United States General Accounting Office

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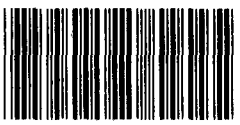
Report to the Chairman, Committee on Government Operations, House of Representatives

September 1990

ARMY AUTOMATION

Decisions Needed on SIDPERS-3 Before Further Development



GAO/IMTEC-90-66

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United States
General Accounting Office
Washington, D.C. 20548

Information Management and
Technology Division

B-239402

September 5, 1990

The Honorable John Conyers, Jr.
Chairman
Committee on Government
Operations
House of Representatives

Dear Mr. Chairman:

This report responds to your July 21, 1989, request that we review the Army's development of an automated personnel management system called the Standard Installation/Division Personnel System III (SIDPERS-3). Your request expressed concern about SIDPERS-3 costs, whether the Army had considered alternative systems, and the use of the Ada programming language.

During our work, Defense's Major Automated Information Systems Review Committee (MAISRC) reviewed SIDPERS-3 and raised a number of concerns similar to yours. As a result, we agreed with your office to provide information on the MAISRC review and the actions the Army took to evaluate alternative systems and the use of the Ada programming language. Appendix I provides detailed information on our objectives, scope, and methodology.

Background

SIDPERS-3 was initiated in 1982 to replace Army personnel systems and to improve personnel services by automating functions such as organization and personnel recordkeeping, manpower accounting, and personnel management reporting. It was originally intended to replace all military personnel systems used by the active Army, National Guard, and Reserves. However, in responding to congressional concerns that the Reserve component of SIDPERS-3 would duplicate other systems under development, the Army in fiscal year 1988, decided instead that it would replace only the active Army systems.

Although the scope of SIDPERS-3 has been reduced significantly, the Army's cost estimate to develop and deploy the system increased from $80 million in 1985 to $151 million in 1990. In addition, the estimated date for full deployment has been extended by almost 3 years to March 1993. The cost growth and schedule delay were attributable to problems with the program structure and development approach, such as (1) switching to the Ada programming language, and (2) eliminating

duplication between SIDPERS-3 and the system being developed for the Army Reserves.

Since the 1970s, Defense has required a structured process (life cycle management) for developing or modernizing major automated information systems such as SIDPERS-3. The process emphasizes developing systems that will meet requirements and stresses sound technical and financial management and continuing oversight. The level of oversight required by life cycle management is generally commensurate with the anticipated investment—the greater the investment, the higher the level of oversight. The Office of the Secretary of Defense established the MAISRC to oversee the development of systems when cost estimates exceed $25 million for 1 year, $100 million in total, or the system is of special interest.

Life cycle management involves six development phases and six decision points (called milestones) where system progress is assessed and documented. Appendix II shows the six life cycle management phases, the corresponding milestones, and the questions which must be answered affirmatively before a system can proceed to the next phase.

Results in Brief

During its September 1989 review of SIDPERS-3, the MAISRC raised significant concerns about whether the Army selected the best program alternative in terms of system cost, hardware, and software. In spite of these concerns, the MAISRC allowed the Army to continue design and development of the system. We believe the MAISRC instead should have directed the Army to stop additional work until its concerns were resolved. Moreover, the Army still has not adequately addressed MAISRC concerns such as the use of alternative systems and the Ada programming language. In the meantime, the Army has paid a contractor about $6 million for continuing technical design and software development of SIDPERS-3. Finally, developing this Army automated personnel system at this time may be contrary to the Secretary of Defense's recent initiative to establish single systems, such as one for personnel, for all military services and Defense agencies.

MAISRC Questions SIDPERS-3 Concept

SIDPERS-3 was not reviewed by the MAISRC before September 1989 because the Army's earlier cost estimates did not exceed the threshold for a major system. When the MAISRC conducted an in-process[1] review of SIDPERS-3 in September 1989, the Army was in the design phase of life cycle management, and officials were projecting that the design would be complete and ready for review (Milestone II) by February, 1990. Although the Army had spent about 7 years and more than $20 million selecting the concept and designing the system, the MAISRC told the Army to go back and address its concerns about the SIDPERS-3 development approach (Milestone I). The Army had approved the concept in October 1985. Specific areas the MAISRC directed the Army to assess and to consider modifying included:

- Available alternatives not previously assessed including use of a Marine Corps system;
- The technical architecture, particularly the hardware components and the use of Ada, to ensure it is effective, appropriate, and economical;
- The program structure to ensure proper levels of oversight and control over development activities.

The MAISRC told the Army it should provide the results of its efforts to the Committee's Executive Secretary within 2 weeks of completing the revalidation. Although the MAISRC's direction to assess a number of areas could have resulted in a decision that the concept was not valid, the MAISRC did not direct the Army to halt or minimize design and development work until the concept was revalidated. At that time, the Army was paying a contractor for the technical design and software development of SIDPERS-3. During the first 9 months of fiscal year 1990, the Army paid the contractor about $6 million.

Army officials told us in February 1990 that they addressed most of the MAISRC's concerns and decided that no other system could adequately meet its requirements. About 2 months later, on April 6, 1990, the Army re-approved SIDPERS-3 as the best program alternative for replacing the current personnel systems. The Army also granted approval for full-scale development pending completion of an economic analysis and all system design activities. The Army submitted the concept documents to the MAISRC in June 1990. The Army also submitted documentation on the system design phase and requested MAISRC approval to proceed into full-scale development. The MAISRC action officer responsible for SIDPERS-3 told us a Milestone II review is scheduled for September 1990.

[1]The MAISRC uses in-process reviews to assess the status and progress of system development efforts between milestone reviews.

Alternatives to SIDPERS-3 Not Adequately Considered

Federal and Defense policies for automated information system development require the identification and analysis of alternative approaches that will satisfy the approved mission need. This is required to ensure that the best available approach is selected, and to avoid duplication and unnecessary expenditures on new systems by effectively using existing systems. When the MAISRC reviewed SIDPERS-3 in September 1989, it directed the Army to assess available alternatives not previously considered, including use of the Marine Corps military personnel system. Our work shows that the Army has not adequately considered alternatives to SIDPERS-3.

Specifically, our review of the SIDPERS-3 concept development paper disclosed that when the Army selected SIDPERS-3 in 1985, it did not consider a full range of alternatives. Although the Army considered four alternatives, they did not represent a full spectrum of possible approaches. Two alternatives were earlier versions of Army personnel systems that had either been replaced or were identified for replacement. The remaining alternatives were the SIDPERS-3 concept that was chosen and a variation of it. Although the SIDPERS-3 project manager said that use of the Air Force personnel system was considered at that time, he could not provide documentation to support this claim. Officials of the Army Program Evaluation Office for Standard Automated Management Information Systems told us other alternatives were not considered because SIDPERS-3 was viewed as an acceptable concept.

In a September 1989 study, performed to answer questions raised by the Committee on Appropriations, House of Representatives, the Army concluded that the Air Force military personnel system could not meet its requirements in a cost effective manner. According to the study, the Air Force system would require extensive and costly modification to meet Army needs because the services' structures and supporting personnel policies are very different. However, we found that the SIDPERS-3 cost estimate in this Army study did not include all of the costs necessary to support SIDPERS-3 and that other costs were estimated poorly. For example, the Army excluded the costs of certain hardware components totalling about $102 million.

At the direction of the MAISRC, the Army also studied the Navy and Marine Corps military personnel systems, and concluded that neither system could meet its needs in a cost effective manner. However, our review of the Army studies showed that this conclusion was not based on comparisons of the total cost and benefits that would be derived

under each alternative. Instead, the Army reviewed the military services' systems to determine whether they provided capabilities planned for SIDPERS-3. The Army determined that neither system had all the capabilities planned for SIDPERS-3, and then without sufficient analysis, concluded they could not be modified to meet its requirements in a cost effective manner.

We are also concerned that the Army's assessments of alternatives have not considered the implications of Defense's ongoing initiative to eliminate duplicate automated information systems. One goal of Defense's Corporate Information Management initiative, which was started in October 1989, is to establish single automated systems for areas such as personnel and financial management that are common to all the military services and Defense agencies. The single systems will be established by designing and developing new ones, or by adopting one of the existing systems for use throughout Defense.

Although common to all the services, military personnel management is not one of the eight common areas that will be studied during fiscal year 1990. Because Defense plans to cover all common areas, the Secretary is likely to include military personnel management in the Corporate Information Management program, and probably before SIDPERS-3 could be fully developed and deployed. Thus, it may not be prudent for the Army to proceed with SIDPERS-3 development at this time. Instead, it could rely upon the interim system called SIDPERS-2.75, which was deployed in 1985. Over the years, this system has been enhanced and has become an essential part of personnel management operations, even though it does not meet all known user requirements.

Ada Questions Have Not Been Answered

During its September 1989 review of SIDPERS-3, the MAISRC expressed concerns about the use of the programming language Ada. According to the MAISRC action officer responsible for SIDPERS-3, the MAISRC was concerned that the Army had not analyzed other programming languages to determine whether they would better satisfy requirements. The action officer also said the Army had not assessed the ability of Ada applications to interface with the Structured Query Language data base management system planned for SIDPERS-3. As a result, the MAISRC directed the Army to ensure that the use of Ada would be effective, appropriate, and economical.

The Army completed its assessment of Ada in February 1990, but our work has shown that the Army has not adequately addressed all of the

MAISRC's concerns. The Army study noted that there is a general lack of empirical data on Ada's cost and benefits for comparing it to other programming languages, but nonetheless concluded that Ada is effective, efficient, and promises to be the most economical choice over the life cycle of the project. Moreover, the Army also cited our March 1989 report that there is no standard method for interfacing Ada applications with the Structured Query Language. The Army stated that this does not diminish the benefits of its use, but did not support this claim. We believe that this is an important and potentially costly issue because the Army will have to develop its own method for interfacing Ada with the Structured Query Language.

Conclusions

Given the importance of the areas questioned by the MAISRC and the wisdom of developing systems in accordance with Defense life cycle management principles, the MAISRC should have directed the Army to stop system design and development efforts until the program concept was reviewed and approved by the MAISRC. Moreover, our work shows that the Army has not adequately addressed all MAISRC concerns. In the meantime, the Army has paid a contractor about $6 million for technical design and software development, based upon a development approach questioned by the MAISRC and in the face of unanswered technical questions.

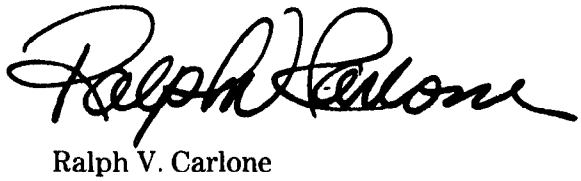
Recommendations

The Secretary of Defense should direct the Secretary of the Army to stop funding SIDPERS-3 design and development until the MAISRC has determined that the system's concept is valid. We also recommend that the Secretary of Defense determine whether it is prudent for the Army to continue designing and developing a potentially unique military personnel system, given Defense's intention to establish single automated systems for common management areas and given that the Army already has an automated system in use that could possibly be modernized to meet user needs.

In accordance with your office's wishes, we did not obtain official agency comments on a draft of this report. We did, however, discuss its contents with Army and Department of Defense officials and have included their comments where appropriate. We conducted our review between August 1989 and July 1990 in accordance with generally accepted government auditing standards.

As agreed with your office, unless you publicly announce this report's contents earlier, we plan no further distribution until 30 days from the date of this letter. At that time we will send copies to interested parties and make copies available to others upon request. This work was performed under the direction of Samuel W. Bowlin, Director, Defense and Security Information Systems, who can be reached at (202) 275-4649. Other major contributors are listed in appendix III.

Sincerely yours,



Ralph V. Carlone
Assistant Comptroller General

Contents

Abbreviations

GAO	General Accounting Office
IMTEC	Information Management and Technology Division
MAISRC	Major Automated Information Systems Review Committee
SIDPERS-3	Standard Installation/Division Personnel System III

Objectives, Scope, and Methodology

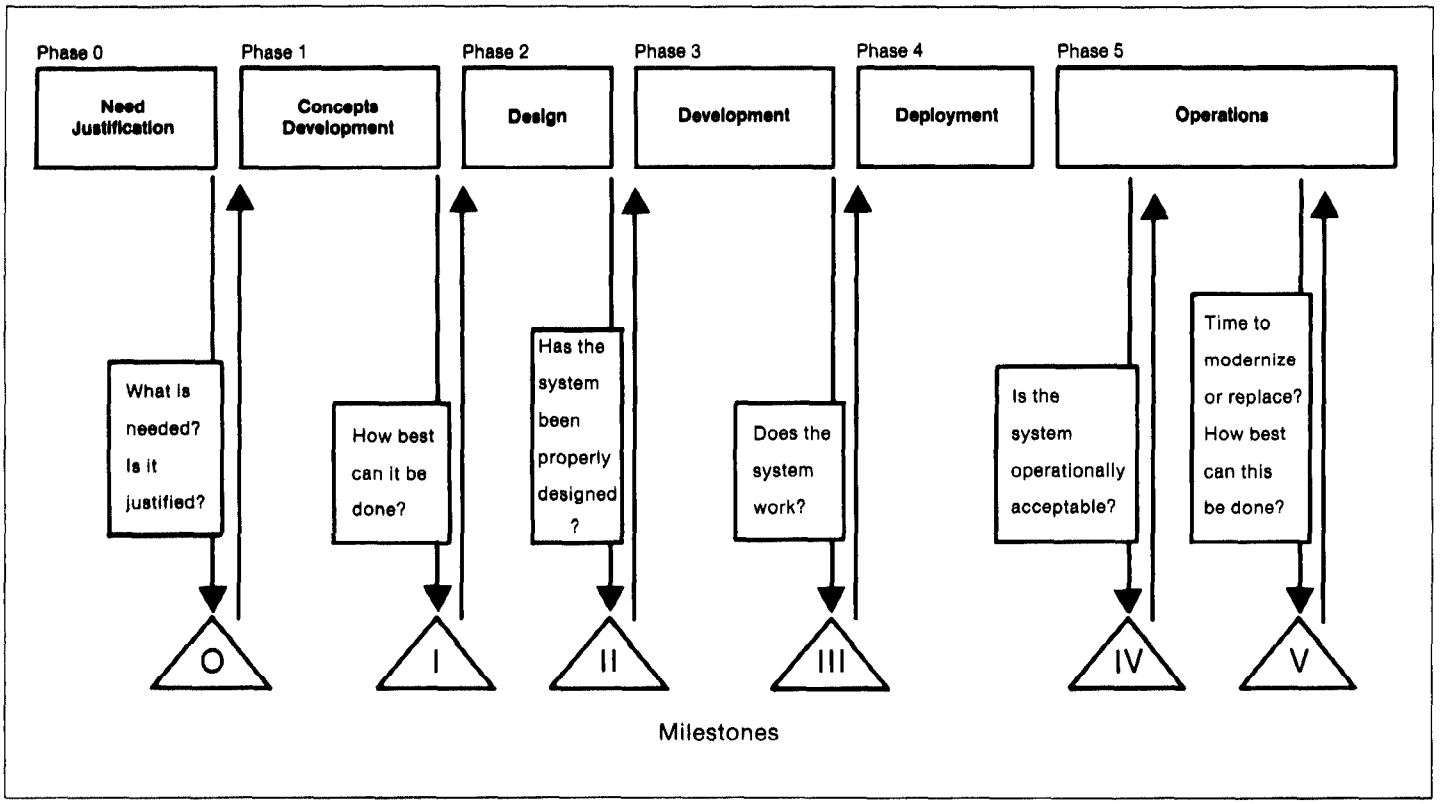
In July 1989, the Chairman, House Committee on Government Operations, asked us to review the Army's SIDPERS-3. Our objectives were to obtain information on the MAISRC review and the actions taken by the Army to assess the use of alternative systems and the Ada programming language.

To accomplish our objectives, we reviewed Defense and Army policies for the development of automated information systems. We reviewed Army documentation on the development of SIDPERS-3, and interviewed officials from the SIDPERS-3 product office, the Program Executive Office, and the prime contractor responsible for system development. We also met with officials from the Army's Personnel Information Systems Command and the Information Systems Engineering Command to discuss user needs and the system development process. To obtain information on the MAISRC review of SIDPERS-3, we met with officials from the Office of the Secretary of Defense (Comptroller) for Information Resources Management.

To address the questions related to the use of Ada and data base management systems, we reviewed Army documentation, including test reports and correspondence. We also interviewed Army officials responsible for acceptance testing and obtained opinions on the adequacy of Army tests from officials at the National Institute of Standards and Technology, expert consultants, and Army data base management system contractors.

Our review was conducted from August 1989 to July 1990, in accordance with generally accepted government auditing standards. As requested by your office, we did not obtain official agency comments on a draft of this report. However, we discussed the information contained in it with Army and Defense officials and have included their comments where appropriate.

Defense's Life Cycle Management Phases and Milestones



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