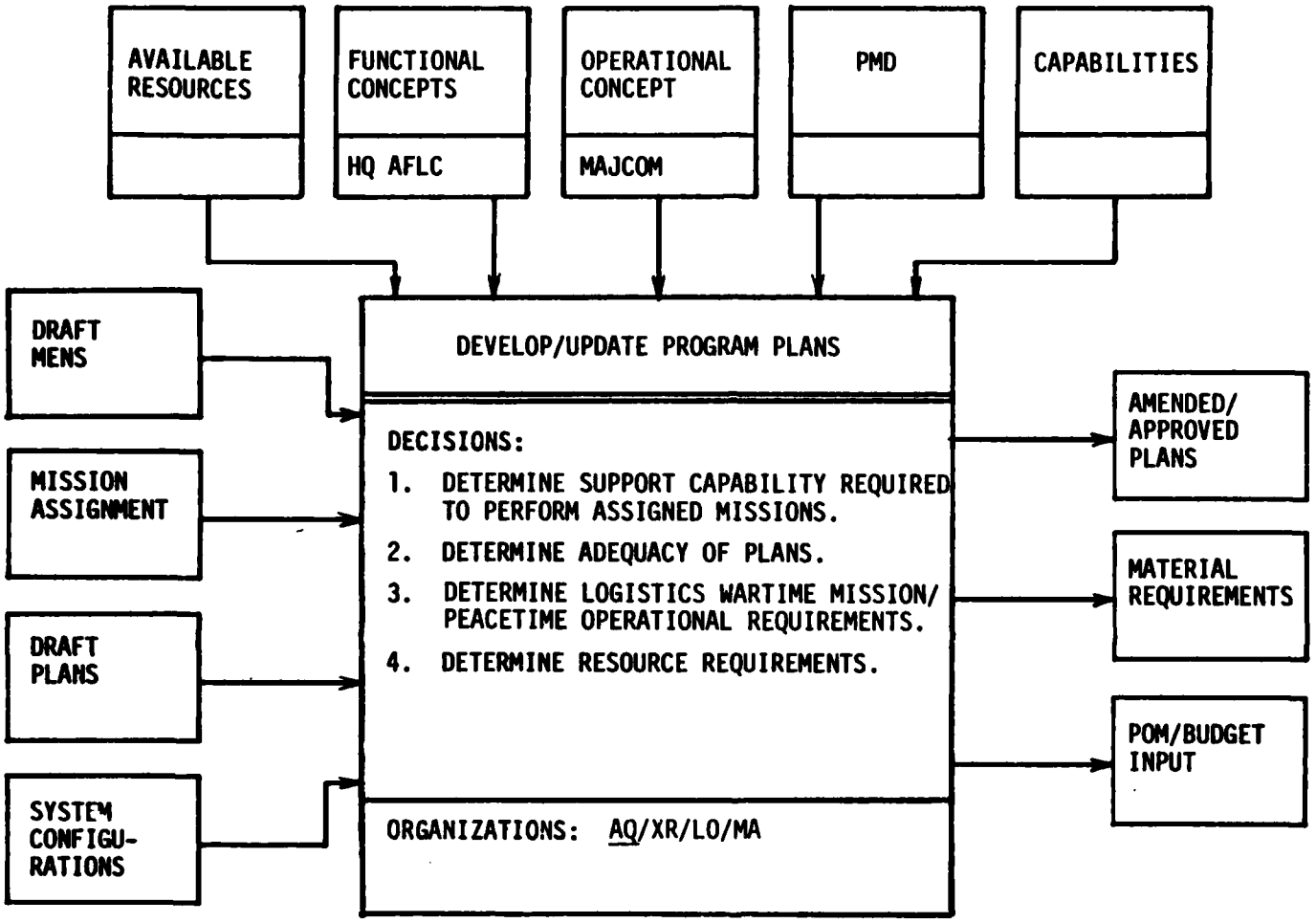
1. LACK OF FEEDBACK TO FUNCTIONAL CONCEPTS
2. LITTLE OR NO INPUT ON LESS-THAN-MAJOR SYSTEMS
3. LOGISTICS NEEDS TO HAVE GREATER IMPACT ON DESIGN
4. INSUFFICIENT CONSIDERATION OF TECHNOLOGY IMPACTS
5. NO STRONG MECHANISM TO COMMUNICATE INPUTS OF LOGISTICS INTO LONG-RANGE PLANNING
6. INFORMATION ON OPERATIONAL CONCEPT NOT READILY AVAILABLE AT WORKING LEVEL
7. INADEQUATE VISIBILITY OF FOREIGN TECHNOLOGY, MANUFACTURING PROCESSES, AND LOGISTICS.



B - SET PROGRAMS AND POLICIES



B3 - DEVELOP/UPDATE PROGRAM PLANS

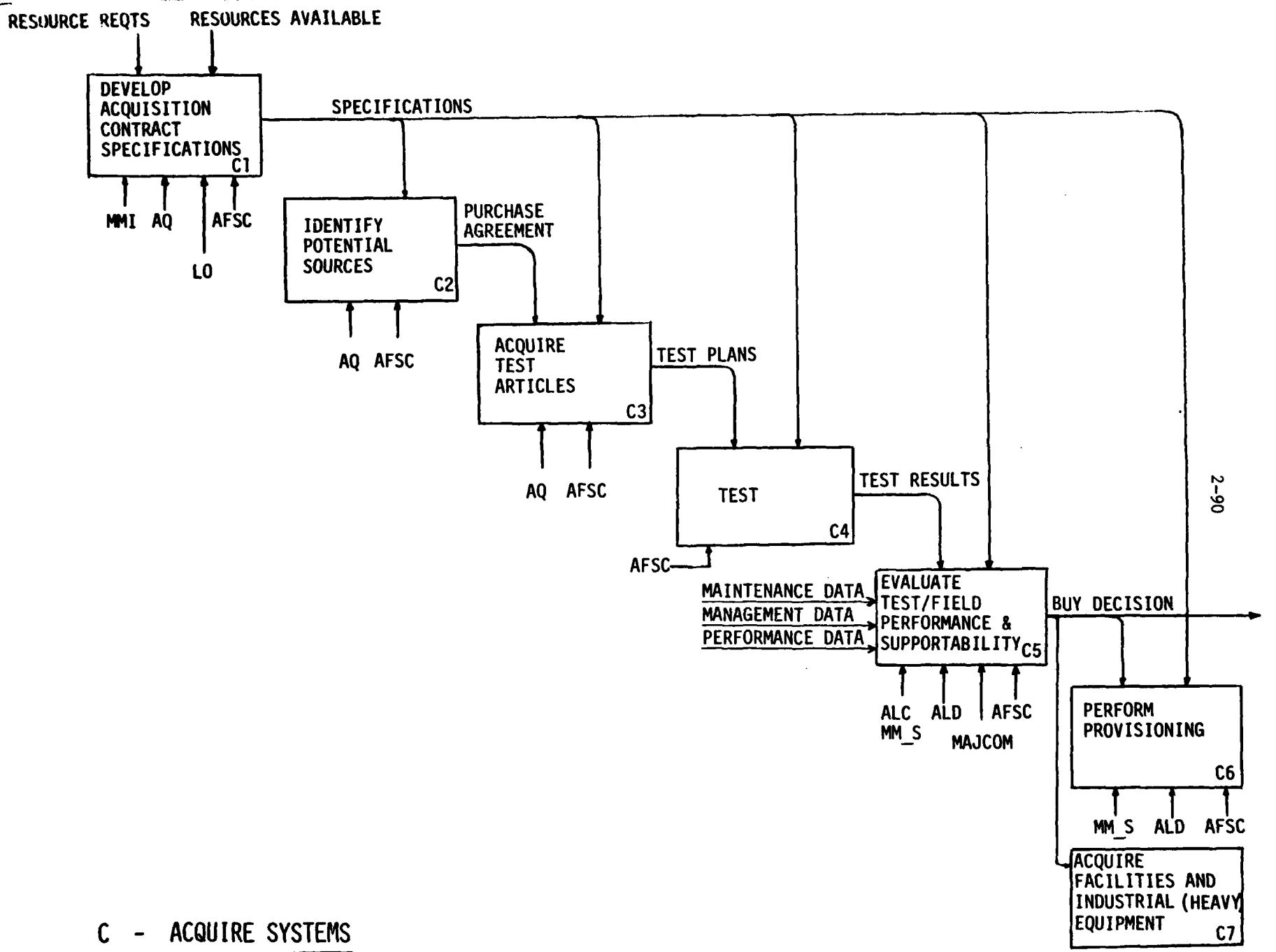


B3 - DEVELOP/UPDATE PROGRAM PLANS

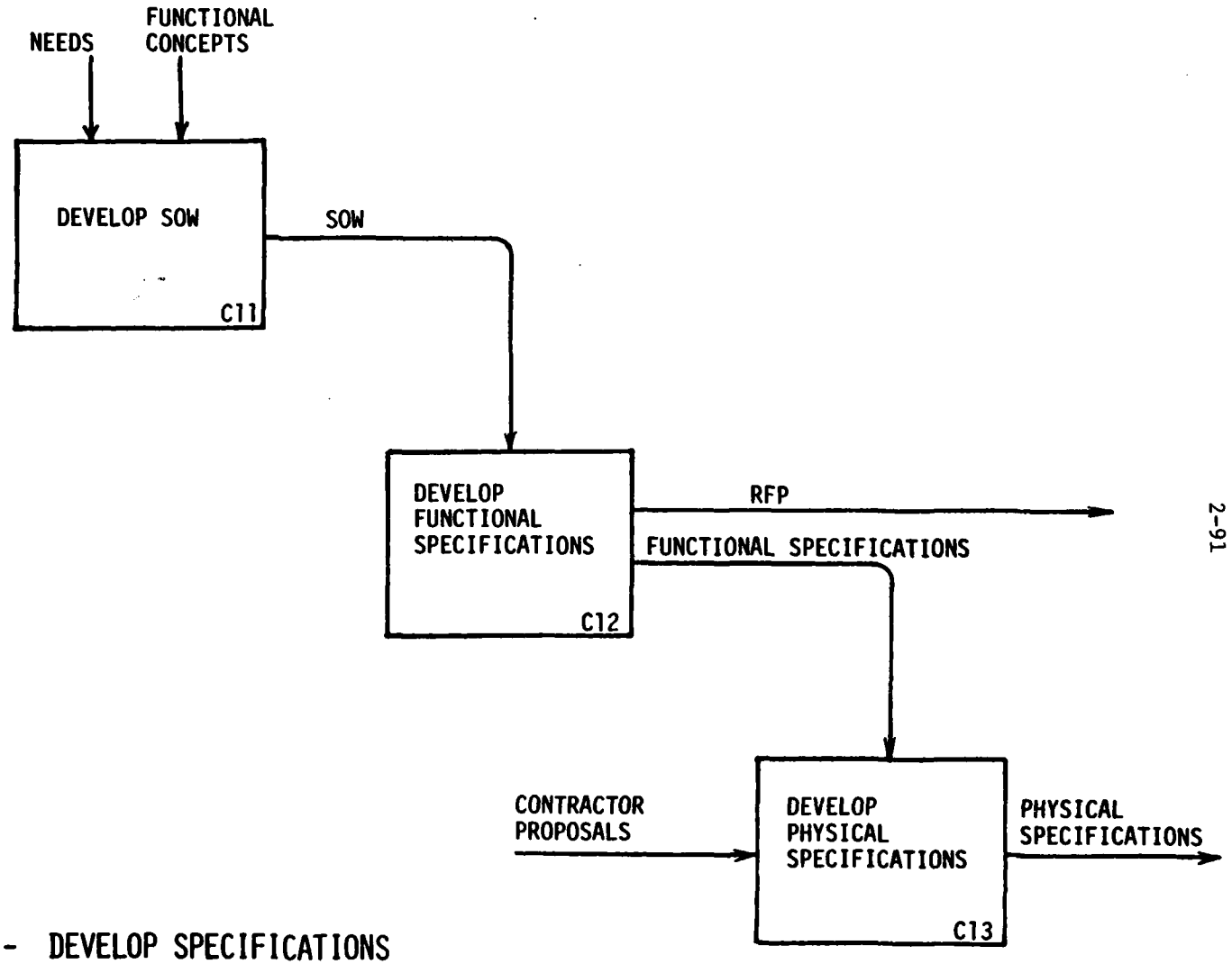
B. SET PROGRAMS AND POLICIES

CURRENT SHORTFALLS

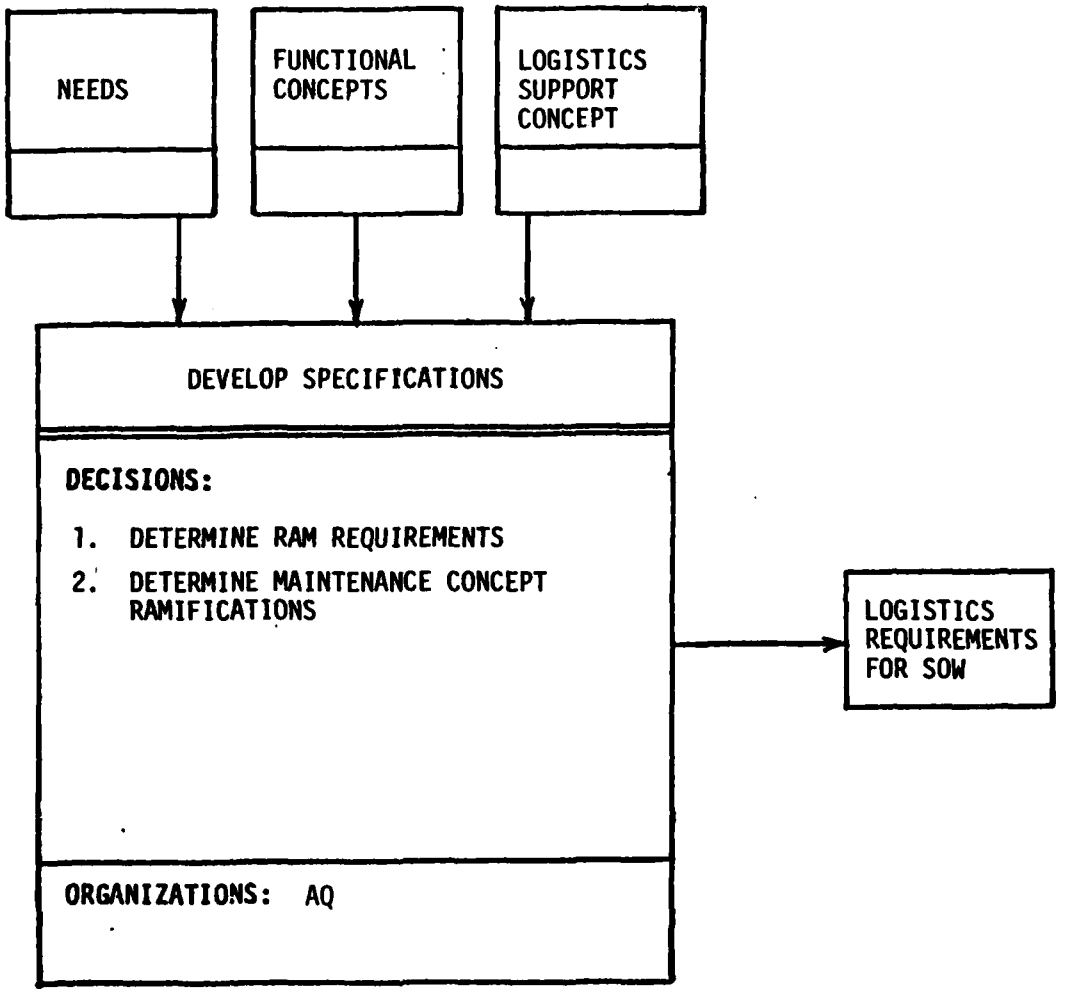
1. NO DEFINED MISSION RESOURCES IN LO COMMITTED TO WEAPON SYSTEM LONG-RANGE PLANNING
2. NEED TO CAREFULLY CONSIDER LOGISTICS IMPLICATIONS OF CONTRACTOR SUPPORT
3. MAINTENANCE CAPABILITIES NOT ASSOCIATED WITH A WEAPON SYSTEM ON COMMON ITEMS
4. R&M REQUIREMENTS IN CONFLICT WITH DTC GOALS (UNIT FLYAWAY COST)
5. POLICY/PROCEDURE LIMITATIONS ON OPTIONS FOR MATERIAL SUPPORT
6. AFLC MISSION ASSIGNMENT NOT DONE EARLY ENOUGH
7. INADEQUATE CONSIDERATION OF BENEFITS GAINED FROM USING PROVEN EQUIPMENT AND MANUFACTURING PROCESS.



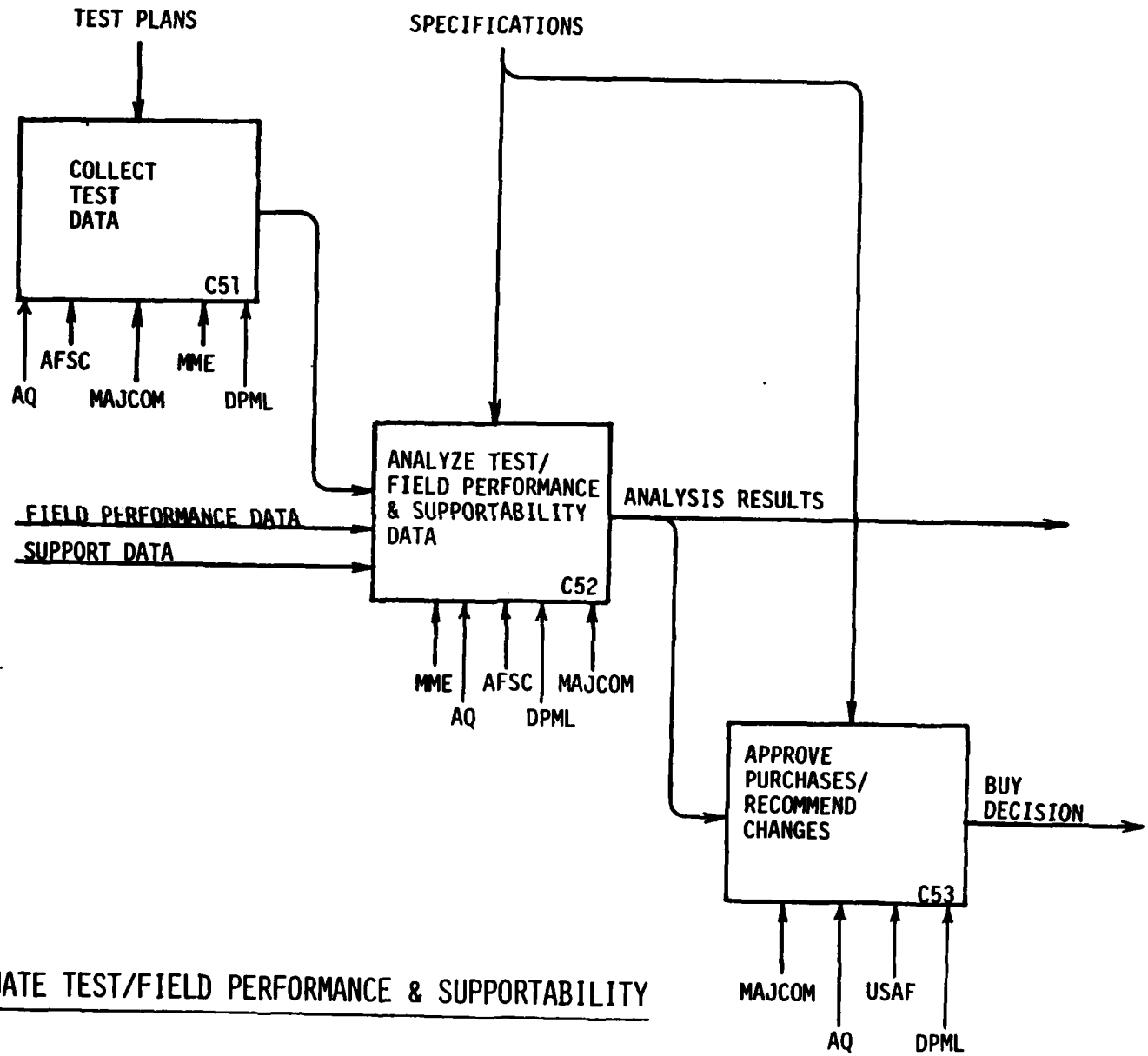
C - ACQUIRE SYSTEMS



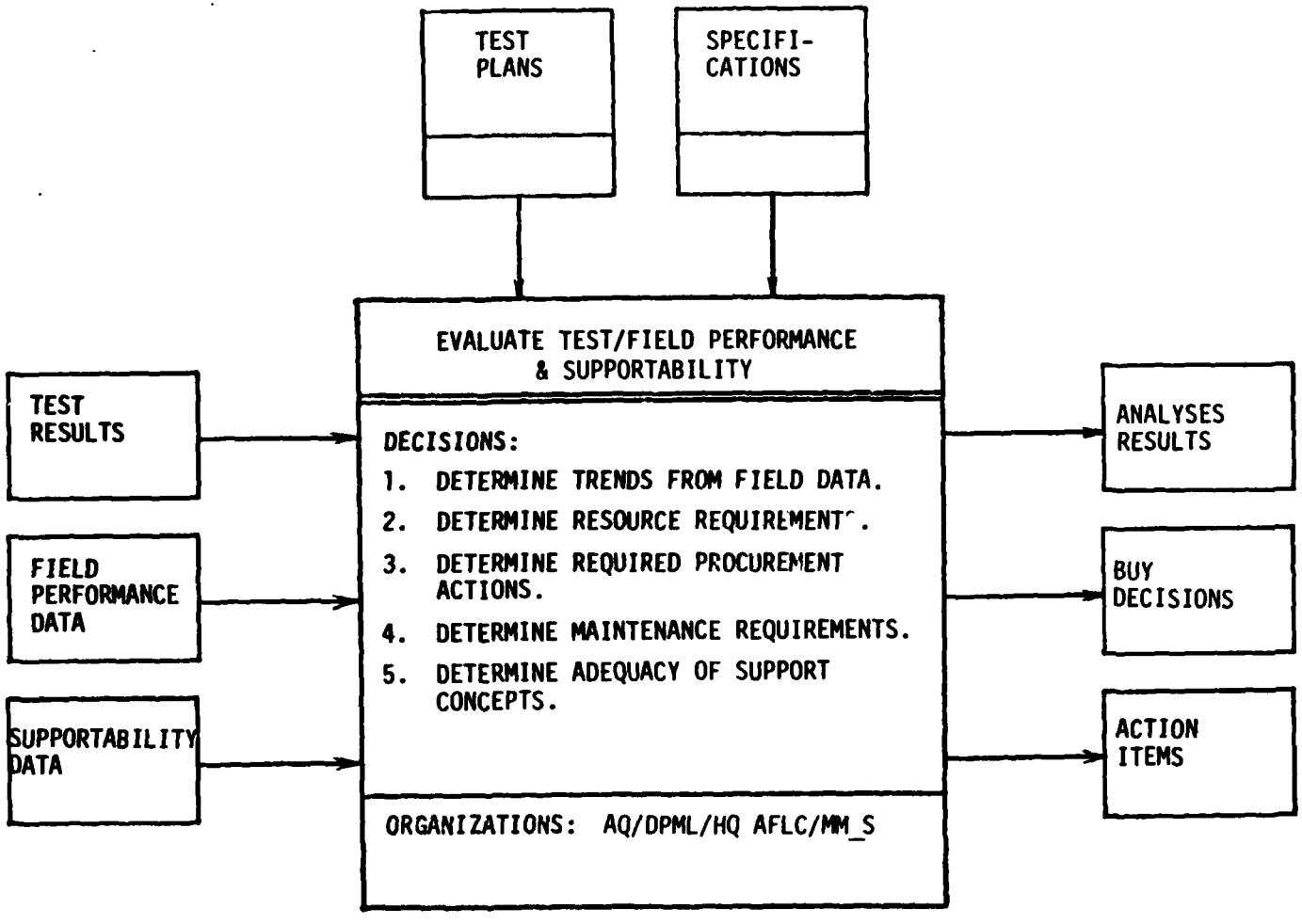
C1 - DEVELOP SPECIFICATIONS



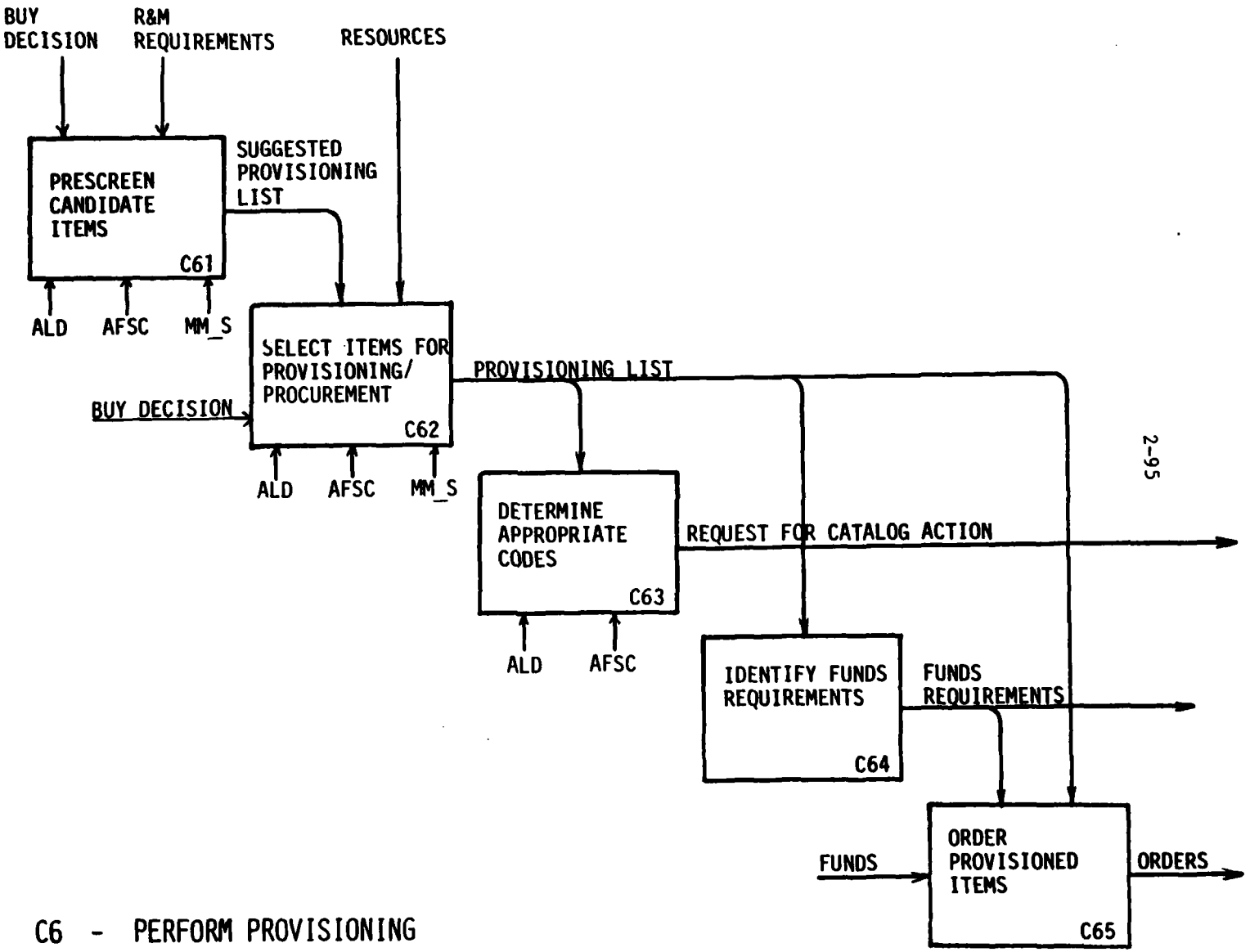
C1 - DEVELOP SPECIFICATIONS



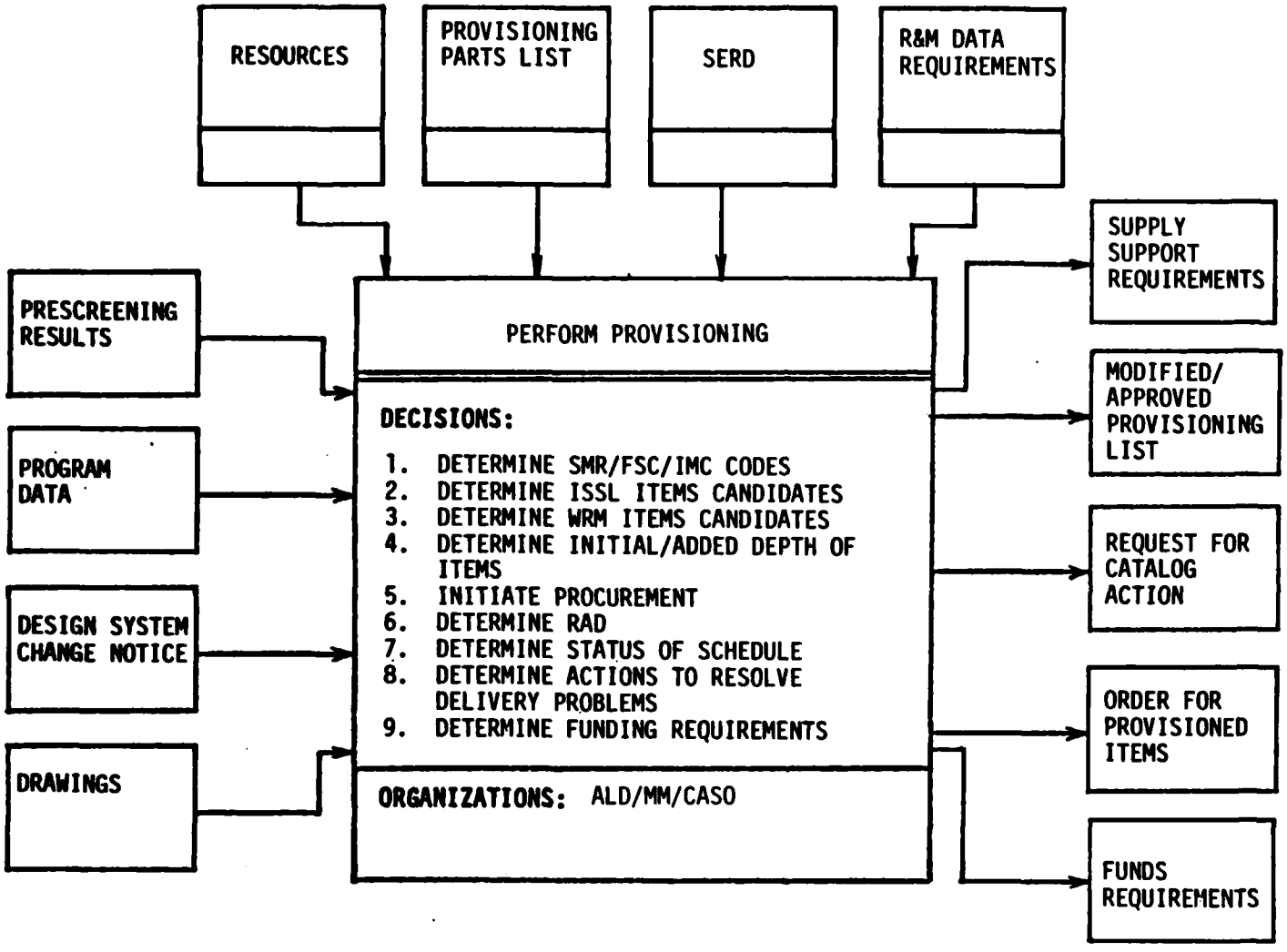
C5 - EVALUATE TEST/FIELD PERFORMANCE & SUPPORTABILITY



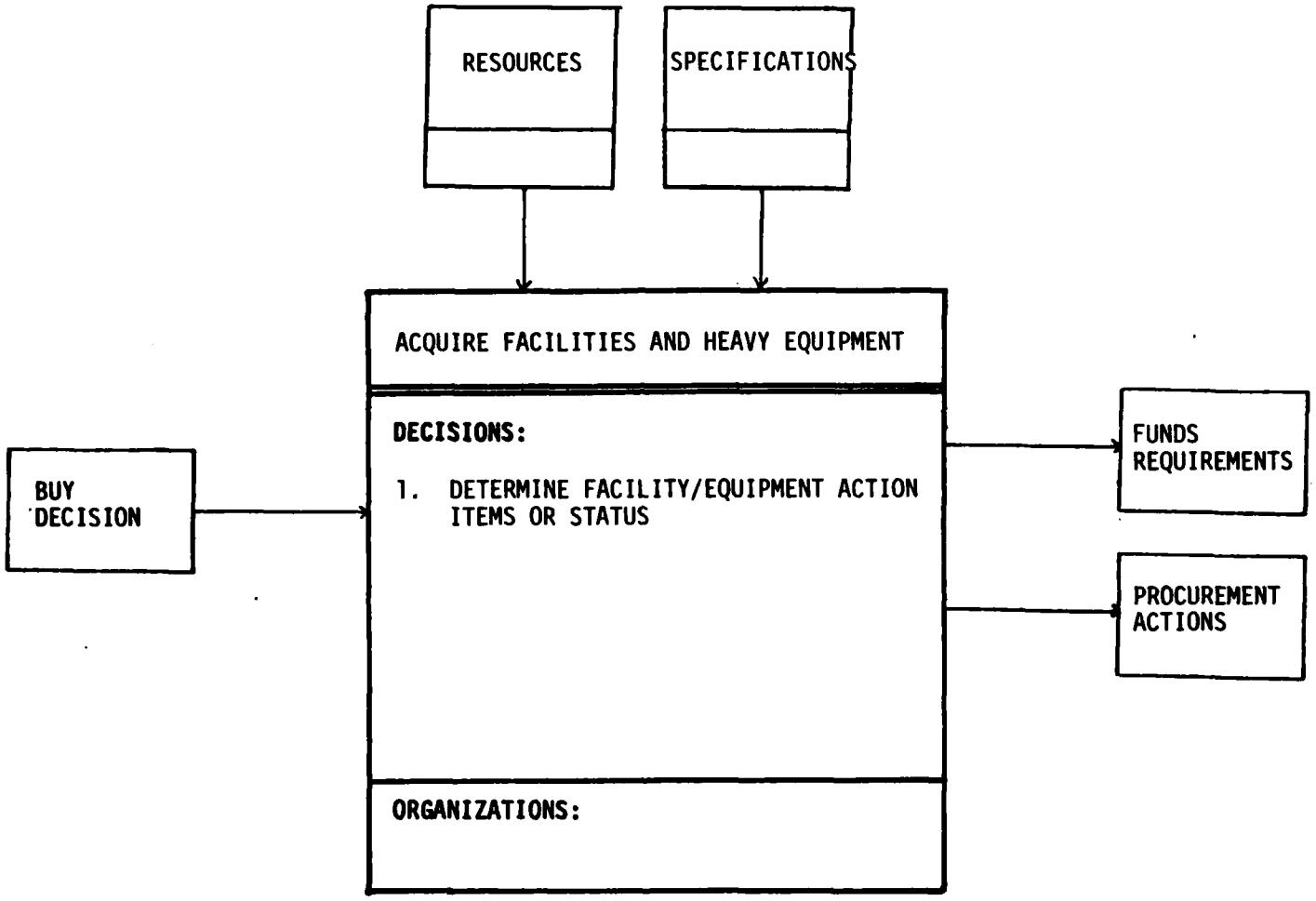
C5 - EVALUATE TEST/FIELD PERFORMANCE & SUPPORTABILITY



C6 - PERFORM PROVISIONING



C6 - PERFORM PROVISIONING

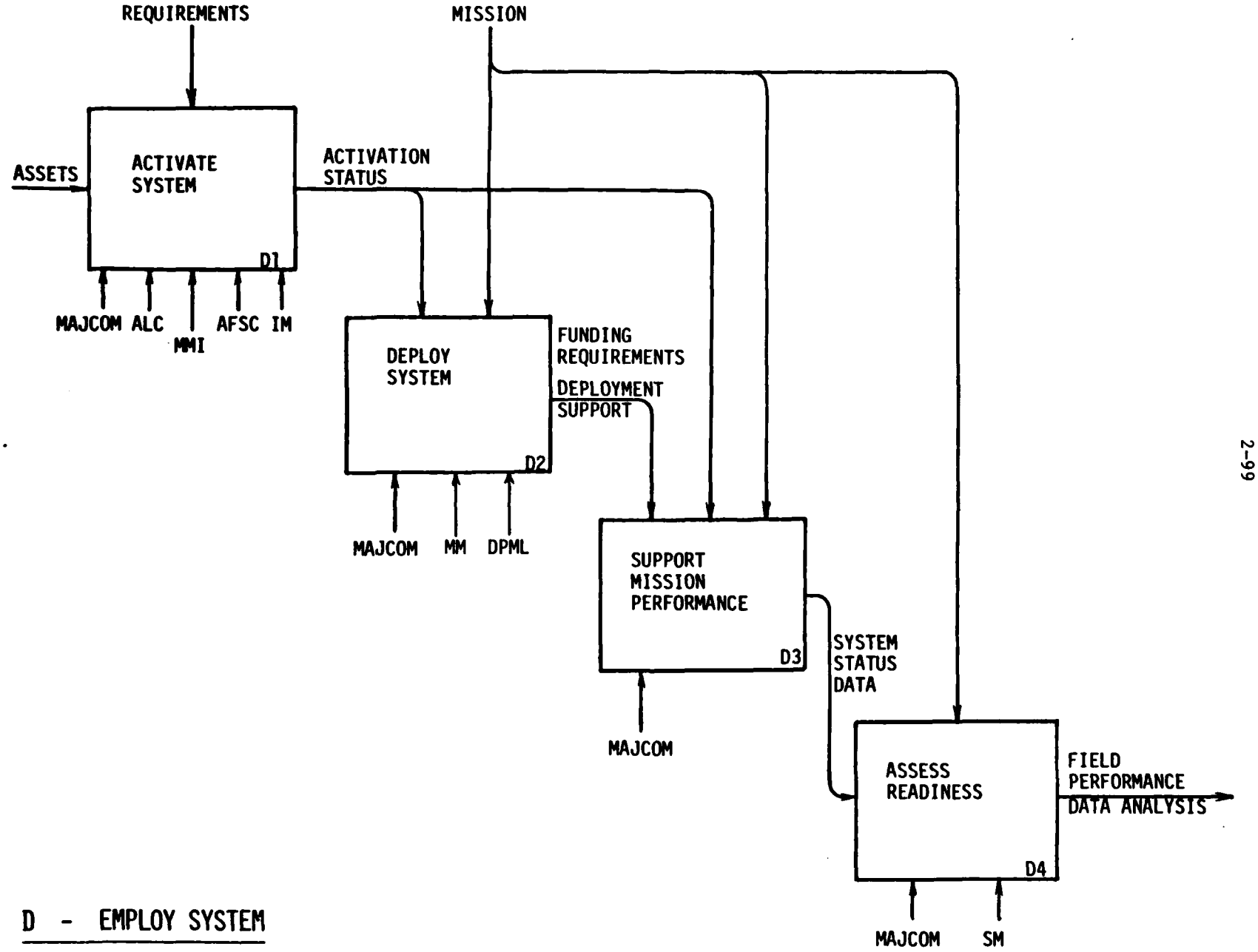


C7 - ACQUIRE FACILITIES AND HEAVY EQUIPMENT

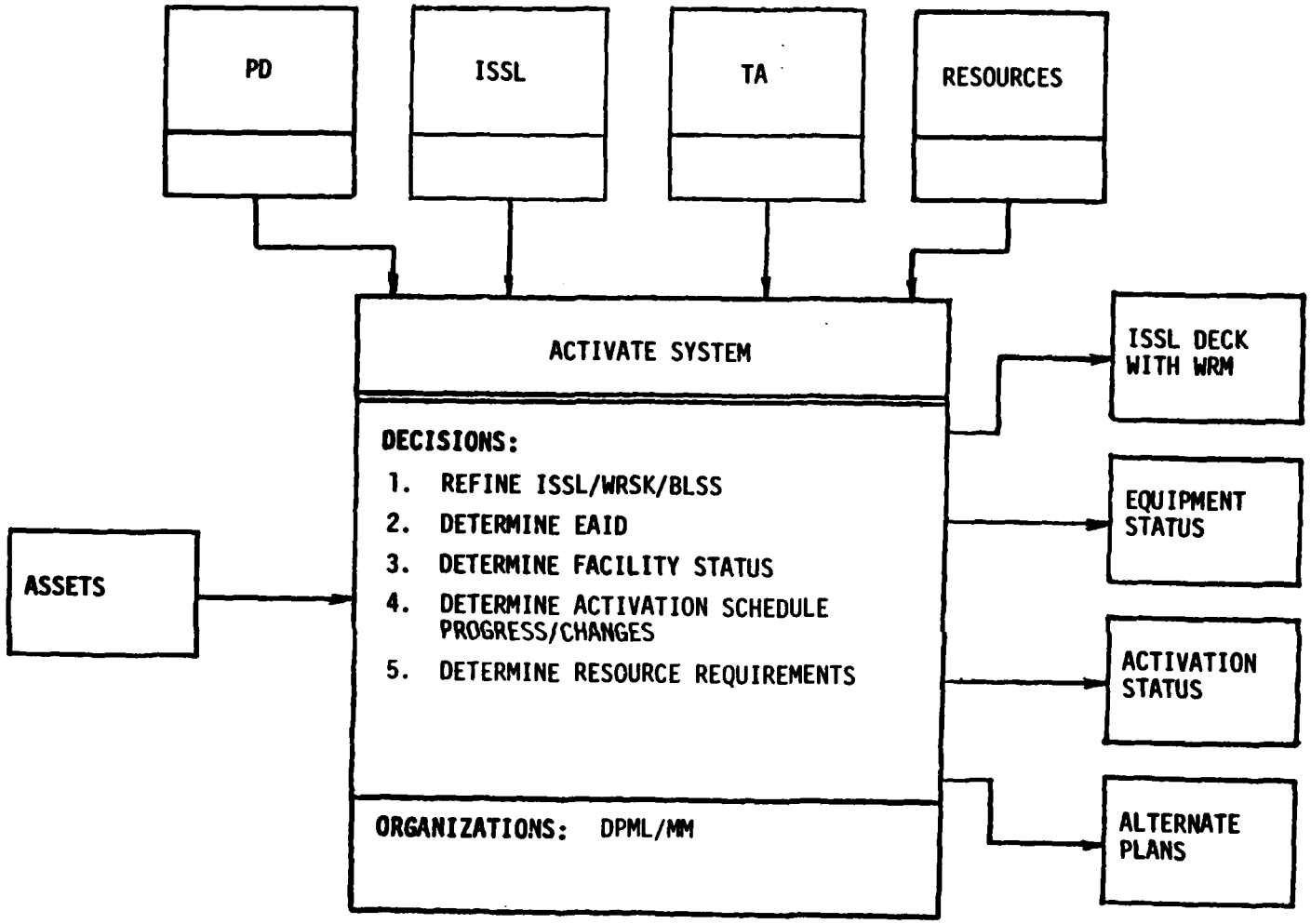
C. ACQUIRE SYSTEMS

CURRENT SHORTFALLS

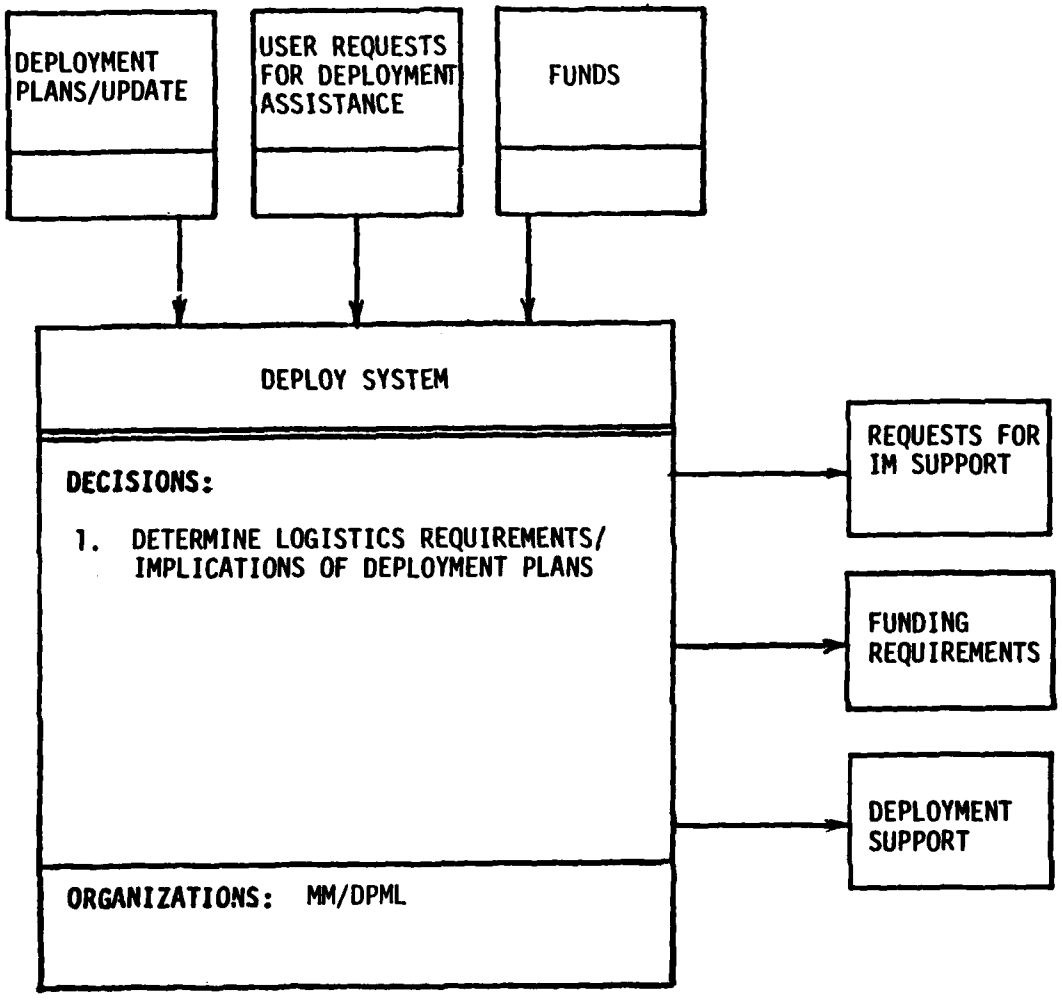
1. INADEQUATE INITIATIVES TO DEVELOP LOGISTICS SOLUTIONS ACROSS SYSTEMS/SUBSYSTEMS COMMON FUNCTIONS (OR FUNCTIONS COMMONG AMONG SYSTEMS)
2. INADEQUATE INTEGRATION OF SYSTEMS/SUBSYSTEMS IN DESIGN REQUIREMENTS
3. LACK OF QUALITY IN LOGISTICS DATA
4. SHORTAGE OF QUALIFIED PEOPLE TO ANALYZE LOGISTICS DATA
5. LACK OF OR FAILURE TO USE MANAGEMENT INDICATORS
6. FAILURE TO STRUCTURE WARTIME EXERCISES TO ASSESS LOGISTICS CAPABILITY
7. INSUFFICIENT PRIORITY PLACED ON LOGISTICS EVALUATION DURING OT&E
8. INADEQUATE FEEDBACK FROM CONTRACTORS USING GFM
9. INFORMATION ON OPERATIONS NOT READILY AVAILABLE
10. INADEQUATE CONSIDERATION OF GFM USE AND IMPACT.



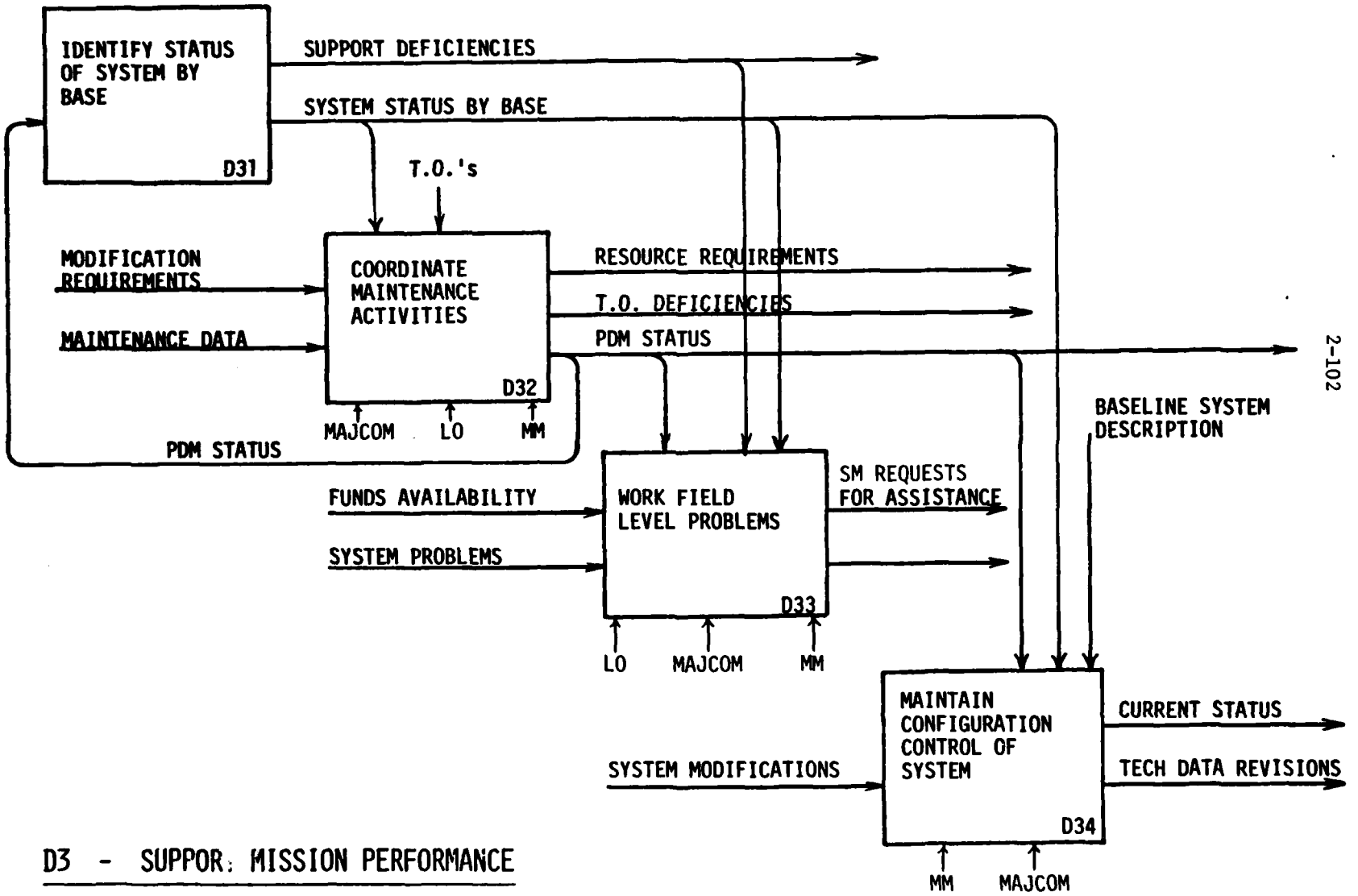
D - EMPLOY SYSTEM



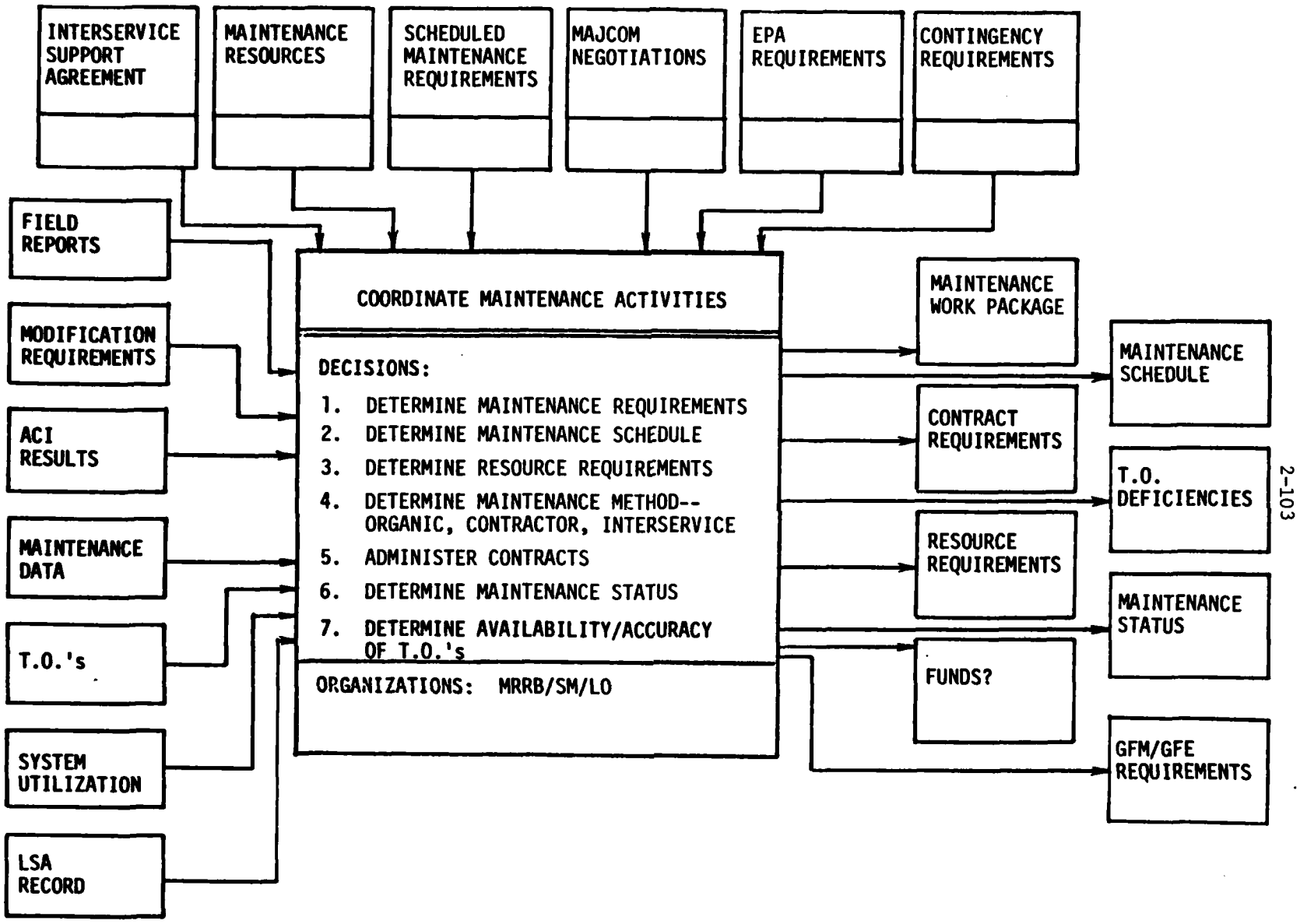
D1 - ACTIVATE SYSTEM



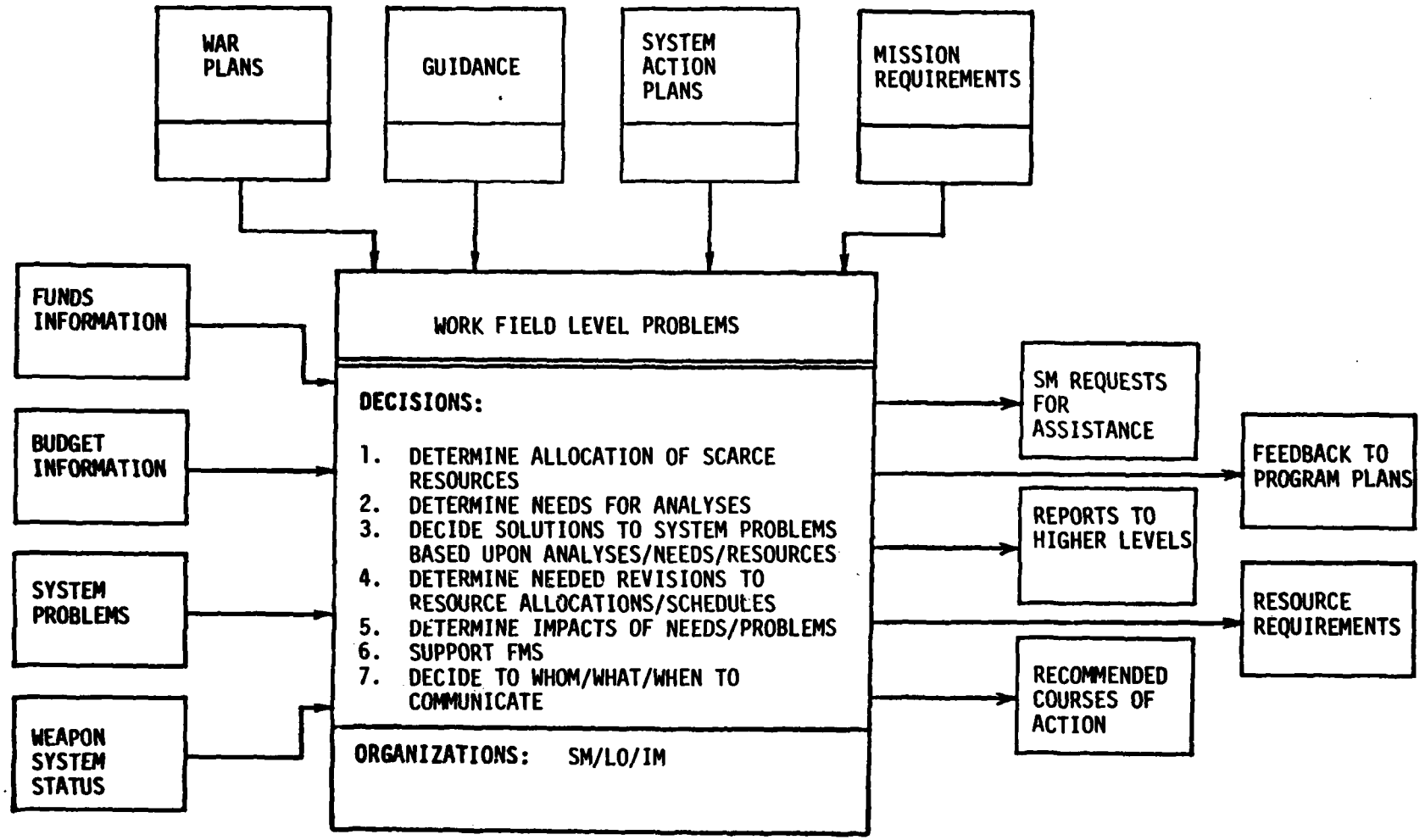
D2 - DEPLOY SYSTEM



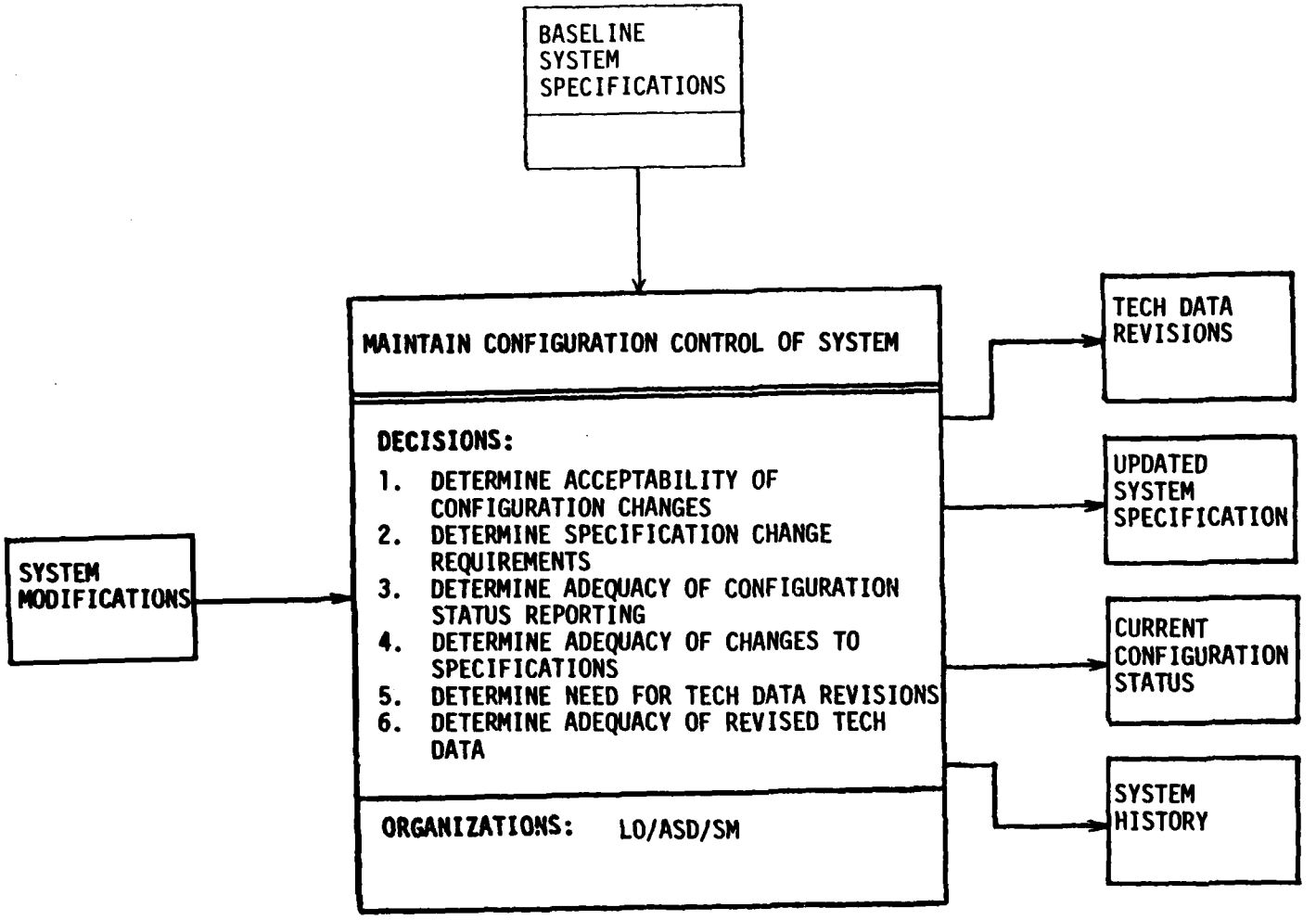
D3 - SUPPOR: MISSION PERFORMANCE



D32 - COORDINATE MAINTENANCE ACTIVITIES



D33 - WORK FIELD LEVEL PROBLEMS



D34 - MAINTAIN CONFIGURATION CONTROL OF SYSTEM

D. EMPLOY SYSTEM

CURRENT SHORTFALLS

1. AFLC DOES NOT CURRENTLY HAVE FULL ACCESS TO WWMCCS (E.G., UNIT READINESS DATA).

2. AFLC CAN'T ASSESS IMPACT OF MAJOR DEPLOYMENTS ON REQUIREMENTS.

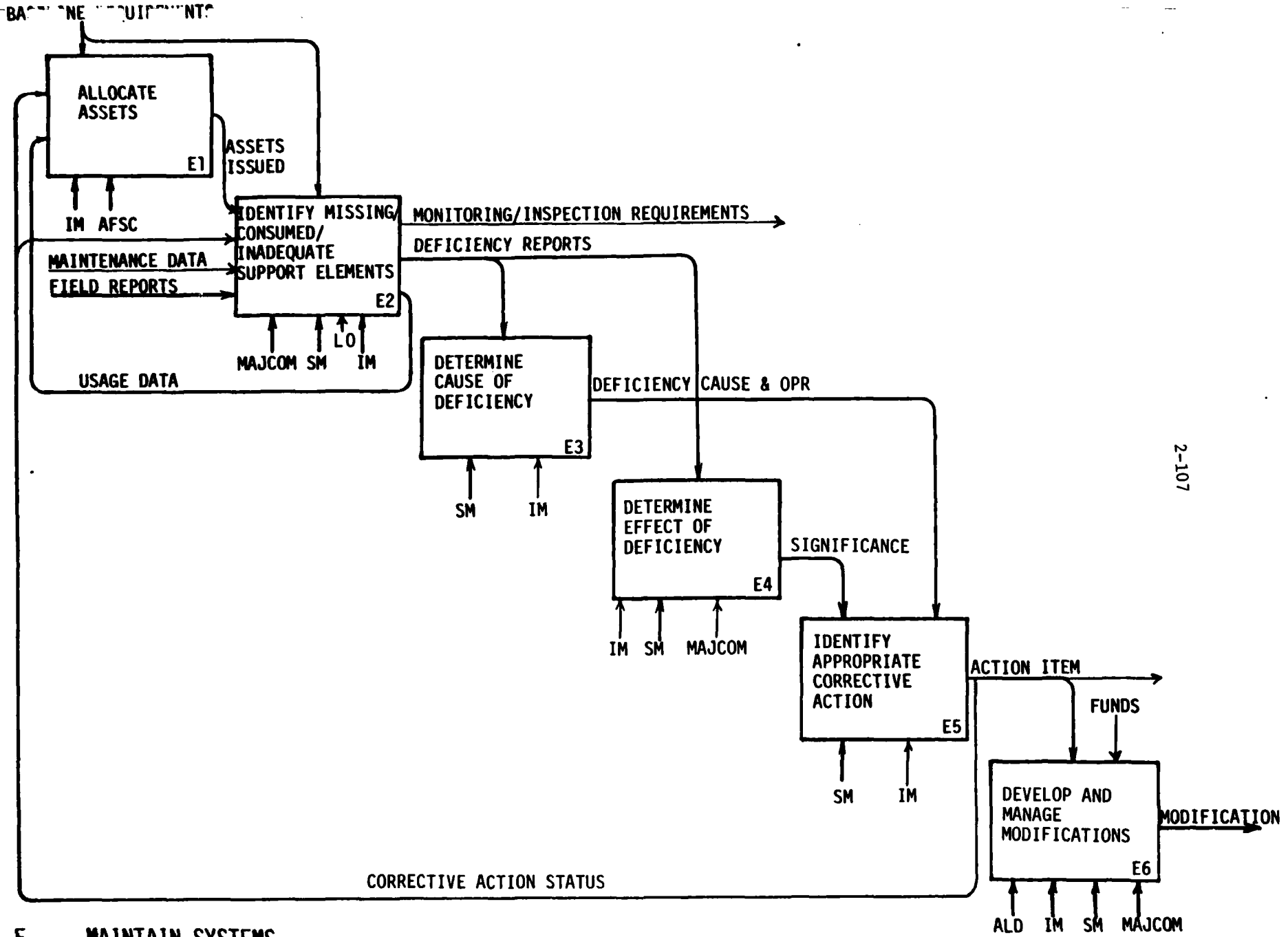
3. INCONSISTENCIES EXIST BETWEEN USER/AFLC PERCEPTION OF MEETING DESIGN OPERATION CAPABILITY.

4. NEED TO CONSIDER VULNERABILITY WHEN BASING SUPPORT ON FOREIGN SOIL.

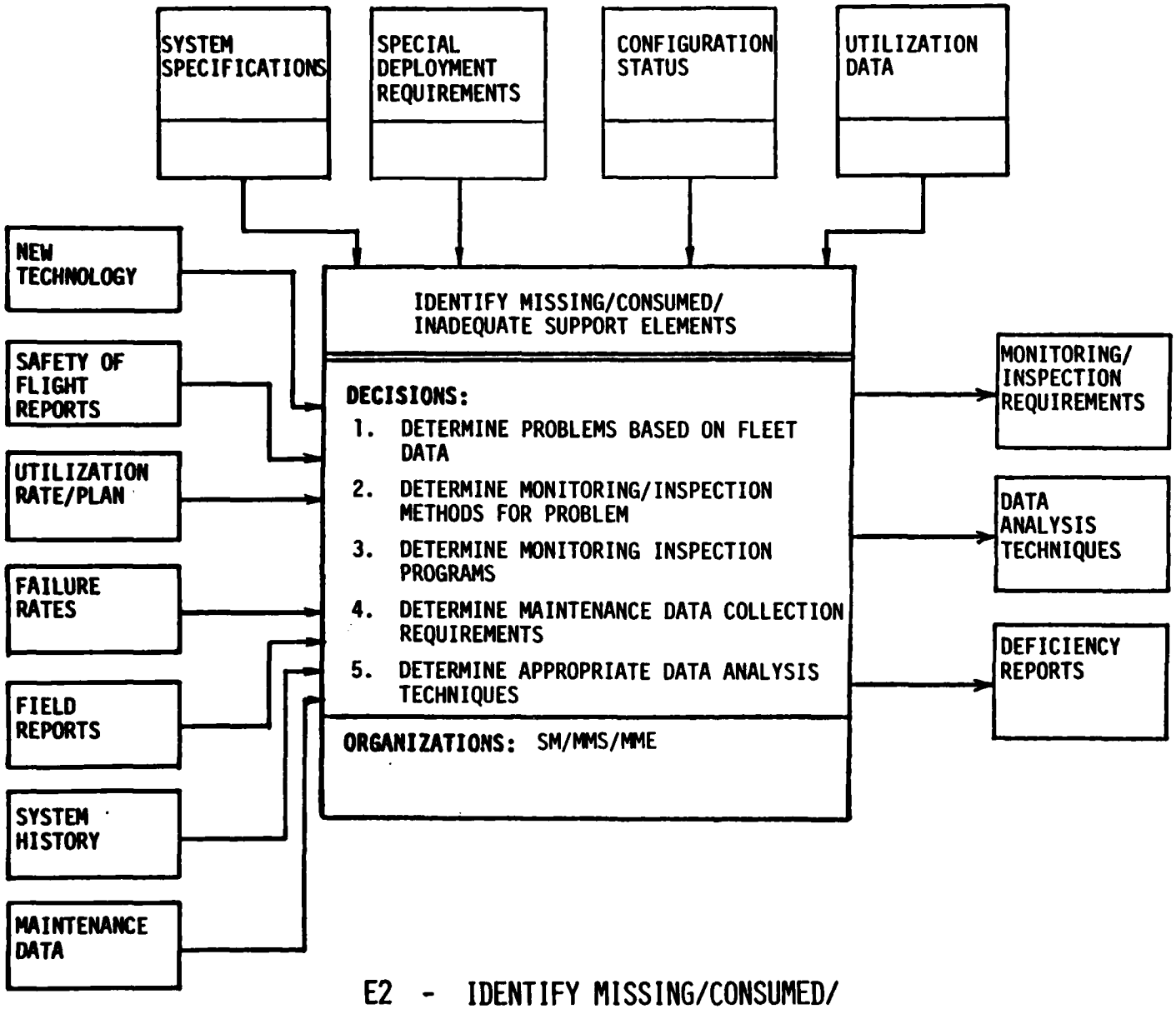
5. INCOMPATIBILITY BETWEEN IOC DATE AND SUPPORTABILITY (S.E., TECH DATA, FACILITIES, MUNITIONS, ETC.)

6. CAN'T DETERMINE STATUS BY BASE.

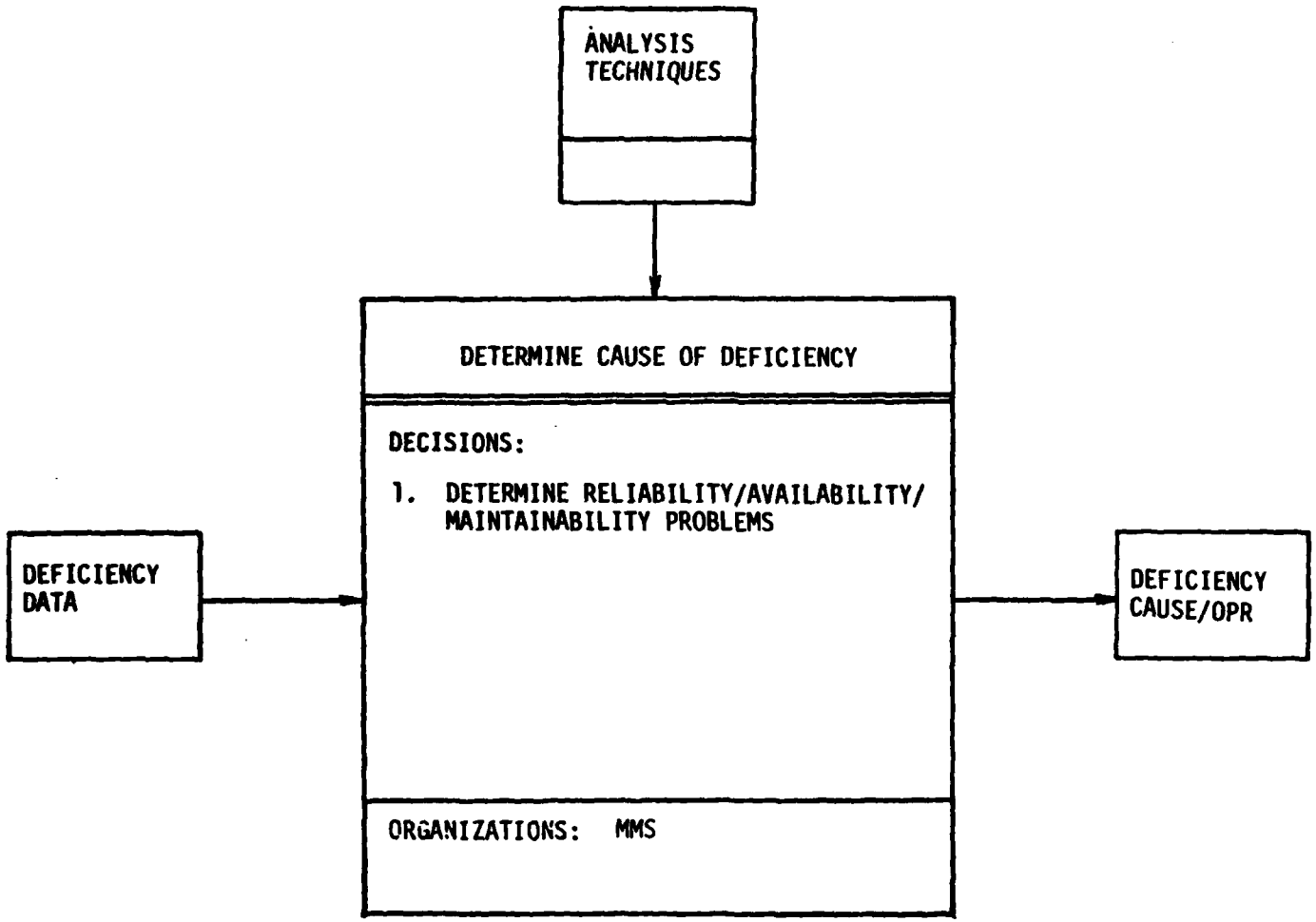
7. INABILITY TO ASSESS LOGISTICS READINESS OF WEAPON SYSTEM IN OPERATIONAL EMPLOYMENT AND ALLOCATE RESOURCES TO OPTIMIZE READINESS.



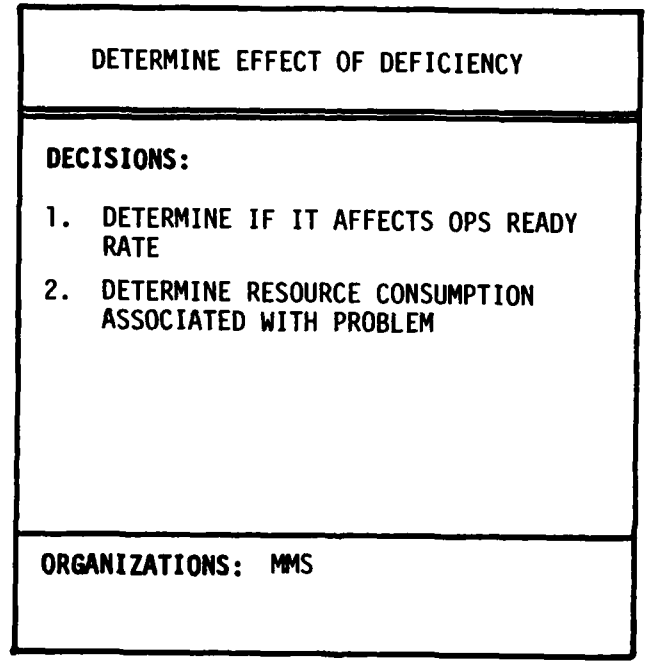
E - MAINTAIN SYSTEMS



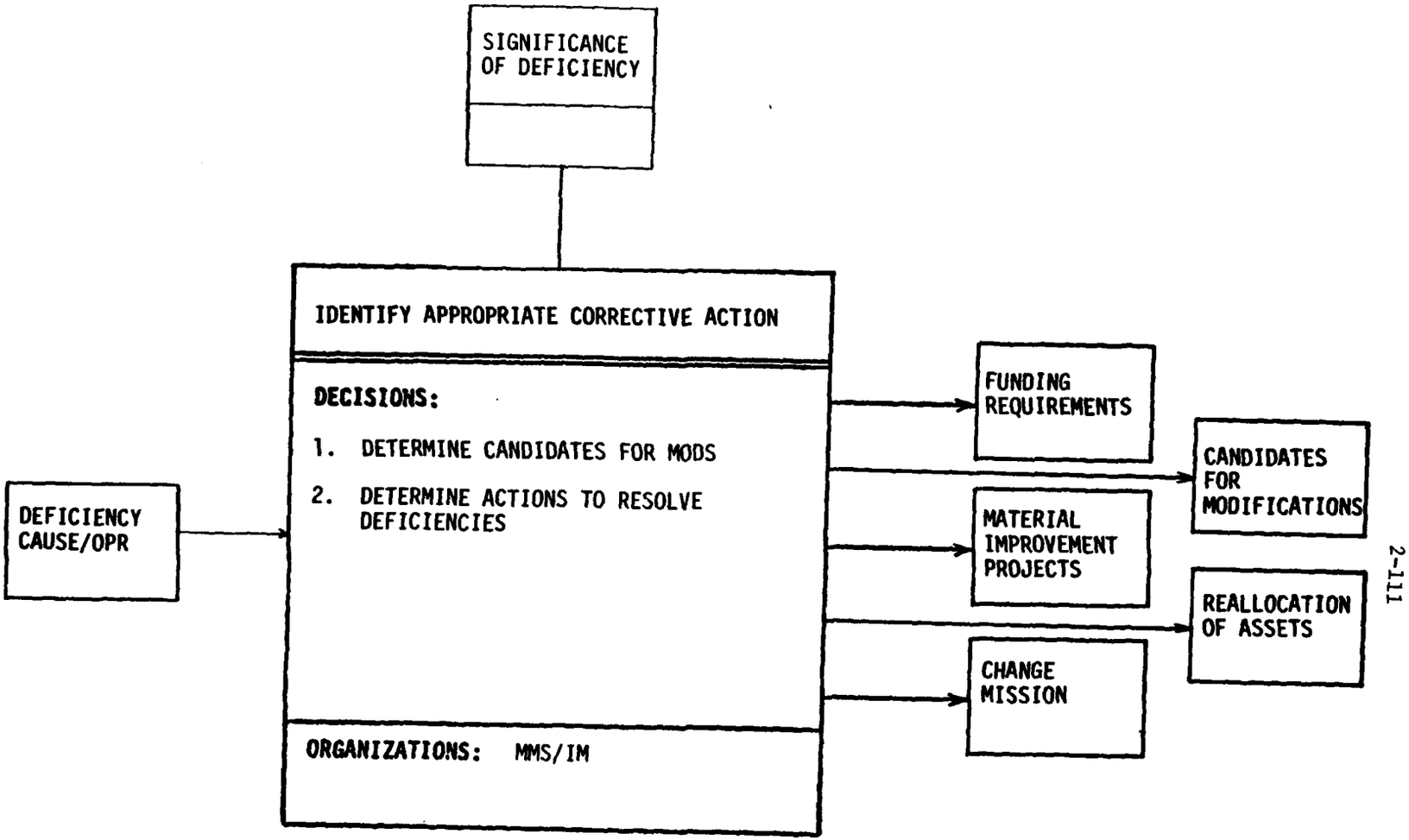
E2 - IDENTIFY MISSING/CONSUMED/ INADEQUATE SUPPORT ELEMENTS



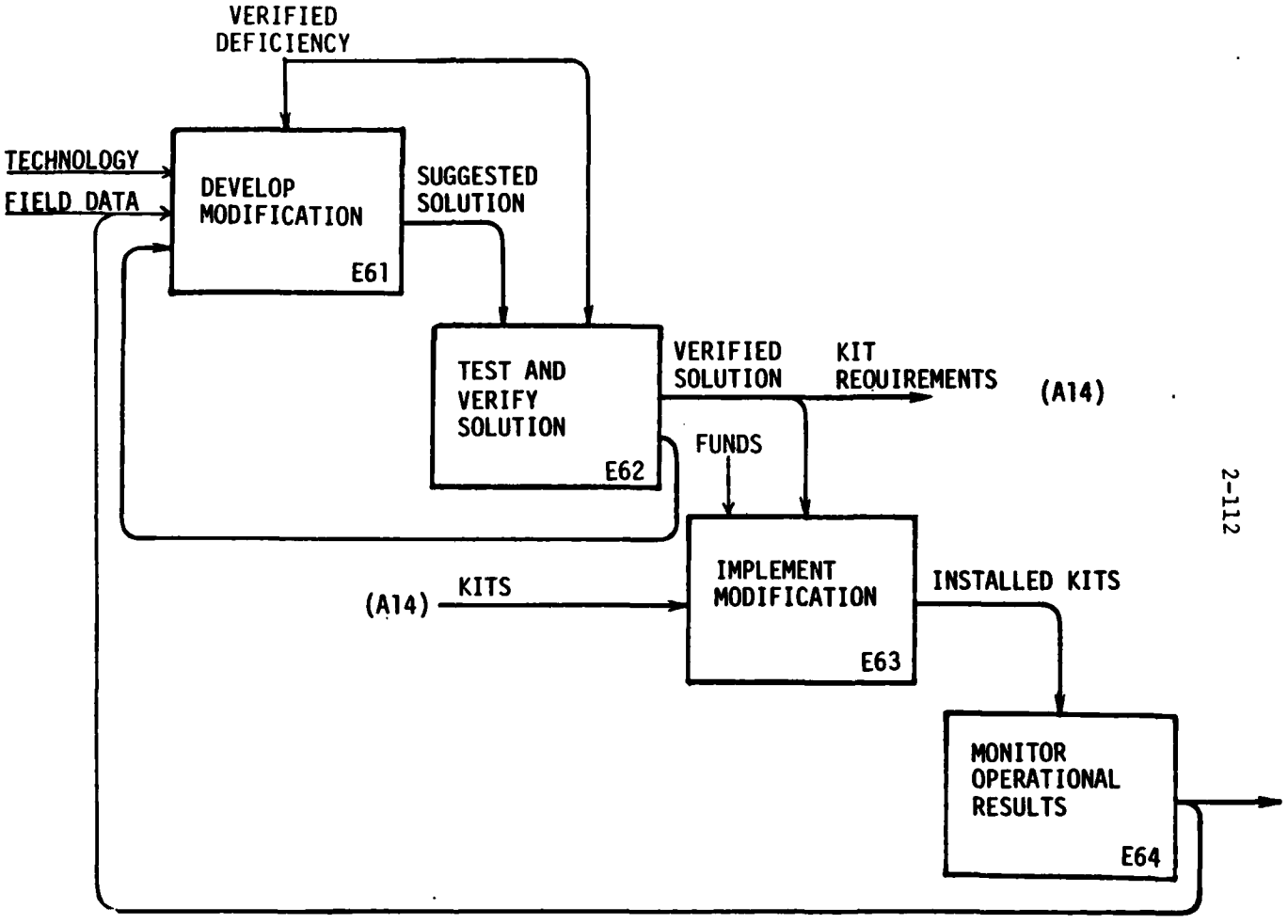
E3 - DETERMINE CAUSE OF DEFICIENCY



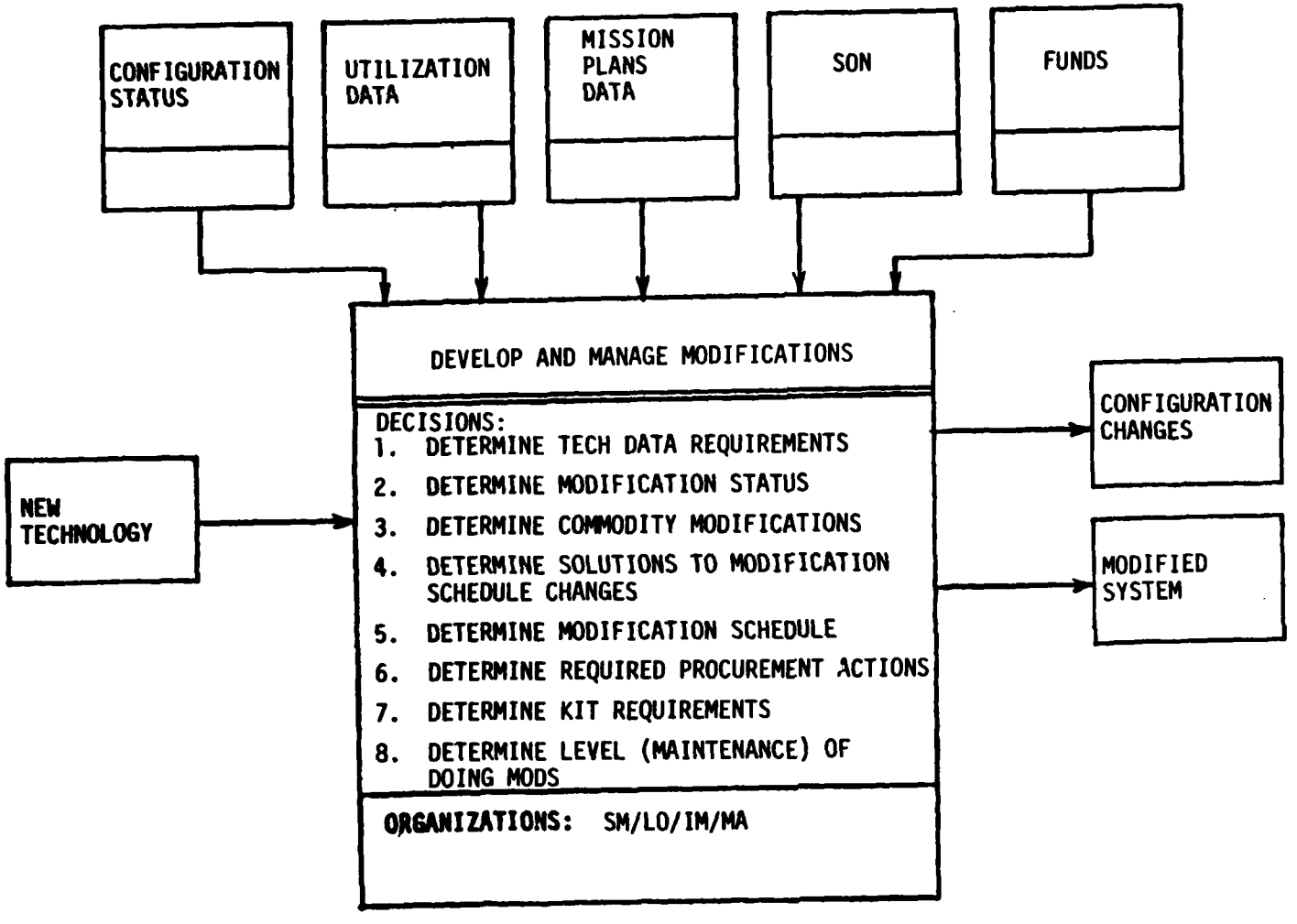
E4 - DETERMINE EFFECT OF DEFICIENCY



E5 - IDENTIFY APPROPRIATE CORRECTIVE ACTION



E6 - DEVELOP AND MANAGE MODIFICATIONS

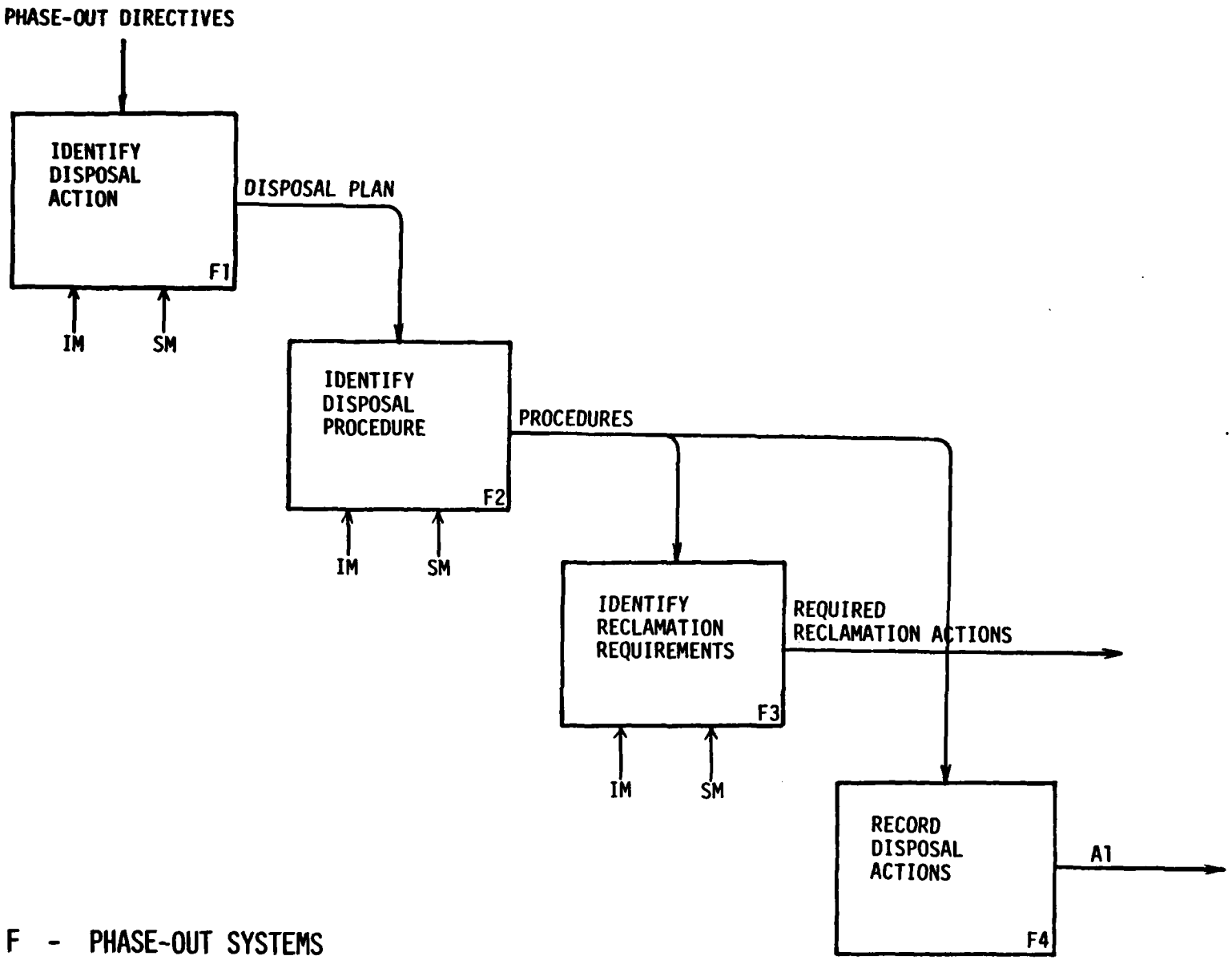


E6 - DEVELOP AND MANAGE MODIFICATIONS

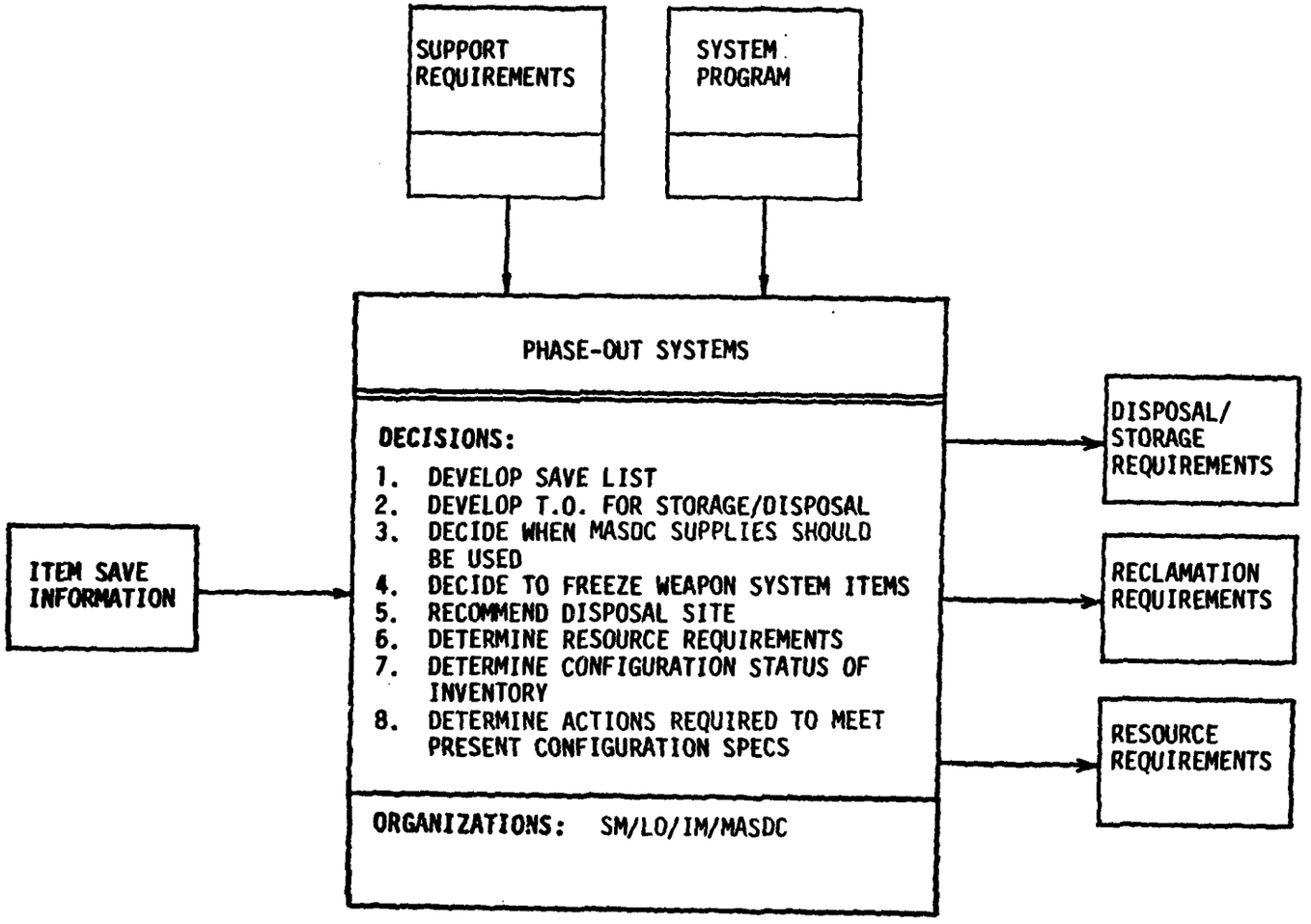
E. MAINTAIN SYSTEMS

CURRENT SHORTFALLS

1. DO NOT HAVE SYSTEM FOR EVALUATING EFFECTIVENESS OF MODIFICATIONS
2. CAN'T DETERMINE FUNDS SPENT BY WEAPON SYSTEM
3. RESOURCE ALLOCATIONS NOT ADEQUATE FOR NEEDS
4. INADEQUATE SYSTEMS FOR TRACKING MODS
5. FINANCIAL TRANSACTION REQUIREMENTS LIMIT OPTIONS
6. INADEQUATE ABILITY TO PERFORM CAPABILITY ASSESSMENT
7. INABILITY TO PROJECT LOGISTICS SUPPORT FUNDING FOR OPERATIONAL REQUIREMENTS
8. LACK OF CONTINUITY IN MODIFICATION PLANNING
9. POOR VISIBILITY OF PROCUREMENT ACTIVITIES PRECLUDES EXPEDITING LEAD TIME.



F - PHASE-OUT SYSTEMS



F - PHASE-OUT SYSTEMS

F. PHASE-OUT SYSTEMS

CURRENT SHORTFALLS

1. INADEQUATE RECORDS OF WHAT HAS BEEN REMOVED IN STORAGE

2. INABILITY TO ACCURATELY ASSOCIATE COMMON ITEMS WITH SYSTEM BEING PHASED OUT

3. AWKWARD METHODS FOR CARRYING OUT PHASE-OUT PROCEDURES.

To assess logistics impacts in the conceptual phases of systems development:

Jan. 6-8	Aggreg.	
C2	B7	Integration of system/subsystems in design requirements
C1	B8	Inadequate initiatives to develop logistics solutions across systems/subsystems' common functions (or functions common among systems)
A5	B10	Insufficient consideration of technology impacts
B2	B1	Need to carefully consider logistics implications of contractor support
D4	B2	Need to consider vulnerability when basing support on foreign soil
E3	B4	Resource allocations not adequate for needs
B4	B5	R&M requirements in conflict with DTC (unit flyaway cost)
B7	B13	Inadequate consideration of benefits gained from using proven equipment and manufacturing processes
A1	A1	Lack of feedback to functional concepts
A2	A2	Little or no input on decisions for less-than-major systems
A4	A6	Logistics needs to have a greater impact on design
A5	A7	Insufficient consideration of technology impacts
D2	C4	AFLC can't assess impact of major deployments on requirements
C9	C6	Information on operations (war plans) not readily available
C10	C7	Inadequate consideration of GFM use and impact

PLANNING

Objective: To assess logistics impacts in the conceptual phases of systems development

- To consider total system supportability
  - -- Integration of system/subsystem in design requirements
  - -- Inadequate initiatives to develop logistics solutions across system/subsystems' common functions (or functions common among systems)
- To consider all aspects of design
  - -- Insufficient consideration of technology impacts
    - o Technologies incorporated
    - o Technologies required for support
  - -- R&M requirements in conflict with DTC (unit flyaway cost)
  - -- Inadequate consideration of benefits gained from using proven equipment and manufacturing processes
  - -- Inadequate consideration of GFM use and impact
- To consider all aspects of support, including operational and support concepts
  - -- Need to carefully consider logistics implications of contractor support
  - -- Need to consider vulnerability when basing support on foreign soil
  - -- Lack of feedback to functional concepts
  - -- AFLC can't assess impact of major deployments on requirements
  - -- Information on operations (war plans) not readily available
- To consider life cycle trade-offs
  - -- Resource allocations not adequate for needs
  - -- R&M requirements in conflict with DTC (unit flyaway cost)
- To evaluate resource sensitivity of support plans
  - -- Resource allocations not adequate for needs

Objective: To assess logistics impacts in the conceptual phase of systems development

- To consider total system supportability

  C1 Develop acquisition contract specifications
  C3 Acquire test articles
  C4 Test
  C5 Evaluate test/field performance and supportability

- To consider all aspects of design

  A3 Perform system analysis
  B1 Develop long-range strategies
  B2 Develop mid-range strategies
  B3 Develop/update program plans
  B4 Identify resources required
  C1 Develop acquisition contract specifications

- To consider all aspects of support, including operational and support concepts

  A2 Perform/review mission analysis
  B1 Develop long-range strategies
  B2 Develop mid-range strategies
  B3 Develop/update program plans
  C1 Develop acquisition contract specifications
  C5 Evaluate test/field performance and supportability
  D1 Activate system
  D2 Deploy system
  D3 Support mission performance

- To consider life cycle trade-offs

  B1 Develop long-range strategies
  E1 Allocate assets
  E3 Determine cause of deficiency
  E4 Determine effect of deficiency
  E5 Identify appropriate corrective action

- To evaluate resource sensitivity of support plans

  E1 Allocate assets
  E5 Identify appropriate corrective actions
  B3 Develop/update program plans

ASSESSMENT CAPABILITY

A5	A7	Insufficient consideration of technology impacts
A7	A9	Inadequate visibility of foreign technology, manufacturing processes, and logistics
B2	B1	Need to carefully consider logistics implications of contractor support
D4	B2	Need to consider vulnerability when basing support on foreign soil
D3	B3	Inconsistencies between user/AFLC perception of meeting DOC
E3	B4	Resource allocations not adequate for needs
B7	B13	Inadequate considerations of benefits gained from using proven equipment and manufacturing processes
C5	C1	SM does not have/use management indicators in routine manner
D6	C3	AFLC does not currently know status by base
D2	C4	AFLC can't assess impact of major deployments on requirements
C6	C5	Failure to structure wartime exercises to assess logistics capability
E6	E5	Inability to perform capability assessments
D7		Inability to assess logistics readiness and allocate resources to optimize readiness

ASSESSMENT CAPABILITY

Objective: To assess weapon system readiness

-- Inability to perform capability assessment

-- Inability to assess logistics readiness and allocate resources to optimize readiness

- To identify key elements affecting system readiness

  -- Insufficient consideration of technology impacts

  -- Need to consider vulnerability when basing supports on foreign soil

  -- AFLC can't assess impact of major deployments on requirements

  -- Need to carefully consider logistics implications of contractor support

  -- Resource allocations not adequate for needs

  -- Inadequate visibility of foreign technology, manufacturing processes, and logistics

  -- Inadequate considerations of benefits gained from using proven equipment and manufacturing processes

- To identify logistics goals related to DOC

  -- Inconsistencies between user/AFLC perception of meeting DOC

- To identify indicators of goal achievement

  -- SM does not have/use management indicators in routine manner

- To gather data measuring achievement of those goals

  -- AFLC does not currently know status by base

  -- Failure to structure wartime (type?) exercises to assess logistics capability

Objective: To assess weapon system readiness

D4 Assess readiness
E2 Identify missing/consumed/inadequate support elements
E3 Determine cause of deficiency
E4 Determine effect of deficiency
E5 Identify appropriate corrective action

- To identify key elements affecting system readiness

A1 Assess environment and long-range trends
A2 Perform/review mission analysis
A3 Perform systen analysis
B1 Develop long-range strategies
B2 Develop mid-range strategies
B3 Develop/update program plans
D1 Activate system
D2 Deploy system
E2 Identify missing/consumed/inadequate support elements
E3 Determine cause of deficiency
E4 Determine effect of deficiency

- To identify logistics goals related to DOC

D3 Support mission performance

- To identify indicators of goal achievement

C1 Develop acquisition contract specifications
C5 Evaluate test/field performance and supportability

- To gather data measuring achievement of those goals

C1 Develop acquisition contract specifications
C3 Identify test articles
C4 Test
C5 Evaluate test/field performance and supportability
D3 Support mission performance
D4 Assess readiness

PROGRAM CONTROL

E	B4	Resource allocations not adequate for needs
D5	B6	Incompatibility with IOC dates and supportability (SE, tech data, etc.)
A7	B9	Insufficient priority placed on logistics evaluation during OT&E
A5	C1	SM does not have/use management indicators in a routine manner
E4	E3	No adequate system for tracking status of mods
E7	E6	Inability to project logistics support funding for operational requirements
F3	F3	Awkward methods for carrying out phase-out procedures
E		Lack of continuity in mod planning

PROGRAM CONTROL

Objective: To maintain cradle-to-grave schedule network for weapon system

- To include major program milestones
  - -- Incompatibility with IOC dates and supportability (SE, tech data, facilities, munitions, etc.)
  - -- SM does not have/use management indicators in a routine manner
  - -- Inability to project logistics support funding for operational requirements
- To track funds by weapon system

Objective: To maintain visibility of changes to system

- No adequate system for tracking status of mods
- Awkward methods for carrying out phase-out procedures
- Resource allocations not adequate for needs
- Lack of continuity in mod planning

Objective: To maintain cradle-to-grave schedule network for weapon system

- To include major program milestones

  A2 Perform mission analysis
  A3 Perform system analysis
  D1 Activate system
  E2 Identify missing/consumed/inadequate support elements
  E4 Determine impact of deficiency
  E5 Identify appropriate corrective action

- To track funds by weapon system

Objective: To maintain visibility of changes to systems

  E1 Allocate assets
  E2 Identify missing/consumed/inadequate support elements
  E4 Determine effect of deficiency
  E5 Identify appropriate corrective action
  E6 Develop and manage modifications

DATA ACCUMULATION AND ANALYSIS

A	A1	Lack of feedback to functional concepts
A	A2	Little or no input on decisions for less-than-major weapon systems
A	A6	Logistics needs to have a greater impact on design
C	A8	Information on operations not readily available at working level
C	B9	Insufficient priority placed on logistics evaluation during OT&E
C	B11	Insufficient feedback from contractors using GFM
C	C1	SM does not have/use management indicators in a routine manner
D	C3	AFLC does not currently know status of systems by base
C	C5	Failure to structure wartime exercises to assess logistics capability
E1	E1	Do not have system for evaluating effectiveness of modifications
E	E5	Inability to perform capability assessment
F	F2	Inability to accurately associate common items with systems being phased out

DATA ACCUMULATION AND ANALYSIS (LESSONS LEARNED?)

Objective: To assess effects of support concepts in field operations (i.e., system effectiveness and supportability)

- Lack of feedback to functional concepts
- Information on operations not readily available

Objective: To assess effect of design parameters on system supportability

- Logistics needs to have a greater impact on design
- Insufficient priority placed on logistics evaluation during OT&E
- Insufficient feedback from contractors using GFM

Objective: To assess adequacy of system's GFM

- Insufficient feedback from contractors using GFM

Objective: To assess weapon system status

- Inability to perform capability assessment
- SM does not have/use management indicators in a routine manner

To assess status of support to user

- To assess status by base
  --AFLC does not currently know status of systems by base

Objective: To assess demonstrated supportability of system

- Information on operations not readily available at working level
- Failure to structure wartime (type) exercises to assess logistics capability
- Do not have system for evaluating effectiveness of modifications

Objective: To assess effects of support concepts on field operations (i.e., system effectiveness and supportability)

- A3 Perform System Analysis
- C5 Evaluate test/field performance and supportability

Objective: To assess effect of design parameters on system supportability

- A3 Perform system analysis
- C5 Evaluate test/field performance and supportability

Objective: To assess adequacy of system's GFM

- C5 Evaluate test/field performance and supportability

Objective: To assess weapon system status

- C1 Develop acquisition contract specifications
- E2 Identify missing/consumed/inadequate support elements
- E4 Determine effect of deficiency

Objective: To assess demonstrated supportability of system

- C1 Develop acquisition contract specifications
- C4 Test
- C5 Evaluate test/field performance and supportability
- E2 Identify missing/consumed/inadequate support elements
- E3 Determine cause of deficiency
- E6 Manage modifications

STATUS ACCOUNTING

B4	Resource allocations not adequate for needs
D5	Can't determine funds spent by weapon system
E3	No adequate system for tracking status of mods
E7	Lack of continuity in mod planning
F1	No adequate records of what's removed in storage

ORGANIZATION/MANAGEMENT ORIENTED

No strong mechanism to communicate input of logistics into LR planning

No defined mission resources in LO committed to LR planning

Information on operations not readily available

To improve quality of logistics data

AFLC mission assignment not done early enough

Relationships between logistics organization not clearly defined

System manager training program

Insufficient definition of integrating role of SM

Lack of AFLC experience/orientation of DPML

Less-than-major systems have program responsibilities without 3600 money

SYSTEM MANAGER TRAINING PROGRAM

Lack of feedback to functional concepts

Little or no input on less-than-major systems

Logistics needs to have greater impact on design

Need to carefully consider logistics implications of contractor support

Inadequate feedback from contractors using GFM

SM does not use/have management indicators in a routine manner

Insufficient definition of integrating role of SM

Poor visibility over procurement activities preclude expediting lead times

Inability to project logistics support function for operational requirements

Lack of continuity in mod planning

Awkward methods for carrying out phase-out procedures

OBJECTIVES

Objective 1: To assess logistics impacts in the conceptual phase of system development

Objective 2: To assess weapon system readiness

Objective 3: To assess effect of support concepts on field operations--system effectiveness and supportability

Objective 4: To assess effect of design parameters on system supportability

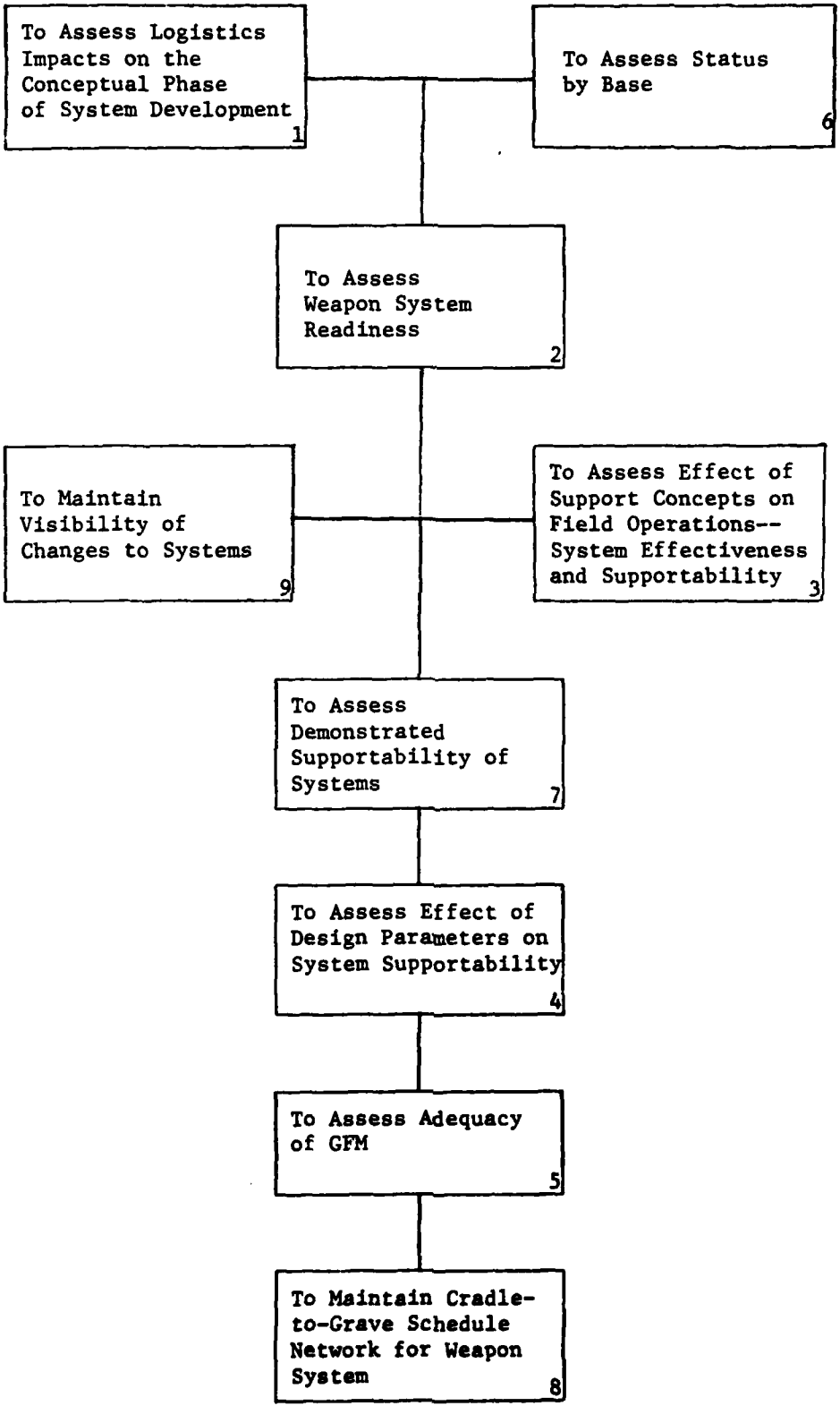
Objective 5: To assess adequacy of GFM

Objective 6: To assess status by base

Objective 7: To assess demonstrated supportability of system

Objective 8: To maintain cradle-to-grave schedule network for weapon system

Objective 9: To maintain visibility of changes to systems


To Assess Logistics Impacts on the Conceptual Phase of System Development
1
To Assess Status by Base
6
To Assess Weapon System Readiness
2
To Maintain Visibility of Changes to Systems
9
To Assess Effect of Support Concepts on Field Operations-- System Effectiveness and Supportability
3
To Assess Demonstrated Supportability of Systems
7
To Assess Effect of Design Parameters on System Supportability
4
To Assess Adequacy of GFM
5
To Maintain Cradle-to-Grave Schedule Network for Weapon System
8

ATTACHMENT 3

Planning Materials, Lessons Learned,
and Output of Level III Weapon
System Management

PLANNING MATERIALS

Weapon System Management
Level III
Block 1

The purpose of the Block 1 activities for LMS planning is to produce a documented and comprehensive view of the current form of the LAG. This includes its subfunctions, organizations involved, subfunction inputs/sources and outputs/receivers, decisions in each subfunction, and decision inputs/sources and outputs/receivers. Block 1 activities also should identify decision factors that "drive" the subfunctions.

It is important to realize that Level III LAG planning should be a continuation of previous Level II planning, which should have already developed similar information at the functional level. This information normally would be the starting point for Level III planning and would be expanded to develop information in sufficient detail to support the development and approval of LMS RSCs. The Level II output, therefore, should both aid and constrain Level III; constrain in the sense that consistency must be ensured between the two levels and aid in that much information should already be available as a base that can provide guidance to Level III planners.

The following outlines the main steps and associated considerations to aid Level III LAG planners in implementing Block 1:

1. Define LAG subfunctions. In the case of this LAG, which requires the reporting of aircraft status by base, it will be necessary to review several of the functions identified in the Level II efforts. As a minimum the areas of Maintenance Data Collection/Materiel Deficiency Reporting, Field Support, Deployment Assistance, Configuration Control, System Modification Management, PDM Work Package, Maintenance, and System Management Integration need to be reviewed. A simplified flow chart must be developed relating all the functions which are part of Weapon System Status. Then functions should be divided as appropriate into subfunctions. A guiding rule concerning level of detail of the subfunction breakout is that each function should not contain more than six subfunctions. Consideration could also be given to attempt to delineate subfunctions so that a single organization has primary responsibility if that does not violate the preceding rule. Subfunction sequencing is important, as are the interactions between subfunctions.

2. Identify the Organization Involved in Each Subfunction. Using Level II information as a starting point, identify organizations responsible for the activities in each subfunction. The depth of the organizational identification will be determined by how finely each subfunction has been delineated. For some cases the organization level may be to three letters, in others to four. Special consideration must be paid to differences between ALC(s) that may substantially impact LMS design requirements.

3. Identify the Information Inputs and Sources; Information Outputs and Receivers for Each Subfunction.

- Adds I/O data between subfunctions that did not show up before
- May add finer detail to Level II functional I/Os because of division of a Level II function I/O information category onto two or more Level III subfunctions.

It is important to ensure information consistency here with Level II and the extent to which new detail is added. Omissions of Level II data or additional data at Level III with no counterpart at Level II must be reconciled.

It is important to note the basic form and format of the data, the timing of its reception, and the requirement for its processing. If the data are classified, or result in classified output, this must also be noted. Any structural relationships between data elements must be noted. For example, data from sources X and Y are processed to produce Z, which is then related to data element A.

Different levels of data may be related to the same subfunction depending on the data user. It is necessary to identify the specific data elements required by each user, when more than one organization is involved in a subfunction. The class of users should also be identified, e.g., technicians, middle management, command level.

4. Identify The Decisions Associated With Each Subfunction. Again, Level II functional decisions provide the starting point but, because of the finer level of detail, these may need to be broken out to the subfunctions or alternatively, identification of supporting decisions may be appropriate in certain subfunctions that support an unchanged Level II identified decision

within a subfunction. The main objective here is to identify the LAG decisions at a sufficient level of detail to allow consideration of decision automation or automated decision support vs. manual execution in the future. The decisions identified should be related to overall objectives of the function. In many cases these will not have been previously identified, but they should be easily stated in a sentence or two, and relatable to a corporate function.

5. Review and Selectively Expand the Decision Factors. Some decision factors were identified in earlier Level II planning. There should be considerable overlap between the data input and these decision factors, but it is possible that the current data do not supply all the information required to make the decisions. It is also possible that excess data comes into a function which could be eliminated without significant loss of decision-making capability.

6. Identify Current LMS Capability Shortfalls. A review of existing documentation which has already identified existing shortfalls should take place at this time. The process MSDs should be reviewed, as well as other shortfalls identified in Level II Weapon System Management Planning. Expanded details of these shortfalls in terms of subfunction support should be identified. Any other current LMS capability shortfalls involving the LAG should also be identified and included for future scrutiny for objectives as part of Blocks 3 and 4.

7. Document Current View. Produce a set of Subfunction Input/Output and Decision Input/Output diagrams for each subfunction (analogous to the Block 1 charts for Weapon System Level II) showing subfunctions, their interactions internally to the LAG and externally through sources and receivers, and showing the individual subfunction decisions and their I/Os and interfaces. The listing of current LMS shortfalls is another key output, as well as the decision factors by subfunction. Supporting narratives should be developed as necessary to ensure understanding of the diagrams.

Weapon System Management
Level III
Block 2

The purpose of the Block 2 activities for Level III LMS planning is to define a comprehensive set of future capabilities objectives and shortfalls in capabilities for the LAG. The future capability shortfalls identify candidate areas for acquiring improved LMS capabilities, and thus lead to translation into LMS change objectives to initiate Block 4.

This approach uses the futurity document from Level I, which indicates some impact assessment of projected future conditions on the various corporate functions. Part of this document was extracted for use in Weapon System Management Level II. Although the most direct correlations should take place at Level II, it is important to briefly review the futurity document again at Level III to insure adequate consideration of its content in defining the LAG of the future.

Each function and subfunction should be reviewed to produce a summary, by subfunction, of future capabilities required by corporate function. This summary should be developed in the following steps:

1. Review AFLC Command Level Guidance for LMS planning. The purpose of this step is to develop an understanding of the corporate task framework, the overall projections, and the forecasts.

2. Review the Level II, Block 2 Function level future assessments. This is particularly important in the Long-Range area, to assess their implications for the LAG subfunctions. For example, in discussing the Data System Concept for Long-Range, the discussion recognized the current separation of operational, maintenance and supply data. It is conceivable, and perhaps the objective of this particular LAG, that this data can be integrated in the future to provide more visibility of Weapon System status. This visibility requirement is related to the increasing demand for information needed for the Conversion-to-War corporate function. As mentioned in the futurity document, AFLC has a growing need for "anticipatory logistics," which requires the ability to quickly assess logistics needs of deploying units, rather than needs in the separate areas. The units require an integrated comprehensive set of needs, not maintenance needs, supply needs, or operational needs.

In order to consolidate this effort, it is recommended that corporate tasks be aggregated into two basic groupings - "Peace" and "War". Under "Peace" the primary corporate tasks would be Equip, Maintain, Logistics Readiness, Planning to Keep Options Open, and Allocation of Command Resources. Under "War" the corporate tasks would be Conversion to War and Sustain. The purpose of this analysis by corporate task groupings is to ensure that Level IlI planning consider potential future wartime and contingency requirements as well as peacetime requirements in LMS capabilities definitions.

3. Identify future capabilities requirements. Based on the Step 2 requirements summaries, the LAG Current View Function and Decision interaction diagrams (from Level III, Block 1) would be reviewed and expanded to identify:

- o New organizational involvements
- o New subfunctions and/or subfunction I/Os
- o New decisions and/or decision I/Os
- o New requirements for information/decision support visibility at higher levels than currently served
- o New requirements for timeliness in data exchanges.

These should highlight the effect of future capabilities requirements in terms of added or changed information needs, new or changed decision structure, and new or changed organizational relationships, and should be supported by the preceding analyses.

4. Consolidate capabilities requirements. The final step of Block 2, Level III is a consolidation of the future capabilities requirements from the previous Block 2 steps, the current LMS capabilities shortfalls, and the relevant Block 2, Level II Capabilities Shortfalls of Weapon System into a consistent, overall set of Capabilities Objectives for the LAG itself. This should be in the form of statements such as: "Reports on Weapon System Status by base will contain the appropriate historical data and analysis routines to predict potential MICAP causes."

These objectives should be compatible within the framework of the Level II, Block 2 Capabilities Objectives and/or MSD deficiencies to ensure consistency within the overall LMS planning process. The formal documentation of these objectives should identify which ones can be satisfied with current LMS and which ones cannot. The unsatisfied requirements will be the LAG objectives which the rest of the Level III planning will aim to satisfy, so they must be robust, specific, comprehensive and supportable via the preceding analysis.

Weapon System Management
Level III
Block 3

Level III, Block 3 activities are aimed at identifying the assumptions and constraints (policies and principles) which should be used in developing a strategy for dealing with the identified LMS shortfalls. The intent is not to create policies and principles, but rather to record those normally recognized in a given area.

There has been some difficulty in distinguishing between policies and principles. The terms are not used consistently in the Air Force environment. The definitions proposed for this activity are the following:

Policy: A course of action adopted by an organization designed to influence and determine decisions, actions, and other matters

Principle: A basic truth, law, or assumption concerning the functioning of organizations, businesses, practices, and systems; normally not scientifically provable, but accepted as rules or standards. Principles influence policies. They may be of several types, e.g., management, fiscal, logistics, ADP, or military.

In the area of Weapon System Management, most of the relevant policies will be set at relatively high levels. An example of a relevant policy is the decision to manage materiel by items. This policy was probably derived from the Principle of Economies of Scale, which recognizes the advantage of grouping homogeneous tasks or items.

The application of the Principle of Economies of Scale, however, would have been tempered by the logistics principle of response, which recommends that the authority for direct mission essential logistics functions be decentralzed to the unit, agency, or department responsible for mission accomplishment.

In developing strategies for dealing with the shortfalls or deficiencies identified it is important that the actions taken be in line with Air Force policy, and follow, as applicable, accepted principles. It also is important to remember, however, that there is a hierarchy of principles, particularly in view of the fact that many of the management and fiscal principles were developed in and are related to profit incentive undertakings. In applying these constraints, it

must always be remembered that military and logistics principles leading to effectiveness should be foremost and that efficiency considerations, while important, must be secondary.

Attachment 1 is presented as a starting point for Block 3 activities. Knowledgeable people in the Weapon System area should be tasked to document the basic policies related to the LAG. The ADP/T Concept developed by another contractor should be reviewed for the identification of ADP principles which should be considered.

ATTACHMENT 1

3-8

PRINCIPLES FOR LONG RANGE PLANNING

Logistics Principles

Logistics doctrine will describe how important elements and variables within the logistics system are related to each other. Knowing these relationships helps to structure the logistics system properly in the same way that knowing the relationships between lift, drag, velocity, and area helps in design of aircraft that flies.

Objectives and Priorities

Logistics support is most effective and economical when objectives and priorities have been established.

Every logistics operation must be directed toward a clearly defined, decisive, and attainable objective.

Design to Life Cycle Costs

The potential to achieve significantly reduced life cycle costs increases to the extent trade-off decisions are made early in the system acquisition process.

Total defense logistics resources are limited in relation to total defense demand. This results in competition between and within program elements and between the requiring activities for available resources.

Variations in mission importance and urgency of need (of supported forces) combined with economic and other constraints dictate that the DoD logistics systems have the capability of identifying the variations and constraints and prioritizing the quality and quantity of logistics support to be provided.

Strategy-Tactics-Logistics

The inherent worth of strategic and tactical concepts is enhanced to the degree that logistics considerations are an integral part of the development of these concepts.

When a tactical military capability is significantly related to a logistics system element or function, then tactical decisions will dictate logistic decisions and logistics decisions will dictate tactical decisions.

- A logistics system must sustain strategic or tactical forces until they achieve their objectives.

Joint-Centralized Planning

Unity of effort in meeting logistics support requirements for accomplishment of national security objectives requires joint centralized planning.

Several separate elements of logistics must be integrated under a single authority to create the necessary military capability.

Simplicity

Cost to operate and maintain a system decreases as the system becomes less complex.

Material easy to operate and maintain lessens personnel requirements, conserves physical and monetary resources, minimizes time and effort required for training, minimizes maintenance problems, and increases the probability of successful operations and the timely achievement of objectives.

Standardization

Standardization of elements of the logistics system permits more efficient use of available resources.

Logistic systems must be designed to make maximum use of available defense resources, and to apply the techniques of standardization, uniformity, or integration when such application is cost effective and will not degrade mission capability.

Flexibility

The capability of the logistics system to meet support requirements quickly and economically increases as the degree of modularity, versatility, and elasticity, in systems design increases.

Logistics must be flexible to meet the changing needs of operational commanders.

Every logistics system must be capable of adjustment to meet changes in the objectives, strategies, tactics, and availability of resources.

Continuous Flow

The efficient flow of logistics support materials is enhanced to the degree that interface requirements between modes of transportation and receipt and storage facilities have been adequately planned for and met.

Compatibility and interface of individual component policies, procedures, and support systems are requisites for fully effective and economical interservice logistics support.

Mobility

The mobility of combat units is enhanced when rapid deployment and employment is not encumbered by the requirement to move large amounts of support personnel and equipment.

Survivability

The survivability of the logistics system is increased to the extent that elements of the system that perform essential functions are redundant, dispersed, concealed, protected, and maintained.

A logistics system must be serviceable, by protecting resource from enemy action, natural disaster, theft, and physical decay.

Security is essential to the preservation of sustained combat capability.

Economies of Scale

The grouping of homogeneous logistics tasks may permit realization of economies of scale; however, logistics functions that are vital to the operational program objectives should be retained by the Air Force.

Response

The speed and accuracy of response to logistics support requirements is enhanced to the degree that the authority for direct mission essential logistics functions is decentralized to the unit, agency, or department responsible for mission accomplishment.

The military departments or other DoD components responsible for creation and maintenance of military capability must retain the authority to determine the technical element of that capability.

Information

The capability of the logistics system to adapt to changes increases as information to support decision making increases.

The logistics system must not be surprised.

Information must be accurate and submitted in a timely manner.

Exploration of technological and scientific advances for potential Air Force purposes contributes to combat capability.

Logistics must be economical in peacetime and responsive in wartime.

Communication

The greater the efficiency of communication within the logistics system, the greater the tolerance for inter-dependence between its activities and processes.

Sustainability

The length, level, and mode of operations for air forces determine the degree of logistics support necessary to sustain those forces for those operations.

Fiscal Principles

Fiscal principles are generally accepted standards used to assess the financial merit of various alternative strategies.

Acquire systems, goods, and services efficiently, effectively, and on time. (Guideline) (Gen Holley)

Allocate resources on the basis of an established priority system. (Guideline) (i.e., a formalized procedure for authorizing appropriations). Vance p. 682.

Operate with the understanding that resources are limited in relation to total demand. (Constraint) (DLOG, P1)

Allocate resources where they will do the most good (are the most needed). (Guideline) (AFLD 3-17)

Optimize tradeoffs between various combinations of resources to achieve the greatest value from expending all resources. (Guideline) (AFLD, 3-18)

Fund only those systems which do not proceed beyond the point where benefits are equal to cost. (Constraint) (AFLD, 3-19)

Operate at the lowest life cycle cost consistent with maintaining operational effectiveness. (Constraint) (Gen Rogers, 1976)

Operate a budgetary system prepared in dollar (financial) terms for each organizational unit in order to control operations. (Constraint)

Design budgetary system to be flexible to varying rates of activity, and variance between actual and historical costs. (Guideline) (Niswonger, p. 562)

Allow for setbacks and unexpected expenses that inevitably occur. (Guideline)

Costs and expenses should be classified by lines of authority. (Guideline) (Vance p. 664))

Periodic comparison of actual vs budgeted expenses must be made. (Constraint) (Vance, p. 664)

Operating personnel should assist in preparing realistic cost estimates. (Guideline) (Vance, p.664)

Accounting Principles and Control by Lawrence L. Vance, and Russell Fawsig

Accounting Principles, C. Rollin Niswonger and Phillip E. Fess.

Management Principles

Management principles are generally accepted theories that deal with planning, organizing, and controlling activities in an organization.

Responsibility for achievement of an objective must be matched by authority over every task required to attain the objective. (Constraint) (Battelle blue notebook)

Managers must have full visibility of their logistics capability. (Constraint) (AFM 1-1)

Systems must be designed to function within the framework of existing organizational structures, yet be capable of adjusting to organizational change. (Constraint) (Battelle blue notebook)

Authority, discipline, unity of command, and unity of direction must be maintained. (Constraint) (Fayol)

Responsibility and authority may be delegated to subordinates, but accountability to one's superior cannot be delegated. (Constraint) (Sisk p. 335)

Each subordinate should be accountable to one and only one superior. (Guideline) (Sisk p.335)

Supervision should be supportive in nature. (Guideline) (Sisk, p. 513)

Work must be divided effectively. (Guideline) (Fayol)

Workers must be carefully selected and thoroughly studied so that each one may be developed to his/her maximum capabilities. (Guideline) (FT)

Do not subordinate the general interest to the individual interest. (Constraint) (Fayol)

There must be equity in treatment of personnel. (Guideline) (Fayol)

There must be stability of tenure of personnel. (Guideline) (Fayol)

Plans must be objective, structured, and flexible. (Constraint)

Before initiating any course of action, the objectives in view must be clearly determined, understood, and stated. (Guideline) (Principles of Management, Henry L. Sisk, p. 74)

Management must foster cooperation between civilian/military and industrial/military sectors to achieve common, joint, and individual objectives. (Guideline)

Management must be efficient in applying resources to where there is the greatest need. (Guideline) (AFLD, 3-14) (AFLD, 3-17)

Weapon System Management

Level III

Block 4

As a result of activities in Blocks 1 and 2, and the MSD efforts, a set of capabilities shortfalls for the Operational Visibility LAG has been identified. The remainder of the Level III planning activities for this LAG will be directed toward eliminating these shortfalls.

The purpose of Block 4 activities is to identify possible alternative approaches to meeting the LAG objectives, which are a restatement of the shortfalls, and to identify the decision structure implications associated with each alternative. The objectives should be stated in terms of the function to be performed and the criticality of that function. The approaches, or strategies, must be developed in enough detail to allow meaningful evaluation of their benefits and costs, and to develop a clear statement of the required capabilities of a system designed to implement them.

The details of Level III Block 4 procedures are as follows.

1. Structure the Objectives

Some of the objectives to be achieved for this LAG may relate to other objectives. For example, one of the following relationship may exist:

- o Dominance, where meeting one objective automatically meets other objectives
- o Precedence, where some objectives must be met before others can be addressed effectively
- o Redundancy, when two or more objectives may support each other, by providing a backup system. Redundancy may be desirable, or undesirable, depending on the situation.

In some cases there will be no structured relationship. Since the objectives primarily represent desired changes, they will not necessarily constitute a comprehensive list of system objectives. Where possible several objectives adequately being met should be included in the structuring process, but the structuring should be viewed as an aid in formulating solutions, and should not be viewed as a "forcing" exercise.

2. Identification of Approaches

Using the objectives and their structure as a starting point, the next step is the identification and definition of one or more approaches to meeting those objectives. In this activity approaches may be generated which deal with only some of the objectives. It is important to note which objectives are being addressed. The final evaluation process may lead to the selection of a less than perfect solution, due to resources or other constraints. Obviously, approaches which reach all objectives are preferable, but the cost/benefit analysis may eliminate some of those. It may also be possible to combine approaches to improve their overall effectivensss. The more completely the suggestions are defined, the more likely is the discovery of the compabilities between appraches.

The statement of approaches can be documented in the form of a table. There will be two major divisions in that table, each of which will be further subdivided.

Figure 1 represents the suggested form of recording the information.

3. Define Decison/Organization Structure Associated With Each Approach

The final step in Block 4 is to identify the information and decision flow structure associated with each alternative approach, both within the functional domain of the LAG, and outside the external functions and management systems in other LAGs and Processes. The purpose of this activity is to identify interfaces in sufficient detail that communication and ADP impacts can be assessed, as well as supporting areas resources requirements. Some considerations to be made and the need for changing responsibilities, adding information demands, changes in timing of data input, flow, and/or accuracy requirements.

Figure 2 shows a sample flow chart of information and decision flow.

LAC #____ Operational Visibility of Weapon Systems by Base

	Logistics Objectives and Priority Index						Implementation Parameters											
							Users				Data							
	Convert-to-War Contingency	Sustain	Logistics Readiness	Equip	Maintain	Flexibility	Internal Resource Conservation	Organization	Location(s)	System(s)	Class	Source(s)	Format	Volume	Classification	Nature	Structure	Timing	Process
Approach 1	Increase surge capability		(Functions being performed)		Identify maintenance requirements in advance		Permit more efficient use of manpower	ALC/MM	OO,OC,SA, WR,SM	Tactical A/C	Mgrs.	Op Base, 66-1 65-110	Alpha numeric	1/Unit	U	MMH	Combine records by tail number	Weekly	Trend analysis
Approach 2		Increase asset visibility at base level	Identify number of spares required for mobile units															

3-T/

FIGURE 1. APPROACH TABLE

LESSONS LEARNED

LESSONS LEARNED: WEAPON SYSTEM MANAGEMENT

LEVEL III ACTIVITIES

Introduction

Under Contract No. F33600-80-C-0414, Battelle's Columbus Laboratories is supporting AFLC/XRB in the full-scale development of the long-range LMS Requirements Determination system. The Requirements Determination Model developed under this contract provides a guide for the activities conducted. It is a Battelle responsibility to monitor these activities and to make recommendations for improvements to the model as a result of its application.

It is the purpose of this document to comment on the success of the Requirements Determination Model as it was applied in the Level III activities for Weapon System Management.

Early activities were designed to prepare for a Level III effort associated with Modification Management. After one meeting in this area, an alternative Level III project, Status of Systems by Base, was selected. All subsequent activities pertained to this subject area.

Modification Management - Level III

For the Level III for Modification Management, several documents were prepared which included a description of preparatory activities, a detailed description of the Modification Management area, and criteria to be used in evaluating approaches. Attachment 1 contains the materials prepared for this meeting. No further Level III activities in this area took place after that meeting.

Status by Base - Level III

With the selection of an alternate Level III, a second meeting was scheduled for September 23-24 for which LOAR took responsibility. Several representatives from the ALCs were invited to headquarters to discuss their requirements in this particular area.

Battelle was invited to attend, but was not responsible for preparing materials for or facilitating this meeting. Attachment 2 contains the materials developed by LOAR and XRB for this meeting. Attachment 3 contains the description of Status by Base which resulted from this meeting and the resulting RSC which was generated.

Recommendations

It is difficult to make specific recommendations as a result of this planning effort since BCL played a relatively small role in these activities. It was obvious, however, that in the absence of a structure to maintain the participants' consideration of the problem to be addressed, it was very easy for a session to deteriorate into a forum for espousing individual pet projects. This exchange of information between ALCs is valuable but does not necessarily contribute to the overall Requirements Determination Process since it tends to be solution-oriented as opposed to focusing on problem identification.

ATTACHMENT 3-1

BCL PLANNING MATERIALS

LEVEL III PLANNING SESSIONS FOR MODIFICATION MANAGEMENT

The purpose of the Level III sessions that are preliminary to the July 17 Level III meeting is to provide required inputs for the July 17 Level III meeting. These inputs consist of:

- o A detailed description of modification management
- o Detailed descriptions of mod management shortfalls
- o General approaches to meet the modification management shortfalls
- o Interrelations between mod tracking shortfalls and approaches and other mod management shortfalls and approaches
- o Evaluation criteria.

These products may be developed in one session or in a number of sessions. Session participation should consist of approximately four LO representatives who are knowledgeable in modification management, and one to two BCL and XRB representatives.

The remainder of this paper describes the inputs required to develop each of the products and the level of detail required.

Modification Management Description

The modification management description developed in Level II meetings will be used as a baseline. The description will be reviewed and updated. Mod management will be described in terms of the decisions, functions, responsible organizations, inputs, outputs, I/O sources, impacts of decisions, decision processes, and interrelationships.

The future description of mod management will be developed using the mod management description and the future trends that were developed in Level I planning. Participants' expectations of future developments in the mod management area which are not covered in the expected future trends will also be included. Expected changes to decisions, functions, etc., will be recorded.

Mod Management Shortfalls

The mod management description will be reviewed to determine shortfalls in meeting current and future requirements. Once the shortfalls are

recorded they will be reviewed and described in more detail. Shortfall descriptions must define the scope and the components of the shortfall. That is: "Lack of mod tracking" is not a sufficient description for analysis of solutions. What is meant by mod tracking? What are the components of mod tracking? Are portions of mod tracking currently being accomplished? What specific aspect of mod tracking is lacking? The level of detail used in describing the shortfalls must be such that participants of the Level III meeting will be able to develop approaches without first re-defining the shortfall. Shortfall descriptions, therefore, must be specific.

Once the shortfalls have been identified, any interrelationship among them must be recognized.

Approaches

General approaches to meeting portions of shortfalls, individual shortfalls, and multiple shortfalls will be developed. Each of the shortfalls will be reviewed and possible alternative approaches for satisfying each shortfall, or portions of it, will be developed. Approaches that satisfy more than one shortfall, or relate to more than one shortfall, will be noted. Approaches should not be detailed, but should clearly relate to the shortfall(s) they deal with.

Interrelationship Between Shortfalls and Approaches

In order to optimize the use of resources in alleviating command shortfalls, it is necessary to recognize the relationships that exist between the shortfalls themselves, and then between the solutions to these shortfalls. Various tree structures can be built, depending on the criteria for relating the shortfalls. Identifying shortfalls which are a subset of other shortfalls is one criteria; identifying shortfalls which must be addressed prior to other shortfalls is another criteria. Once the initial relationships among the shortfalls have been recognized, the possible synergism between approaches must be explored, to allow the reasonable allocation of scarce resources.

Evaluation Criteria Definition

Evaluation criteria are needed to rank approaches for any shortfall. Evaluation criteria consist of implementation criteria that relate to AFLC goals and resources, and measures of merit that relate to specific shortfalls.

Implementation criteria developed for Maintenance long-range planning will be used as a baseline. These will be reviewed and refined for modification management. For each of the shortfalls, associated measures of merit will be developed which specifically describe the performance factors that relate to the shortfall and by which alternative approaches to overcoming the shortfall will be judged from a strictly performance view point.

Measurement scales will be adopted for all the evaluation criteria associated with mod tracking. Absolute scales will be used whenever possible. Relative scales will be used where necessary.

Other Level III Sessions

It has been assumed that the Level III meeting of July 17 will address the mod tracking shortfall specifically associated with the G079 system. Other shortfalls relating to mod management may be identified during earlier sessions described above. All associated shortfalls should be structured and related, where possible, to the shortfalls developed in Level II planning. Any high priority mod management shortfalls should be considered for further action. This action might include other Level III meetings similar to the planned Level III mod tracking meeting.

AD A124 332 WEAPON SYSTEM MANAGEMENT TO DIRECTORATE OF LOGISTICS MANAGEMENT SYSTEMS R..(U) BATTELLE COLUMBUS LABS OH K V MILLER 14 MAY 82 F33600-80-C-0414 3/4

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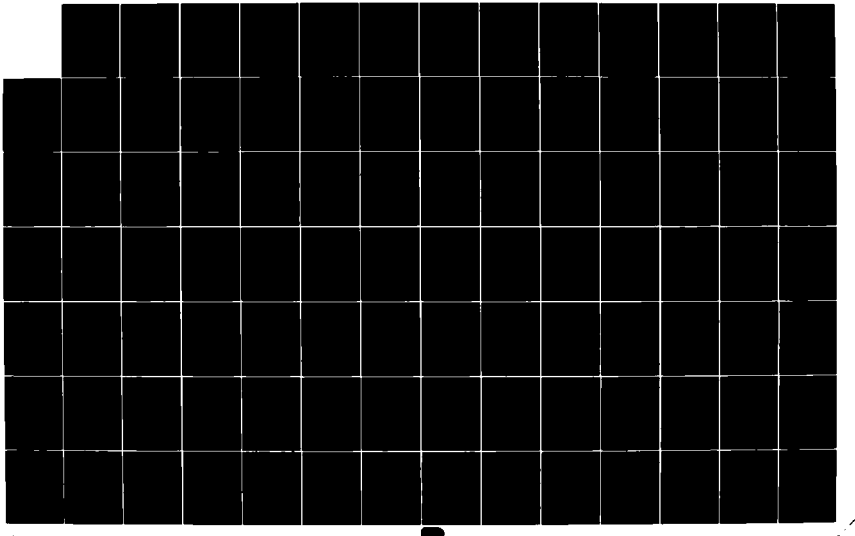
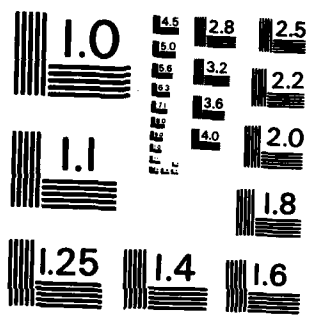




WEAPON SYSTEM MANAGEMENT
LEVEL III MEETING DESCRIPTION
July 17, 1981

The purpose of the Level III meeting to be held the week of July 17, 1981, is to define an approach that will meet the modification tracking shortfall identified during Level II of the planning process. In general, the meeting will be used to look at/develop alternative approaches to overcome the defined shortfall, to rank the approaches according to criteria developed prior to the meeting, and to recommend an approach for implementation. It is expected that the recommended approach will have logistics management system implications, either changes to an existing system or the creation of a new system. If the development of a logistics management system, or a modification to an existing system, is recommended, the Level III planning process will continue into RSC development.

The meeting format described in this paper requires inputs expected from previous sessions. Expected inputs include a detailed description of the shortfall to be addressed and its associated function(s). The functional description should include descriptions of the decisions to be made, the responsible organizations, the input required, and the outputs expected. Descriptions should include the information required to make a decision, the source(s) of the information, the impacts of the decision, the methods of decision, outputs of the decision, and the organizations which receive outputs.

The meeting results should consist of a prioritized list of alternative approaches to meet the modification tracking shortfall and a recommended approach to be pursued.

The meeting is to be held by LO, with review by XR and guidance from BCL. BCL and XR are responsible for lessons learned and meeting minutes and, therefore, must have representatives at the meeting. However, BCL and XR representatives will not participate in the meeting unless requested by LO.

The remainder of this paper describes the meeting process in individual steps. The order presented is the order recommended for the meeting. The steps that follow are taken from the Level III planning process for long-range planning. Each step has a brief description of purpose, materials, and methods. Presentation of each section would involve an introduction to the material to be covered in the section during the meeting.

Introduction

The purpose of the introduction is to present background material, to describe the overall planning process and meeting objectives, and to outline the meeting. The introduction should be kept as simple as possible and should use examples where possible and applicable. The level of detail required will depend upon the amount of participant involvement prior to the meeting. The following is a sample outline of an introduction.

- o Objective of the overall study
- o Overview description of planning process
- o Description of weapon system management
- o Report of earlier meeting results
- o Description of modification management
- o Objective of current meeting
- o Outline of meeting and methodology.

The detail involved in the introduction ranges from review, for participants with a great deal of previous involvement, to a tutorial with examples for participants with no previous involvement. The letter of introduction may address the same material for emphasis.

Modification Management Definition

The purpose of the modification management definition is to describe the decisions, organizations, inputs, and outputs of mod management as a common framework for the meeting. This definition will be brought into the meeting from a previous Level III session. The definition should be rather detailed since the rest of the meeting depends upon a common understanding of mod management. The mod management definition should be structured, but simple. Complicated pictorials will overwhelm participants.

Shortfall Definition

The purpose of the shortfall definition is to describe the shortfall to be addressed in the meeting in detail. Boundaries, restrictions, and

inclusions should be reviewed. The shortfall definition, with boundaries determined, will be a product of the Level III session held previously.

The shortfall discussion may uncover additional shortfalls. Participants may want to address these other shortfalls. Participants should be allowed to discuss other shortfalls related to modification tracking. Other shortfalls, concerns, and possible impacts should be recorded for later consideration. Only information relevant to this particular shortfall should be addressed in detail. Presenters will have to keep the meeting on modification tracking.

Measures of Merit Definition

The purpose of this exercise is to develop measures to evaluate the effectiveness of alternative approaches to meeting the shortfall identified earlier. The shortfall will need to be restated as a change objective. This change objective will be examined for possible division into a hierarchy of sub-objectives which can be described in more detail. The achievement of these sub-objectives will be measured by attributes called "measures of merit", which indicate the degree to which an alternative approach attains this objective. In order for an attribute to be a satisfactory measure of merit the knowledge of the level of this attribute must give the decision maker a clear understanding of the extent to which the associated objective is achieved, and it must be possible for the decision maker to relate level of attainment of the objective to the scale associated with the attribute. In some cases, the attributes may present only an indirect measure of achievement of the sub-objective, particularly in cases where a war is the only true test.

Participants will identify the sub-objective and the related measures of merit. Presenters will develop several sample measures of merit to be used to invite participants response. Some of these measures of merit could be brought up in conversation to stimulate discussion, but the development should not become a review process of measures of merit brought in by the presenters. To avoid the appearance of a review, sample measures of merit should not be listed on a single slide. In order to avoid a proliferation of sub-objectives, however, the test of importance should be applied, e.g. would the best course of action be altered if that objective were excluded. Sub-objectives themselves

may have to be furthered divided to the level at which measures of merit can be identified. It may be necessary, therefore, to group measures of merit associated with a sub-objective, and to do some mathematical functions such as weighting to develop a reasonable estimate of importance.

Once the sub-objective and measures of merit are identified, approaches to achieve these sub-objectives must be identified.

Approach Development

The purpose of this section is the development of approaches to meet the change objective being addressed. Approaches should be of sufficient detail that the measures of merit developed earlier in the present meeting may be used to evaluate the alternative approaches, and impact of logistics policies and principles which apply to modification management can be assessed. In addition to the measures of merit, implementation criteria will be used to evaluate differences in areas such as resource requirements, benefits to overall defense capabilities, impacts on existing management systems, time required to apply each approach, and differences in risks. These implementation criteria have been identified in Level II planning.

The approaches developed in earlier sessions may be used to start, or restart, the development process. These approaches may be expanded in detail for evaluation against other approaches suggested in this meeting. Presenters are cautioned about listing approaches developed earlier on a slide for presentation. This may cause the session to result in a review process versus a development process. Presenters should encourage the development of alternative approaches.

Evaluation Criteria Application

The purpose of the evaluation criteria section is to evaluate the effects of each approach in terms of the measures of merit (improvements to performance) and the implementation criteria, (cost, resources, time, impacts/ interactions, and risk). A dual-screen projection is suggested for this section.

An approach would be projected upon one screen while measurement values would be developed upon the second screen. A scaling system for the values would be presented in the introduction to this session. These may be relative or absolute scales. It is suggested, however, that absolute scales be used whenever possible/practical. For example, costs may be measured in actual dollars while performance may be measured on a scale of zero to ten (negative five to five, zero to a hundred, etc.), or on a "high, medium, low" scale.

The slide for recording the values should have the criteria listed for which values are to be identified. It is suggested that each category of criteria, such as performance or risk, be presented on individual slides. This is suggested especially if similar relative scales are to be used (e.g., zero-to-ten scale). Such a separation will tend to keep participants from prematurely comparing categories of criteria, such as cost and performance, for a particular approach. Such comparisons at this point would be performed on criteria of different measures--the classical "apples to oranges" comparison.

Presenters should use the same slides for different approaches. For example, measures of merit for all approaches should be listed on the same slide. A rating of ten for one approach should have a meaning similar to a rating of ten for another approach. A rating of five for one approach indicates more performance improvement than for an approach with a three as a rating. Even when absolute measures are used, values should be comparable between approaches for similar criteria. Development of values for all approaches on the same slide for a class of criteria would aid participants in estimating comparative values.

The criteria to be evaluated in this section will be implementation criteria and measures of merit. Examples of implementation criteria are attached at the end of this paper for reference.

Alternative Approaches Evaluation

The actual evaluation of the alternative approaches will be performed based upon the results of the evaluation criteria application. The method, similar to the method described in the "Level II. LMS Planning Outline of

Block 4 Activities" for Level II planning for Maintenance, will be developed by Battelle. LO and XRB, with guidance on the methodology from BCL, will identify the order in which the various criteria are to be considered prior to the meeting.

For example, an approach which improves the sub-objective of war surge capability might be most desirable. All those which rate high in that category will be extracted followed by a second group of those which are fair, and subsequently those which rate poorly. Within each subgroup, the next criteria might be reduction in vulnerability. Those with a high impact on war surge and a high impact on reduced vulnerability would be listed first. The rating matrix would be searched based on the desired order, and subgroups sorted iteratively by application of subsequent criteria. By carrying this process through, all the approaches will be sorted into a sequence of priority according to the order specific criteria are applied.

Participants may disagree with the order of importance of the criteria. It is recommended that the sensitivity of the criteria ordering be tested. Sequences of criteria suggested by participants should be used to test the sensitivity of the sequence.

The results of this section will be a ranking of the approaches and justification for recommending an approach. If the recommended approach involves an LMS, it will continue in the Level III planning method to RSC development.

ATTACHMENT

EXAMPLES OF EVALUATION CRITERIA

Measures of Merit (Performance)

- o Peacetime Impact
  - Efficiency
  - Cost reduction
  - Logistics readiness contribution
  - Flexibility of operation
- o Wartime Impacts
  - Surge capability
  - Vulnerability
  - Sustain capability
  - Portability/Modularity
  - Ease of capacity expansion

Implementation Criteria

Cost/Resources Impacts

- o Development Cost
- o O&M Costs
- o Software development
- o Personnel skill requirement

Time Frame

- o Ability to utilize existing efforts/systems
- o Development time duration

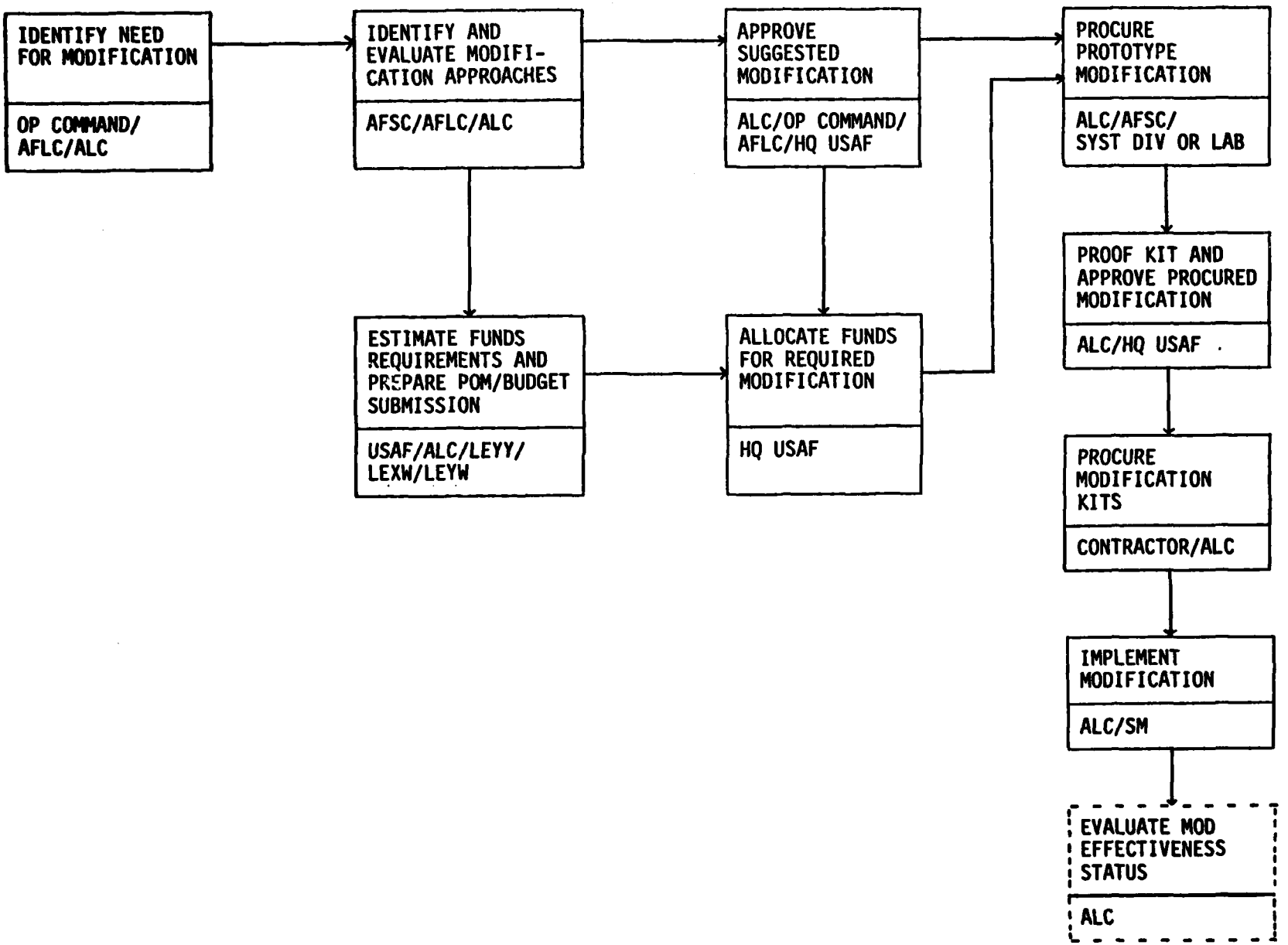
Organizational/Decisions Structure

- o Impact on Management Structure
- o Impact on Decision Structure
- o Impact on Other Processes

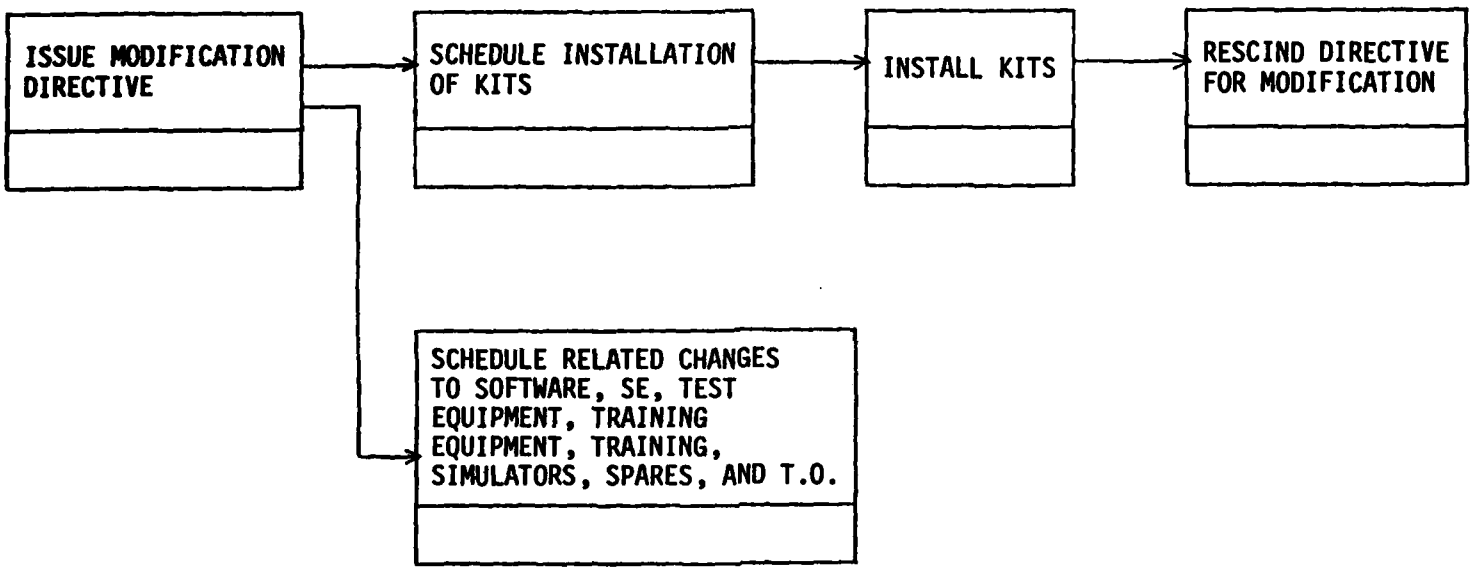
Risks

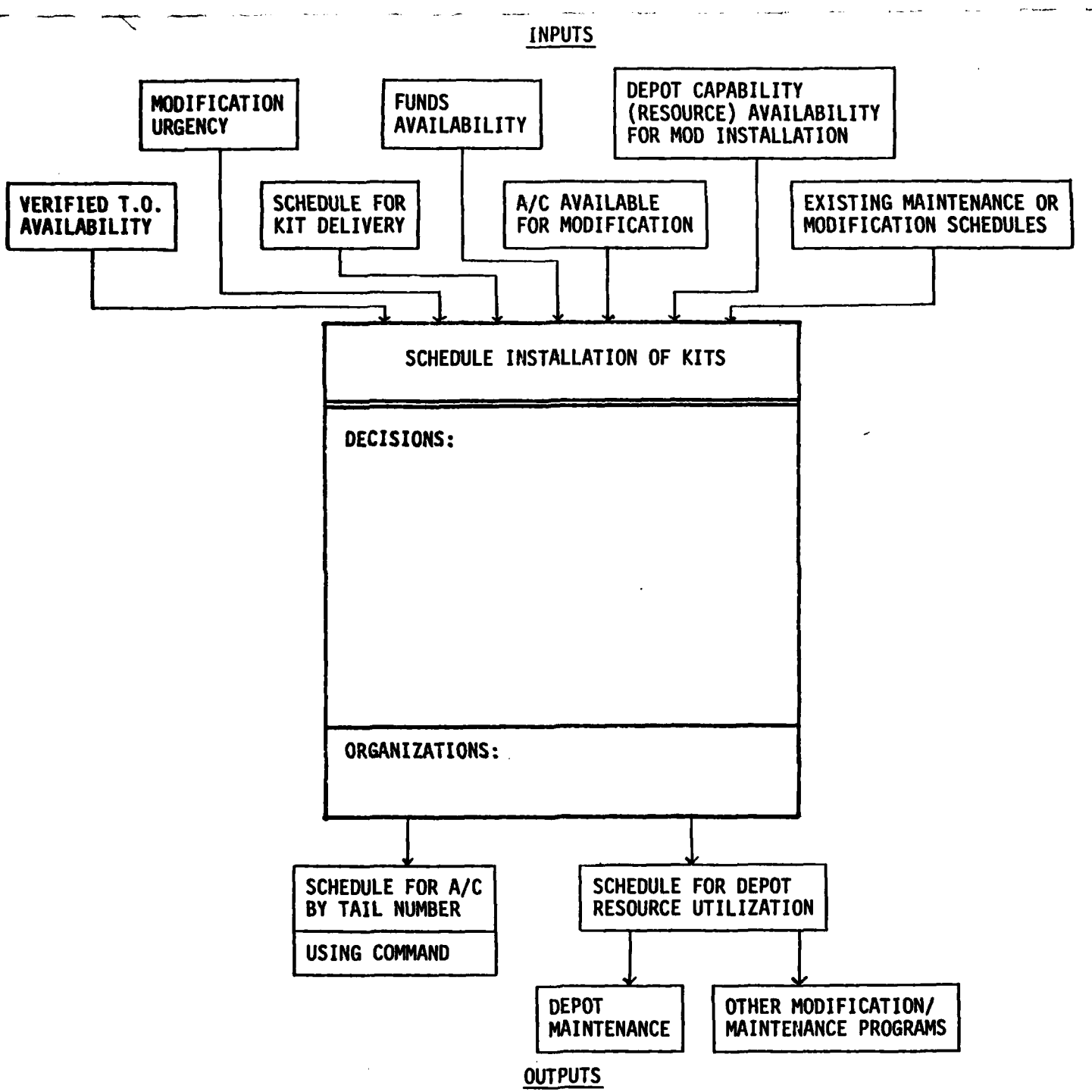
- o Technical development risk
- o Operational performance risk
- o Capability/Flexibility risk
- o Organizational risk
- o Financial risk

SYSTEM MODIFICATION MANAGEMENT



IMPLEMENT MODIFICATION




INPUTS
MODIFICATION URGENCY
FUNDS AVAILABILITY
DEPOT CAPABILITY (RESOURCE) AVAILABILITY FOR MOD INSTALLATION
VERIFIED T.O. AVAILABILITY
SCHEDULE FOR KIT DELIVERY
A/C AVAILABLE FOR MODIFICATION
EXISTING MAINTENANCE OR MODIFICATION SCHEDULES
SCHEDULE INSTALLATION OF KITS
DECISIONS:
ORGANIZATIONS:
SCHEDULE FOR A/C BY TAIL NUMBER
USING COMMAND
SCHEDULE FOR DEPOT RESOURCE UTILIZATION
DEPOT MAINTENANCE
OTHER MODIFICATION/ MAINTENANCE PROGRAMS
OUTPUTS

EVALUATION CRITERIA

PERFORMANCE

LOGISTICS READINESS CONTRIBUTION	PERCENT OF FLEET IN DEPOT	MOD PROGRAM EFFICIENCY	ACCURACY OF PREDICTION OF FUTURE FORCE CONFIGURATION		
COST REDUCTION/ AVOIDANCE	AIRCRAFT PROCESSING COSTS	COST OF MOVING AIRCRAFT TO AND FROM SOR	IMPROVED INFORMATION ACCURACY, RELIABILITY, RELEVANCE, CURRENCY	COST OF INFORMATION	
FLEXIBILITY OF OPERATION	APPLICABILITY TO ALL MOD PROGRAMS, WEAPON SYSTEMS	ADAPTABILITY TO RANGE OF SYSTEM MANAGEMENT APPROACHES	ADAPTABILITY TO EVOLVING ENVIRONMENT	APPLICABILITY TO LARGE WEAPON SYSTEMS	APPLICABILITY TO SMALL WEAPON SYSTEMS
EXPANSION CAPACITY	ABILITY TO ADD WEAPON SYSTEMS AND MOD PROGRAMS	ABILITY TO ADD OTHER LOGISTICS FUNCTIONS			

EVALUATION CRITERIA

IMPLEMENTATION CONSTRAINTS

TIME FRAME	SHORT TERM (CY 82)	MID TERM (CY 85)	LONG TERM	IMPACT OF OTHER ON-GOING ANALYSES AND PROJECTS	OPTIMUM TIME FRAME AND RESOURCE LEVELS
DEVELOPMENT RESOURCE CONSUMPTION	PERSONNEL: SKILLS NUMBERS	EQUIPMENT	MATERIALS	DATA BASE SOURCES	
OPERATIONAL RESOURCE CONSUMPTION	PERSONNEL: NUMBERS SKILLS	EQUIPMENT	MATERIALS	TRAINING	NUMBER OF SYSTEMS INVOLVED IN CHANGES
LOGISTICS POLICIES	COMPATIBLE WITH EXISTING POLICY	LEVEL OF APPROVAL FOR CHANGES	EASE OF CHANGE IMPLEMENTATION	NUMBER OF ORGANIZATIONS INVOLVED IN CHANGES	NUMBER OF SYSTEMS INVOLVED IN CHANGES

EVALUATION CRITERIA

UNCERTAINTY

TECHNOLOGICAL	EXISTING TECHNOLOGY	PROVEN TECHNOLOGY	ALTERNATIVES IN CASE OF FAILURE		
FINANCIAL	EFFECT OF COST OVERRUN	RELIABILITY OF COST ESTIMATE	ORGANIZATION ASSUMING FINANCIAL RISK	EFFECT OF PERSONNEL REDUCTION-IN-FORCE	
ORGANIZATIONAL	EFFECT OF ORGANIZATIONAL REALIGNMENT	EFFECT OF POLICY CHANGES FROM HIGHER HEADQUARTERS	EFFECT OF PERSONNEL TURNOVER		
OPERATIONAL	RELIABILITY OF SYSTEM	DIFFICULTY IN CONFLICT RESOLUTION	EFFECT OF RESOURCE REMOVAL	ORGANIZATION ASSUMING RISK	AVAILABILITY OF SYSTEM

EVALUATION SUMMARY SHEET

CRITERIA / APPROACHES	PERFORMANCE				IMPLEMENTATION				UNCERTAINTY			
	LOGISTICS READINESS CONTRIBUTION	COST REDUCTION/ AVOIDANCE	FLEXIBILITY OF OPERATION	EXPANSION CAPACITY	TIME FRAME	DEVELOPMENT RESOURCE CONSUMPTION	OPERATIONAL RESOURCE CONSUMPTION	LOGISTICS POLICIES	TECHNOLOGICAL	FINANCIAL	ORGANI-ZATIONAL	OPERATIONAL

ATTACHMENT 3-2

AFLC PLANNING MATERIALS

WEAPON SYSTEM MANAGEMENT REQUIREMENTS DEFINITION MEETING 16-17 SEP 1981

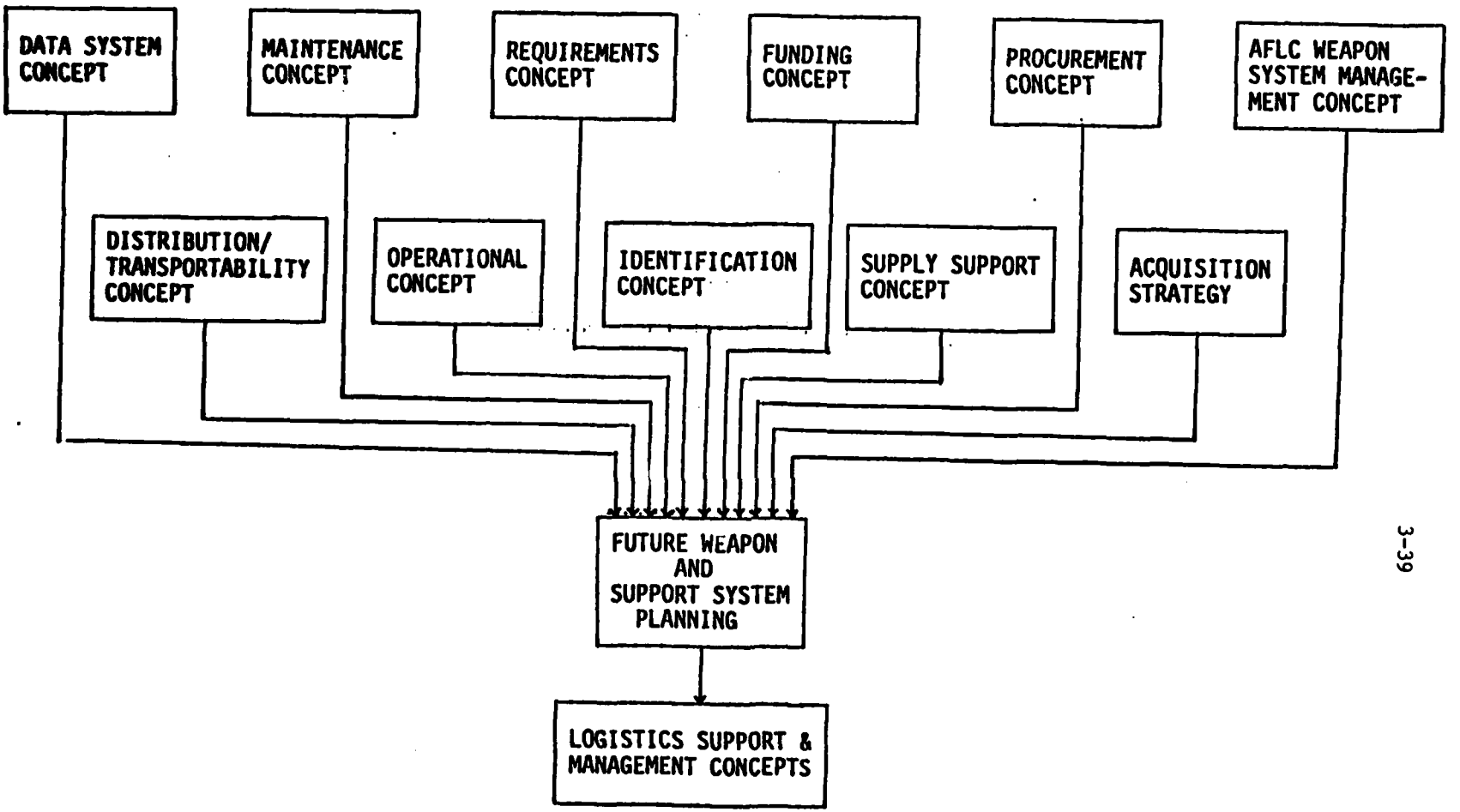
AGENDA

16 Sep 1981

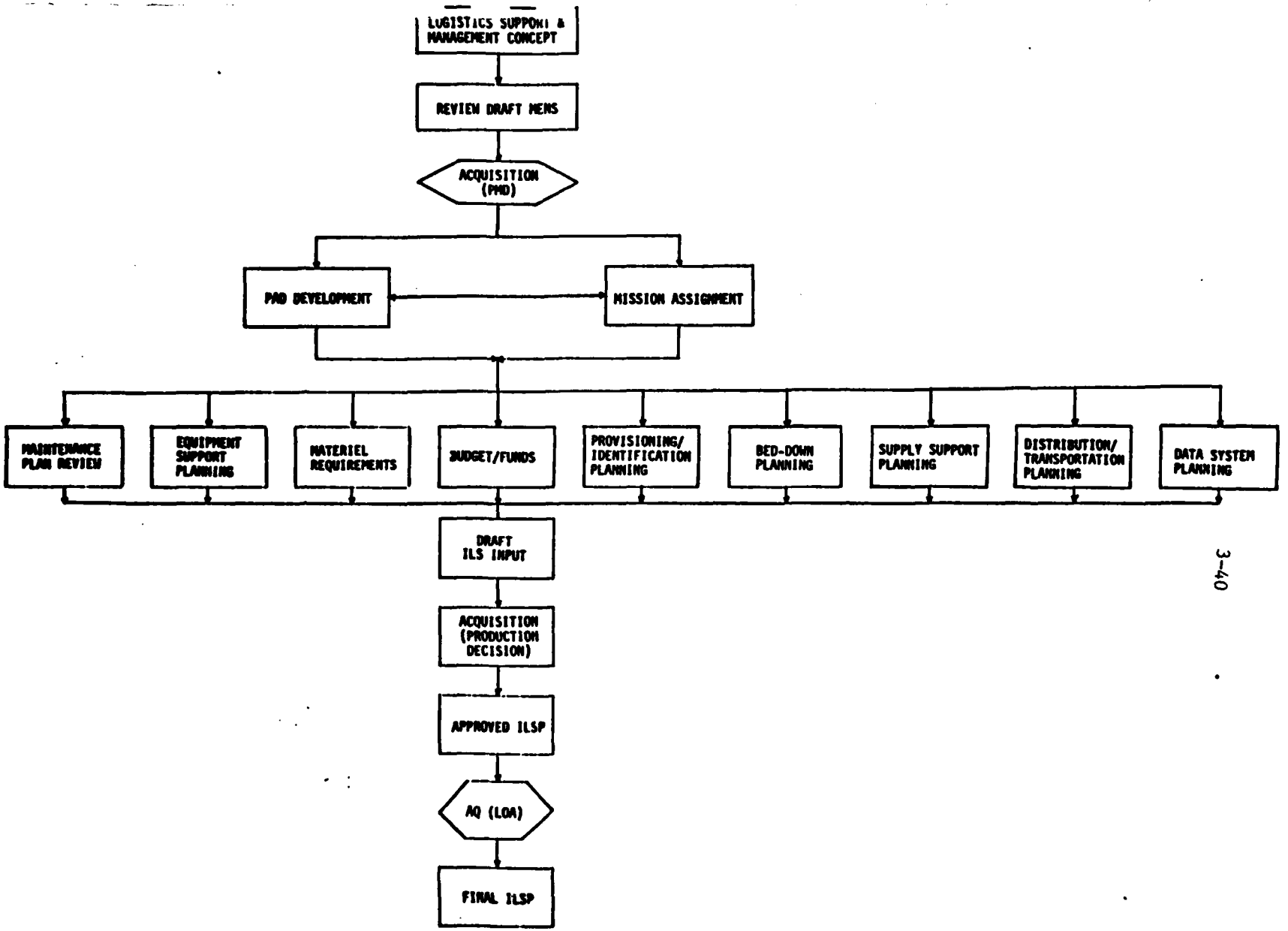
0830-0845	Opening Remarks	Gen Waters
0845-0850	Administrative Comments	Col Utt
0850-0915	Requirements Definition Overview	Col Utt
0915-0930	Scope of Meeting	Col Utt
0930-1000	Definition of Current Requirements	Working Session for Balance of Meeting
1000-1015	Break	
1015-1130	Definition of Current Requirements (cont)	
1130-1300	Lunch	
1300-1430	Definition of Future Requirements a. Organization involved b. Principles involved c. Decisions of requirements	
1430-1445	Break	
1445-1600	Requirements Shortfalls	
1600	Adjourn for Day	

17 Sep 1981

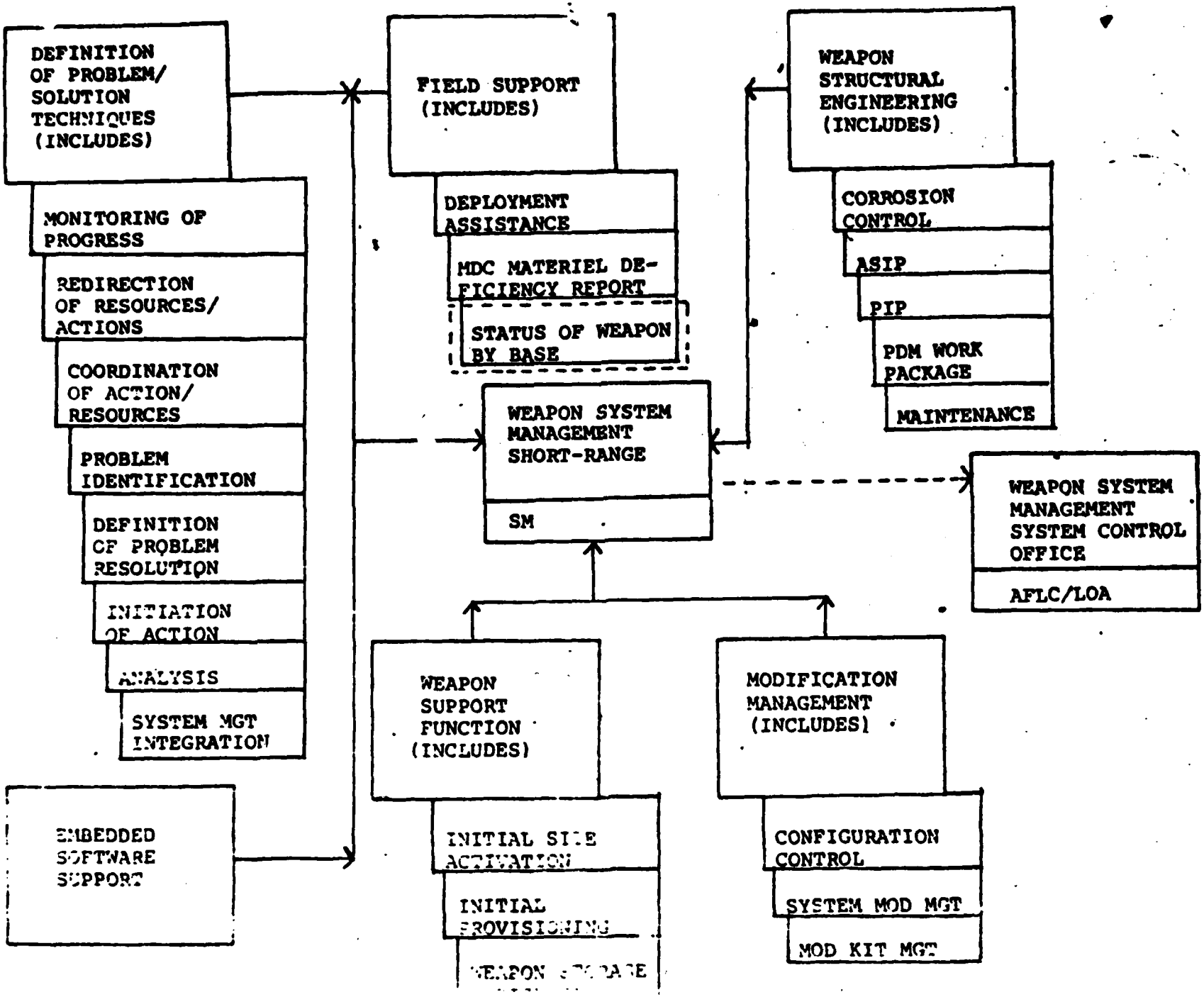
0830-0915	Objective Definition
0915-1000	Review/Define Policy Constraints
1000-1015	Break
1015-1030	Review Alternatives Approach
1030-1130	Application of Alternatives
1130-1300	Lunch
1300-1430	Selection of Alternatives
1430-1445	Break
1445-1600	Review and Documents Results
1600	Adjourn

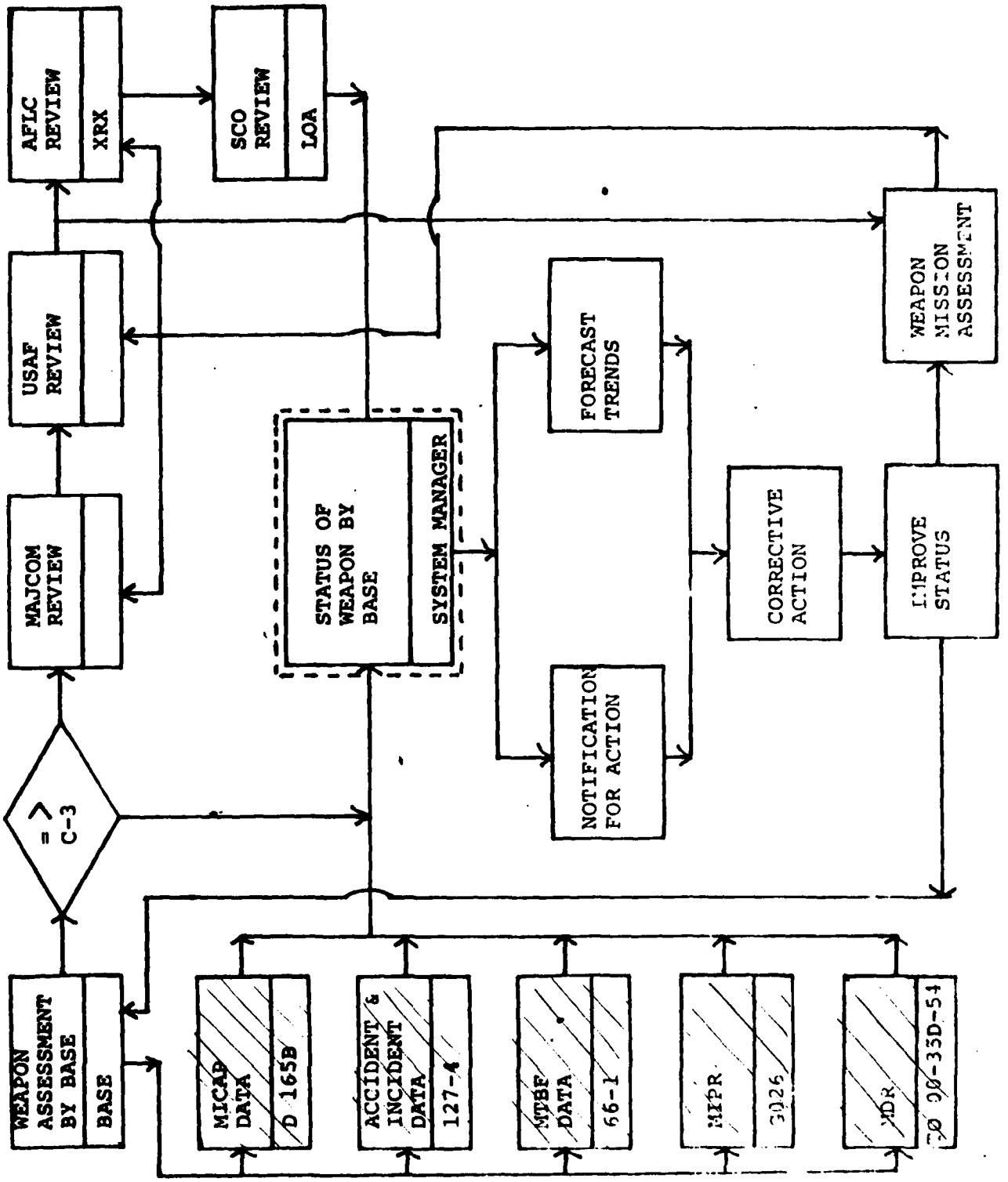


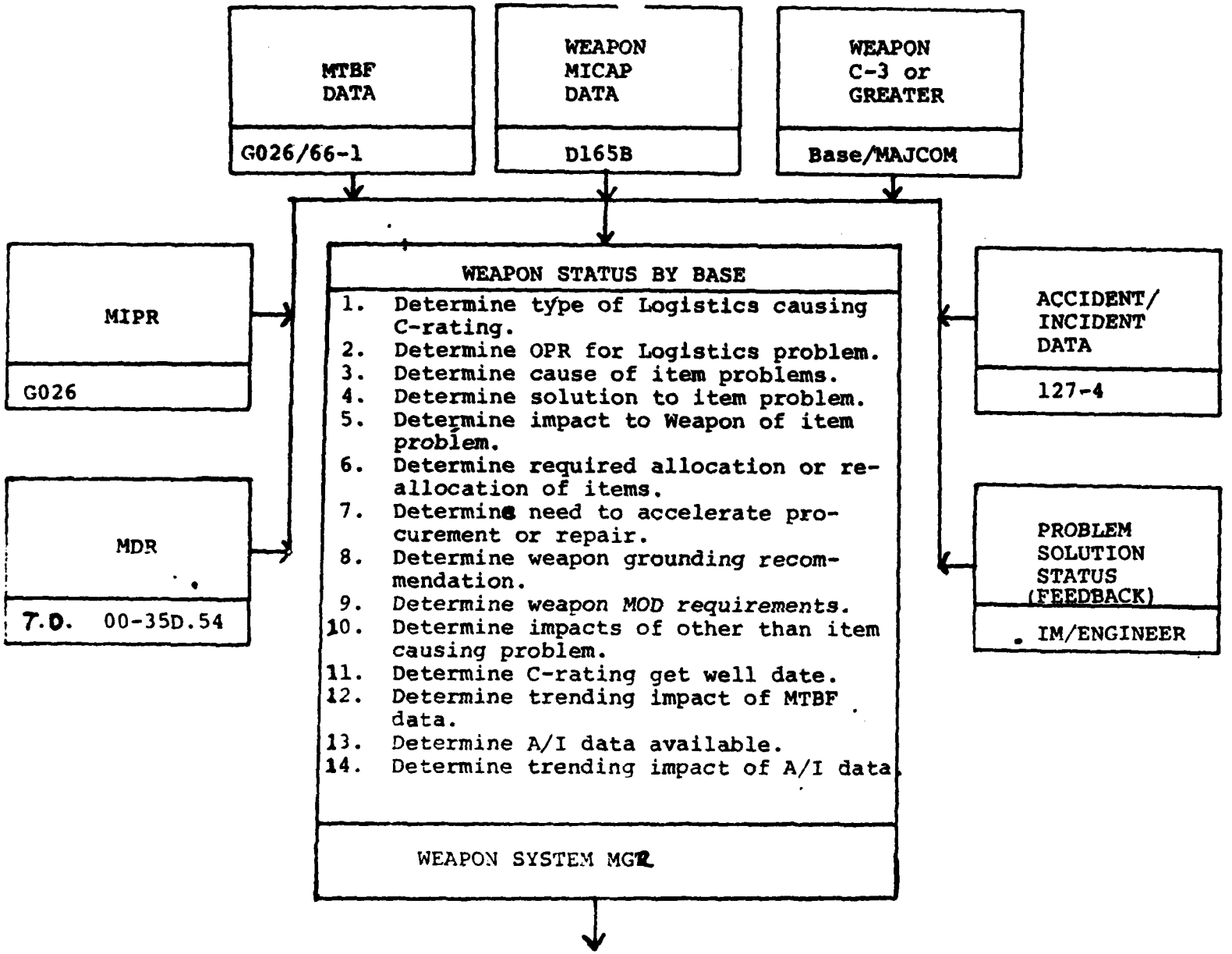
LONG-RANGE WEAPON SYSTEM MANAGEMENT FUNCTIONAL DESCRIPTION

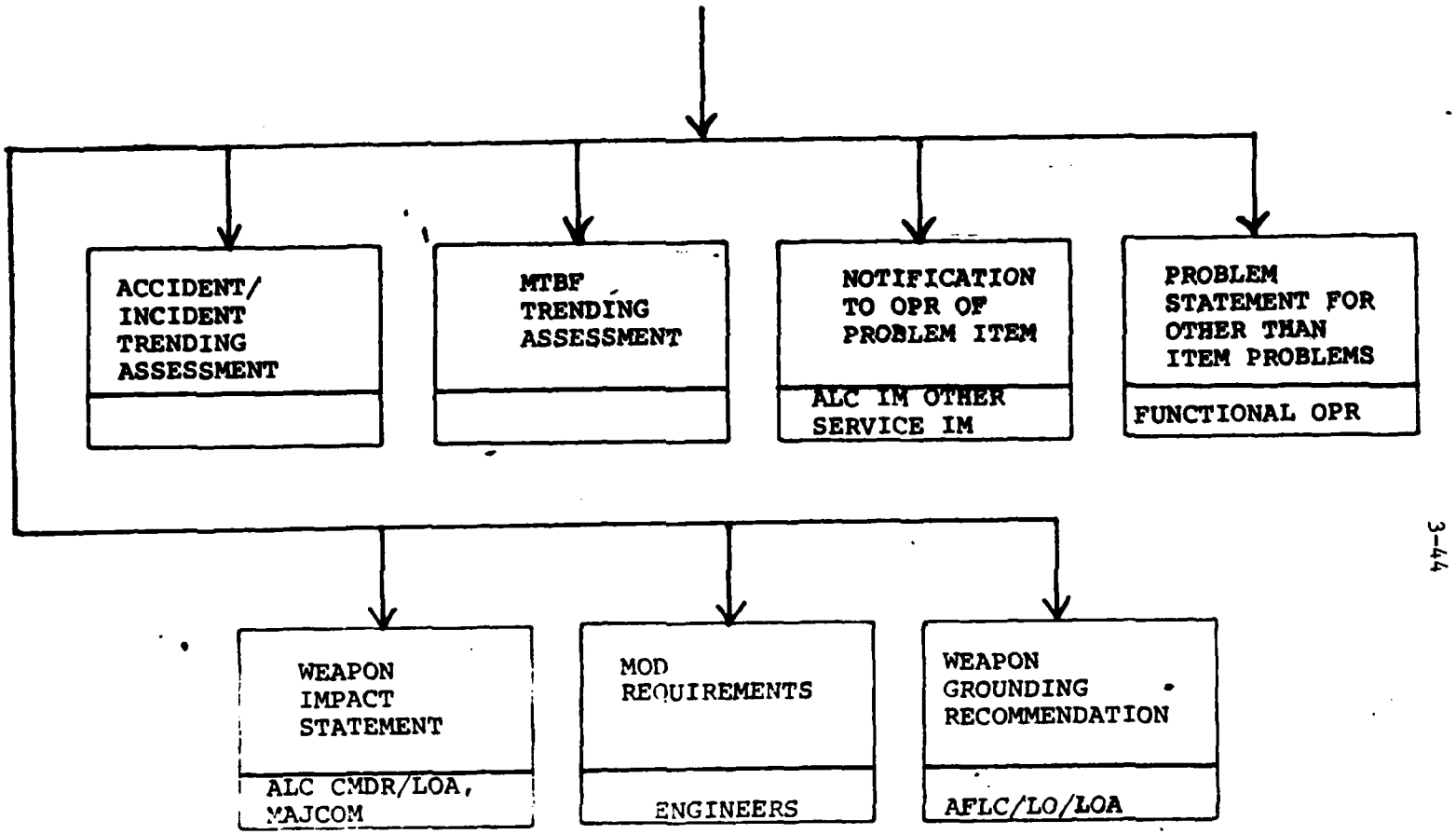


MID-RANGE WEAPON SYSTEM MANAGEMENT FUNCTIONAL DESCRIPTION


DEFINITION OF PROBLEM/ SOLUTION TECHNIQUES (INCLUDES)
MONITORING OF PROGRESS
REDIRECTION OF RESOURCES/ ACTIONS
COORDINATION OF ACTION/ RESOURCES
PROBLEM IDENTIFICATION
DEFINITION OF PROBLEM RESOLUTION
INITIATION OF ACTION
ANALYSIS
SYSTEM MGT INTEGRATION
EMBEDDED SOFTWARE SUPPORT
FIELD SUPPORT (INCLUDES)
DEPLOYMENT ASSISTANCE
MDC MATERIEL DEFICIENCY REPORT
STATUS OF WEAPON BY BASE
WEAPON SYSTEM MANAGEMENT SHORT-RANGE
SM
WEAPON SUPPORT FUNCTION (INCLUDES)
INITIAL SITE ACTIVATION
INITIAL PROVISIONING
WEAPON STRUCTURAL ENGINEERING (INCLUDES)
CORROSION CONTROL
ASIP
PIP
PDM WORK PACKAGE
MAINTENANCE
WEAPON SYSTEM MANAGEMENT SYSTEM CONTROL OFFICE
AFLC/LOA
MODIFICATION MANAGEMENT (INCLUDES)
CONFIGURATION CONTROL
SYSTEM MOD MGT
MOD KIT MGT


AFLC REVIEW
XRX
SCO REVIEW
LOA
USAF REVIEW
MAJCOM REVIEW
STATUS OF WEAPON BY BASE
SYSTEM MANAGER
FORECAST TRENDS
WEAPON MISSION ASSESSMENT
CORRECTIVE ACTION
IMPROVE STATUS
NOTIFICATION FOR ACTION
= > C-3
WEAPON ASSESSMENT BY BASE
BASE
MICAP DATA
D 165B
ACCIDENT & INCIDENT DATA
127-4
MTBF DATA
66-1
MTPR
3026
MDR
TO 00-35D-54


MTBF DATA
G026/66-1
WEAPON MICAP DATA
D165B
WEAPON C-3 or GREATER
Base/MAJCOM
MIPR
G026
MDR
T.O. 00-35D.54
WEAPON STATUS BY BASE
1. Determine type of Logistics causing C-rating.
2. Determine OPR for Logistics problem.
3. Determine cause of item problems.
4. Determine solution to item problem.
5. Determine impact to Weapon of item problem.
6. Determine required allocation or re-allocation of items.
7. Determine need to accelerate procurement or repair.
8. Determine weapon grounding recommendation.
9. Determine weapon MOD requirements.
10. Determine impacts of other than item causing problem.
11. Determine C-rating get well date.
12. Determine trending impact of MTBF data.
13. Determine A/I data available.
14. Determine trending impact of A/I data.
WEAPON SYSTEM MGR
ACCIDENT/ INCIDENT DATA
127-4
PROBLEM SOLUTION STATUS (FEEDBACK)
IM/ENGINEER


ACCIDENT/ INCIDENT TRENDING ASSESSMENT
MTBF TRENDING ASSESSMENT
NOTIFICATION TO OPR OF PROBLEM ITEM
ALC IM OTHER SERVICE IM
PROBLEM STATEMENT FOR OTHER THAN ITEM PROBLEMS
FUNCTIONAL OPR
WEAPON IMPACT STATEMENT
ALC CMDR/LOA, MAJCOM
MOD REQUIREMENTS
ENGINEERS
WEAPON GROUNDING RECOMMENDATION
AFLC/LO/LOA

AFLC COMMAND LEVEL GUIDANCE

FOR

LOGISTICS MANAGEMENT SYSTEMS (LMS) PLANNING

ANNEX A

FOR

WEAPON SYSTEM MANAGEMENT

PERSPECTIVE

PURPOSE: This annex was prepared for Weapon System Management Perspective as a quick reference to highlight some of the major forecasts applicable from the basic document. Forecasts from basic document are repeated here and those added, considered appropriate for Weapon System Management, are indicated by (Added) at end of forecast. Discussion and guidance for the forecasts are contained in basic document.

A. Corporate Level Output - EQUIP

1. Definition. This is AFLC's function of supporting or accomplishing acquisition and the introduction of weapons and equipment into the inventory. It includes capabilities acquired through purchase or modification of existing systems and equipment (Note: modifications for cost reduction are not included).

2. Forecast.

a. Technology and strategic material availability pressures will push the "equip" function to introduce systems and equipment that cause a continuing movement of repair towards depots as well as reductions in the quantity of repair and maintenance of equipment and replacement spares. Contrasting with this, the character of future wars, such as minimal warning, logistical vulnerability, etc., may demand disposal of repair capability and prepositioning of assets.

b. Funds availability, raw materials and industrial process availability, clearly indicate a new level of interoperability with both other services and allies will occur in the future. In addition, these same factors forecast new levels of source dependencies for such things as materials, finished products and entire logistics functions.

c. The pendulum of weapon system modernization is expected to swing from new acquisitions to modernization through comprehensive modifications.

d. Introduction of new technology produces new problems that are often repeated in subsequent systems. System Management requires a capability to crossfeed these problems and solutions. (Added)

e. Potential loss of assets to enemy actions will require methods of assessing the threat to logistics and means of adjusting inventory levels for those losses. (Added)

B. Corporate Level Output - Maintain

1. Definition - This is AFLC's function of supporting the existing force structure in a peacetime mode; i.e., maintaining operational war readiness.

2. Forecast:

a. The management orientation of AFLC will continue towards commodity or item management. However, the orientation will be aggregated by weapon system for budgetary purposes and to support impact (what if) assessments. (Added)

b. It is forecasted that weapons of foreign manufacture may well enter our inventory; in addition, there is a strong likelihood that the use of foreign contractors will become significant, if current policies are continued.

c. The technological forecast of increasing complexity of both systems and equipment indicates that the organic workforce capability (in terms of training and skills) may be exceeded.

C. Corporate Level Output- Conversion to War (or other contingency):

1. Definition: This is AFLC's function of converting to a war or other contingency footing. It includes all tasks, formal or informal, to make the conversion. For example, doing all one time tasks of getting a specific tactical unit capable of deploying or a receiving site capable of reception, making all internal changes to operate on a war footing, etc. Although the emphasis here is on output, organizational management tasks critical to the conversion are included.

2. Forecast:

a. Forecasts affecting conversion to war are:

(1) The characteristics of future wars will include minimum warning time, high dispersal, high intensity, and operations from bare bases in addition to those types of wars we have previously fought or prepared to fight.

(2) Technological complexity and component reliability will increase significantly.

(3) There may be a shortage of young people with technical backgrounds for work at base-level maintenance. This, coupled with increased complexity, will lead to a swing toward depot-level maintenance, possibly resulting in the demise of intermediate-level maintenance.

D. Corporate Level Output - Sustain:

1. Definition: This is AFLC's function of applying the necessary means to provide the "Maintain" functions under the range of adverse conditions expected in war and other contingencies. Examples are:

a. The stress of sustained usage rates beyond the normal program.

b. Establishing an alternate method of support when the primary means has been destroyed.

c. Carrying out operations under attack, etc.

2. Forecast: The mix of weapon systems will be broadened, in terms of age and technology represented, due to the increased emphasis on modifications.

E. Corporate Level Function - Logistics Readiness:

1. Definition:

a. This is AFLC's function of developing and implementing, before war, methods of compensating for shortfalls in its wartime mission capabilities. The task is largely analytical and deals with all shortfalls caused by such things as new enemy capabilities, inadequate resources (budget), environmental changes (political, physical, or economic), or any other similar events.

2. Forecast:

a. There will be continued difficulty in funding requirements that do not contribute to visible, operational readiness (MICAP reduction). This, combined with the gap between peace and war, may create a relative inability to fund logistics war readiness.

b. Vulnerability of our logistics infrastructure (in peace and war, in-theatre and in the ZI) to destruction or disruption will become real.

c. Growing pressures to integrate Allied logistics support into war plans (and into peace time logistics infrastructure) will create a new readiness consideration.

WEAPON SYSTEM MANAGEMENT PRINCIPLES

- DEVELOPED FROM AFM 2-18
- USED IN DEVELOPING ALTERNATIVE APPROACHES TO OVERCOME SHORTFALLS

AFLC LEVEL SHORTFALLS

- WEAPON SYSTEM RELATED "CORPORATE" SHORTFALLS
  - ABSTRACTED FROM USAF/COMMAND APPROVED DOCUMENTS
- USED IN DEFINING/PRIORITIZING WEAPON SYSTEM MANAGEMENT SHORTFALLS

SHORTFALLS FOR WEAPON SYSTEM MANAGEMENT PLANNING

SHORTFALL 1: AFLC CANNOT PROVIDE ADEQUATE SUPPORT IN AUSTERE LOCATIONS.

APPROACHES

TO DEVELOP AN IMPROVED WEAPON SYSTEM INFORMATION SYSTEM

TO INCREASE INTEROPERABILITY AND BILATERAL LOGISTICS SUPPORT ARRANGEMENTS WITH OTHER FRIENDLY NATIONS

SHORTFALL 3: COMMUNICATIONS WILL BE INADEQUATE

APPROACHES

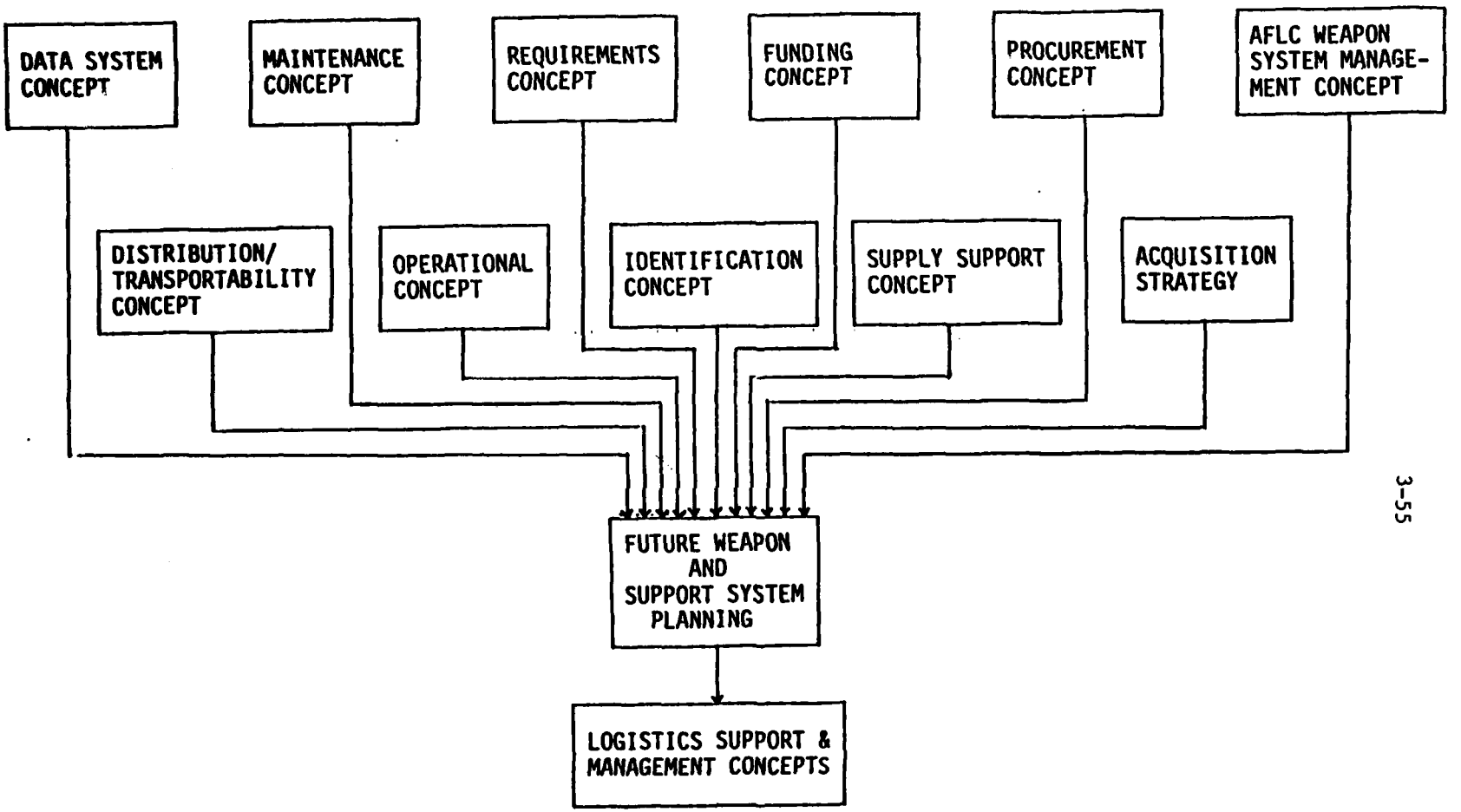
TO DEVELOP LINES OF COMMUNICATION TO SUPPORT FIXED AND MOBILE AF OPERATIONS WORLDWIDE.

- TO HAVE COMMUNICATIONS THAT PROVIDE IN-TRANSIT ASSET VISIBILITY, ITEM IDENTIFICATION, AND RECEIPT NOTICE.

MEASURES OF MERIT

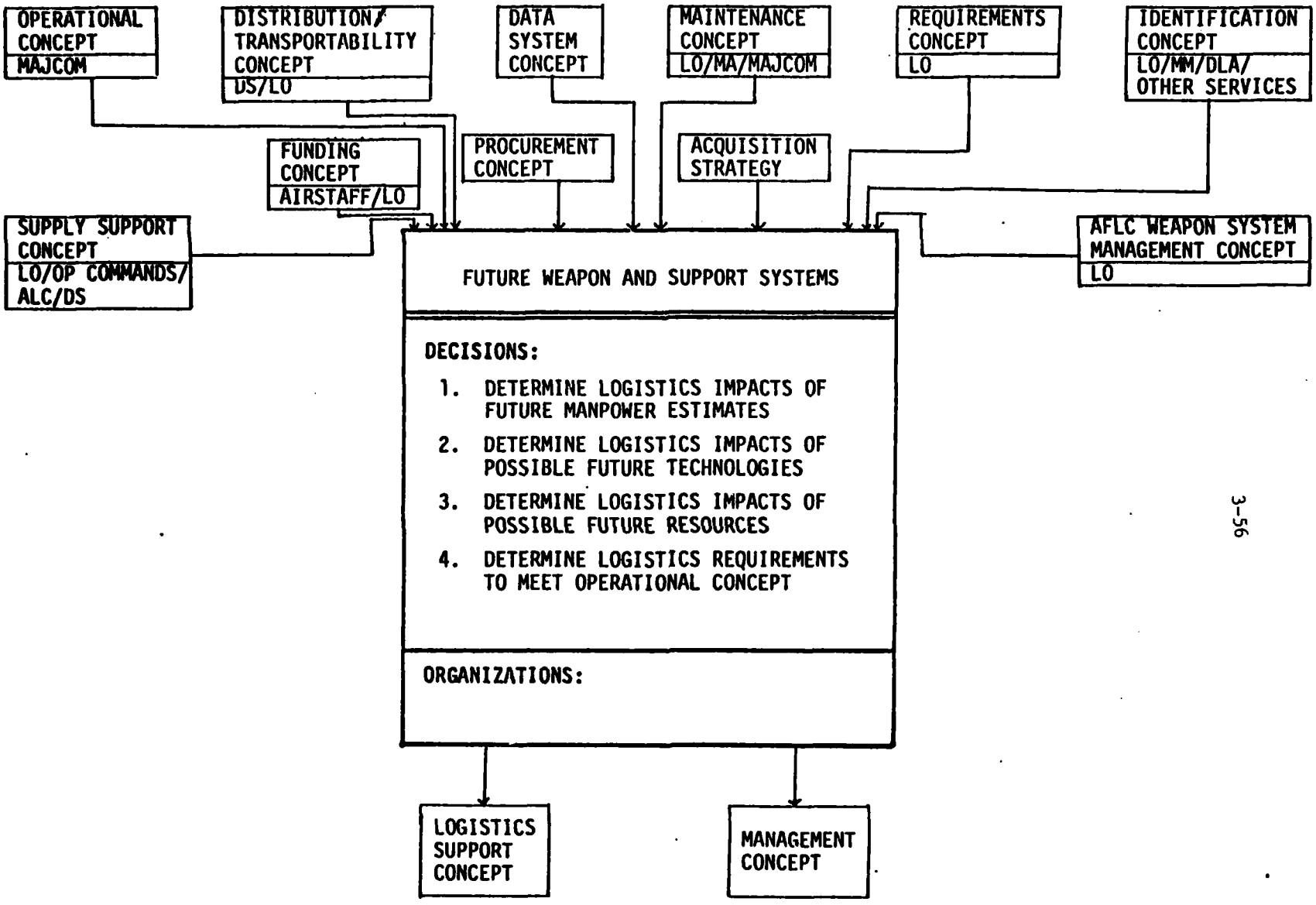
- CRITERIA FOR EVALUATING SHORTFALLS
  - EVALUATE IMPACTS
  - RANK SHORTFALLS
- EXAMPLES:
  - MEET SURGE REQUIREMENTS
    - -- AVAILABLE MATERIAL
    - -- SOFTWARE CAPABILITIES
  - IMPROVE OPERATIONAL READINESS
    - -- OVERAGE MIPs

LONG-RANGE WEAPON SYSTEM
MANAGEMENT DESCRIPTION

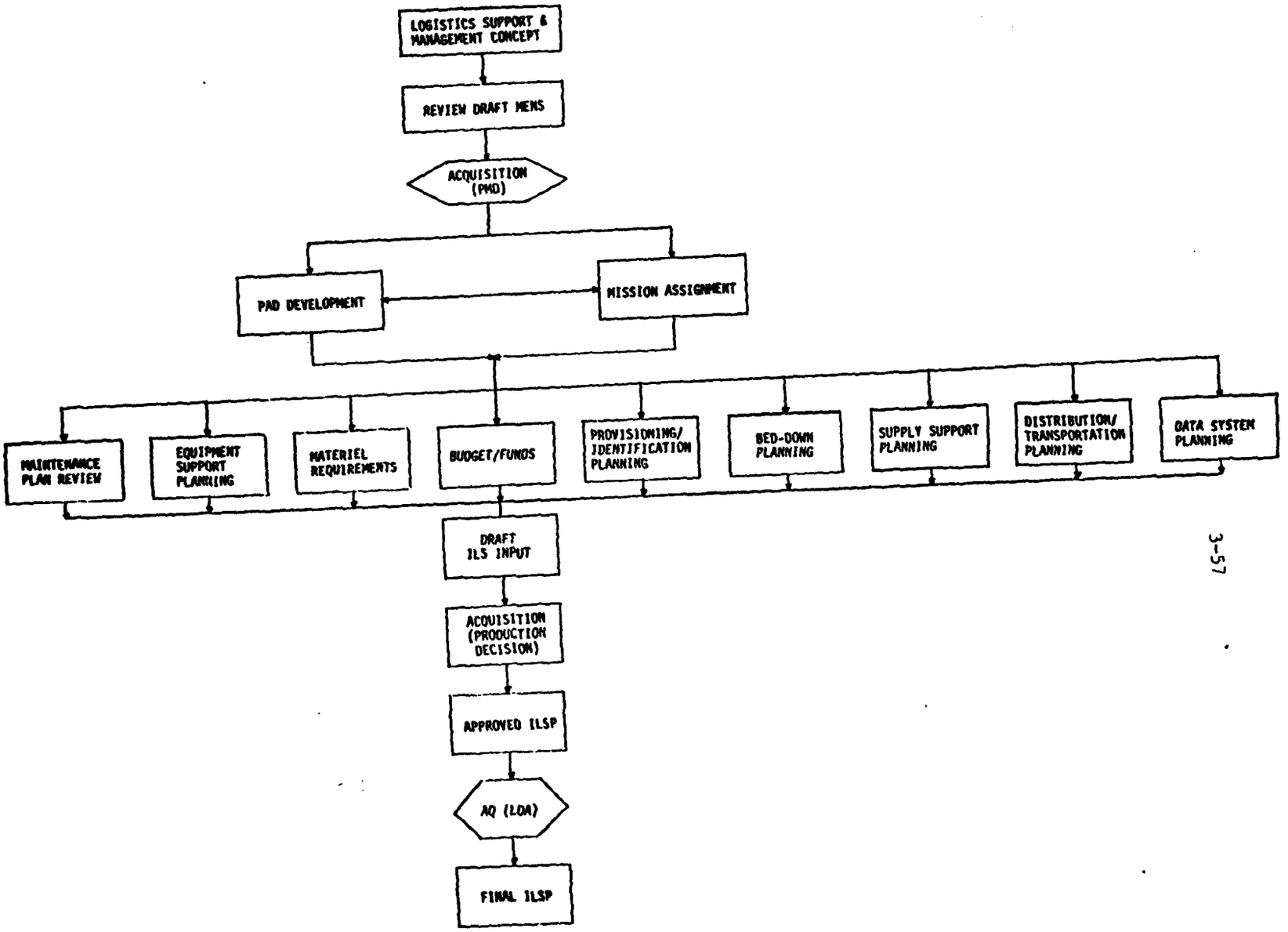


LONG-RANGE WEAPON SYSTEM MANAGEMENT FUNCTIONAL DESCRIPTION

INPUTS



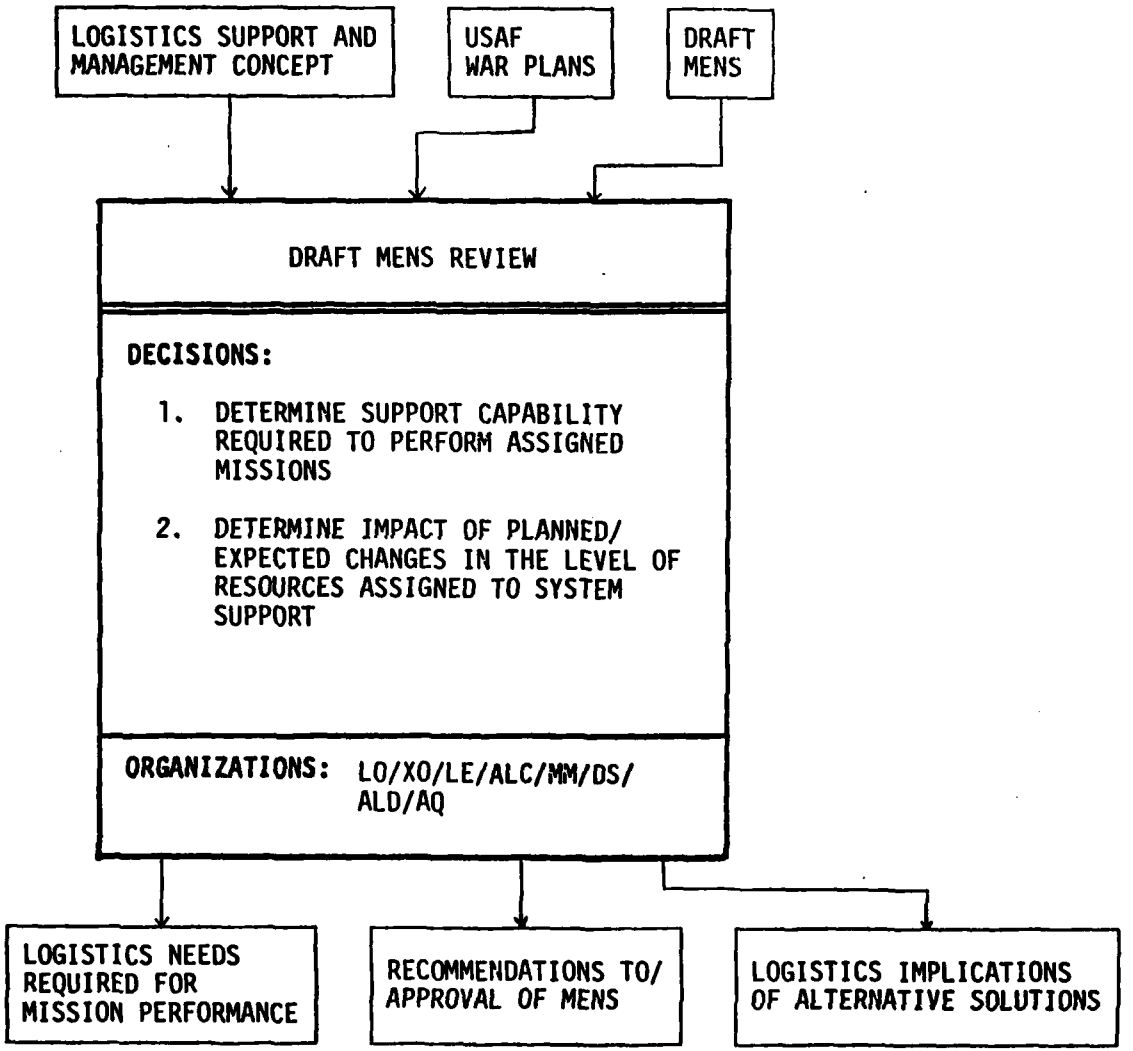
OUTPUTS



MID-RANGE WEAPON SYSTEM MANAGEMENT FUNCTIONAL DESCRIPTION

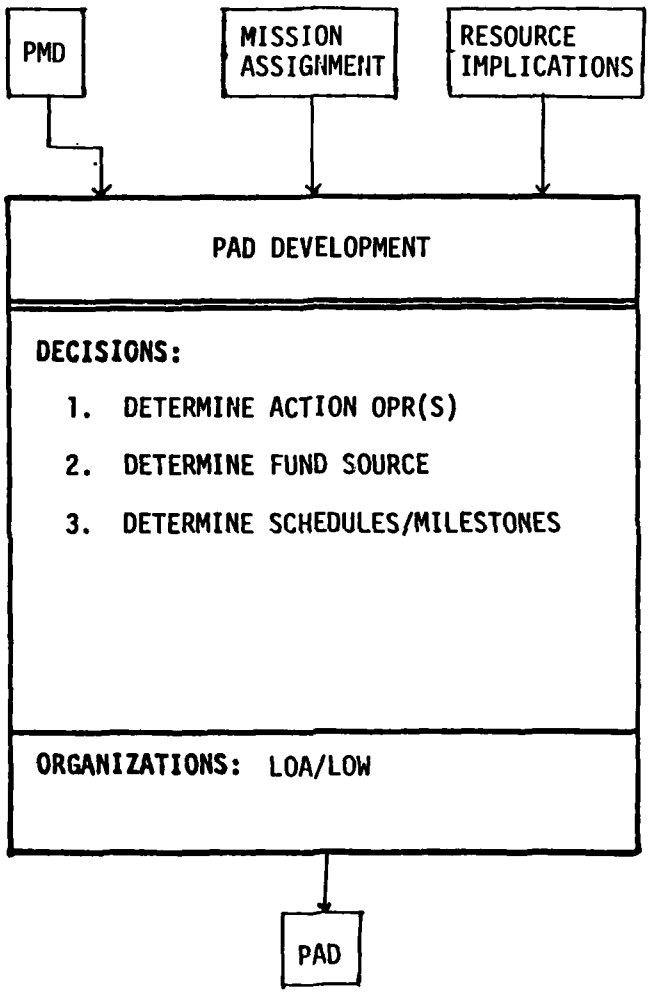
MID-RANGE WEAPON SYSTEM
MANAGEMENT DESCRIPTION

INPUTS



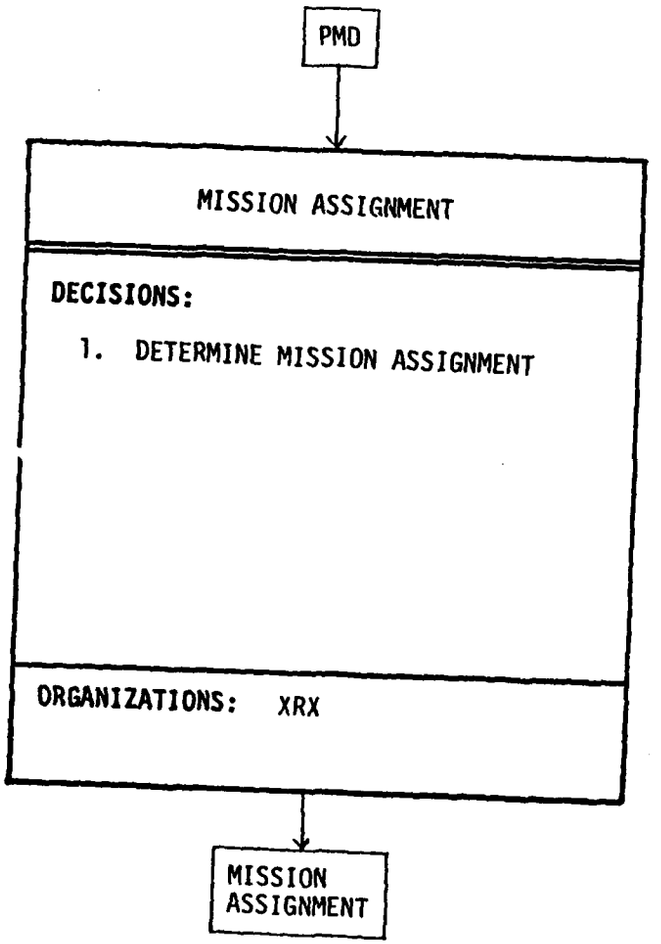
OUTPUTS

INPUTS



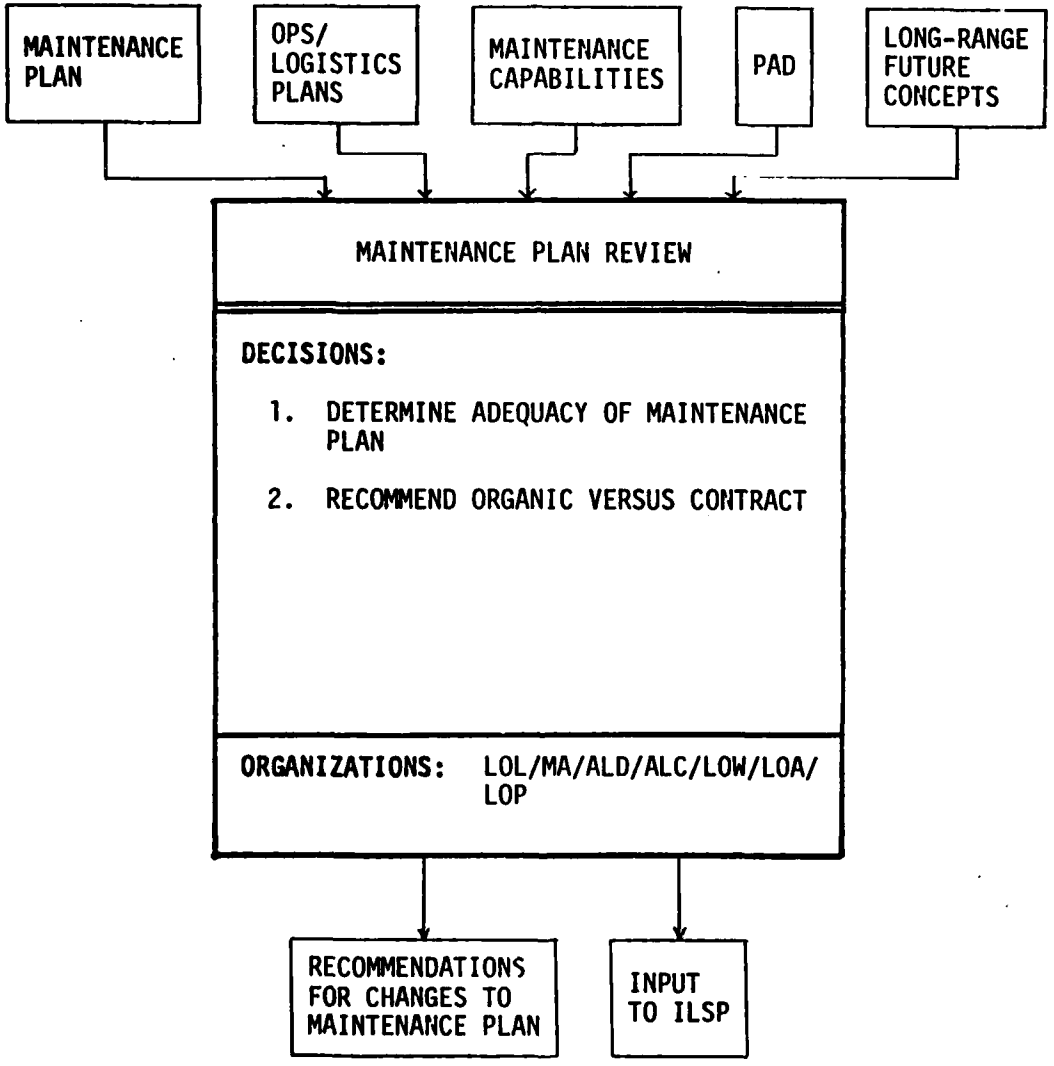
OUTPUTS

INPUTS



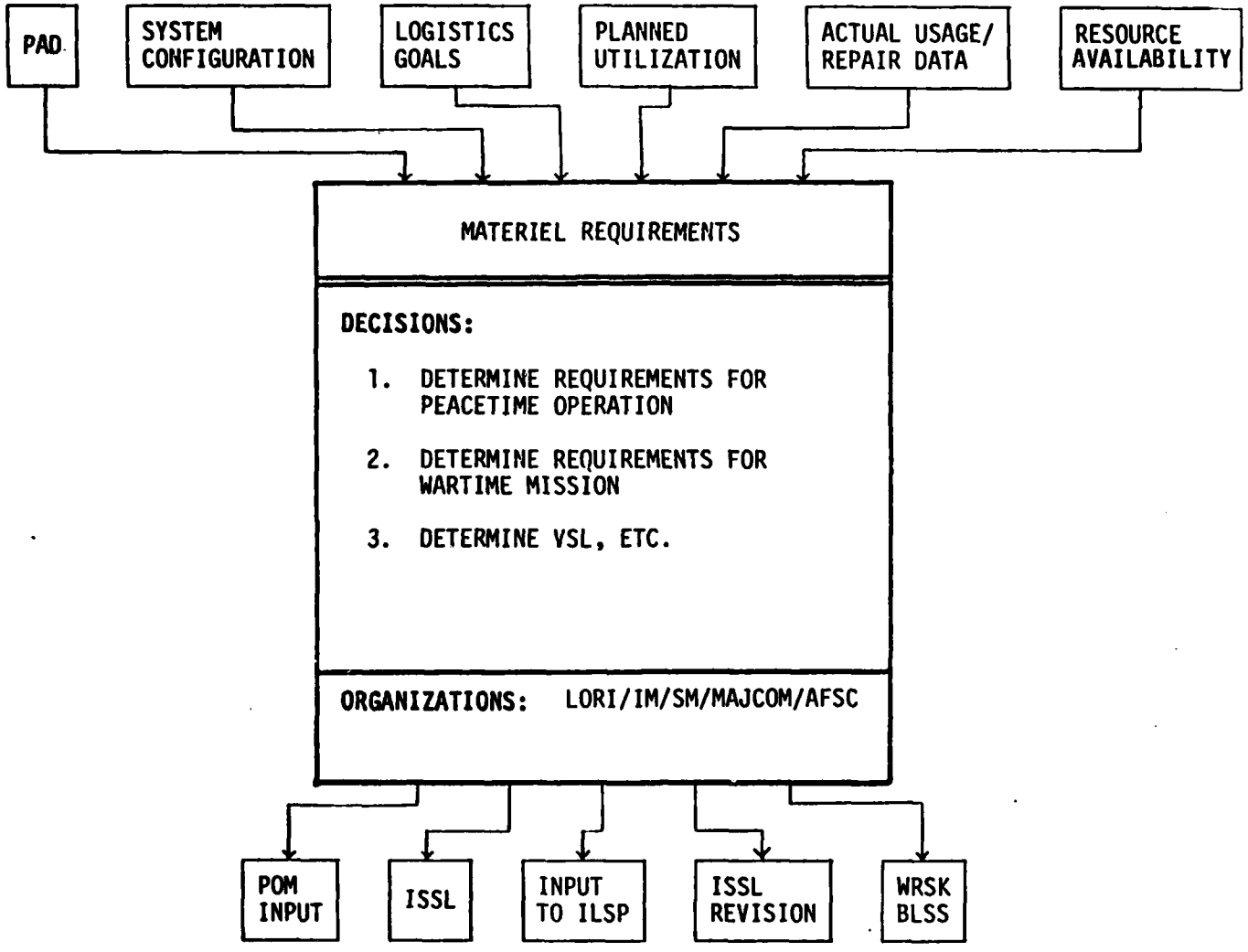
OUTPUTS

INPUTS



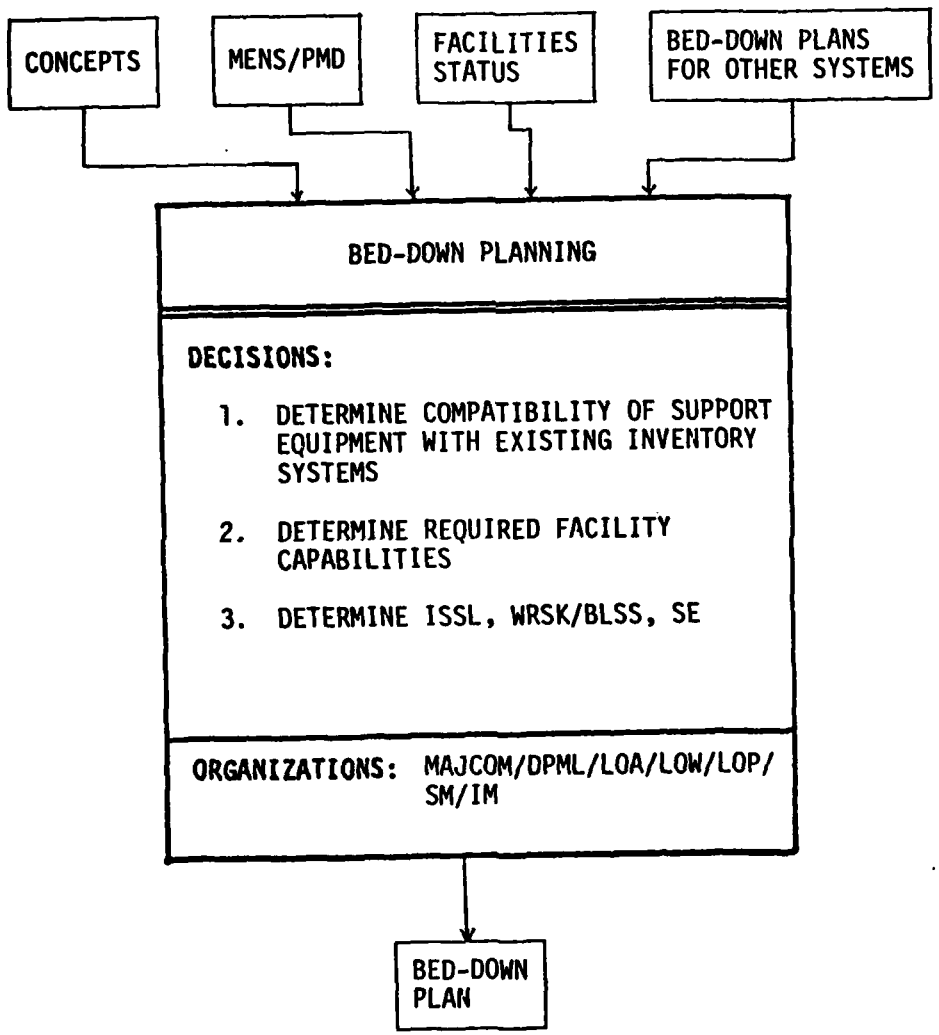
OUTPUTS

INPUTS



OUTPUTS

INPUTS



OUTPUTS

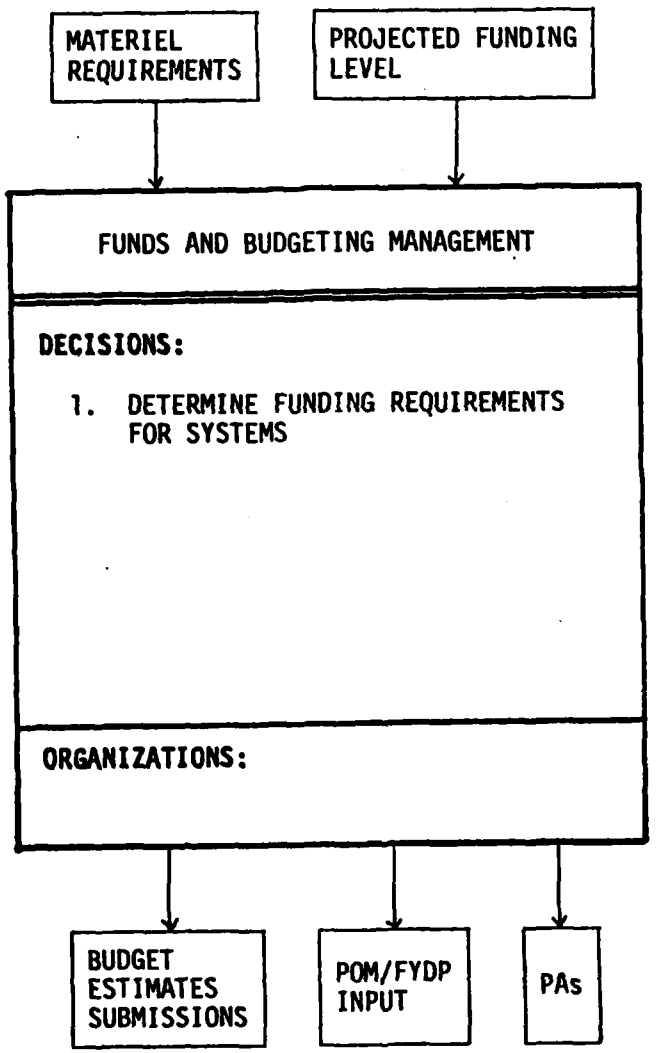
BED-DOWN PLANNING

DECISION FACTORS:

1. INTEROPERABILITY

2. PHASE-OUT OF CURRENT SYSTEMS

INPUTS



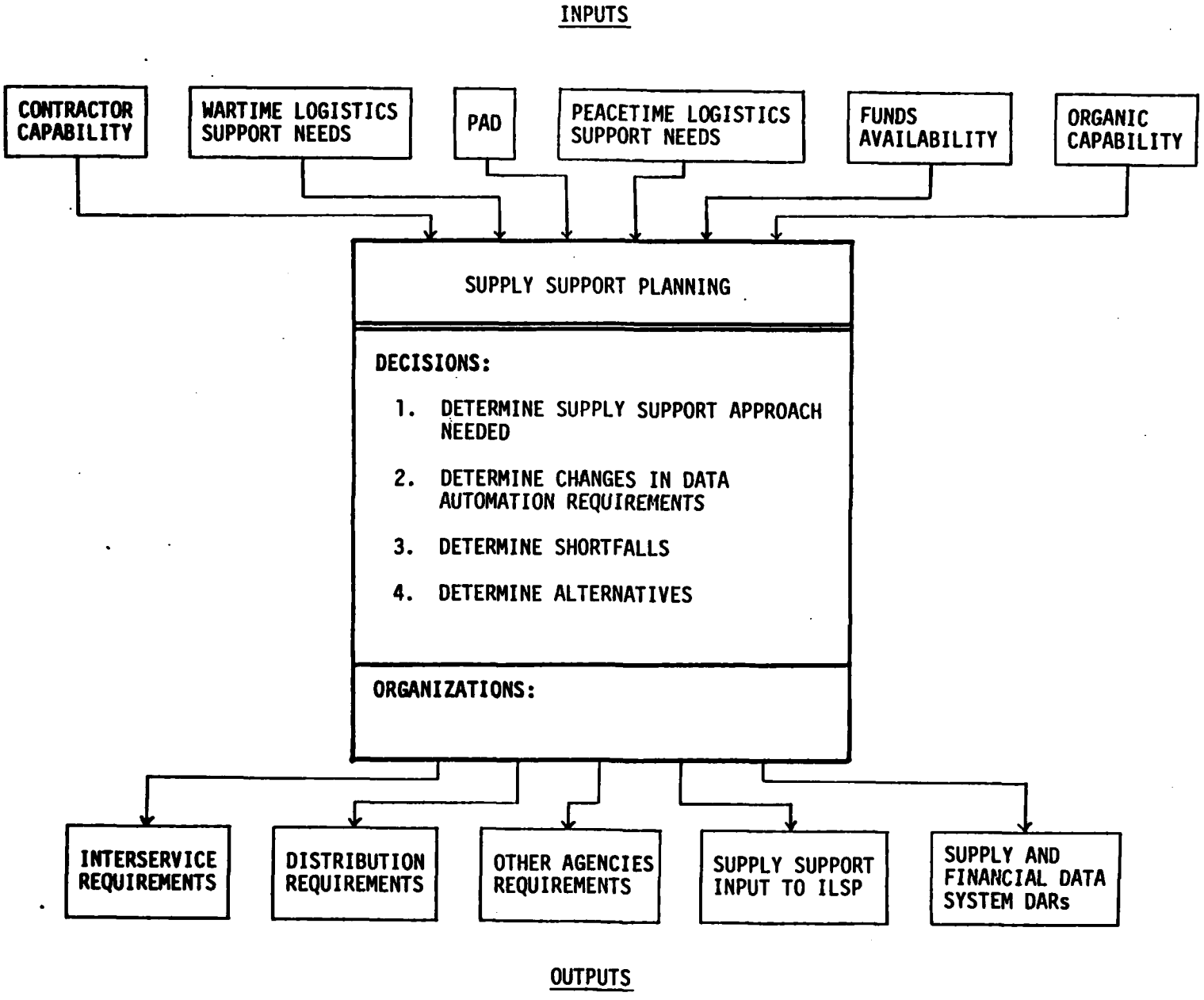
OUTPUTS

FUNDS AND BUDGETING MANAGEMENT

DECISION FACTORS:

1. SYSTEM LIFE CYCLE STATUS

2. SYSTEM PRIORITY

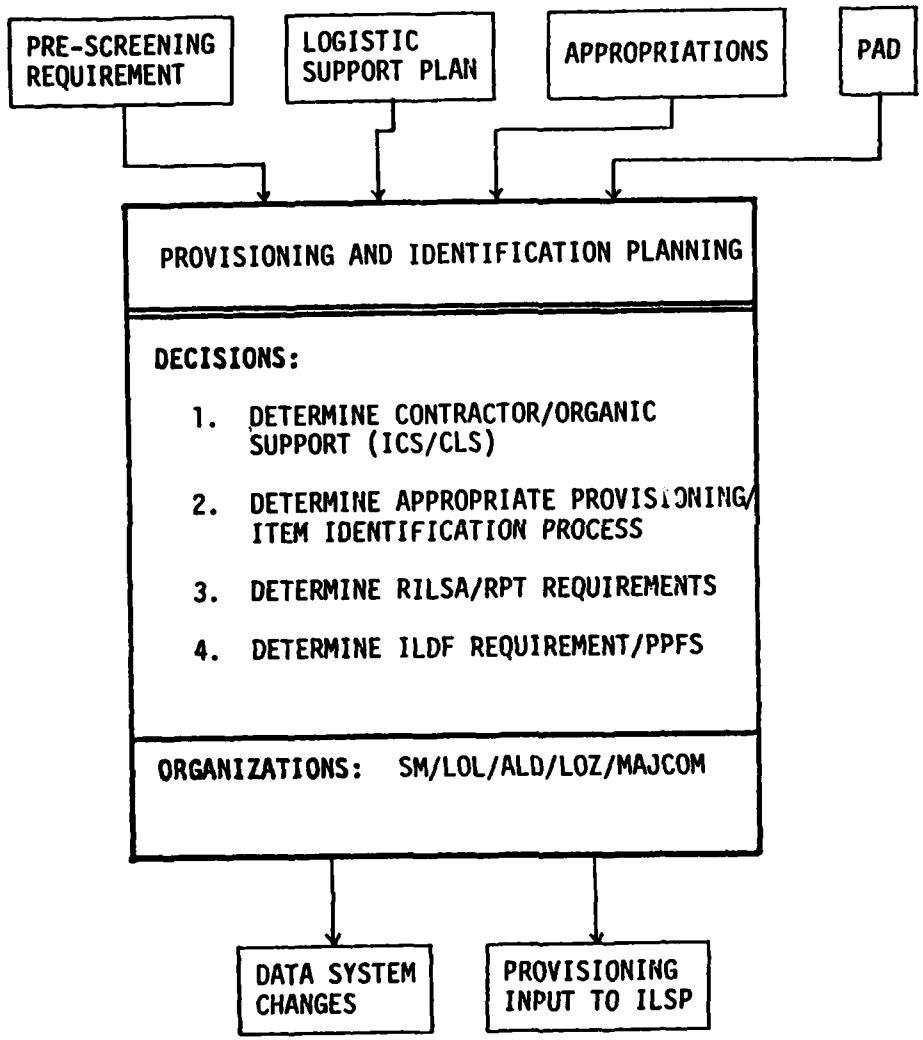

INPUTS
CONTRACTOR CAPABILITY
WARTIME LOGISTICS SUPPORT NEEDS
PAD
PEACETIME LOGISTICS SUPPORT NEEDS
FUNDS AVAILABILITY
ORGANIC CAPABILITY
SUPPLY SUPPORT PLANNING
DECISIONS:
1. DETERMINE SUPPLY SUPPORT APPROACH NEEDED
2. DETERMINE CHANGES IN DATA AUTOMATION REQUIREMENTS
3. DETERMINE SHORTFALLS
4. DETERMINE ALTERNATIVES
ORGANIZATIONS:
INTERSERVICE REQUIREMENTS
DISTRIBUTION REQUIREMENTS
OTHER AGENCIES REQUIREMENTS
SUPPLY SUPPORT INPUT TO ILSP
SUPPLY AND FINANCIAL DATA SYSTEM DARs
OUTPUTS

SUPPLY SUPPORT PLANNING

DECISION FACTORS:

1. PMRT DATE
2. MAINTENANCE CONCEPT
3. TECHNICAL COMPLEXITY OF SYSTEM
4. SOURCE OF REPAIR
5. PERSONNEL AVAILABILITY
6. ORGANIC/CONTRACTOR MAINTENANCE CAPACITY
7. RELIABILITY AND MAINTAINABILITY REQUIREMENTS

INPUTS



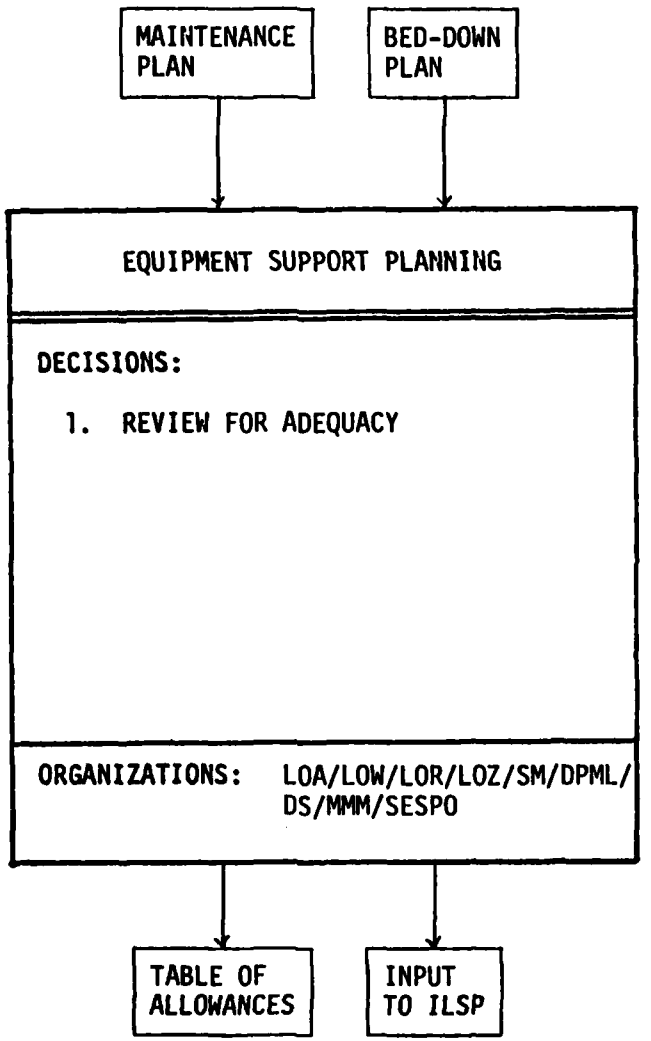
OUTPUTS

PROVISIONING AND IDENTIFICATION PLANNING

DECISION FACTORS:

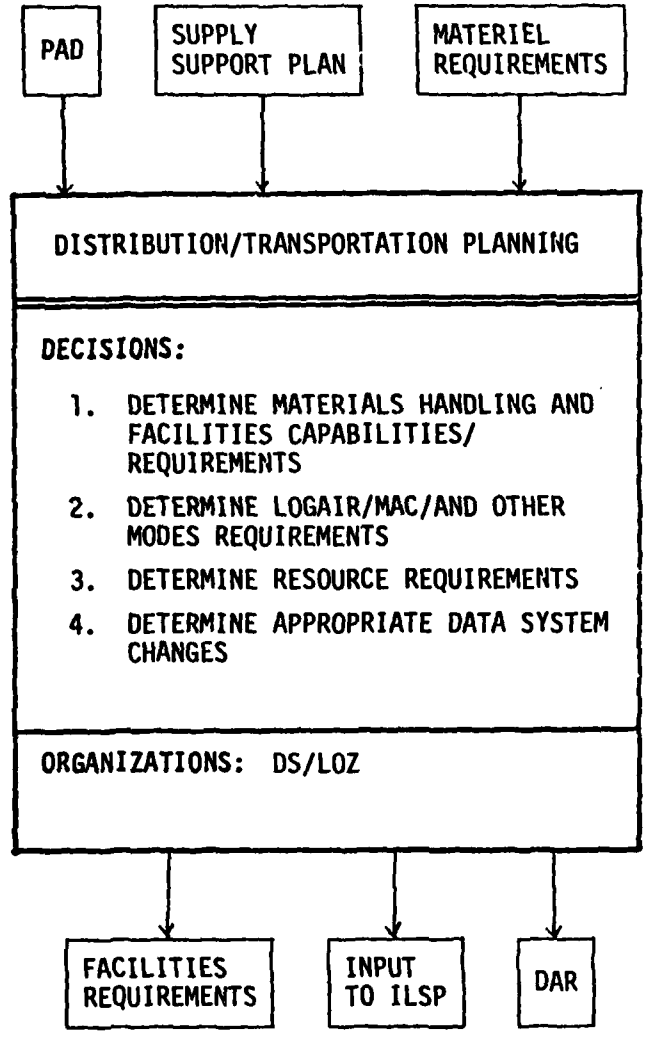
1. SUPPORT EQUIPMENT NUMBERS AND TYPES
2. AVAILABILITY OF SKILL LEVELS, LOCATIONS, NUMBERS
3. ADEQUACY OF TECHNICAL DATA
4. AVAILABILITY OF TRANSPORTATION

INPUTS



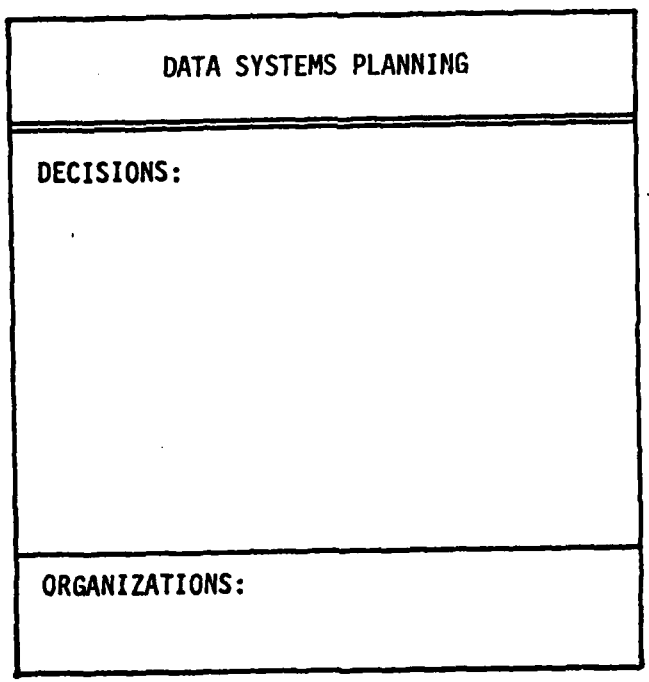
OUTPUTS

INPUTS



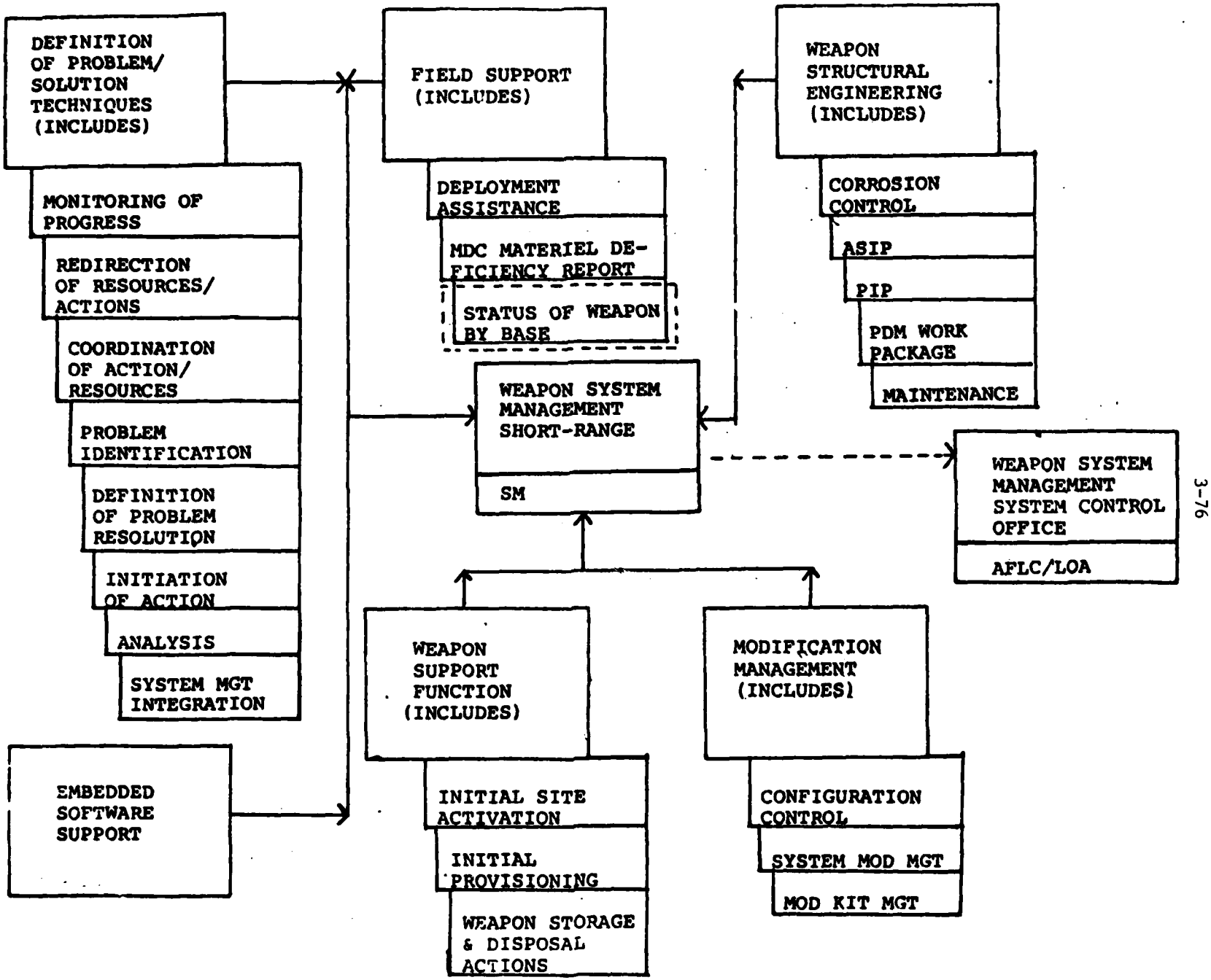
OUTPUTS

INPUTS

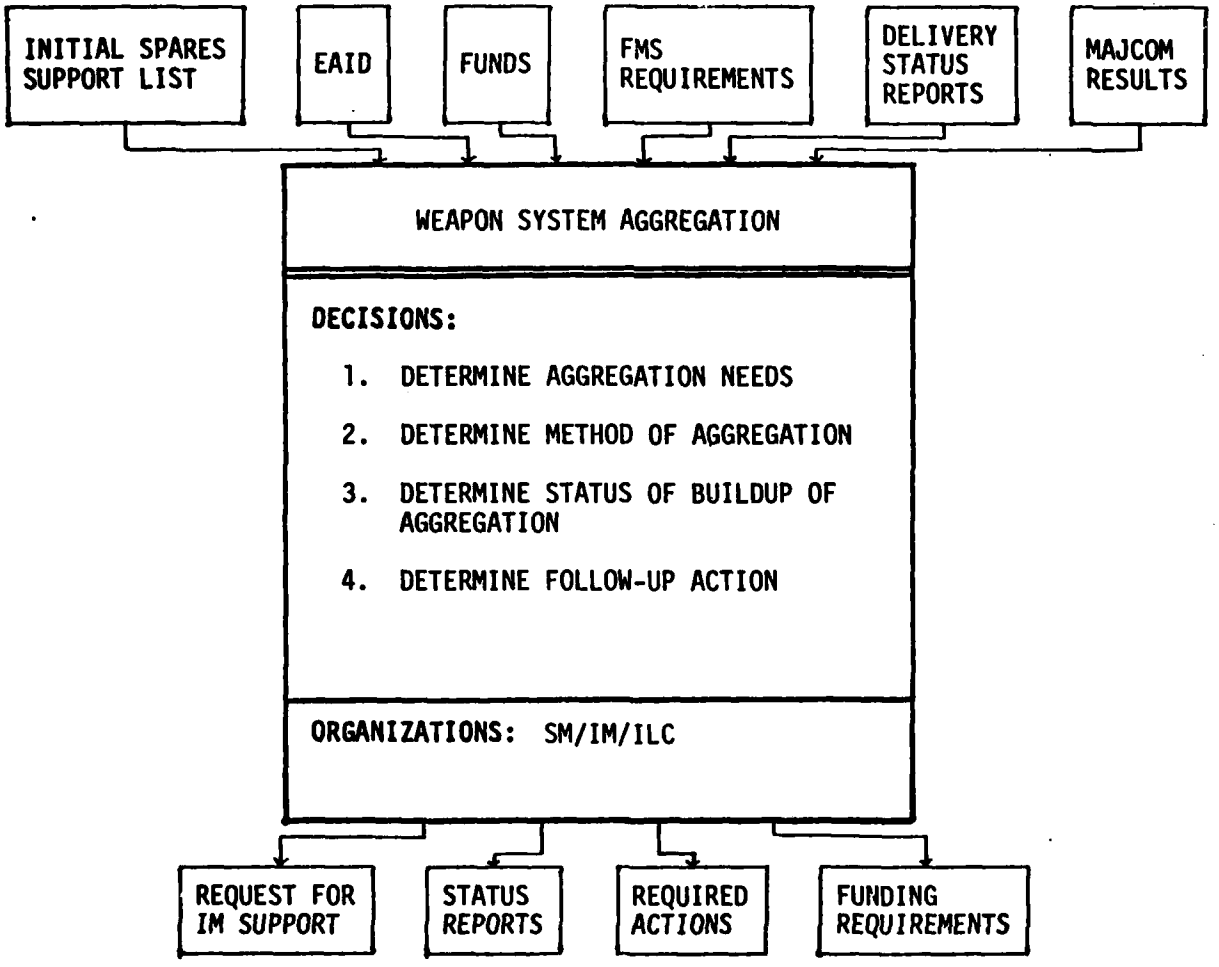


OUTPUTS

SHORT-RANGE WEAPON SYSTEM
MANAGEMENT DESCRIPTIONS


DEFINITION OF PROBLEM/ SOLUTION TECHNIQUES (INCLUDES)
MONITORING OF PROGRESS
REDIRECTION OF RESOURCES/ ACTIONS
COORDINATION OF ACTION/ RESOURCES
PROBLEM IDENTIFICATION
DEFINITION OF PROBLEM RESOLUTION
INITIATION OF ACTION
ANALYSIS
SYSTEM MGT INTEGRATION
EMBEDDED SOFTWARE SUPPORT
FIELD SUPPORT (INCLUDES)
DEPLOYMENT ASSISTANCE
MDC MATERIEL DEFICIENCY REPORT
STATUS OF WEAPON BY BASE
WEAPON STRUCTURAL ENGINEERING (INCLUDES)
CORROSION CONTROL
ASIP
PIP
PDM WORK PACKAGE
MAINTENANCE
WEAPON SYSTEM MANAGEMENT SHORT-RANGE
SM
WEAPON SYSTEM MANAGEMENT SYSTEM CONTROL OFFICE
AFLC/LOA
WEAPON SUPPORT FUNCTION (INCLUDES)
INITIAL SITE ACTIVATION
INITIAL PROVISIONING
WEAPON STORAGE & DISPOSAL ACTIONS
MODIFICATION MANAGEMENT (INCLUDES)
CONFIGURATION CONTROL
SYSTEM MOD MGT
MOD KIT MGT

INPUTS

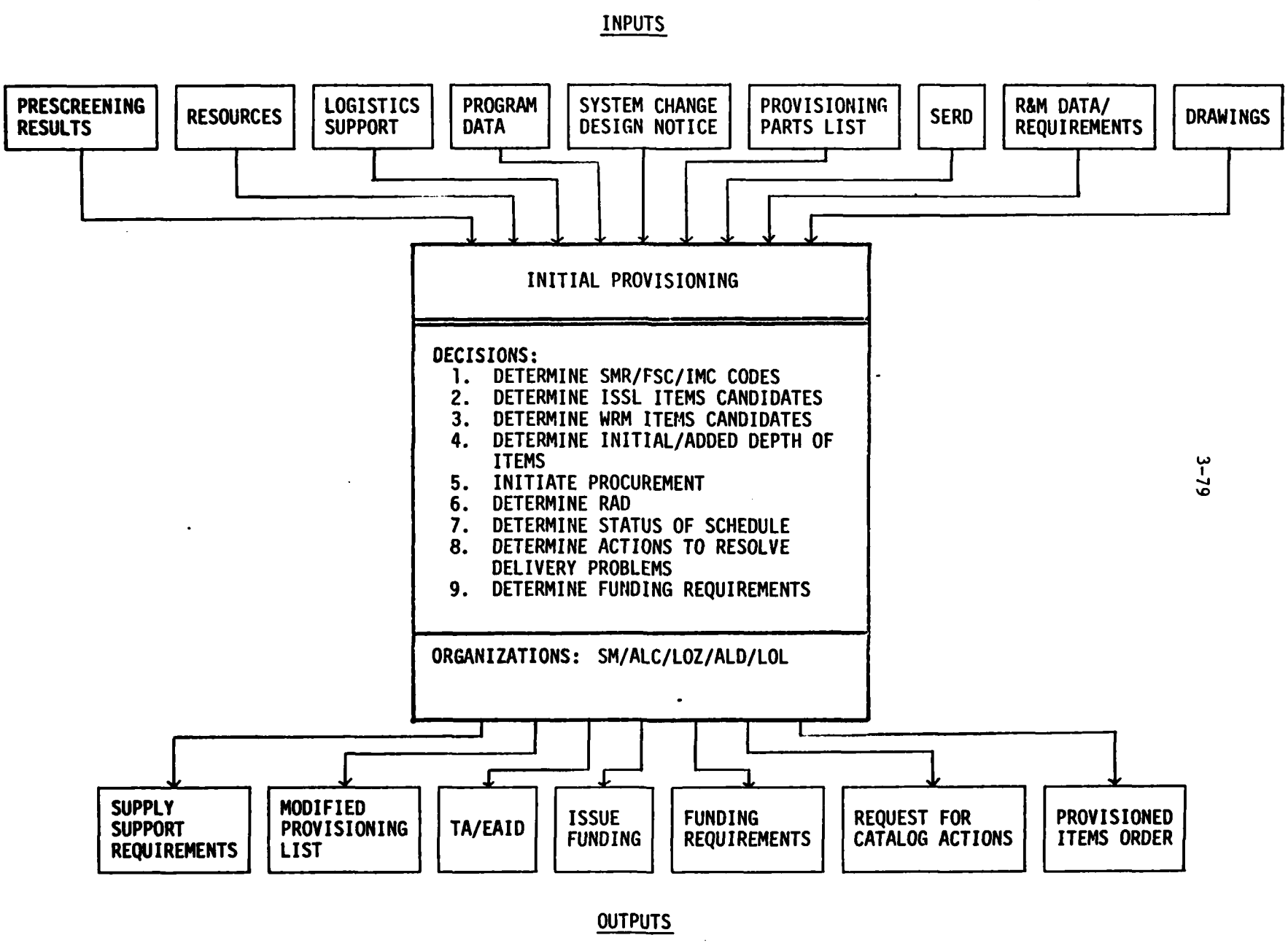


OUTPUTS

WEAPON SYSTEM AGGREGATION

DECISION FACTORS:

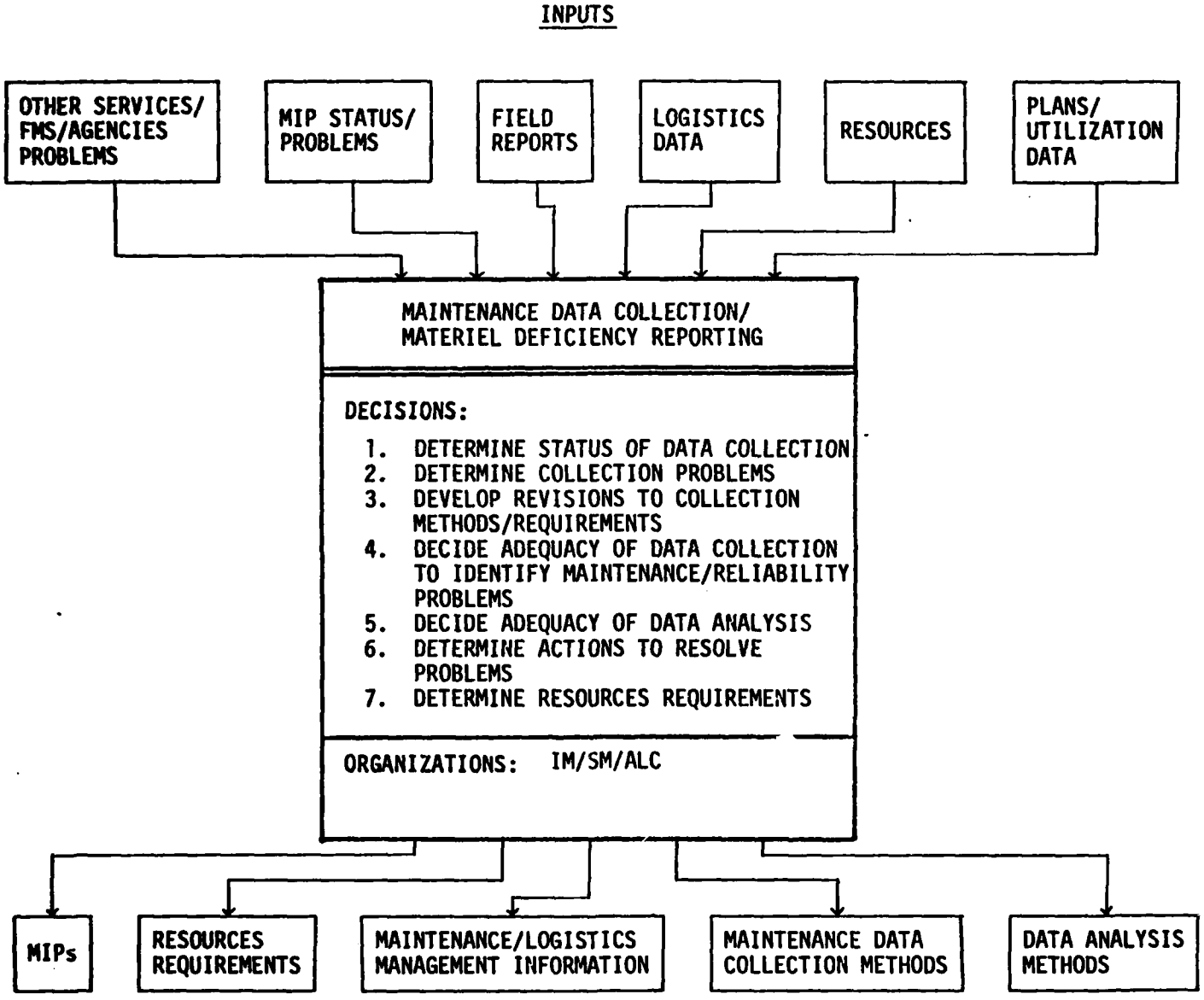
1. REQUISITION STATUS
2. ITEMS REQUESTED (QUANTITY AND TYPE)
3. AGGREGATION STATUS


INPUTS
PRESCREENING RESULTS
RESOURCES
LOGISTICS SUPPORT
PROGRAM DATA
SYSTEM CHANGE DESIGN NOTICE
PROVISIONING PARTS LIST
SERD
R&M DATA/ REQUIREMENTS
DRAWINGS
INITIAL PROVISIONING
DECISIONS:
1. DETERMINE SMR/FSC/IMC CODES
2. DETERMINE ISSL ITEMS CANDIDATES
3. DETERMINE WRM ITEMS CANDIDATES
4. DETERMINE INITIAL/ADDED DEPTH OF ITEMS
5. INITIATE PROCUREMENT
6. DETERMINE RAD
7. DETERMINE STATUS OF SCHEDULE
8. DETERMINE ACTIONS TO RESOLVE DELIVERY PROBLEMS
9. DETERMINE FUNDING REQUIREMENTS
ORGANIZATIONS: SM/ALC/LOZ/ALD/LOL
SUPPLY SUPPORT REQUIREMENTS
MODIFIED PROVISIONING LIST
TA/EAID
ISSUE FUNDING
FUNDING REQUIREMENTS
REQUEST FOR CATALOG ACTIONS
PROVISIONED ITEMS ORDER
OUTPUTS

INITIAL PROVISIONING

DECISION FACTORS:

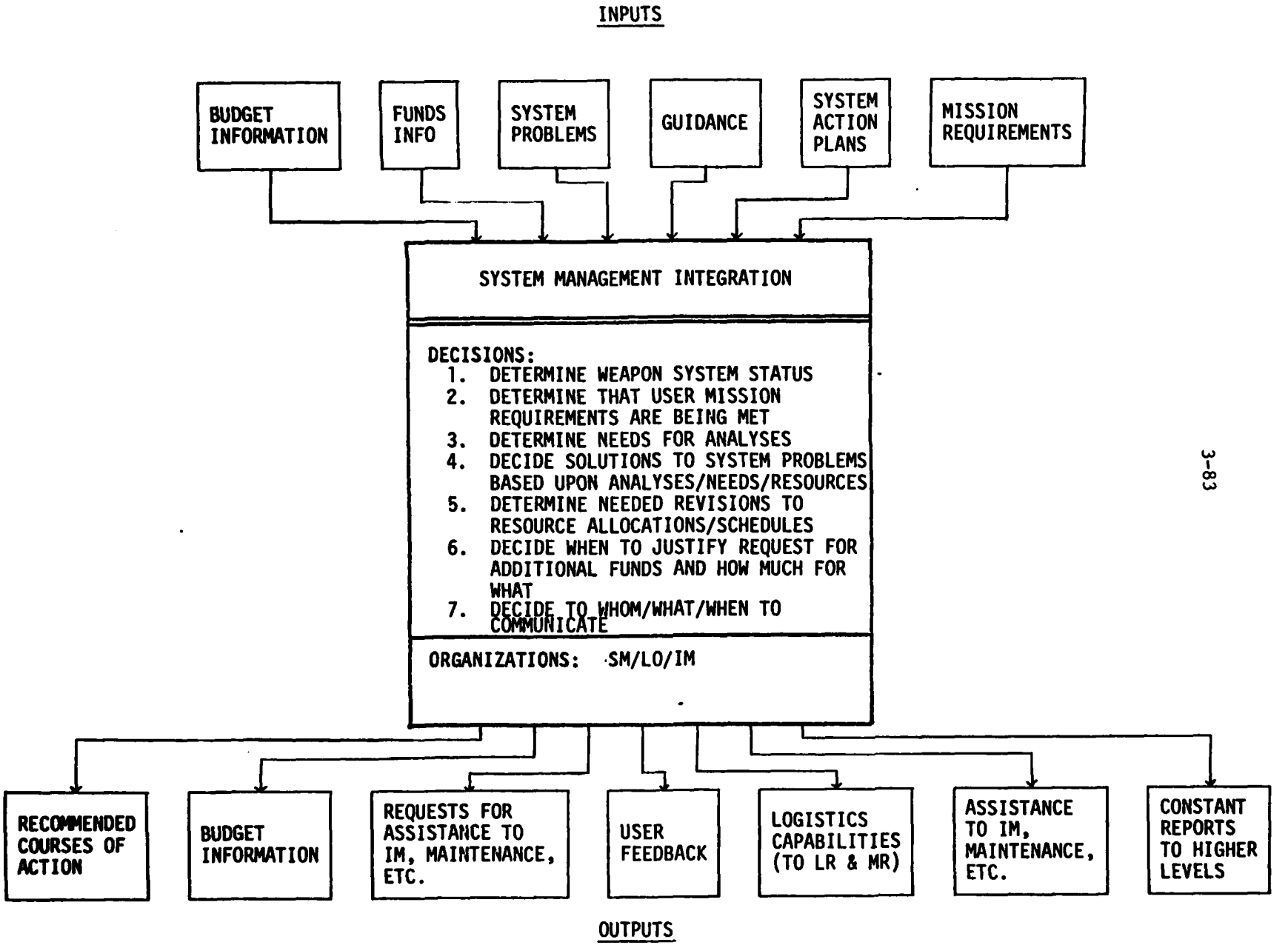
1. PROGRAMMING OF WEAPON SYSTEMS
2. SCHEDULE REQUIREMENTS
3. DELIVERY METHOD


INPUTS
OTHER SERVICES/ FMS/AGENCIES PROBLEMS
MIP STATUS/ PROBLEMS
FIELD REPORTS
LOGISTICS DATA
RESOURCES
PLANS/ UTILIZATION DATA
MAINTENANCE DATA COLLECTION/ MATERIEL DEFICIENCY REPORTING
DECISIONS:
1. DETERMINE STATUS OF DATA COLLECTION
2. DETERMINE COLLECTION PROBLEMS
3. DEVELOP REVISIONS TO COLLECTION METHODS/REQUIREMENTS
4. DECIDE ADEQUACY OF DATA COLLECTION TO IDENTIFY MAINTENANCE/RELIABILITY PROBLEMS
5. DECIDE ADEQUACY OF DATA ANALYSIS
6. DETERMINE ACTIONS TO RESOLVE PROBLEMS
7. DETERMINE RESOURCES REQUIREMENTS
ORGANIZATIONS: IM/SM/ALC
MIPs
RESOURCES REQUIREMENTS
MAINTENANCE/LOGISTICS MANAGEMENT INFORMATION
MAINTENANCE DATA COLLECTION METHODS
DATA ANALYSIS METHODS
OUTPUTS

MAINTENANCE DATA COLLECTION/MATERIEL DEFICIENCY REPORTING

DECISION FACTORS:

1. COLLECTION METHODS
2. DATA REQUIREMENTS
3. ANALYSIS PROGRAMS (OUTPUT FORMAT)
4. AVAILABILITY/ACCESSIBILITY OF THE DATA

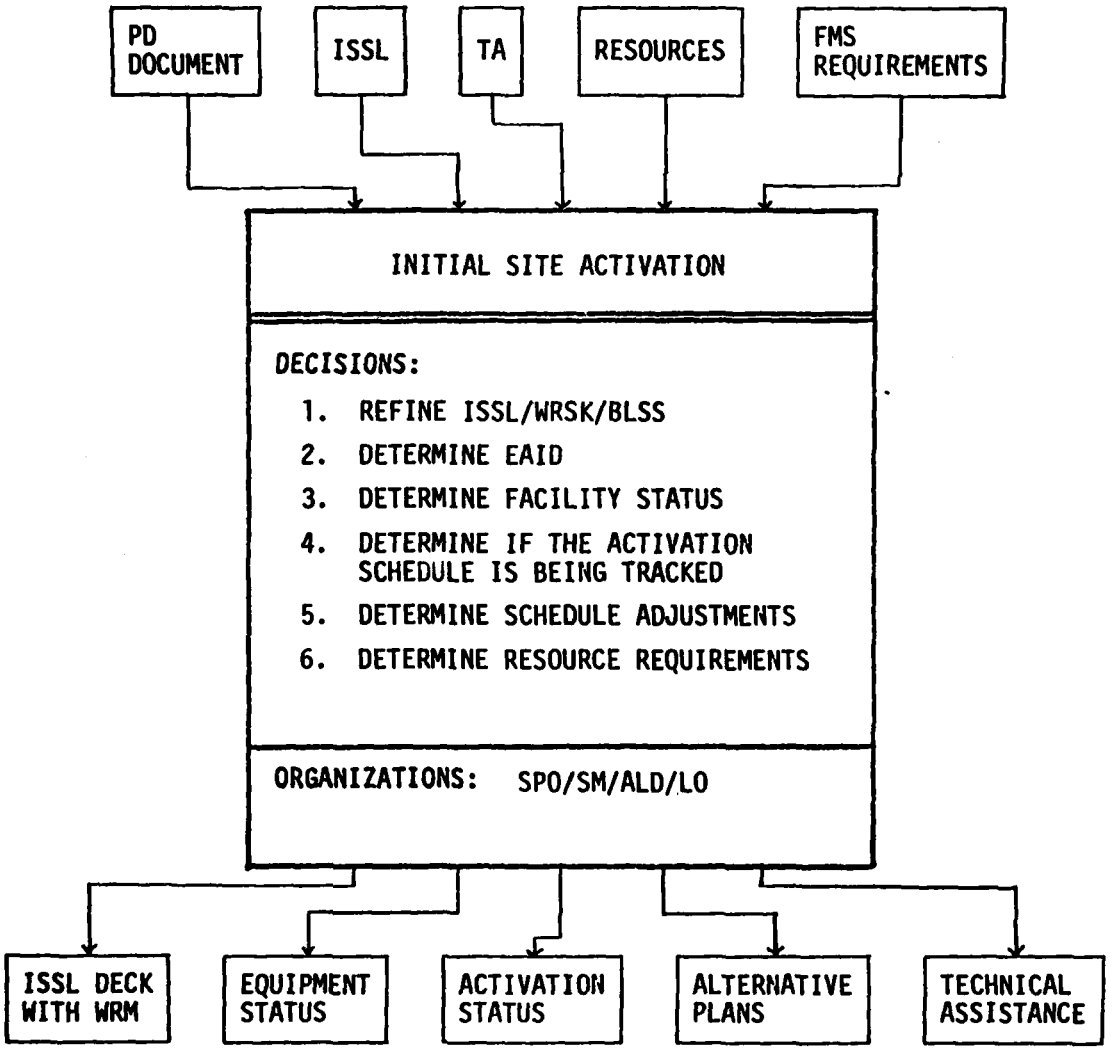

INPUTS
BUDGET INFORMATION
FUNDS INFO
SYSTEM PROBLEMS
GUIDANCE
SYSTEM ACTION PLANS
MISSION REQUIREMENTS
SYSTEM MANAGEMENT INTEGRATION
DECISIONS:
1. DETERMINE WEAPON SYSTEM STATUS
2. DETERMINE THAT USER MISSION REQUIREMENTS ARE BEING MET
3. DETERMINE NEEDS FOR ANALYSES
4. DECIDE SOLUTIONS TO SYSTEM PROBLEMS BASED UPON ANALYSES/NEEDS/RESOURCES
5. DETERMINE NEEDED REVISIONS TO RESOURCE ALLOCATIONS/SCHEDULES
6. DECIDE WHEN TO JUSTIFY REQUEST FOR ADDITIONAL FUNDS AND HOW MUCH FOR WHAT
7. DECIDE TO WHOM/WHAT/WHEN TO COMMUNICATE
ORGANIZATIONS: SM/LO/IM
RECOMMENDED COURSES OF ACTION
BUDGET INFORMATION
REQUESTS FOR ASSISTANCE TO IM, MAINTENANCE, ETC.
USER FEEDBACK
LOGISTICS CAPABILITIES (TO LR & MR)
ASSISTANCE TO IM, MAINTENANCE, ETC.
CONSTANT REPORTS TO HIGHER LEVELS
OUTPUTS

SYSTEM MANAGEMENT INTEGRATION

DECISION FACTORS:

1. ANALYSIS TECHNIQUES
2. AVAILABILITY OF INFORMATION
3. STATUS TRACKING TECHNIQUES
4. RESOURCE LEVELS/IMPROVEMENTS/ALLOCATIONS
5. SCHEDULE REVISIONS
6. AMOUNT OF AUTHORITY

INPUTS

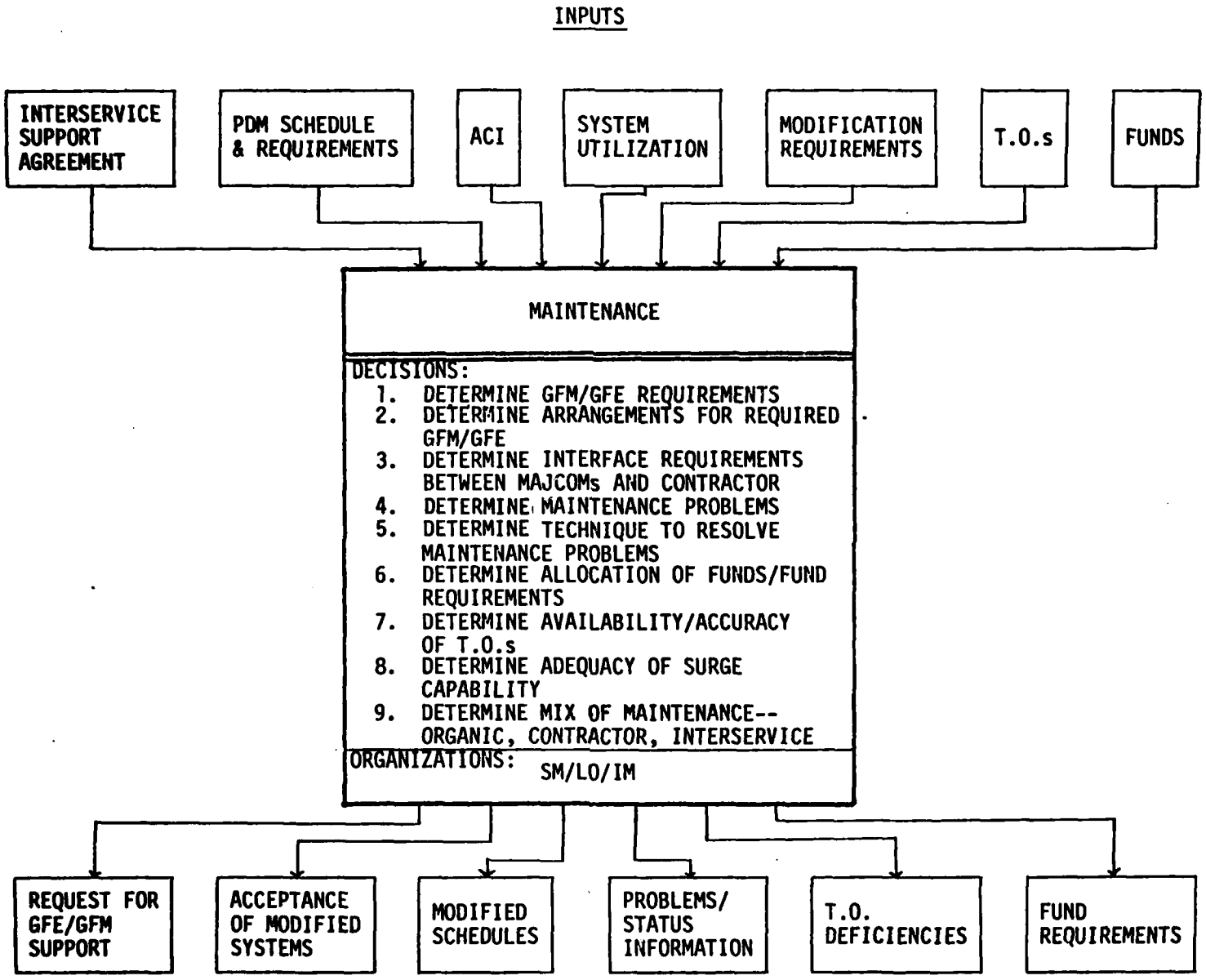


OUTPUTS

INITIAL SITE ACTIVATION

DECISION FACTORS:

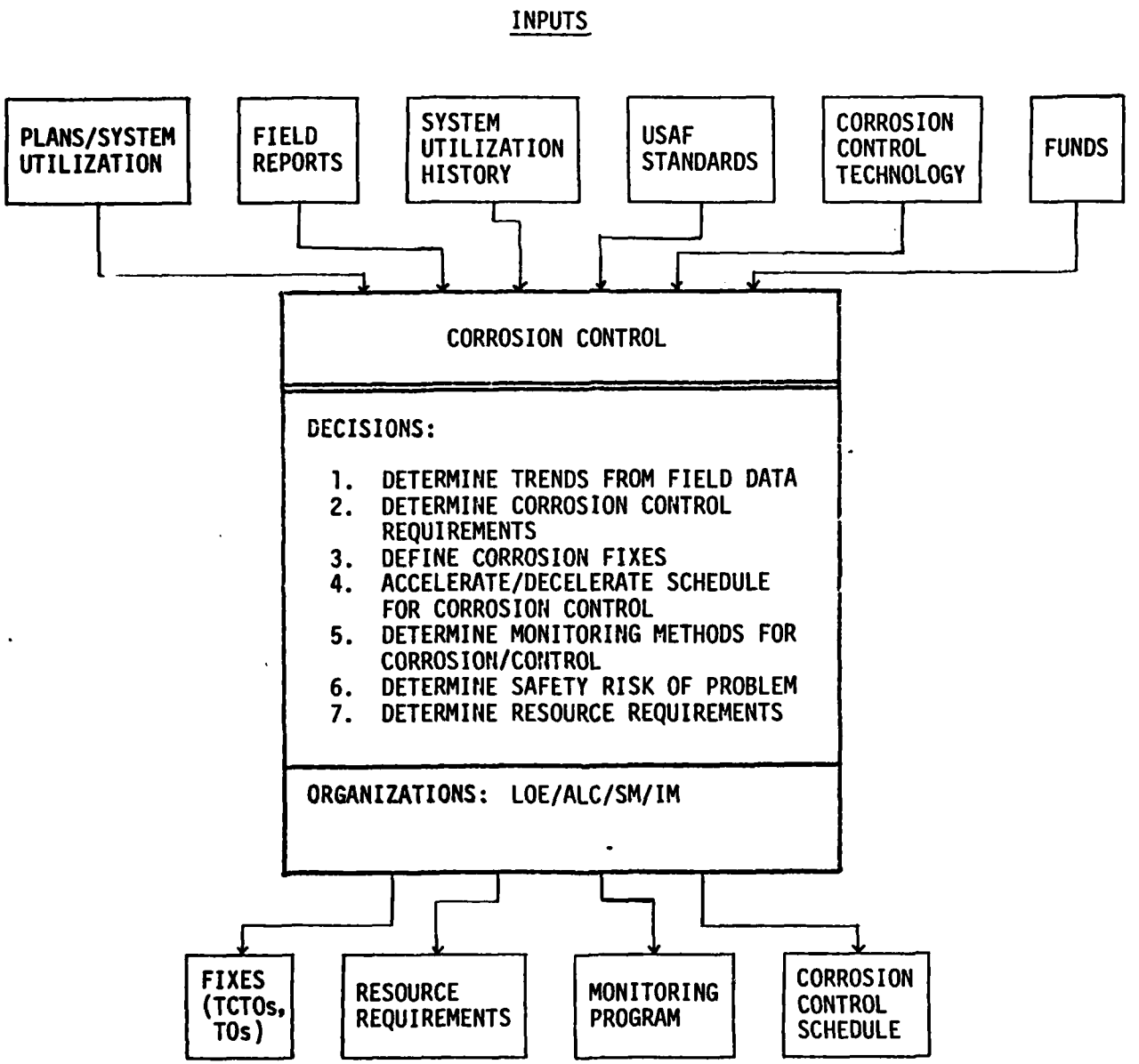
1. EXISTING STOCK/EQUIPMENT


INPUTS
INTERSERVICE SUPPORT AGREEMENT
PDM SCHEDULE & REQUIREMENTS
ACI
SYSTEM UTILIZATION
MODIFICATION REQUIREMENTS
T.O.s
FUNDS
MAINTENANCE
DECISIONS:
1. DETERMINE GFM/GFE REQUIREMENTS
2. DETERMINE ARRANGEMENTS FOR REQUIRED GFM/GFE
3. DETERMINE INTERFACE REQUIREMENTS BETWEEN MAJCOMs AND CONTRACTOR
4. DETERMINE MAINTENANCE PROBLEMS
5. DETERMINE TECHNIQUE TO RESOLVE MAINTENANCE PROBLEMS
6. DETERMINE ALLOCATION OF FUNDS/FUND REQUIREMENTS
7. DETERMINE AVAILABILITY/ACCURACY OF T.O.s
8. DETERMINE ADEQUACY OF SURGE CAPABILITY
9. DETERMINE MIX OF MAINTENANCE-- ORGANIC, CONTRACTOR, INTERSERVICE
ORGANIZATIONS: SM/LO/IM
REQUEST FOR GFE/GFM SUPPORT
ACCEPTANCE OF MODIFIED SYSTEMS
MODIFIED SCHEDULES
PROBLEMS/ STATUS INFORMATION
T.O. DEFICIENCIES
FUND REQUIREMENTS

MAINTENANCE

DECISION FACTORS:

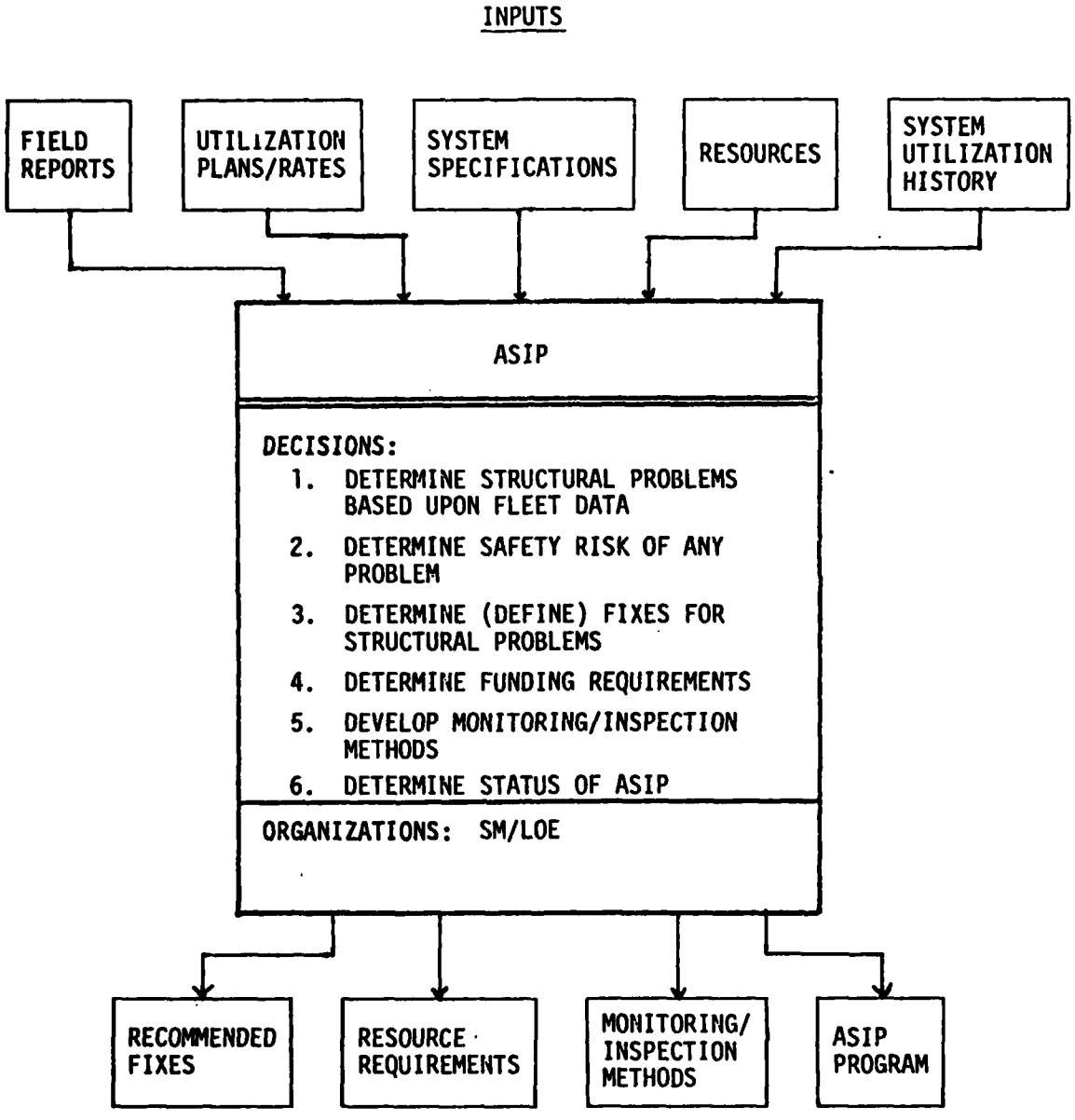
1. MAINTENANCE WORKLOAD LEVELS
2. SYSTEM DESIGN
3. TECHNOLOGICAL ADVANCEMENTS/OBSOLESCENCE
4. AUTHORITY OVER MAINTENANCE
5. ACI
6. INTERSERVICE SUPPORT AGREEMENTS
7. MAINTENANCE CAPABILITIES/TECHNIQUES/RESOURCES


INPUTS
PLANS/SYSTEM UTILIZATION
FIELD REPORTS
SYSTEM UTILIZATION HISTORY
USAF STANDARDS
CORROSION CONTROL TECHNOLOGY
FUNDS
CORROSION CONTROL
DECISIONS:
1. DETERMINE TRENDS FROM FIELD DATA
2. DETERMINE CORROSION CONTROL REQUIREMENTS
3. DEFINE CORROSION FIXES
4. ACCELERATE/DECELERATE SCHEDULE FOR CORROSION CONTROL
5. DETERMINE MONITORING METHODS FOR CORROSION/CONTROL
6. DETERMINE SAFETY RISK OF PROBLEM
7. DETERMINE RESOURCE REQUIREMENTS
ORGANIZATIONS: LOE/ALC/SM/IM
FIXES (TCTOs, TOs)
RESOURCE REQUIREMENTS
MONITORING PROGRAM
CORROSION CONTROL SCHEDULE
OUTPUTS

CORROSION CONTROL

DECISION FACTORS:

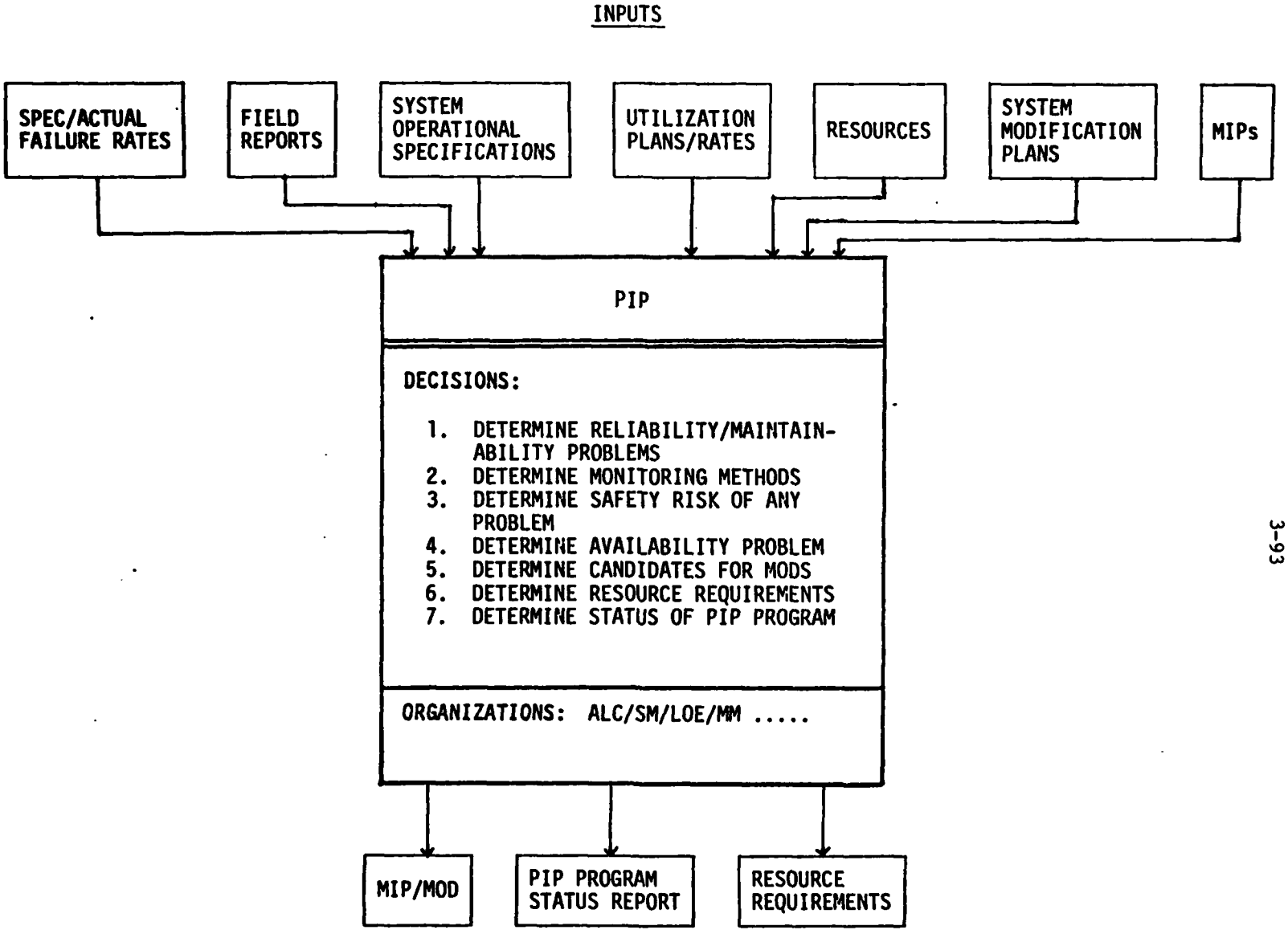
1. NEW MATERIALS/REQUIREMENTS
2. INSPECTION/MONITORING METHODS
3. REPORTING SYSTEM
4. CORROSION CONTROL TECHNOLOGY/METHODS
5. RESOURCE LEVELS


INPUTS
FIELD REPORTS
UTILIZATION PLANS/RATES
SYSTEM SPECIFICATIONS
RESOURCES
SYSTEM UTILIZATION HISTORY
ASIP
DECISIONS:
1. DETERMINE STRUCTURAL PROBLEMS BASED UPON FLEET DATA
2. DETERMINE SAFETY RISK OF ANY PROBLEM
3. DETERMINE (DEFINE) FIXES FOR STRUCTURAL PROBLEMS
4. DETERMINE FUNDING REQUIREMENTS
5. DEVELOP MONITORING/INSPECTION METHODS
6. DETERMINE STATUS OF ASIP
ORGANIZATIONS: SM/LOE
RECOMMENDED FIXES
RESOURCE REQUIREMENTS
MONITORING/ INSPECTION METHODS
ASIP PROGRAM
OUTPUTS

ASIP

DECISION FACTORS:

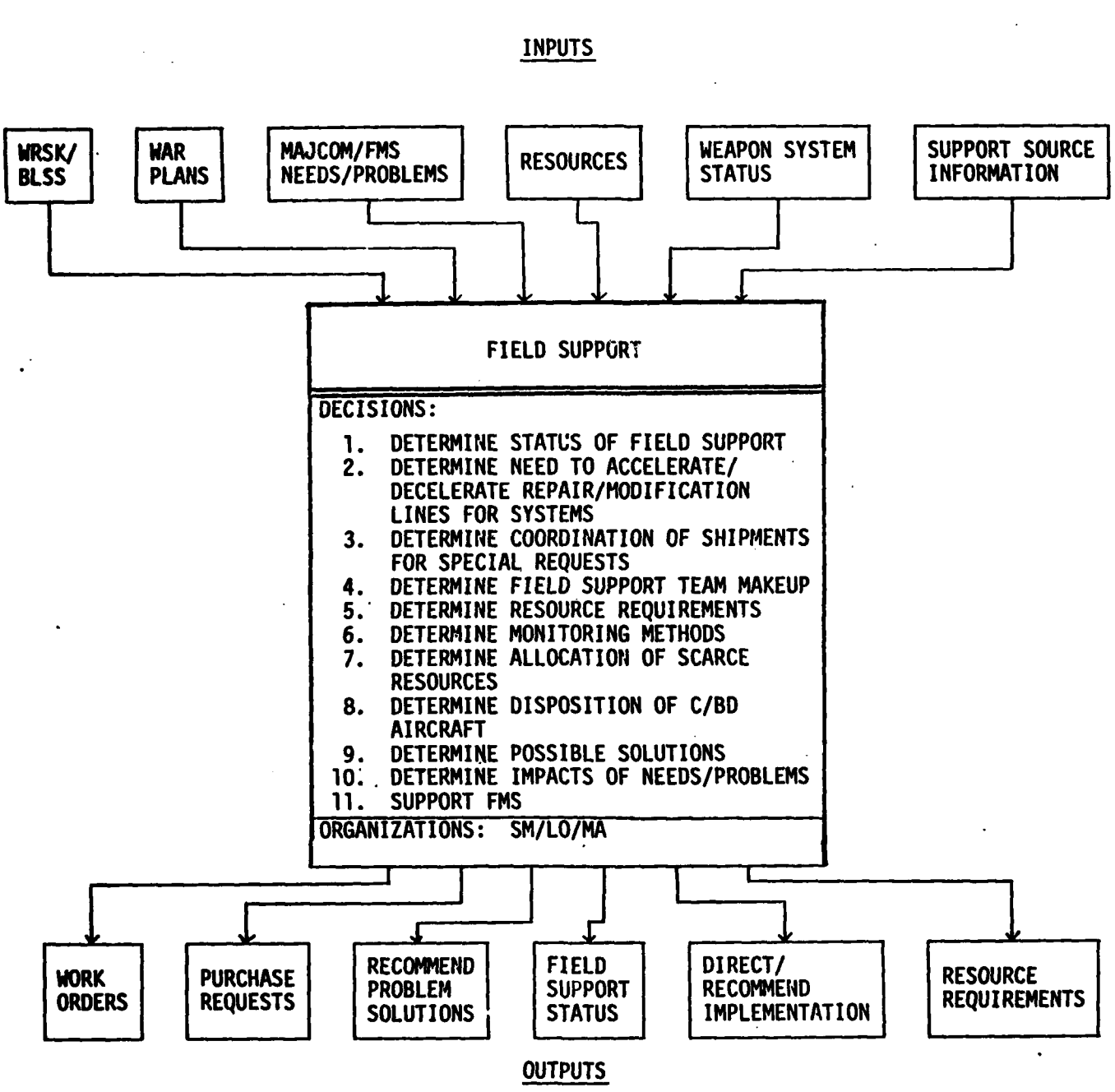
1. NEW DESIGNS/MATERIALS
2. MONITORING/INSPECTION METHODS
3. TECHNIQUES FOR IMPROVING STRUCTURAL INTEGRITY


INPUTS
SPEC/ACTUAL FAILURE RATES
FIELD REPORTS
SYSTEM OPERATIONAL SPECIFICATIONS
UTILIZATION PLANS/RATES
RESOURCES
SYSTEM MODIFICATION PLANS
MIPs
PIP
DECISIONS:
1. DETERMINE RELIABILITY/MAINTAINABILITY PROBLEMS
2. DETERMINE MONITORING METHODS
3. DETERMINE SAFETY RISK OF ANY PROBLEM
4. DETERMINE AVAILABILITY PROBLEM
5. DETERMINE CANDIDATES FOR MODS
6. DETERMINE RESOURCE REQUIREMENTS
7. DETERMINE STATUS OF PIP PROGRAM
ORGANIZATIONS: ALC/SM/LOE/MM .....
MIP/MOD
PIP PROGRAM STATUS REPORT
RESOURCE REQUIREMENTS
OUTPUTS

PIP

DECISION FACTORS:

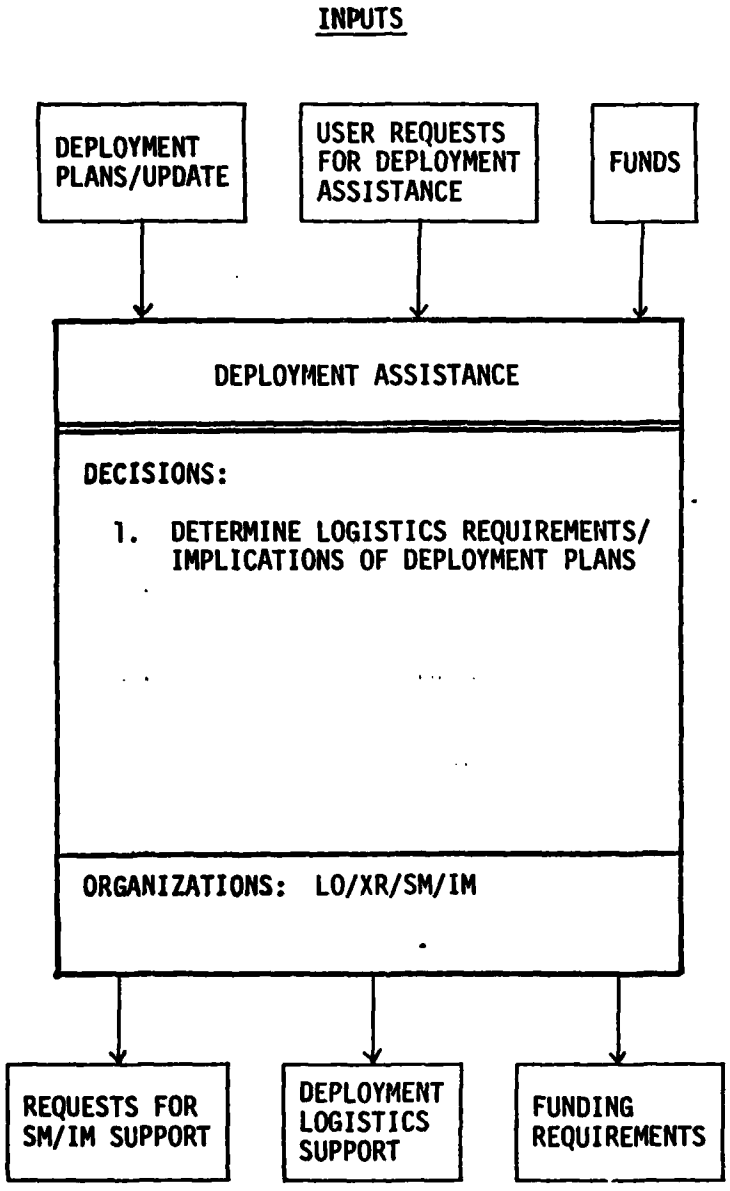
1. STATE-OF-THE-ART OF COMPONENTS/MATERIALS
2. SYSTEM TO BE MODIFIED
3. REPORTING SYSTEM USED TO IDENTIFY PROBLEMS
4. PROJECTED LIFE OF SYSTEM


INPUTS
WRSK/ BLSS
WAR PLANS
MAJCOM/FMS NEEDS/PROBLEMS
RESOURCES
WEAPON SYSTEM STATUS
SUPPORT SOURCE INFORMATION
FIELD SUPPORT
DECISIONS:
1. DETERMINE STATUS OF FIELD SUPPORT
2. DETERMINE NEED TO ACCELERATE/ DECELERATE REPAIR/MODIFICATION LINES FOR SYSTEMS
3. DETERMINE COORDINATION OF SHIPMENTS FOR SPECIAL REQUESTS
4. DETERMINE FIELD SUPPORT TEAM MAKEUP
5. DETERMINE RESOURCE REQUIREMENTS
6. DETERMINE MONITORING METHODS
7. DETERMINE ALLOCATION OF SCARCE RESOURCES
8. DETERMINE DISPOSITION OF C/BD AIRCRAFT
9. DETERMINE POSSIBLE SOLUTIONS
10. DETERMINE IMPACTS OF NEEDS/PROBLEMS
11. SUPPORT FMS
ORGANIZATIONS: SM/LO/MA
WORK ORDERS
PURCHASE REQUESTS
RECOMMEND PROBLEM SOLUTIONS
FIELD SUPPORT STATUS
DIRECT/ RECOMMEND IMPLEMENTATION
RESOURCE REQUIREMENTS
OUTPUTS

FIELD SUPPORT

DECISION FACTORS:

1. WEAPON SYSTEM STATUS
2. FIELD TEAM NUMBERS/TRAINING
3. MODIFICATION SCHEDULES
4. RESOURCE LEVELS

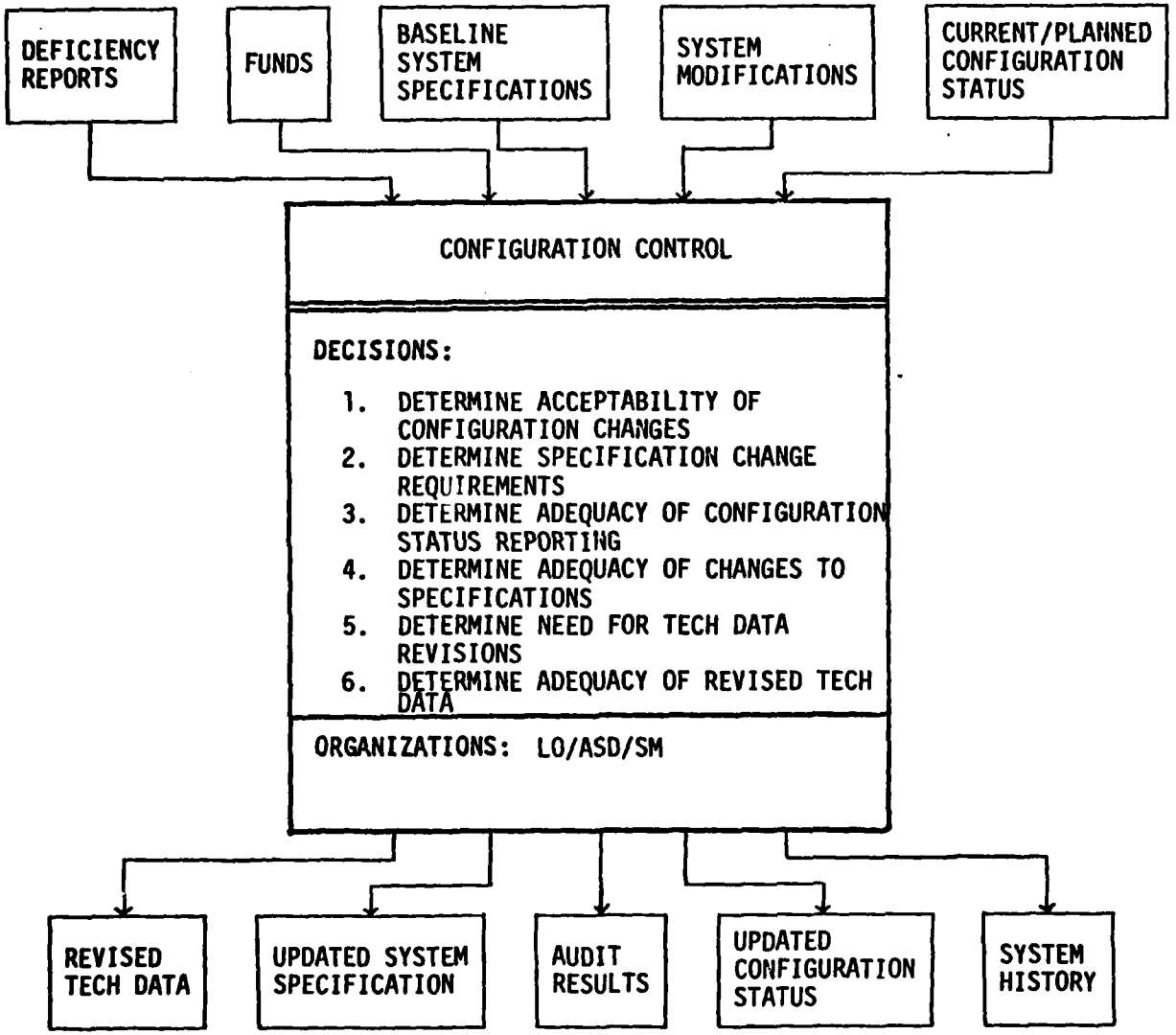

INPUTS
DEPLOYMENT PLANS/UPDATE
USER REQUESTS FOR DEPLOYMENT ASSISTANCE
FUNDS
DEPLOYMENT ASSISTANCE
DECISIONS:
1. DETERMINE LOGISTICS REQUIREMENTS/ IMPLICATIONS OF DEPLOYMENT PLANS
ORGANIZATIONS: LO/XR/SM/IM
REQUESTS FOR SM/IM SUPPORT
DEPLOYMENT LOGISTICS SUPPORT
FUNDING REQUIREMENTS
OUTPUTS

DEPLOYMENT ASSISTANCE

DECISION FACTORS:

1. DEPLOYMENT LOGISTICS PLANS
2. MOVEMENT METHODS/TIMING
3. DEPLOYMENT PLANS/SCHEDULES
4. SYSTEM/DESIGN (COMMONALITY)
5. NUMBER OF DEPLOYMENTS

INPUTS



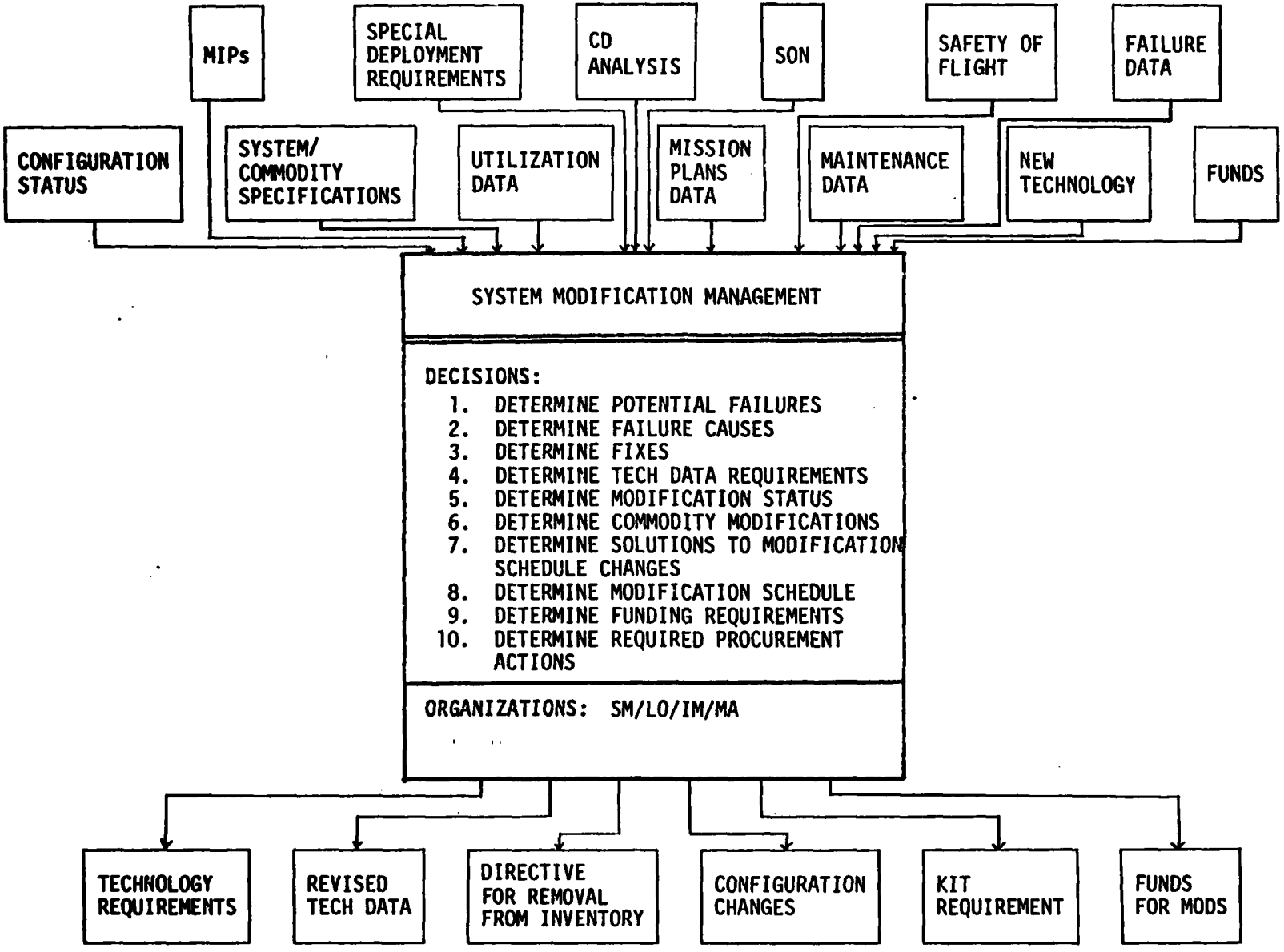
OUTPUTS

CONFIGURATION CONTROL

DECISION FACTORS:

1. SPECIFICATION CHANGES
2. AUTOMATIC DATA PROCESSING SUPPORT
3. CONFIGURATION STATUS TRACKING METHODS
4. POLICIES FOR CONFIGURATION CONTROL
5. TECH DATA STANDARDS
6. ARCHIVE DATA REQUIREMENTS

INPUTS



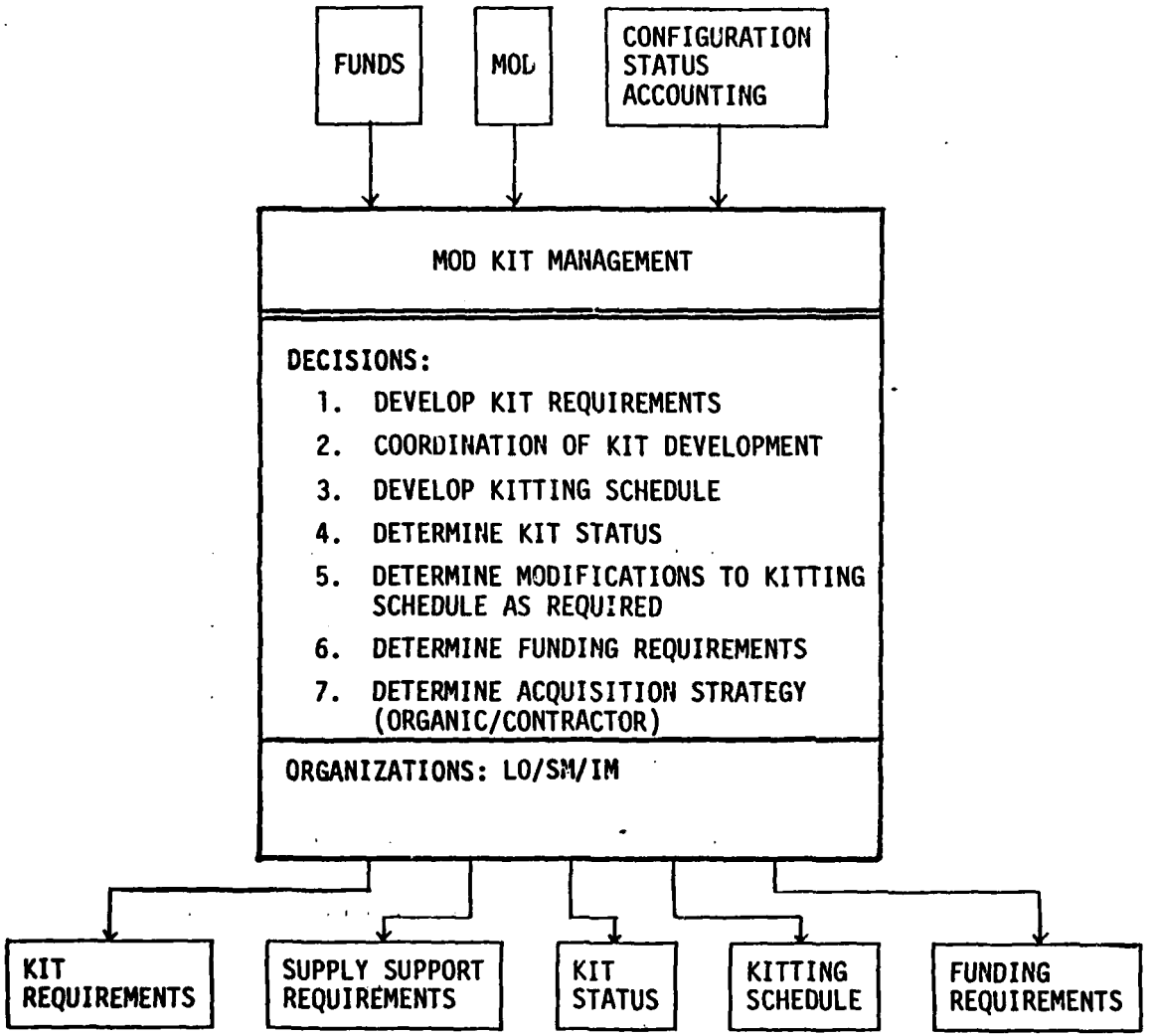
OUTPUTS

SYSTEM MODIFICATION MANAGEMENT

DECISION FACTORS:

1. NEW/IMPROVED OPERATIONAL CAPABILITY
2. WHERE MODIFICATIONS ARE PERFORMED
3. MODIFICATION SCHEDULE
4. MAINTENANCE TECHNIQUES
5. MODIFICATION TECHNIQUES
6. DEFICIENCY CORRECTIONS/SYSTEM MODERNIZATION
7. MOD PRIORITY
8. FUND AVAILABILITY
9. WHO PERFORMS MODIFICATION

INPUTS



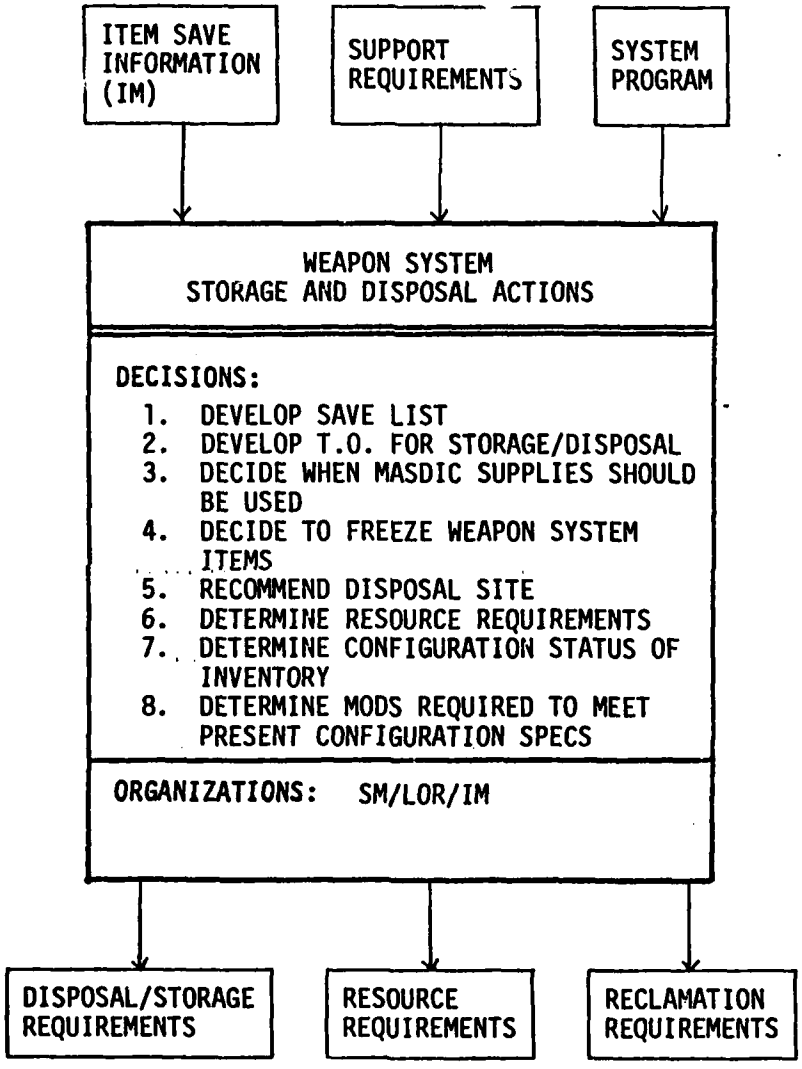
OUTPUTS

MOD KIT MANAGEMENT

DECISION FACTORS:

1. SYSTEM CONFIGURATION
2. MAINTENANCE LEVEL FOR KIT INSTALLATION
3. KITTING SCHEDULE
4. MAN-HOUR REQUIREMENTS

INPUTS



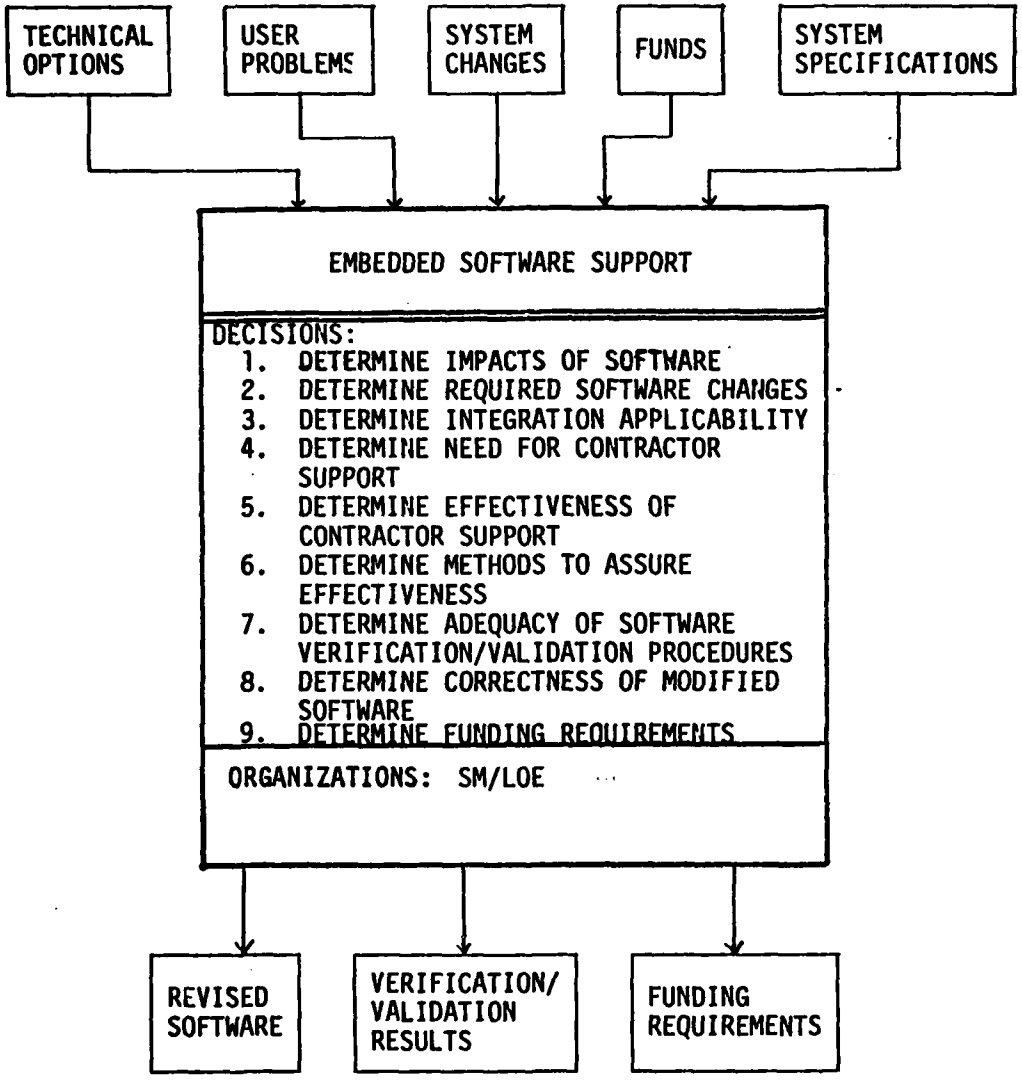
OUTPUTS

WEAPON SYSTEM STORAGE AND DISPOSAL ACTIONS

DECISION FACTORS:

1. SYSTEM PHASE-OUT SCHEDULE
2. AVAILABILITY OF LOCATIONS
3. EPA RESTRICTIONS
4. MARKETABILITY OF WEAPON SYSTEM

INPUTS

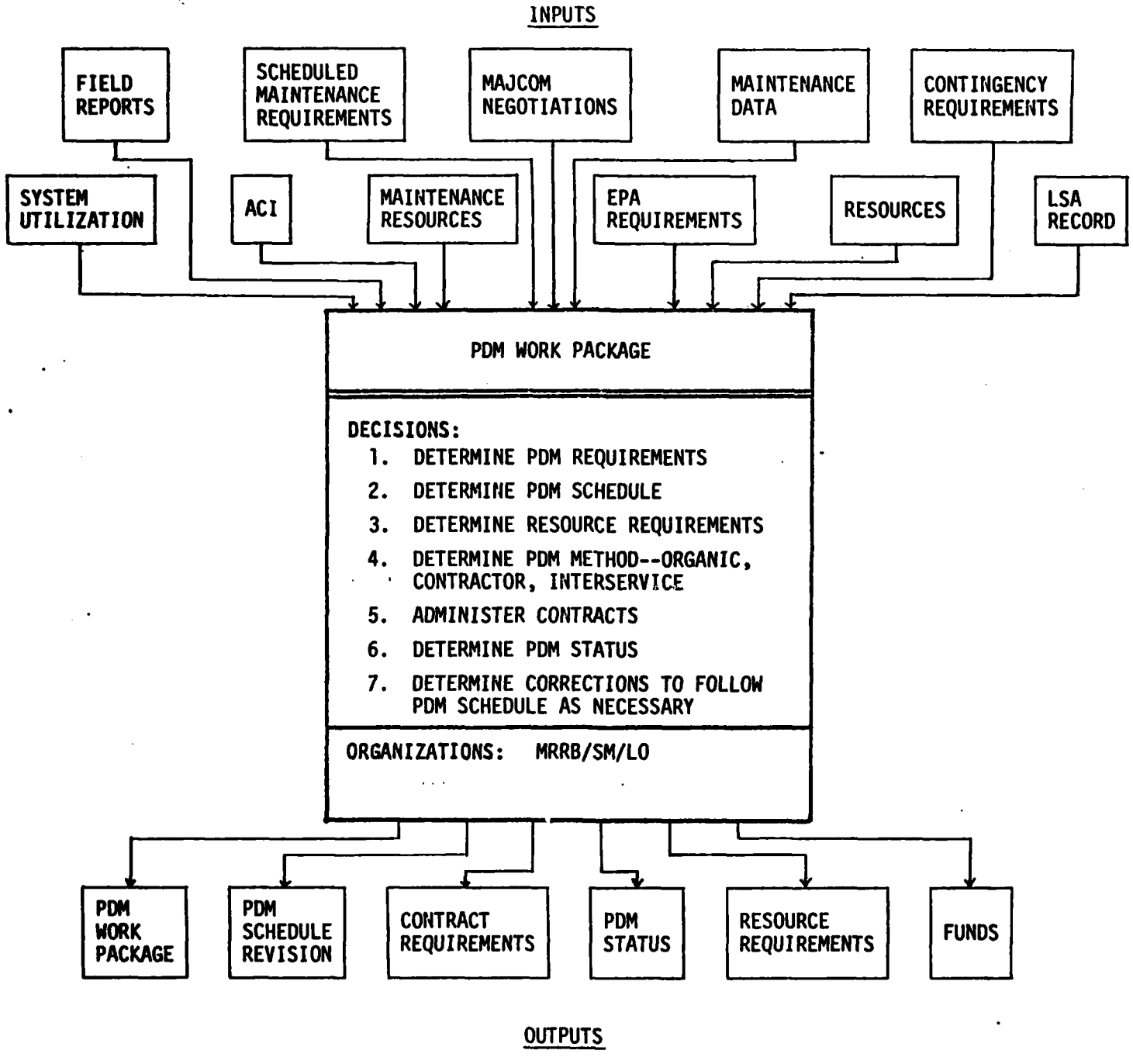


OUTPUTS

EMBEDDED SOFTWARE SUPPORT

DECISION FACTORS:

1. SOFTWARE DESIGN (E.G., MODULARITY)
2. HARDWARE SYSTEMS
3. SOFTWARE LANGUAGE
4. VERIFICATION/VALIDATION PROCEDURES
5. CONTRACTOR SUPPORT

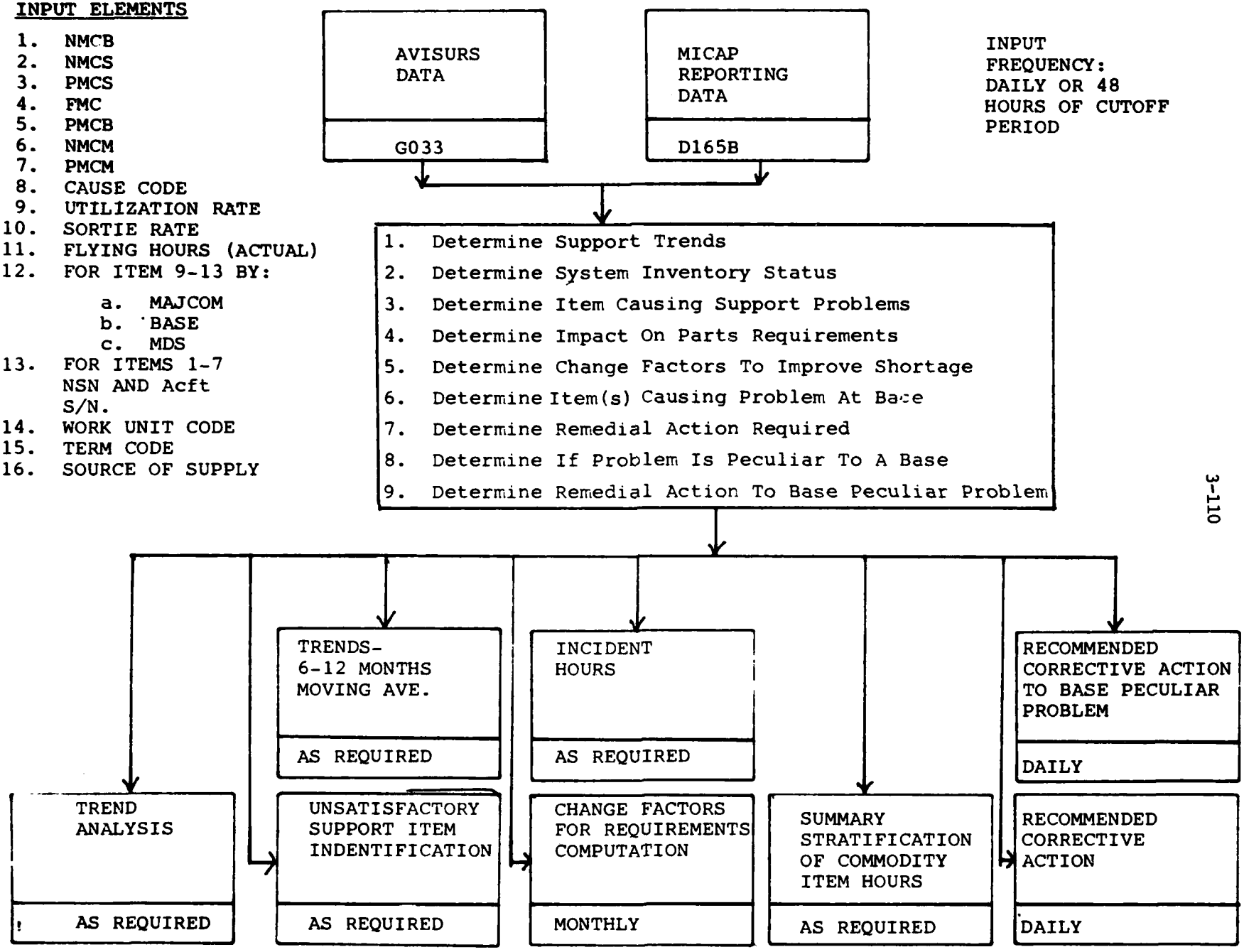

INPUTS
FIELD REPORTS
SCHEDULED MAINTENANCE REQUIREMENTS
MAJCOM NEGOTIATIONS
MAINTENANCE DATA
CONTINGENCY REQUIREMENTS
SYSTEM UTILIZATION
ACI
MAINTENANCE RESOURCES
EPA REQUIREMENTS
RESOURCES
LSA RECORD
PDM WORK PACKAGE
DECISIONS:
1. DETERMINE PDM REQUIREMENTS
2. DETERMINE PDM SCHEDULE
3. DETERMINE RESOURCE REQUIREMENTS
4. DETERMINE PDM METHOD--ORGANIC, CONTRACTOR, INTERSERVICE
5. ADMINISTER CONTRACTS
6. DETERMINE PDM STATUS
7. DETERMINE CORRECTIONS TO FOLLOW PDM SCHEDULE AS NECESSARY
ORGANIZATIONS: MRRB/SM/LO
PDM WORK PACKAGE
PDM SCHEDULE REVISION
CONTRACT REQUIREMENTS
PDM STATUS
RESOURCE REQUIREMENTS
FUNDS
OUTPUTS

ATTACHMENT 3-3

OUTPUT

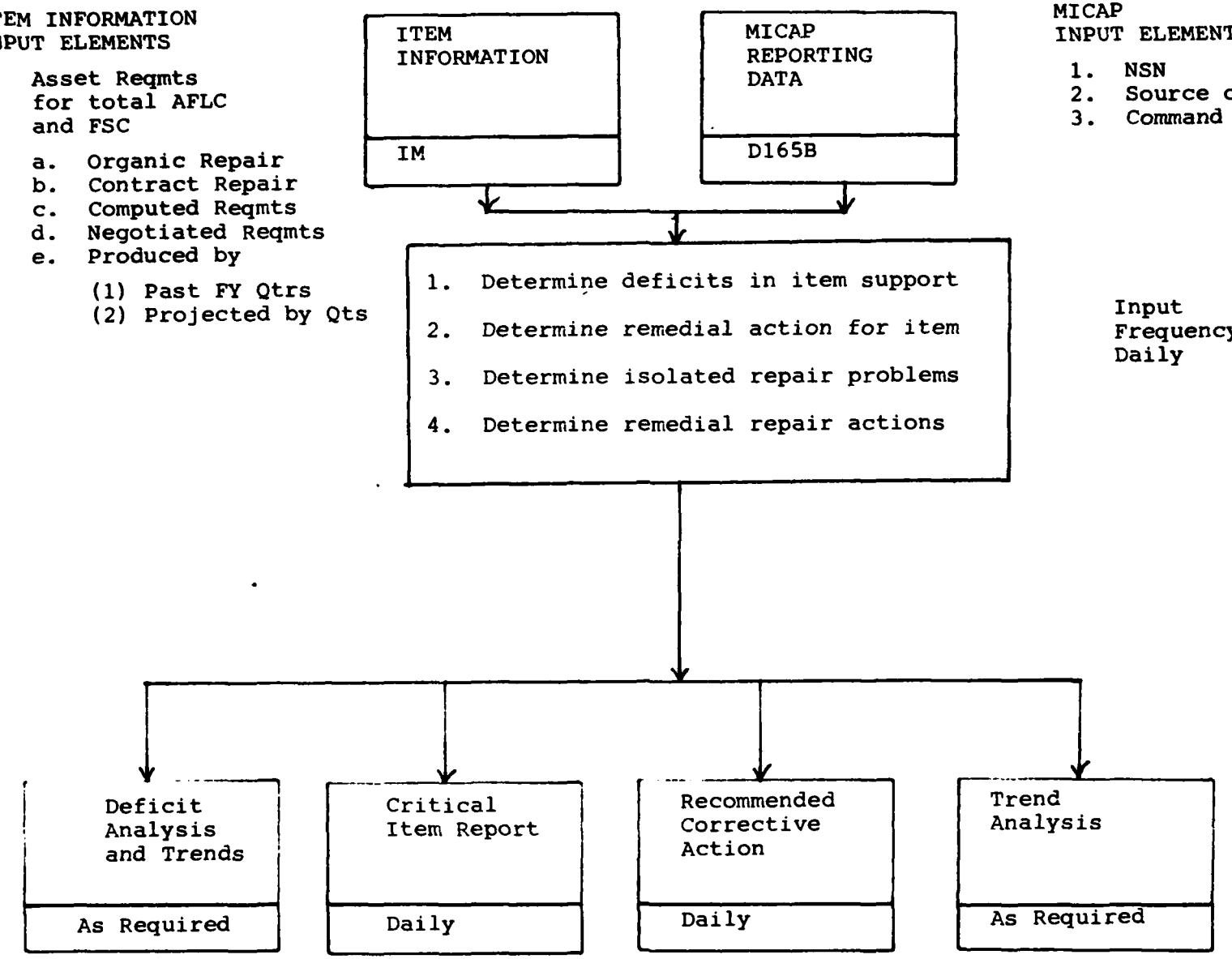
INPUT ELEMENTS

1. NMCB
2. NMCS
3. PMCS
4. FMC
5. PMCB
6. NMCM
7. PMCM
8. CAUSE CODE
9. UTILIZATION RATE
10. SORTIE RATE
11. FLYING HOURS (ACTUAL)
12. FOR ITEM 9-13 BY:
    a. MAJCOM
    b. BASE
    c. MDS
13. FOR ITEMS 1-7 NSN AND Acft S/N.
14. WORK UNIT CODE
15. TERM CODE
16. SOURCE OF SUPPLY



ITEM INFORMATION
INPUT ELEMENTS

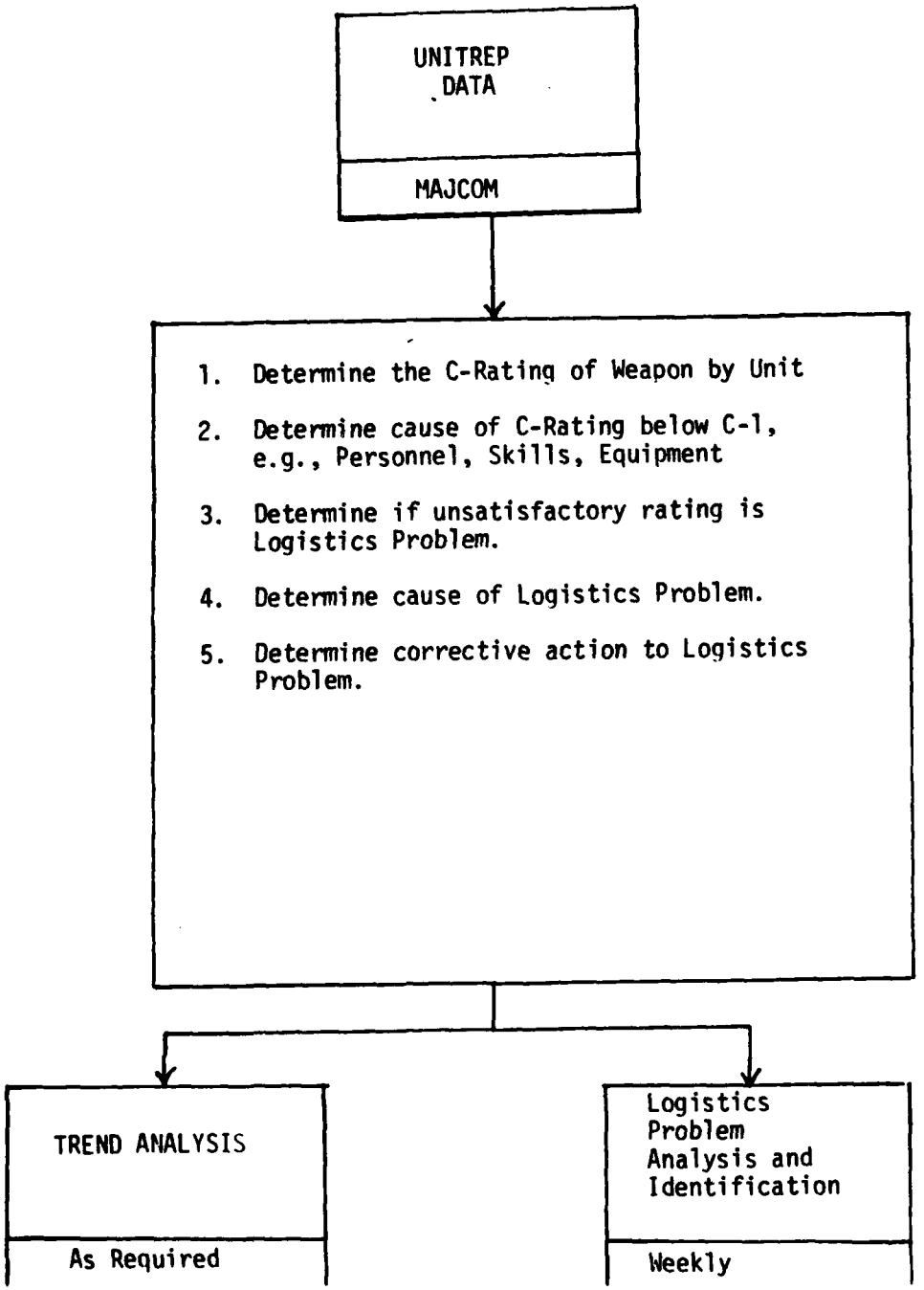
1. Asset Reqmts for total AFLC and FSC
   a. Organic Repair
   b. Contract Repair
   c. Computed Reqmts
   d. Negotiated Reqmts
   e. Produced by
      (1) Past FY Qtrs
      (2) Projected by Qts

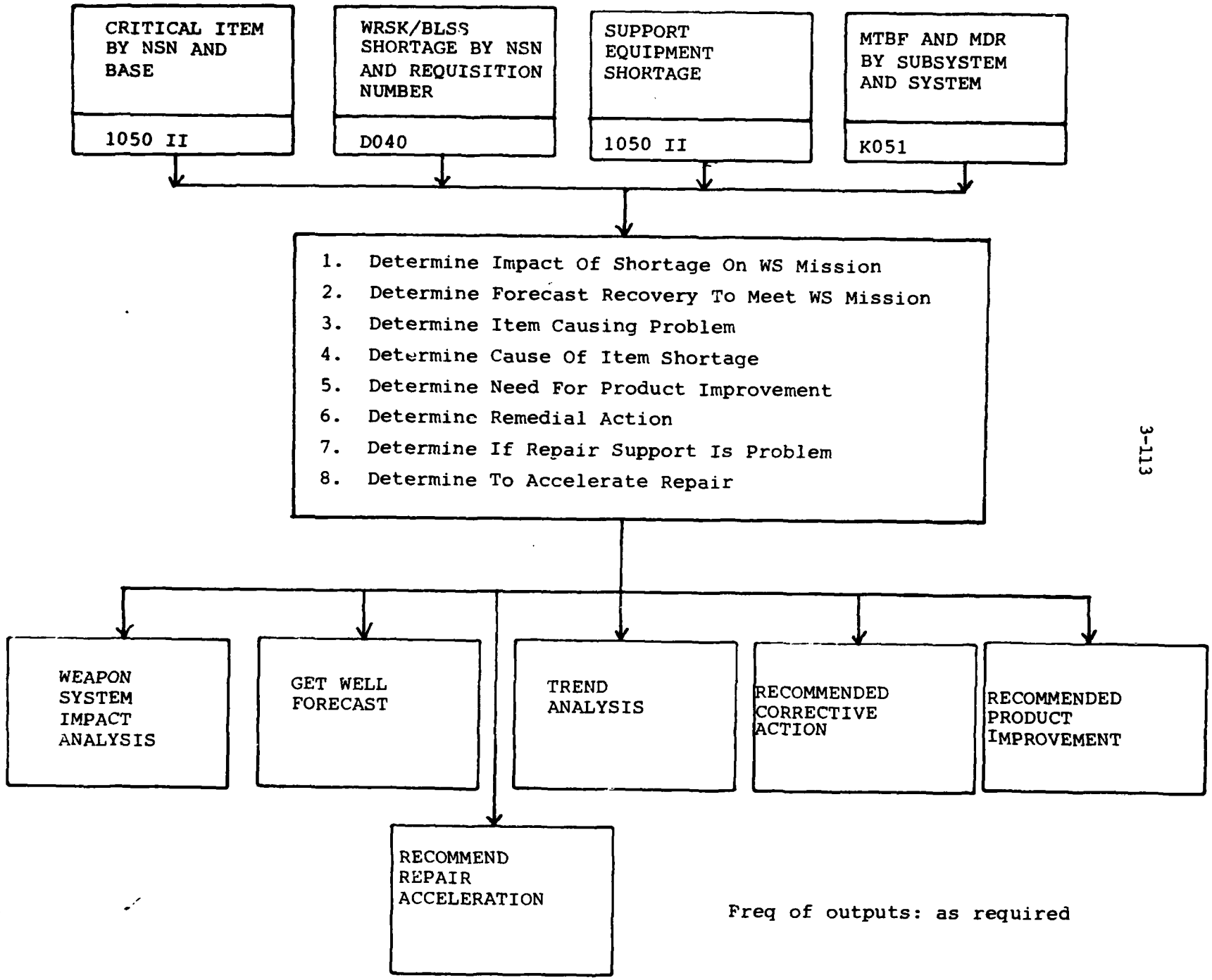


MICAP
INPUT ELEMENTS

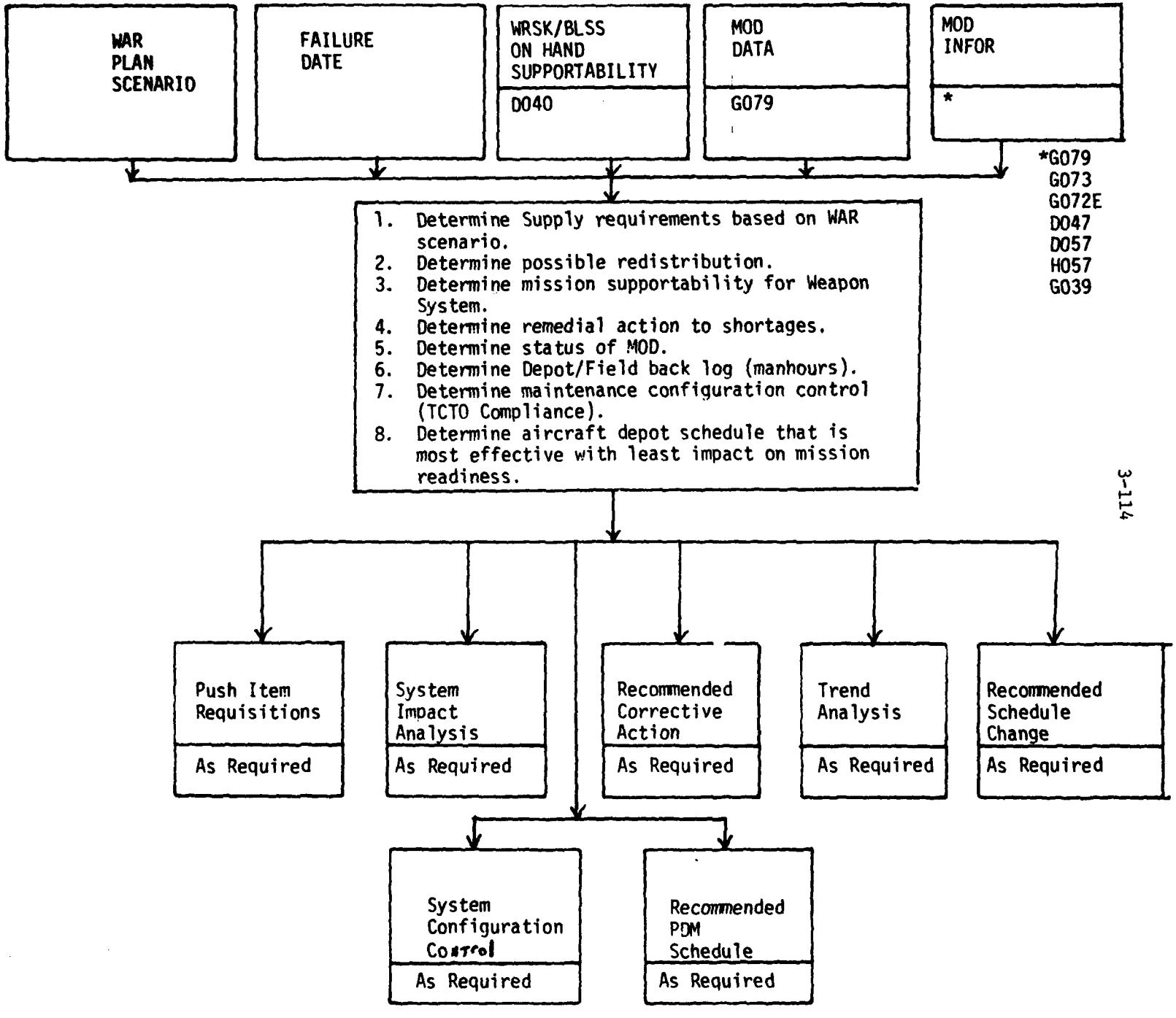
1. NSN
2. Source of Supply
3. Command

Input Frequency:
Daily

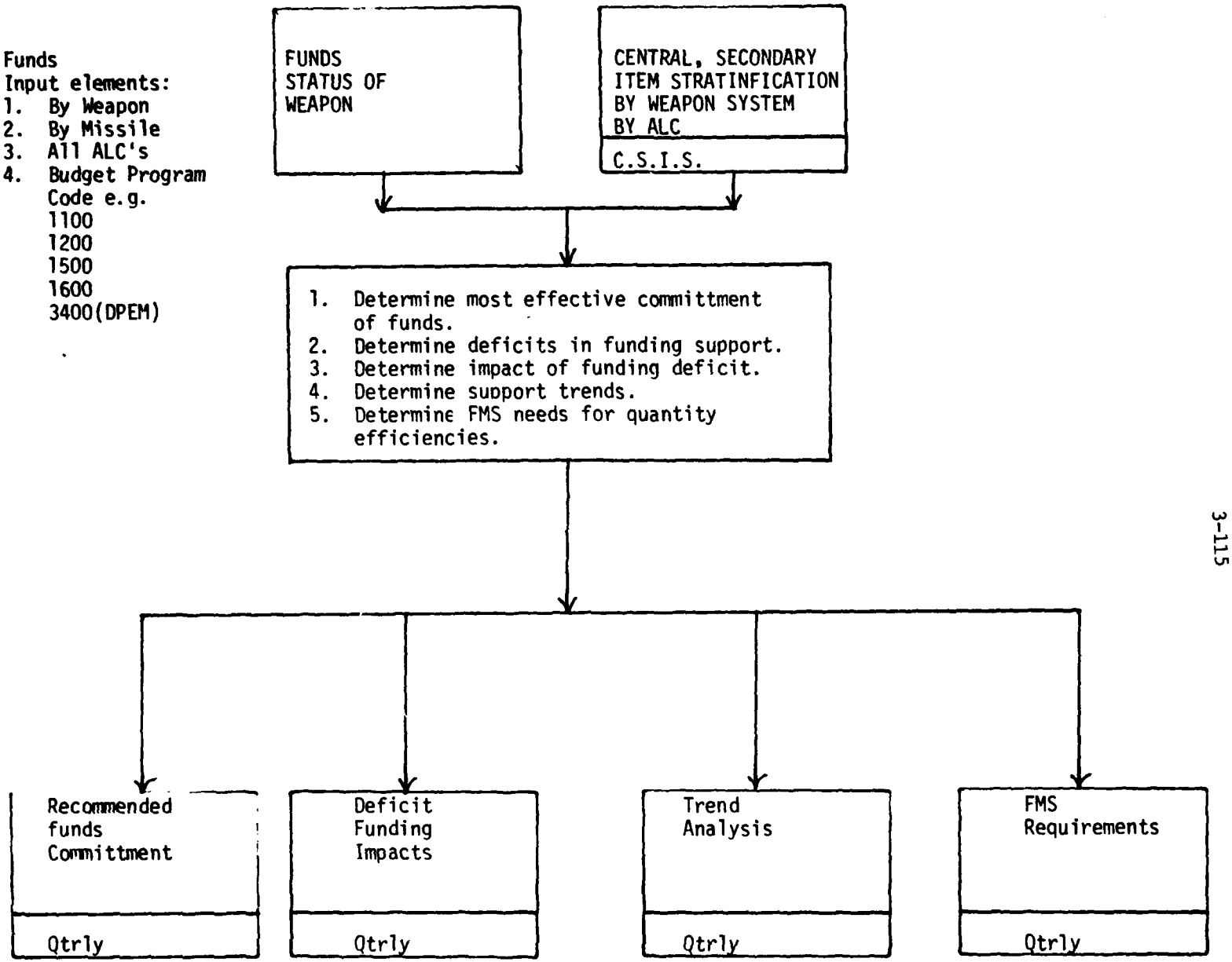

UNITREP DATA
MAJCOM
1. Determine the C-Rating of Weapon by Unit
2. Determine cause of C-Rating below C-1, e.g., Personnel, Skills, Equipment
3. Determine if unsatisfactory rating is Logistics Problem.
4. Determine cause of Logistics Problem.
5. Determine corrective action to Logistics Problem.
TREND ANALYSIS
As Required
Logistics Problem Analysis and Identification
Weekly



Freq of outputs: as required


WAR PLAN SCENARIO
FAILURE DATE
WRSK/BLSS ON HAND SUPPORTABILITY
D040
MOD DATA
G079
MOD INFOR
*
*G079
G073
G072E
D047
D057
H057
G039
1. Determine Supply requirements based on WAR scenario.
2. Determine possible redistribution.
3. Determine mission supportability for Weapon System.
4. Determine remedial action to shortages.
5. Determine status of MOD.
6. Determine Depot/Field back log (manhours).
7. Determine maintenance configuration control (TCTO Compliance).
8. Determine aircraft depot schedule that is most effective with least impact on mission readiness.
Push Item Requisitions
As Required
System Impact Analysis
As Required
Recommended Corrective Action
As Required
Trend Analysis
As Required
Recommended Schedule Change
As Required
System Configuration Control
As Required
Recommended PDM Schedule
As Required

Funds
Input elements:
1. By Weapon
2. By Missile
3. All ALC's
4. Budget Program Code e.g.
   1100
   1200
   1500
   1600
   3400(DPEM)

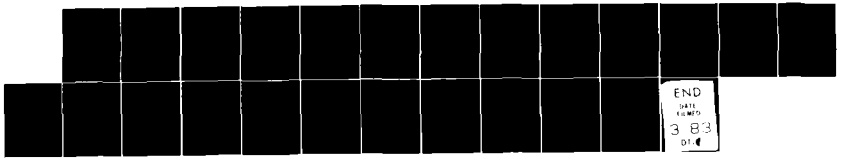


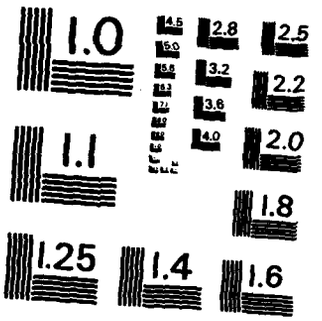
ATTACHMENT 3-4

JUSTIFICATION FOR A
WEAPON SYSTEM STATUS BY
BASE/WEAPON SYSTEM MANAGEMENT

AD A124 332 WEAPON SYSTEM MANAGEMENT TO DIRECTORATE OF LOGISTICS MANAGEMENT SYSTEMS R..(U) BATTELLE COLUMBUS LABS OH K V MILLER 14 MAY 82 F33600-80-C-0414 4/4

UNCLASSIFIED F/G 15/5 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

LOA

RSC-LOG-LOA-D81-002, Justification for a Weapon System Management System

LOMC
XRB
IN TURN

1. Attached is the Required Statement Capability (RSC) for the first start project of the Weapon System Management Perspective/ Logistics Management System. This RSC expresses the need for the system manager to have data from the operating bases to support his weapon system.

2. The project officer is Lt Col H. Williams, LOARE, 77033 or Deborah Malewich, LOARE, 77991.

Charles D. Upham

CHARLES E. UPHAM
Deputy Director, Aerospace Systems
DCS/Logistics Operations

1 Atch
RSC-LOG-LOA-D81-002

Cy to: XRB

RSC-LOG-LOA-D81-002

JUSTIFICATION FOR A

WEAPON SYSTEM STATUS BY BASE/WEAPON

SYSTEM MANAGEMENT

PROJECT OFFICER: Lt Col Harold Williams
AFLC/LOAR, 77033

1. PURPOSE: Request approval for an automated data system to support the requirements for the first segment of the AFLC Weapon System Management Perspective. This perspective is needed immediately to support and improve the logistics readiness of weapon systems.

2. OBJECTIVE: The weapon system management system must provide immediate access to logistics information by base in order that weapon systems are maintained consistent with their wartime mission.

3. REQUIREMENTS:

a. Once a weapon system is in the operational environment, the system manager must manage initial and follow-on support of the system to meet defined performances, schedules, and cost objectives. This requires system managers have daily access to mission capability information at operational bases. This information must include the C-rating, maintenance actions, planned flying hour programs, etc.

b. The system manager must have the capability to rapidly process data to assure that direct and prompt actions are taken to prevent or correct deficiencies as they are discovered. He must have the visibility of peculiar base problems as well as fleet trends in order to assist operational commanders in the resolution of specific unit problems.

4. FUNCTIONS: The system manager is the AFLC focal point for all logistics management information relative to his assigned weapon system. This requires the monitoring, preparation, and submission of all status analysis and reports concerning Not Mission Capable (NMC) and Partial Mission Capable (PMC) conditions for assigned systems. The System Manager must know the current status of all assigned weapons to assure that adequate logistics support is available for maintaining each operational weapon in the highest possible state of war readiness.

5. CURRENT METHODS: The system manager (SM) is primarily dependent on batch data systems designed primarily for commodity item management, not for weapon system management. Therefore, the SM must either manually aggregate information from these fragmented data systems or obtain the information by other means (i.e., telephone). The current method of supporting the function of knowing and improving the logistics status by base is virtually impossible using these manual techniques.

6. DEFICIENCIES: The present batch and fragmented data systems do not provide the SM with the capability to know status of systems by base or to immediately take action to

improve the logistics readiness of the weapon. The SMs are dependent upon information that is 60-90 days or more old and in many cases, no longer valid. The data needed is available to make appropriate SM decisions, but must be obtained from the source of the data instead of current batch systems or manual methods.

7. ALTERNATIVES: Four alternatives were considered in satisfying the objectives.

a. Alternative 1. Continue the current methods which are considered unsatisfactory and unacceptable since no objective or deficiencies can be satisfied.

b. Alternative 2. Develop a totally new dedicated data system to satisfy the objectives. This alternative would require a major redesign for processing source data with secure communications line and new ADP equipment. The proposed system would provide a data base management technique by weapon system with interactive terminals and graphics capabilities. This alternative will satisfy the objective and deficiencies.

c. Alternative 3. This alternative provides for enhancing segments of existing systems currently applicable to a single weapon system and expanding to all weapon systems, multiple addressing source data using existing communications lines and development of unique applications programs for weapon systems. This proposal would make available existing source data as it occurs instead of 60-90 days via current batch commodity systems. The system would provide data base management capability by weapon system with interactive terminals and graphics capability. Initial site development by selected weapon system(s) would be accomplished on dedicated hardware prior to full operational implementation to obtain early benefits for SM. This alternative will satisfy the objectives and deficiencies.

d. Alternative 4. This alternative is basically the same as alternative 3 except the prototyping would be accomplished in the Sacramento SM information laboratory. The laboratory hardware would be used in order to quantify the hardware capability required, development costs, benefits, and methodology with the least risk and cost involved. This alternative will satisfy the objectives and deficiencies.

8. ALTERNATIVE COMPARISON: Each alternative was subjected to a comparative judgment analysis ranking, for immediate or early payback, early implementation, low risk, least cost, and use of existing data. Alternative four was selected as the preferred alternative based on the analysis ranking shown in atch 1.

a. Immediate or Early Payback. This was defined as early benefits gained by the SM and MAJCOM or base by improving the operational readiness of the weapon system to a wartime status. Payback defined here has no association in dollar cost for equipment or development costs, since wartime readiness can't be quantified. Having the weapon system at wartime operational status was judged as a benefit or payback.

b. Early Implementation. This was defined as the method to begin gaining benefits as soon as possible. Factors considered were prototyping and implementing the total requirements in increments by selected weapon system (manageable numbers in inventory and locations).

c. Low Risk. This was defined as the implementing method of satisfying the requirements with the least risk to the individual bases, the SM, and the operational mission of the weapon.

d. Least Cost. This was defined as the implementing method which would require the least cost in development resources, hardware/software, and communication.

e. Use of Existing Data. This factor was defined as using existing data where possible instead of defining new data to be created or collected to satisfy the requirements.

FACTORS	ALT	ALT 2	ALT 3	ALT 4
Immediate or Early Payback	0	-	+	++
Early Implementation	0	-	+	++
Low Risk	0	-	++	++
Least Cost	0	-	+	++
Use of Existing Data	+	-	++	++

0 = No value

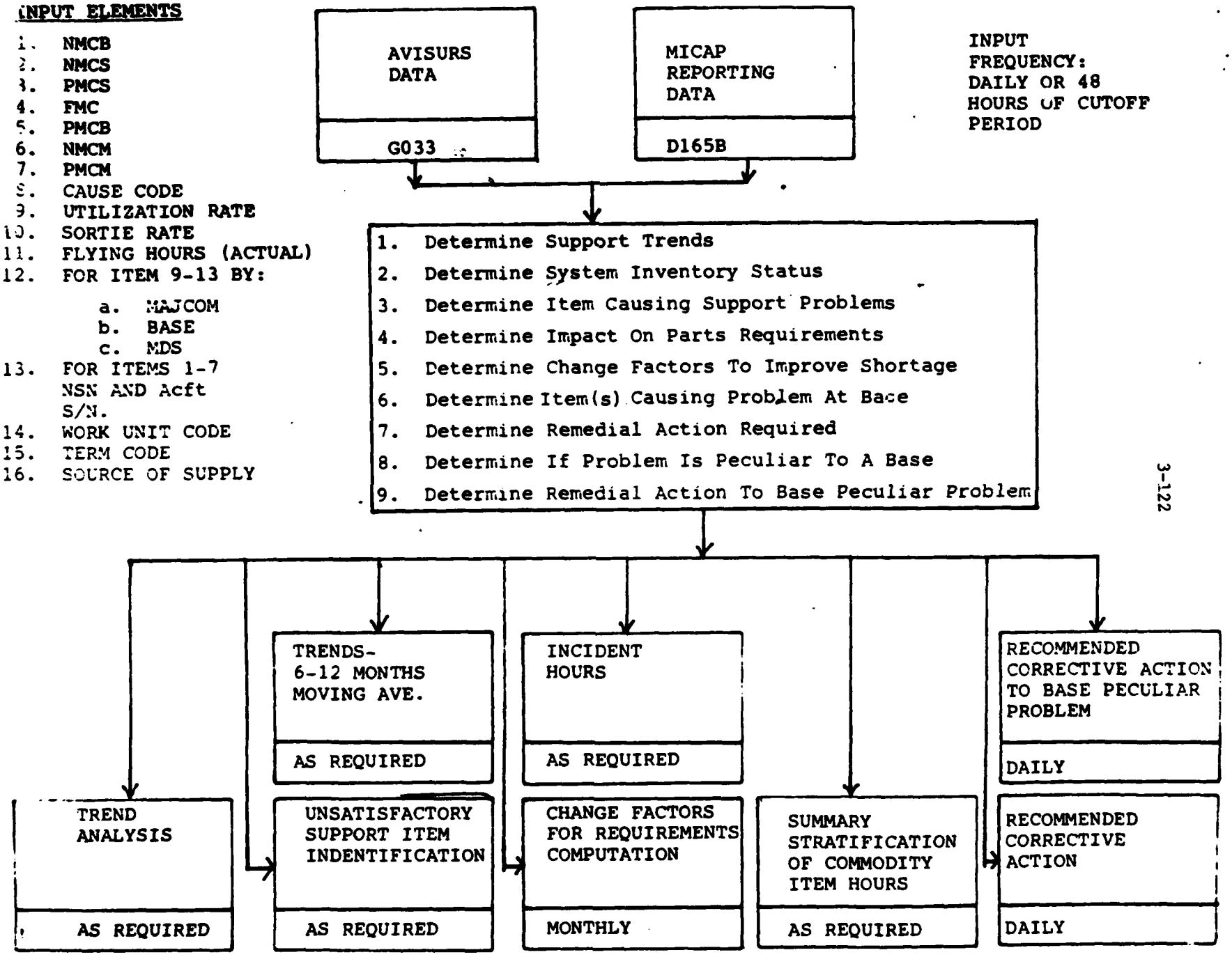
\+ = Positive value

\- = Negative value

++ = Significant positive value

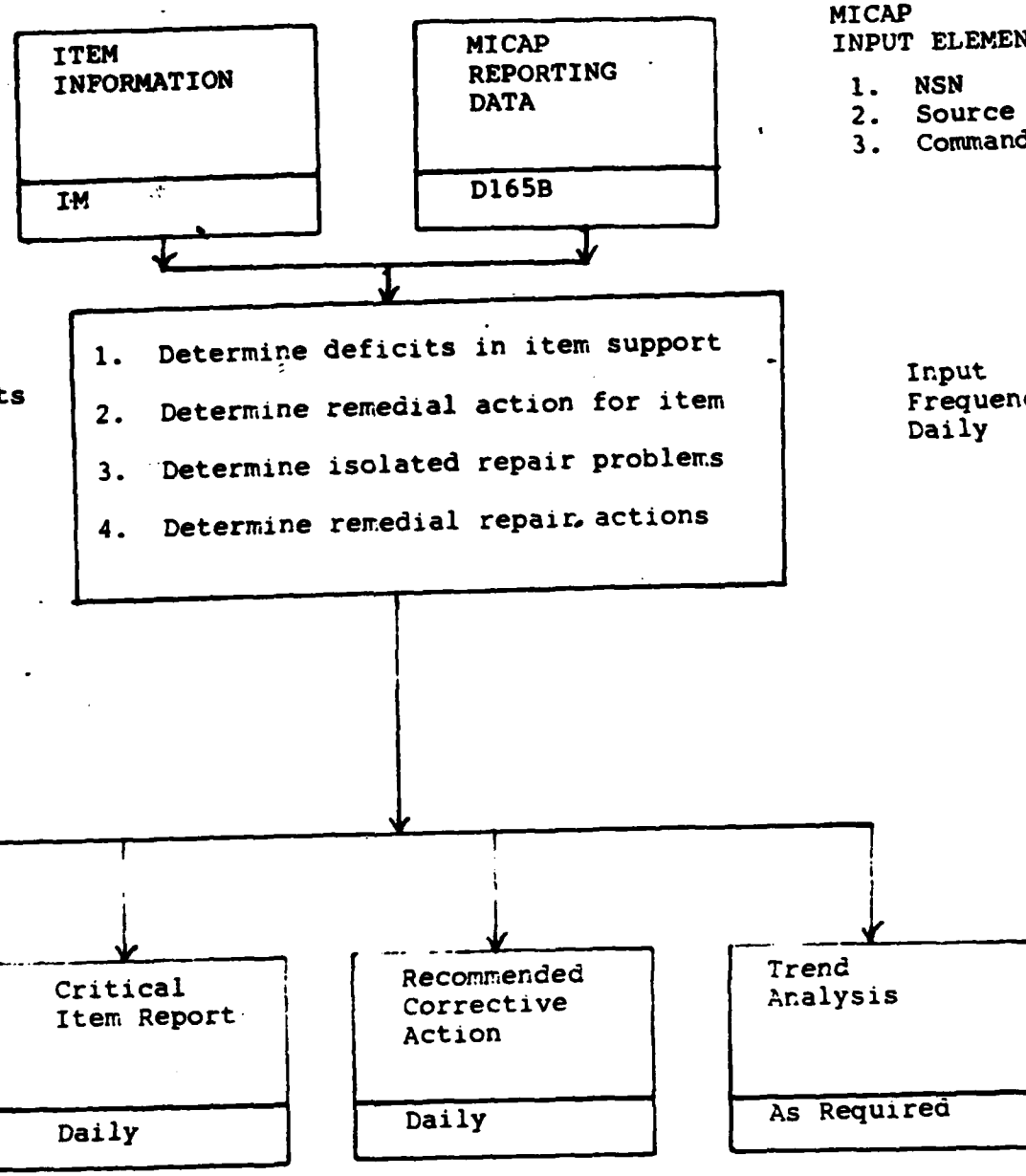
INPUT ELEMENTS

1. NMCB
2. NMCS
3. PMCS
4. FMC
5. PMCB
6. NMCM
7. PMCM
8. CAUSE CODE
9. UTILIZATION RATE
10. SORTIE RATE
11. FLYING HOURS (ACTUAL)
12. FOR ITEM 9-13 BY:
    a. MAJCOM
    b. BASE
    c. MDS
13. FOR ITEMS 1-7 NSN AND Acft S/N.
14. WORK UNIT CODE
15. TERM CODE
16. SOURCE OF SUPPLY



ITEM INFORMATION INPUT ELEMENTS

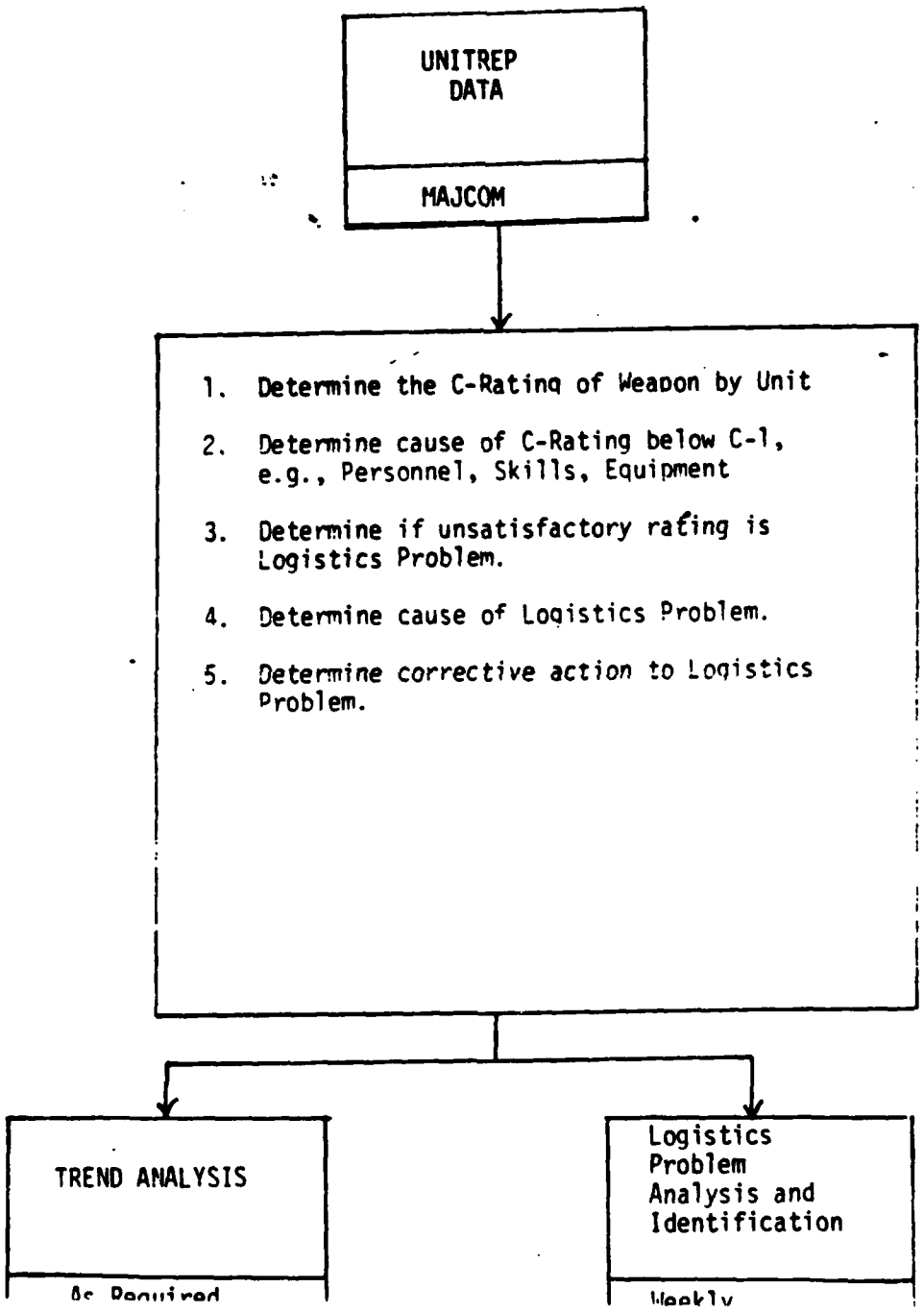
1. Asset Reqmts for total AFLC and FSC
   - a. Organic Repair
   - b. Contract Repair
   - c. Computed Reqmts
   - d. Negotiated Reqmts
   - e. Produced by
     - (1) Past FY Qtrs
     - (2) Projected by Qts

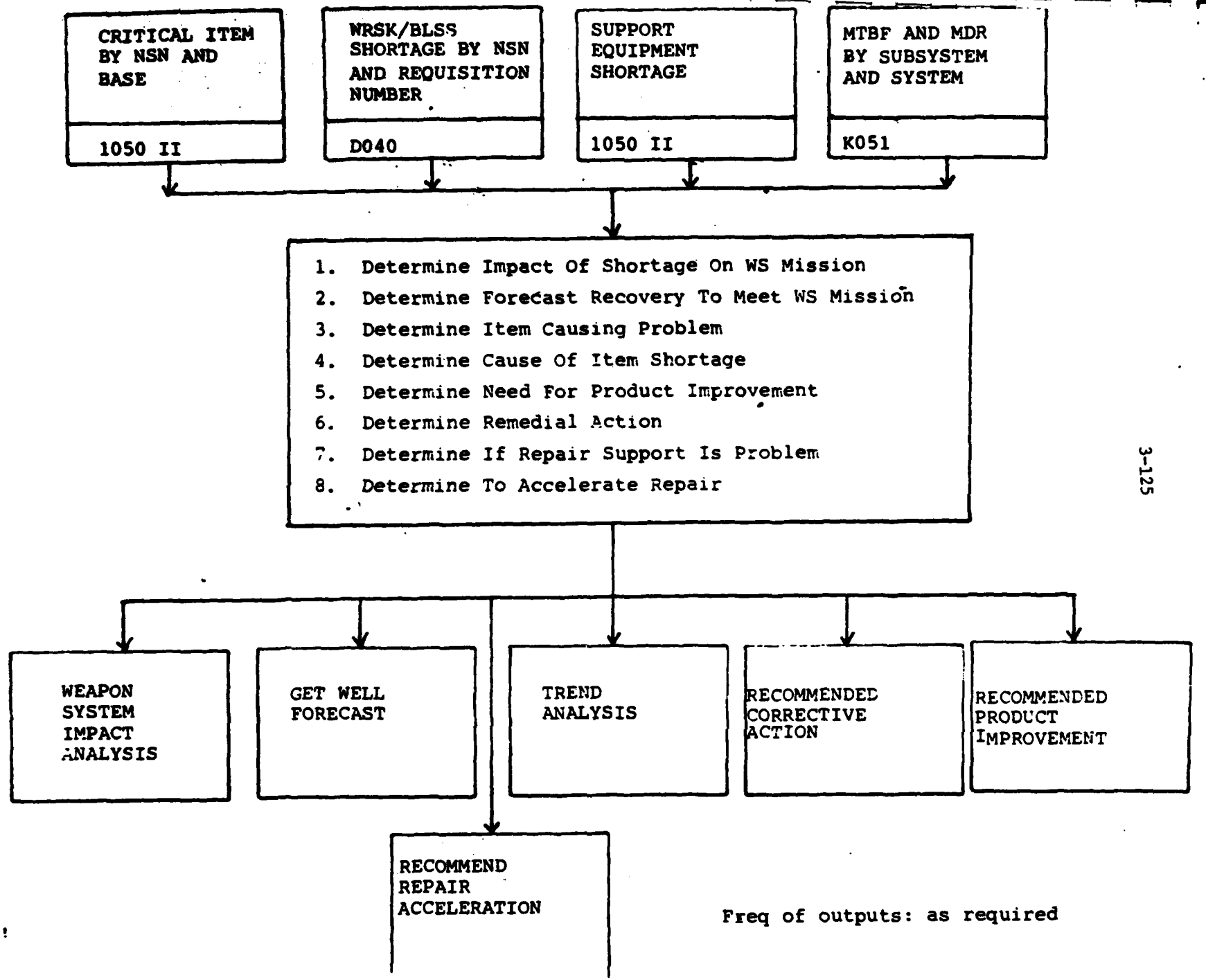


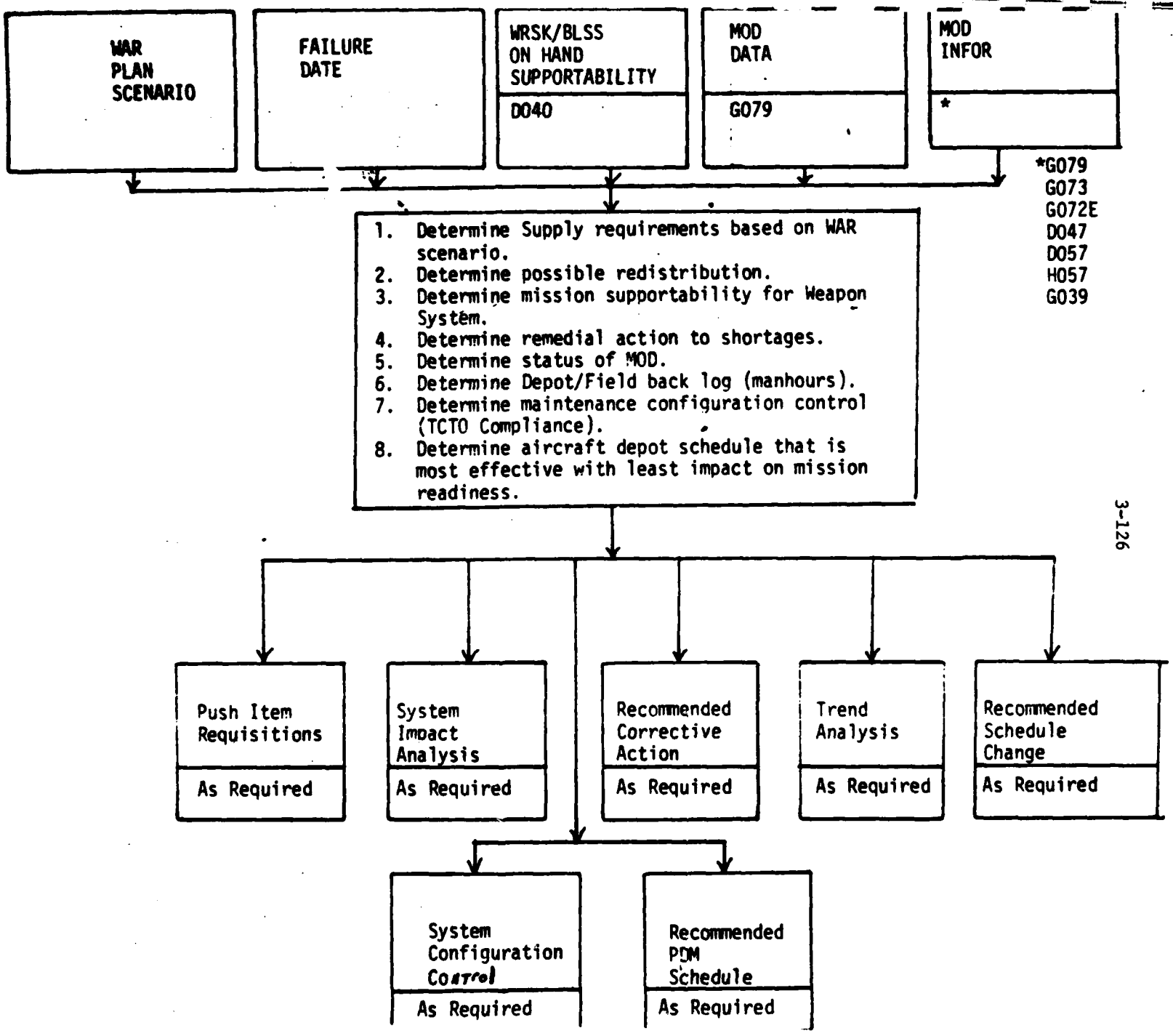
MICAP INPUT ELEMENTS

1. NSN
2. Source of Supply
3. Command

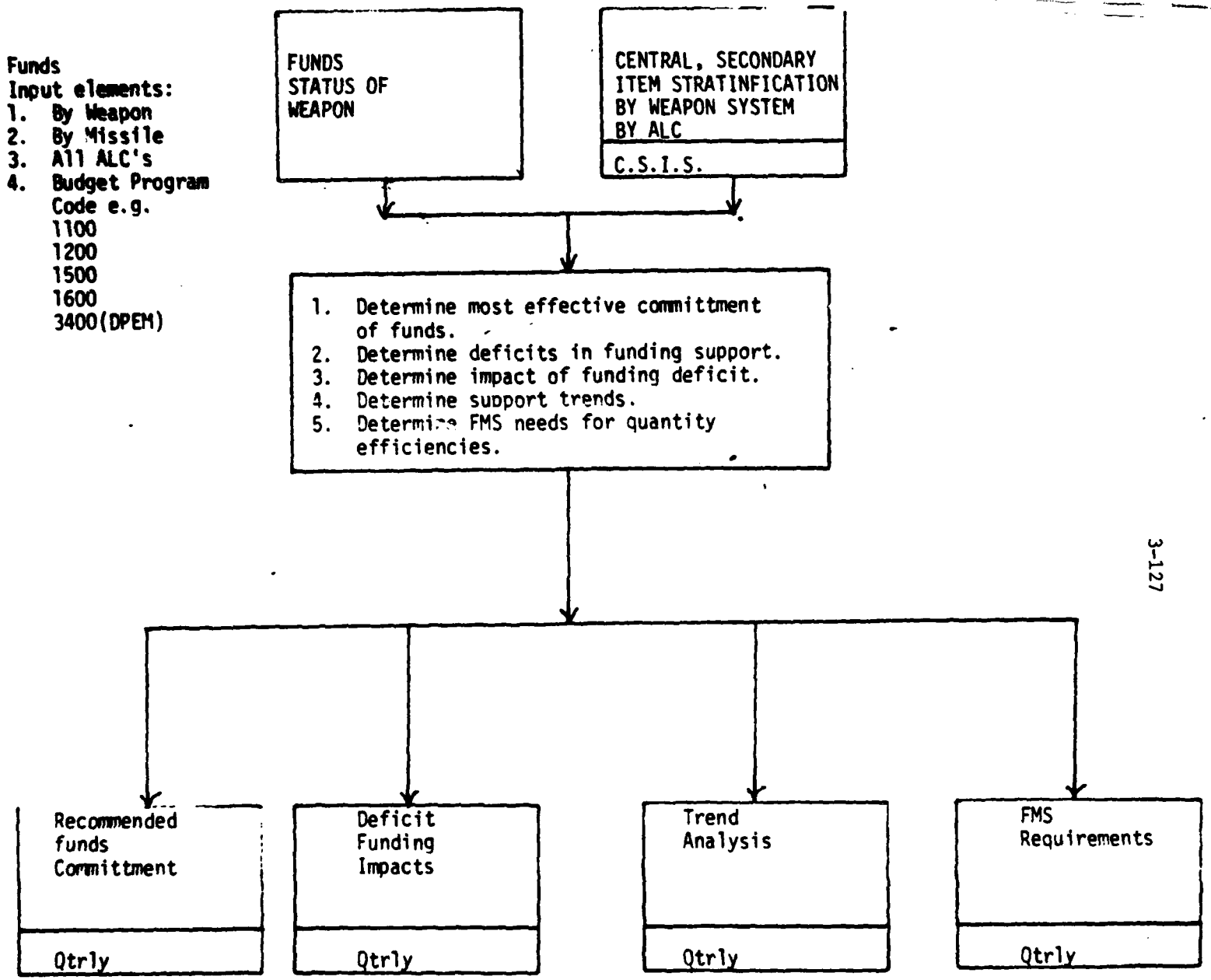
Input Frequency: Daily


UNITREP
DATA
MAJCOM
1. Determine the C-Rating of Weapon by Unit
2. Determine cause of C-Rating below C-1, e.g., Personnel, Skills, Equipment
3. Determine if unsatisfactory rating is Logistics Problem.
4. Determine cause of Logistics Problem.
5. Determine corrective action to Logistics Problem.
TREND ANALYSIS
As Required
Logistics Problem Analysis and Identification
Weekly


CRITICAL ITEM BY NSN AND BASE
1050 II
WRSK/BLSS SHORTAGE BY NSN AND REQUISITION NUMBER
D040
SUPPORT EQUIPMENT SHORTAGE
1050 II
MTBF AND MDR BY SUBSYSTEM AND SYSTEM
K051
1. Determine Impact Of Shortage On WS Mission
2. Determine Forecast Recovery To Meet WS Mission
3. Determine Item Causing Problem
4. Determine Cause Of Item Shortage
5. Determine Need For Product Improvement
6. Determine Remedial Action
7. Determine If Repair Support Is Problem
8. Determine To Accelerate Repair
WEAPON SYSTEM IMPACT ANALYSIS
GET WELL FORECAST
TREND ANALYSIS
RECOMMENDED CORRECTIVE ACTION
RECOMMENDED PRODUCT IMPROVEMENT
RECOMMEND REPAIR ACCELERATION
Freq of outputs: as required


WAR PLAN SCENARIO
FAILURE DATE
WRSK/BLSS ON HAND SUPPORTABILITY
D040
MOD DATA
G079
MOD INFOR
*
*G079
G073
G072E
D047
D057
H057
G039
1. Determine Supply requirements based on WAR scenario.
2. Determine possible redistribution.
3. Determine mission supportability for Weapon System.
4. Determine remedial action to shortages.
5. Determine status of MOD.
6. Determine Depot/Field back log (manhours).
7. Determine maintenance configuration control (TCTO Compliance).
8. Determine aircraft depot schedule that is most effective with least impact on mission readiness.
Push Item Requisitions
As Required
System Impact Analysis
As Required
Recommended Corrective Action
As Required
Trend Analysis
As Required
Recommended Schedule Change
As Required
System Configuration Control
As Required
Recommended PDM Schedule
As Required

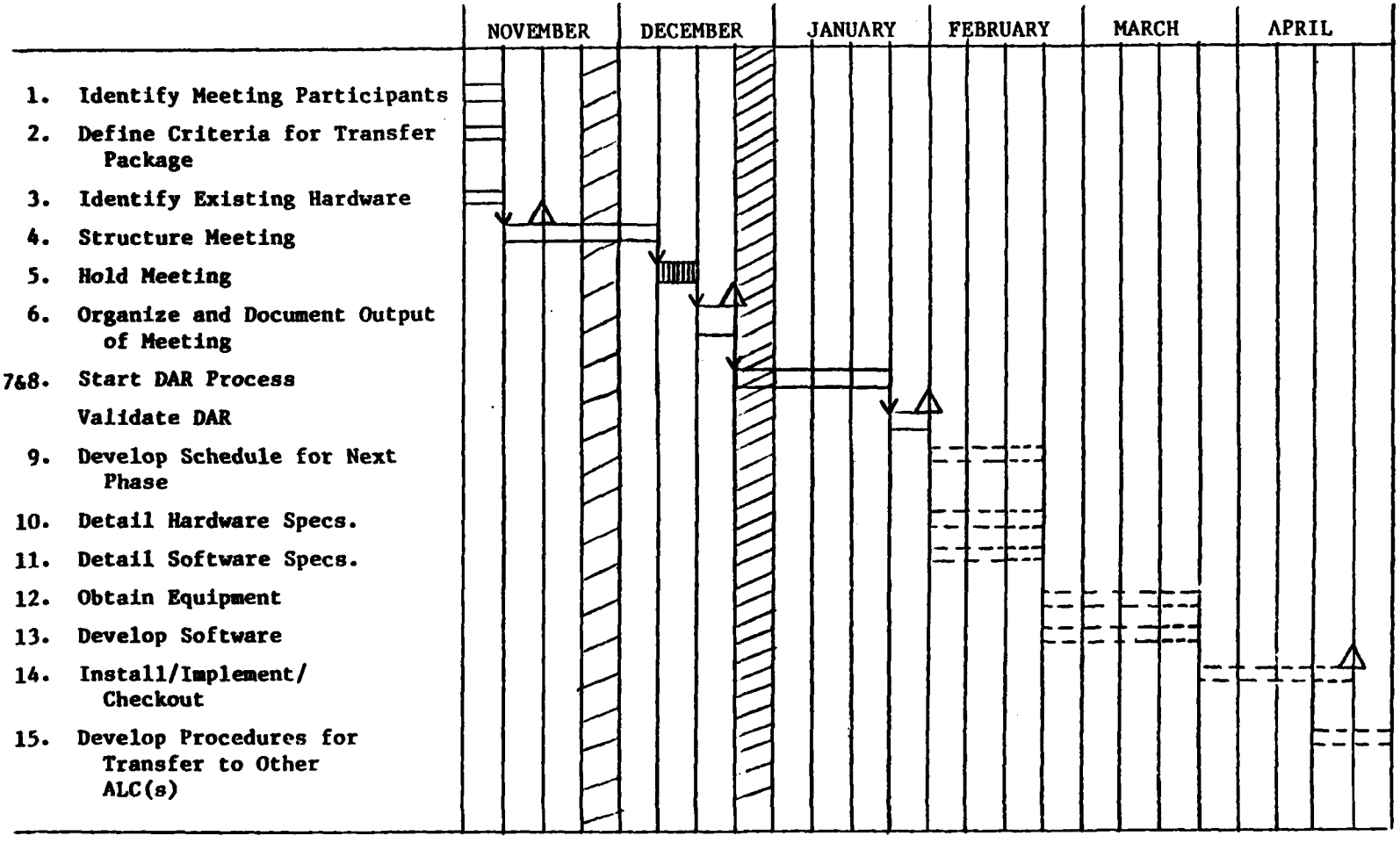
Funds
Input elements:
1. By Weapon
2. By Missile
3. All ALC's
4. Budget Program Code e.g.
   1100
   1200
   1500
   1600
   3400(DPEM)



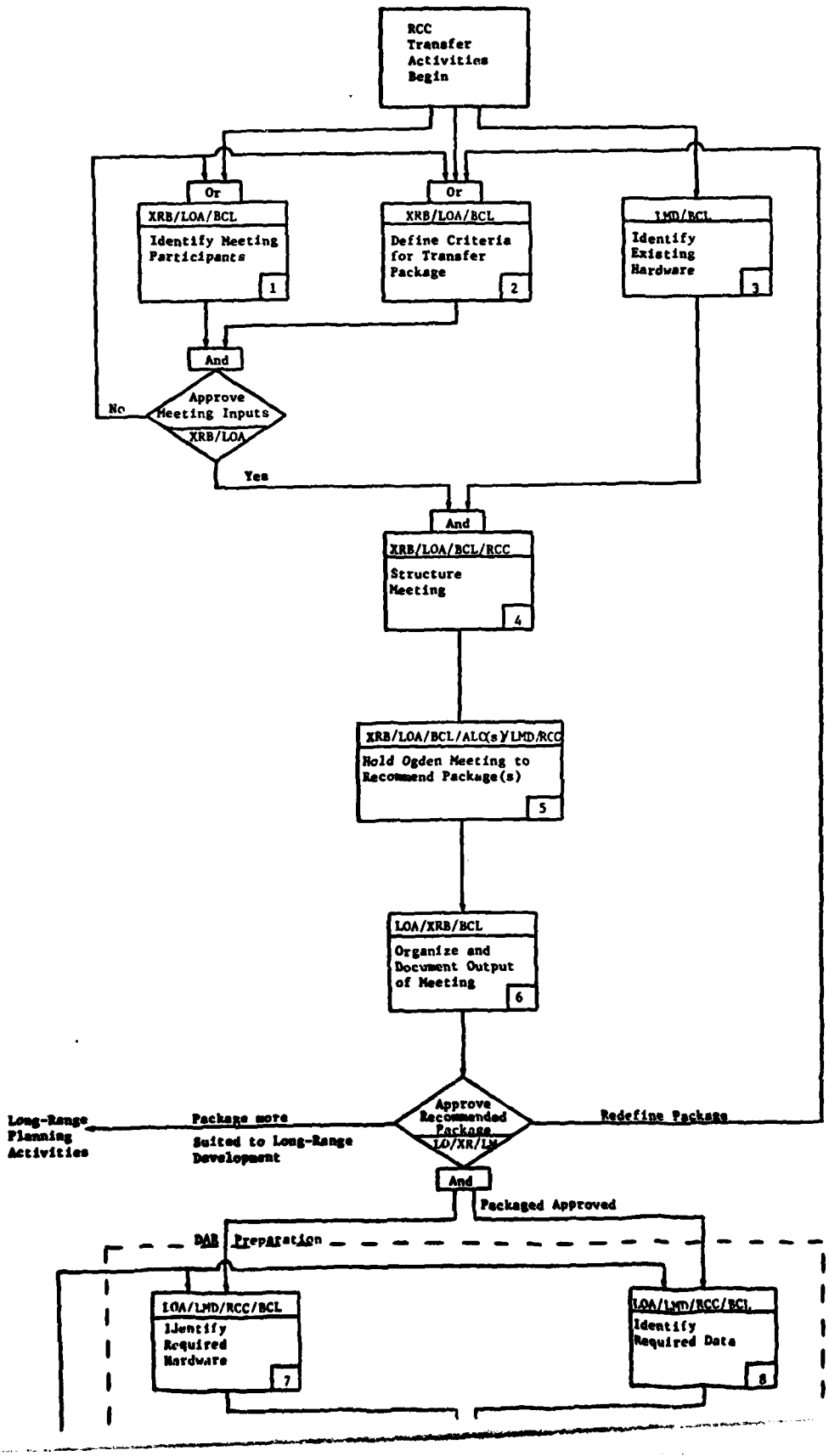
ATTACHMENT 4

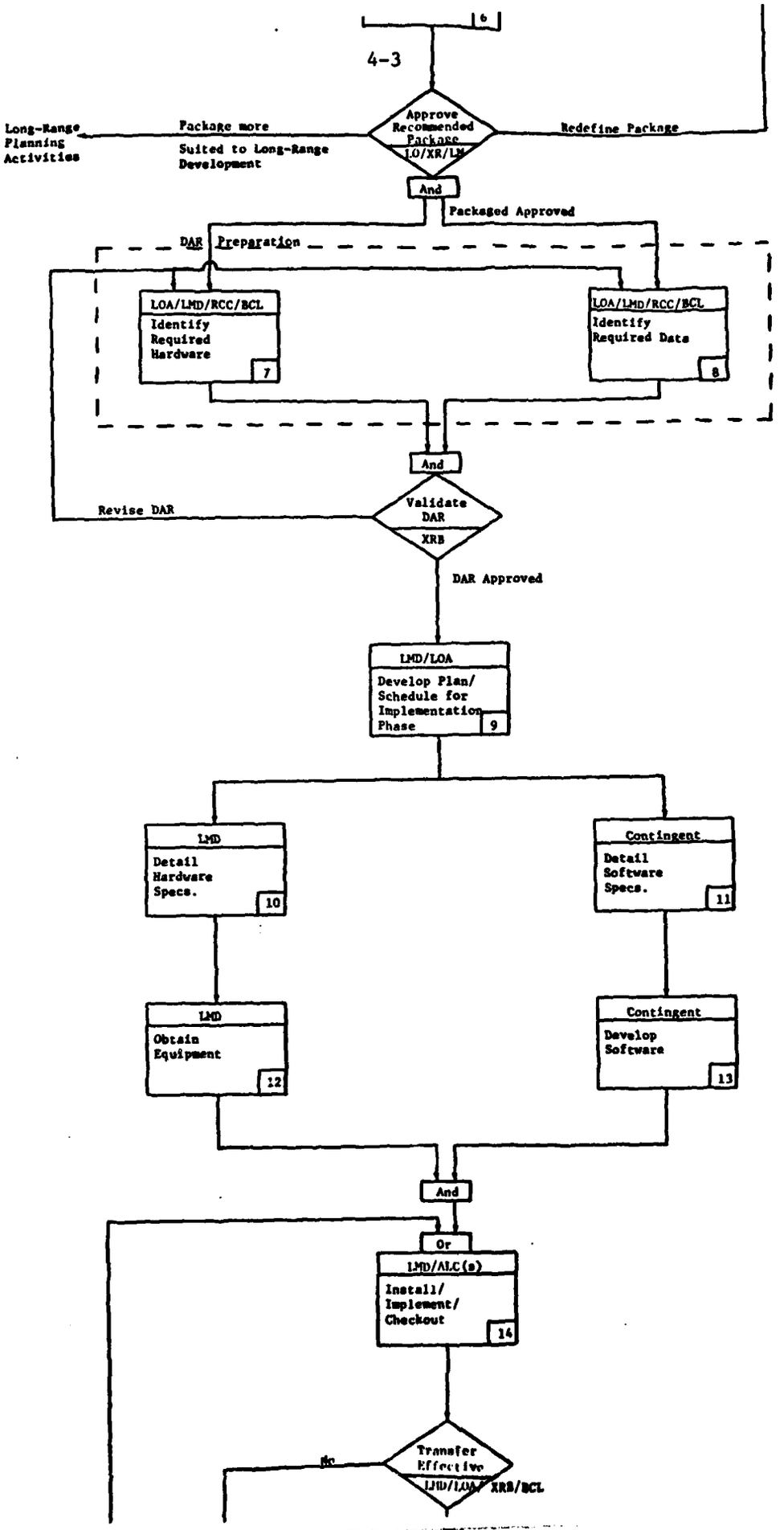
Plans and Lessons Learned
for RCC Evaluation Activities

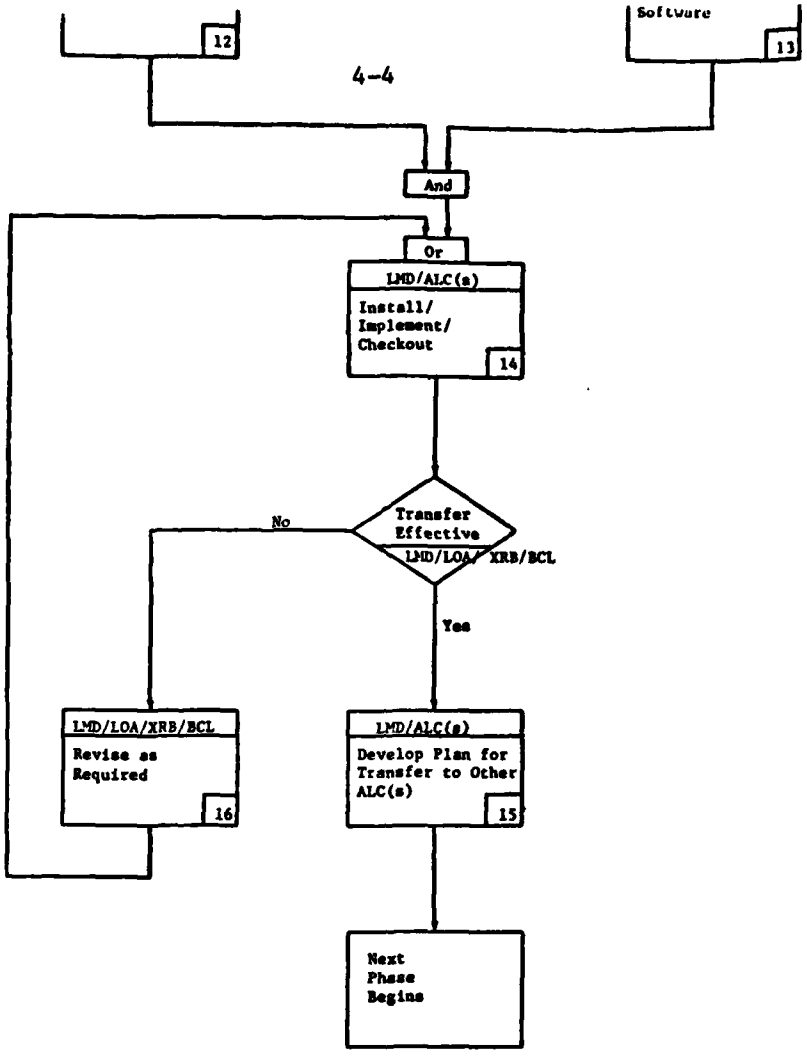
SCHEDULE OF TRANSFER OF RCC CAPABILITY



November 6, 1980


RCC Transfer Activities Begin
Or
XRB/LOA/BCL
Identify Meeting Participants
1
Or
XRB/LOA/BCL
Define Criteria for Transfer Package
2
LMD/BCL
Identify Existing Hardware
3
And
Approve Meeting Inputs
XRB/LOA
No
Yes
And
XRB/LOA/BCL/RCC
Structure Meeting
4
XRB/LOA/BCL/ALC(s)/LMD/RCC
Hold Ogden Meeting to Recommend Package(s)
5
LOA/XRB/BCL
Organize and Document Output of Meeting
6
Approve Recommended Package
LO/XR/LM
Long-Range Planning Activities
Package more Suited to Long-Range Development
Redefine Package
And
Packaged Approved
DAB Preparation
LOA/LMD/RCC/BCL
Identify Required Hardware
7
LOA/LMD/RCC/BCL
Identify Required Data
8


6
Approve Recommended Package
LO/XR/LM
Long-Range Planning Activities
Package more Suited to Long-Range Development
Redefine Package
And
Packaged Approved
DAR Preparation
LOA/LMD/RCC/BCL
Identify Required Hardware
7
LOA/LMD/RCC/BCL
Identify Required Data
8
And
Validate DAR
XRB
Revise DAR
DAR Approved
LMD/LOA
Develop Plan/ Schedule for Implementation Phase
9
LMD
Detail Hardware Specs.
10
Contingent
Detail Software Specs.
11
LMD
Obtain Equipment
12
Contingent
Develop Software
13
And
Or
LMD/ALC(s)
Install/ Implement/ Checkout
14
Transfer Effective
LMD/LOA/ XRB/BCL


12
Software
13
And
Or
LMD/ALC(s)
Install/
Implement/
Checkout
14
No
Transfer
Effective
LMD/LOA/ XRB/BCL
Yes
LMD/LOA/XRB/BCL
Revise as
Required
16
LMD/ALC(s)
Develop Plan for
Transfer to Other
ALC(s)
15
Next
Phase
Begins

REPORT

on

LESSONS LEARNED FROM THE READINESS CONTROL CENTER (RCC) EVALUATION APPROACH

to

DIRECTORATE OF LOGISTICS MANAGEMENT
SYSTEM REQUIREMENTS (XRB)
DCS/PLANS AND PROGRAMS
AIR FORCE LOGISTICS COMMAND
WRIGHT-PATTERSON AFB, OHIO 45433

(Contract No. F-33600-80-C-0414)

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by

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INTRODUCTION

BG Leo Marquez requested in mid-1980 that Battelle review several software packages generated by the Ogden Air Logistics Center's (ALC) Readiness Control Center (RCC) to determine if any or all of them were transferable to System Managers (SMs) in the other ALCs. An initial review by Battelle staff members resulted in the identification of three potentially transferable packages. It was decided that a review of the selected software packages by ALC representatives would be the best technique for evaluating the packages for transfer, considering those representatives' awareness of the ALC environment.

Battelle, with assistance from LOACF and XRB, arranged a meeting of ALC System Managers at Ogden AFB on January 13-15, 1981, to evaluate the selected RCC software packages in terms of utility to the SM and to determine the requirements for, and the availability of, appropriate hardware at the

various ALCs. The overall results of the meeting were reported to XRB in early February 1981.*

The purpose of this report is to identify needed improvements in the process used to evaluate the Readiness Control Center (RCC) management systems and the transfer criteria. The primary issues are: (1) The adequacy of the methodology used to address the problem and (2) The validity of the process outcome. This report will address (1) the role of the ALC representatives, (2) the appropriateness of the meeting format, (3) the achievement of the process objectives, and (4) conclusions and recommendations.

THE ROLE OF THE ALC REPRESENTATIVES

The original purpose in inviting representatives from the ALCs was to have them evaluate the utility of the packages in view of their experience in the SM area. Some attendees were requested by name, but the letter of invitation stressed the ALCs' role in choosing participants.

In addition to the evaluation of the software package for utility to the SM, documentation of the programs and the availability of the similar hardware in the ALCs were considered to be important factors in assessing transferability. BCL provided an independent analyst to assess the stage of development of the packages. Participants from LM were included in the original meeting plans to supply information regarding hardware availability in the field. As it turned out, LM representatives did not attend, but several of the ALCs sent system analysts. Their attendance should be requested at any future meetings of this type, as they supplied very useful information concerning both hardware and support personnel availability.

The representatives from the ALCs provided very useful input to the decision process. They did not represent a true cross-section of SM experience, however, and they were not all familiar with all of the management areas being discussed. More detailed descriptions of the systems to be examined might

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* Readiness Control Center Capability Transfer Evaluation, Contract No. F-33600-80-C-0414, February 2, 1981, to Directorate of Logistics Management System Requirements (XRB), DCS/Plans and Programs.

have permitted the selection of individuals more familiar with the specific areas. It would still be difficult to determine the selected systems which would be equally beneficial to SMs of weapon systems in development as opposed to operational systems. The inability to measure adequately ALC requirements, both in terms of weapon system information needs and ALC hardware capability, made definite recommendations difficult.

MEETING FORMAT

The meeting was designed to familiarize the ALC representatives with the software packages so that requirements associated with transfer could be identified from both an operational viewpoint and a technical or automated data processing (ADP) perspective. The sessions flowed smoothly and the participation was good. The representatives from the ALCs appeared to be satisfied with their efforts. They seemed to have acquired a basic understanding of what the systems could do for them. They could not evaluate as fully the commitment of resources required to support the systems.

SUCCESS IN ATTAINING THE MEETING OBJECTIVE

The purpose of the Readiness Control Center (RCC) evaluation was to determine whether or not automated management systems under development by the RCC could be transferred immediately to the other Air Logistics Centers (ALCs) to improve the management capabilities of their System Managers.

Table 1 lists the systems considered by the RCC to be operational and in production status*, and the ALC organizations using them.

Conversations with representatives from the RCC and a preliminary visit to Ogden by Battelle representatives led to the selection of three systems for detailed consideration. The selection was based on the presumed applicability of the systems to most System Managers and the apparent stage of development. To be considered, a system had to be designed to deal

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* ARCC ADP System Status as of 14 January 1981, p 1.

TABLE 1. ARCC (AIRCRAFT READINESS CONTROL CENTER) SYSTEMS

Systems	Organizations
F-16 Aircraft Readiness	MMA
CDS Management Query System	ACD
Contractor Support Equipment	MMS
Defective Counting Accel-Meter	MMS
F-4/F-16 Significant Events	MMA/MMS
B/O Fill Rate Computation	MMM
FMS T.O. Tracking	MMS
4052 General Purpose Graphics	ACD
Commander's Information Management System	MMM
ARCC Inventory Control System	ACD
Rand Dynametrics Model (CSCMS)	MMM
D165 MICAP	MMA/MMS
F-4 Modification Tracking	MMS
Milestone Charts	ACD
Programmed versus Actual Flying Hours	MMA
Peace Pharaoh LRU Equipment	MMS
Report of Item Discrepancies	MMA
Sortie Utilization Graphics	MMA
TCTO 1F-4-1239 Tracking	MMS
Wartime Data Base	MMM
F-4 Wing Tracking	MMS
ARCC F-16 SPO Network	MMA

with a management area common to all or most SMs, as opposed to one peculiar to a particular system. The system was to be already substantially programmed rather than in the conceptual stage. The systems selected were: Rand Dynametrics model (CSCMS), F-4 Mod Tracking, and D165 MICAP.

After this preliminary selection, the meeting with representatives from the ALCs was structured to obtain their evaluation of the selected systems. A structured information-gathering approach was developed to acquaint the ALC representatives with the selected systems and then to support a decision as to their transferability.

In retrospect, the use of the structured information-gathering approach by Battelle before the meeting would have had two benefits. The first would have been a better preliminary assessment of the current operational status of all the systems, and might have led to the selection of

different systems for in-depth review by the ALC representatives. The second advantage would have been that the results of this information-gathering exercise could have been presented to the ALCs to help in the selection of knowledgeable representatives to determine the operational utility of systems. Managers very familiar with the selected areas could have been chosen for attendance. The technical information would have highlighted programming difficulties and perhaps eliminated the consideration of systems not fully ready for transfer. A technique for comparing with other potential SM requirements would have been used at the meeting.

A major problem in achieving the objective of the evaluation was the inability to scope the trade-offs that would be made in assigning resources to the transfer activity. The evaluation as it was designed could only compare selected systems against each other. It did not address the possibility that the same resources might be better used to develop a management capability other than those presented for consideration. In order to address this issue, a broad menu of desired capabilities should have been available to measure the benefits to be obtained from these systems as compared to others. The difficulty that existed then, and would still exist if the project were begun again today, is that no such broad perspective currently exists. The long-range planning effort directed toward the Weapon System Management perspective should develop such a view, but the completion of this effort is still several months away.

Again, in the area of resource commitments, not only competition for resources but potential synergism from capitalizing on joint use of resources such as hardware was not addressed. Compatible systems, even from outside the SM function, need to be considered in scoping advisability of hardware acquisition to support the selected systems, since few systems are of sufficient magnitude to justify a hardware purchase on their own merit.

The chief difficulty, therefore, is in developing a definitive measure of benefit which could be compared to cost to justify the commitment of resources to such a transfer.

CONCLUSIONS/RECOMMENDATIONS

The meeting did not result in a clear cut imperative to transfer certain systems. It did indicate a need for the systems considered, highlight the difficulties associated with transfer of developed software, and raise some questions which must be answered before such a transfer decision should be made.

The use of the evaluation technique that was applied, in concert with a method for developing a relatively complete list of SM requirements, would aid the evaluation of management capability software packages for transfer.

The principal ingredient still missing is a definitive measure of the tangible benefit to be accrued from the improvement of the SM's management capability. The expenditure of funds for hardware, software, or systems analysts to increase SM capability is difficult, if not impossible, to justify on a cost/benefit basis when profit is not a reasonable measure of merit.


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