United States
Agency for International Development

FIVE-YEAR OFFICE AUTOMATION PLAN

Booz, Allen & Hamilton Inc.
Bethesda, Maryland

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Mr. James T. McMahon
SER/DM
Office of Data Management
U.S. Agency for International Development
Washington, D.C. 20523

Subject: IQC No. AID/otr-C-1689--Task 9 Deliverable: Five-Year Office Automation Plan

Dear Mr. McMahon:

Booz, Allen & Hamilton is pleased to submit this Five-Year Office Automation Plan as the third of three deliverable products under the referenced contract. The other products, an Executive Summary and the Final Report, have been submitted under separate cover. The foundation for this Plan is based upon the study results fully presented in the Final Report. The Plan document is organized as follows:

- Introduction--A brief description of the strategy underlying the Plan, and the system that would result from its implementation.
- Five-Year Office Automation Plan Management Structure--A description of the management organization and its attendant responsibilities necessary to implement the Plan.
- System Description--The scope and configuration of the system as it will evolve.
- Office Automation Plan "A" Budget Estimates and Implementation Schedules--The implementation plan and schedule for the first 2 years of the Plan.
- Office Automation Plan "B" Budget Estimates and Implementation Schedule--The planning factors and intended direction for the last 3 years of the Plan.

We wish to express our appreciation of the cooperation and assistance of Agency staff in Washington, Cairo and Nairobi who contributed

to the development of this Plan. In particular, we want to thank the SER/DM staff who actively participated in study activities and guided the study team's efforts. We look forward to answering any questions you and your staff may have and to presenting the results of the study to AID senior management. Please let us know if we can be of further assistance.

Very truly yours,

Booz · Allen & Hamilton Inc.

T A B L E O F C O N T E N T S

T A B L E O F E X I B I T S

EXECUTIVE SUMMARY
OFFICE AUTOMATION PLAN
(Project ASAP)

Planning is the key to successful implementation of office automation systems. During the information-gathering and analysis phase described in the Final Report, the Booz, Allen team presented AID with three implementation strategies. One of these, as described in the section below, served as the basis for the Five-Year Office Automation Plan.

I. AID CHOSE THE STRATEGIC ALTERNATIVE THAT INCLUDES RAPID IMPLEMENTATION OF A LARGE-SCALE INTEGRATED OFFICE AUTOMATION SYSTEM

As described fully in the Final Report, the implementation strategy chosen will:

- Provide a system configuration to support the Agency-wide Plan
- Recommend a major investment in equipment which will be rapidly installed in appropriate Agency locations
- Provide flexibility by allowing individual offices to determine needs and justify equipment requests
- Require a strong central management group (to be located in SER) to supervise the large-scale investment and to:
  - Establish and implement the Agency-wide Plan
  - Support and guide local office users of automation technology
- Provide procedures for collection and analysis of performance data by both the users and the central management group, established to:
  - Monitor equipment and personnel problems for correction
  - Provide equipment and configuration advice
  - Evaluate office automation results.

This is a bold and aggressive approach to office automation implementation. The greatest benefits of this strategy are that AID will rapidly derive major improvements in productivity, work flow and coordination. These benefits are a direct consequence of the scale of the system configuration. If fully implemented, the system will connect all major offices in an integrated network. Of course, careful management of the Plan's implementation is required, as a consequence of the Plan's scale and short time-frame.

II. THE PLAN PROVIDES THE BASIS FOR THE DEVELOPMENT OF OTHER PLANNING DOCUMENTS AND PROVIDES INFORMATION FOR AID MANAGERS

The Plan, divided into two sections, provides AID management with information needed for decisionmaking. It covers the following topics:

- Management structure required to implement, coordinate, control and refine the automation system
- Proposed system configuration to link the five study processes
- Preliminary cost estimates for equipment and operations
- An Implementation Plan describing task sequences and levels of effort
- Expansion Plan (FY82-FY84) for basic system enhancement after the tasks of the first two years (FY80-FY81) are complete.

The Plan is a blueprint for Agency management decisions and will be refined as requirements are further defined. The Plan can also serve as the model for other office automation planning documents.

III. THE PROPOSED SYSTEM IS AN INTEGRATED NETWORK OF INFORMATION PROCESSING AND COMMUNICATIONS EQUIPMENT

The term "office automation technology" was broadly defined for the purposes of this study to include:

- Word processing
- Data processing
- Telecommunications.

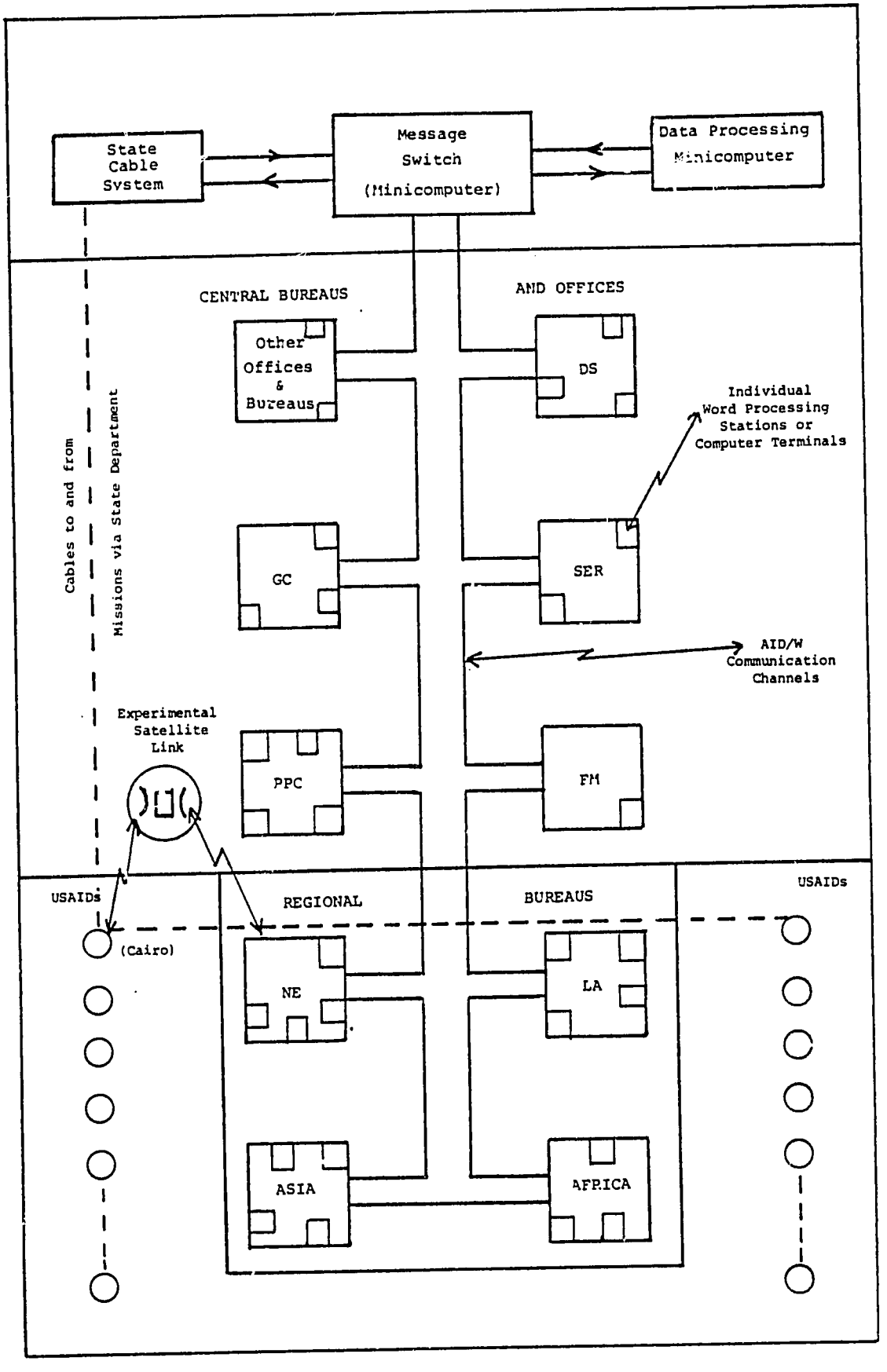
(1) The System Design Employs A Modular Hardware Strategy

The proposed office automation system will support each network site, connecting missions, offices and bureaus to speed the flow of work processes while improving product quality. Exhibit A, following this page, illustrates the system configuration. The design is a feasible, modular configuration which allows growth in response to incorporation of additional processes and organizational units into the system. The system configuration includes:

- A central communications network, operated by a programmed processor (message switch) interconnecting all participating AID/W elements which provides the ability to:
  - Pass text back and forth between designated word processing stations via the message switch
  - Route data processing traffic via the message switch to work stations connected for that purpose
  - Send and receive cables over State facilities through the AID/W work stations connected to the message switch
- Word processing equipment, part of the message switching network, capable of preparing, revising, and retrieving text locally

EXHIBIT A

Conceptual Office Automation System



- A data processing system which provides file access, and document control and allows individuals to compute budgets and perform other data processing tasks at their location

- Special purpose components, such as:

  - Facsimile sets to connect Washington area desks

  - Photocomposing equipment where text must be converted to type for printing, eliminating the need for additional keyboarding

  - Satellite channels, on a trial basis, to determine the utility and cost-effectiveness of full-length document transmission between missions and AID/W

  - Answering services and voice message forwarding facilities to aid communication.

(2) Because Of Its Modular Design, the System Can Readily Expand As Participating Units Identify Needs

The system configuration uses a modular implementation approach, particularly because system participation is voluntary. The central management group will not be able to define all user needs, so the configuration allows the user-set to expand. Large overseas missions will certainly participate at a different level than will the smaller offices.

Missions in cities such as Cairo and Manila are expected to employ word-processing, data processing, and telecommunications facilities similar to those used in AID/W. Text will be physically transported between the missions and AID/W on magnetic disks.

In countries where equipment vendors are not available to maintain the more sophisticated equipment, optical character recognition (OCR) typing fonts will be used on standard electric typewriters to prepare reports. The reports will be sent by conventional means to AID/W where an OCR scanner will automatically enter the text into the word processing equipment and network, thereby eliminating the need to rekeyboard and reprocess documents.

The system is designed to support both clerical and professional staff. Data processing terminals, separate from word processing stations, will be installed to facilitate professional staff use of the system.

IV. THE SYSTEM DESCRIBED IN THE PLAN WILL COST AN ESTIMATED $16,800,000 OVER THE FIVE-YEAR IMPLEMENTATION PERIOD

As shown in Exhibit B, following this page, preliminary cost estimates show that implementation of the Plan will cost $16,778,000. Of that amount, $5,488,000 will be expended in the first two years (Plan A) and $11,330,000 during the last three years (Plan B).

Plan A cost estimates included funds for:

- Office automation hardware
- Data processing software
- Telecommunications facilities
- Management support.

Approximately 28 person years of effort by office automation specialists and technology managers will be required to support

EXHIBIT B

Estimated Costs of the Second Alternative

	FYs 80-81 ($000's)	FYs 82-84 ($000's)	Total ($000's)
Word Processing			
CRT word processors	1,187[1]	3,370[2]	4,557
Memory typewriters	112	-	112
Combined WP/DP units	-	780	780
OCR scanners	240	385	625
Photo compositions	25	79	104
Protocol translators	144	-	144
Copying (intelligent, communicating)	-	1,230	1,230
	1,708	5,844	7,552
Telecommunications			
Facsimile	78	240[3]	318
Satellite channels	264	331	595
Leased lines	240	360	600
Message switching terminals	-	170	170
Telephone answering service	-	70	70
Voice message services	-	185	185
Teleconferencing	-	645	645
	582	2,001	2,583
Data Processing			
Minicomputers	500	-	500
Terminals	40	330	370
Graphics	-	130	130
Programs	824	-	824
	1,364	460	1,824
Personnel[4]			
Contractor	1,512	2,280	3,792
AID staff	282	745	1,027
	1,794	3,025	4,819
Total	$5,448	$11,330	$16,778

Notes:
1. Includes $200,000 set aside for installation of word processing equipment at USAIDs.
2. Includes $450,000 set aside for installation of word processing equipment at USAIDs.
3. Includes five digital high-speed units.
4. Estimated at 19 person-years of contractor effort and 9¼ person-years of AID/SER effort. This excludes operating personnel and training staff.

Plan A. Contractor and AID staff costs are included in the overall budget estimate. The central authority will be staffed by a combination of in-house and consultant personnel who will conduct seven major activities during the Plan A period. The major activities are:

- Establishment of the management structure
- Completion of the system design
- Acquisition of equipment and contractor support
- Installation and monitoring of the system
- Operation of the centralized system equipment
- Coordination of staff resources
- Refinement of the system.

During the Plan B period, the depth and breadth of automated support will be expanded throughout the Agency. Word processing and telecommunications equipment expenditures will greatly increase, while data processing equipment, software and personnel expenditures will decrease.

The average annual expenditures for both plan periods will be approximately $3.3 million.

V. THE PLAN IS DIVIDED INTO TWO PHASES

A detailed plan with distinct milestones is essential for implementation of complex systems such as this. Before

Plan A can be initiated, three critical pre-implementation activities must be carried out:

- Formal plan adoption
- Designation of central management authority
- Acquisition of contractor support.

(1) Plan A Is Designed To Rapidly Increase Clerical Productivity

Ten major milestones have been identified for Plan A:

- Milestone 1--Completion of Final System Design

  There will be three major work activities:

  - Definition of the system's operational parameters
  - Establishment of performance monitoring and evaluation methodologies
  - Definition of equipment specifications, including equipment compatibility standards

- Milestone 2--Complete Initial Equipment Justifications

  Detailed cost estimates will be prepared for this task, to include items such as:

  - Data processing and other personnel
  - Hardware purchase, rental, lease and maintenance
  - Software purchase, rental, lease and maintenance
  - System installation
  - Network services
  - Vendor personnel support

- Milestone 3--Prepare Final Implementation Schedule

  Specific month-by-month milestones must be established to ensure that site preparation, acceptance testing, training and staffing will be implemented at the proper times.

- Milestone 4--Obtain Bids and Equipment

  All procurement will be handled through the central office. With support from the Central Authority, each local user will justify his requests, and standard procurement processes will be used.

- Milestone 5--Establish Performance Monitoring And Evaluation Methodologies

  The performance monitoring and evaluation methodologies identified in the pre-implementation phase will be established, tested and implemented during this task period.

- Milestone 6--Begin Equipment Installation

  Working in close conjunction with individual offices, the central authority will:

  - Select and prepare sites
  - Prepare test specifications and programs
  - Install and test equipment and systems.

  The burden of these activities will be borne by the central staff to ensure conformity with Agency standards.

- Milestone 7--Implement Message Switching Applications

  The central office will procure all message switching equipment. Mini-computers, message switching software and telecommunications lines or channels will be obtained only after detailed requirements and vendor capabilities studies are performed.

- Milestone 8--Implement Data Processing Applications

  Software development efforts must be centrally managed. Candidate systems include:

  - Document/correspondence control
  - PIO/T&C processing
  - Operating year budget maintenance and modeling.

- Milestone 9--Develop Position Descriptions, Assist Classification Efforts and Coordinate Staff Training

  Central staff will assist in the development of office automation position descriptions and classification efforts, coordinate use of highly trained or specialized office automation staff, and secure necessary contract labor.

- Milestone 10--Operate the Automated System

  The central staff will monitor system progress and efficiency by:

  - Monitoring the implementation and operation of the system
  - Maintaining equipment and programs
  - Publishing status and performance reports for Agency-wide use.

At the successful conclusion of Plan A, AID will have an interconnected word processing network, controlled by a message switching computer, on-line and ready for additional stages. This will give AID the ability to expedite the paper flow associated with the study process, while minimizing clerical functions performed by professionals. The evaluation of Plan A will guide Plan B.

(2) Plan B Is Designed to Improve Professional Productivity, While Continuing Clerical Productivity Improvement

Plan A focused on the installation and use of word-processing and telecommunications equipment, resulting in considerably improved abilities to originate, revise, transmit, and distribute text, cables, plans and reports.

Plan B is designed to directly effect professional staff productivity by enhancing the data processing and telecommunications portions of the system.

Professionals need to obtain, sort, compare and manipulate information. Plan B will provide software to facilitate:

- Report writing
- File organization and retrieval
- Personnel file collection and processing
- Calendar and meeting control.

The communications improvements will include enhancing message switching capabilities, replacing facsimile with digital communications, expanding satellite channels and adding teleconferencing capabilities.

At the conclusion of the fifth year, AID will have:

- Increased clerical and professional productivity
- An on-line interactive office automation network
- An automatic domestic and international document production and distribution capacity.

* * * *

Project ASAP's Five-Year Implementation Plan is summarized above. The Plan provides a blueprint for implementation of a network of office automation technologies designed to improve

communication, increase productivity and provide increased data processing capabilities for AID/W and field offices. Each site would obtain the equipment configuration most suited to its needs. The Plan covers management as well as technology issues.

I. INTRODUCTION

I. INTRODUCTION

The United States Agency for International Development has contracted with Booz, Allen & Hamilton Inc., to examine the voluminous information processing and paperwork requirements associated with five program processes. The purpose of the study, conducted over a three-month period, was to develop a broad strategy to assist the Agency's efforts over the next five years in realizing the potential benefit of office automation support.

This document is the second of two major reports presenting the results of the Booz, Allen study. The first report presented findings, conclusions and several strategic alternatives for AID management consideration. The Office Automation Plan presented in this document has been developed within the framework of the strategy chosen by AID from among the conceptual alternatives described and assessed in the Final Report.

The Plan is organized into two parts -- a detail action plan for introducing expanded support to five program processes in the Agency during FY 80 - FY 81, (Plan A). It is then followed by more general recommendations for continued activities over the three-year period FY 82 - FY 84 (Plan B).

1. AID CHOSE THE STRATEGIC ALTERNATIVE THAT INCLUDES RAPID INSTALLATION OF A LARGE-SCALE INTEGRATED OFFICE AUTOMATION SUPPORT SYSTEM FOR DEVELOPMENT IN THIS PLAN.

The conceptual alternative selected by AID for development is presented in detail in the Final Report. It can be summarized as:

- Providing a system configuration for integrated office automation support as defined by an Agency-wide Office Automation Plan.
- Making a major investment in equipment that is rapidly installed at appropriate locations throughout the Agency.
- Imposing few limitations on system participants; it essentially depends upon individual offices' willingness to be part of an overall automation program; and their ability to justify and utilize automation support.
- Requiring a strong central management group (to be located in SER) to supervise this large-scale investment, but also to:
  - Establish and implement an Agency-wide plan
  - Support and guide local office users of automation technology.
- Providing procedures for collection and analysis of performance feedback data by both local users and the central management group, established to:
  - Monitor equipment and personnel problems for correction
  - Provide insights on the most effective equipment and applications
  - Test the achievement of the benefits of office automation support.

This alternative is a bold and aggressive approach to office automation technology. The greatest advantage of this strategy is that it positions AID to benefit from major improvements in productivity, work flow and coordination, as rapidly as possible. This stems from the scale of the system configuration that will connect all strategic offices handling information generated in the five study processes into an integrated network, if fully implemented. The large volume of new equipment and the rapid pace of installation, however, must be undertaken with caution. The Agency must invest its funds carefully to ensure fuller and more effective utilization than would be achieved under a slower-paced alternative. This risk is not infrequent in such rapid, large-scale investments but, if carefully managed, can be averted. AID staff must also be trained to rapidly accept and utilize the influx of office automation equipment. Unless the staff is trained, the new equipment could negatively affect staff productivity, performance and morale.

Cognizant of the trade-offs in the risks and benefits of this strategy, AID has concluded that such an ambitious undertaking is necessary given the building pressures in its information processing requirements. These pressures mandate a technological solution to the growing volume of paper and communications workload in AID. To avoid

technology at this juncture would serve only to guarantee increased clerical staff requirements for AID in the near future.

2. THE PLAN AS PRESENTED IS A DOCUMENT FOR AID MANAGEMENT CONSIDERATION AND PROVIDES THE BASIS FOR THE DEVELOPMENT OF OTHER REQUIRED PLANNING DOCUMENTS.

Expanded office automation support will be introduced throughout the Agency under the aegis of the Plan for Agency-wide Office Automation Support Systems. The two sections of the Plan provide information AID top management requires for decisions on office automation support and other resources for addressing Agency problems. It is also directed at increasing the organization's efficiency and effectiveness as formulated. The Plan covers the following topics:

- Management structure required to implement, coordinate, refine and control the expanded use of office automation technology
- Postulated system configuration proposed for linking the flow of participants in the five study processes
- Order to magnitude costs for equipping and operating the system configuration
- Implementation Plan describing the sequence and level-of-effort associated with each implementation task
- Expansion Plan (FY 82-FY 84) for continuing to enhance the basic system of automation support instituted in the first two fiscal years (FY 80-FY 81) of the Plan.

These topics provide the guidelines for Agency use in operating the system and rationalizing the Plan.

The Plan is, therefore, considered to be a blueprint that can be modified by AID management decisions and refined to meet the requirements which arise during implementation. As a blueprint, the basic components of the Plan can also be used in the preparation of other office automation planning documents. These documents may be required by such agencies as the Office of Management and Budget (OMB) or the General Services Administration (GSA).

3. THE PLAN HAS BEEN DEVELOPED WITHIN THE PARAMETERS ESTABLISHED BY THE SCOPE OF THE STUDY.

AID managers selected five program processes for inclusion in the scope of the study. The information processing activities of the following processes were examined in depth:

- Project Identification Document/Project Paper process
- Annual Budget Submission process
- Congressional Presentation process
- Project Implementation Order processes for technical services and commodities
- Non-Project Assistance process.

Other major processes were examined briefly to obtain an overview perspective on Agency-wide operations. These

other processes were explored in interviews with Agency staff, but were not subject to a detail investigation of office automation support needs. They are, therefore, not systematically included in this Plan even though opportunities for office automation support may exist in these areas.

Interviews were conducted with over 100 AID staff members whose selection was coordinated by the Office of Data Management (SER/DM). AID/W offices were well represented in the interviews but only three field offices were visited. The study team's familiarity with the full variety of mission office automation needs and operating environments is, therefore, limited.

4. CHARACTERISTICS OF THE OFFICE AUTOMATION SYSTEM TO BE INSTALLED THROUGHOUT AID.

The conceptualization of the office automation system was developed on the basis of reasonable assumptions as to which organizational units will participate in the Plan. Further, office automation was defined in a global context to include a wide-range of available information management technology. The technology is generally grouped into three major categories of:

- Word Processing
- Data Processing
- Telecommunications

These groupings are useful for assessing the kinds of support an office requires or may utilize effectively.

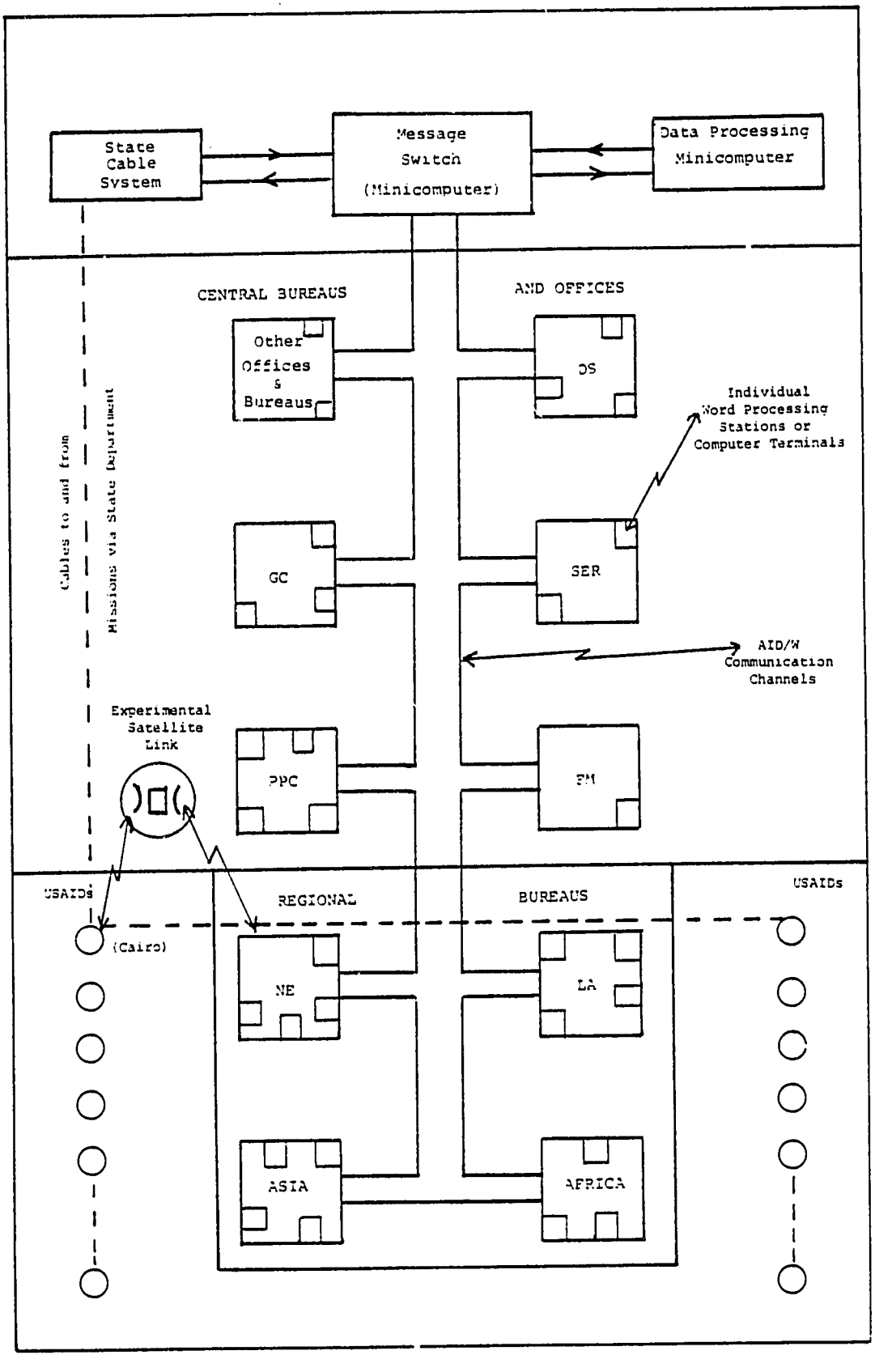
(1) Hardware-Related Characteristics of the Office Automation System.

The office automation system that will operate throughout AID as the Plan is implemented will serve as a means to provide support at each work site. It will facilitate interconnecting missions, offices, and bureaus so as to speed the flow of work processes and contribute to higher levels of quality. The particular system configuration envisioned for AID is graphically illustrated in Exhibit I, following this page. It is a feasible, modular configuration that will grow to respond to more work processes as they are incorporated, and as increasing numbers of organizational elements participate. The system, as illustrated, is characterized by:

- A central telecommunications network that is operated by a programmed processor (message switch) and which interconnects all participating elements of AID/W including:
  - Communicating word processing stations that pass text back and forth between designated addresses via the message switch

EXHIBIT I

Conceptual Office Automation System



- Data processing computer traffic that is routed via the message switch to those work stations connected for that purpose

- Cables sent and received over the State facilities and which are accepted and delivered at AID/W work stations connected to the message switch

- Terminals and lines that could be added to the network as participants in the system grow in number.

. Word processing equipment that functions locally for the preparation, revision and retrieval of text, and that interconnects with other locations via the AID/W message switch

. A data processing system that provides access to files, controls the flow of documents, and allows individuals to compute budgetary parameters and other processing tasks at their own locations

. Other components of the system include:

- Facsimile sets will be used to connect desks in the Washington area

- Photocomposing equipment will be in those locations where text has to be converted to type for printing, without the need for additional keyboarding

- Satellite channels will be installed on a test basis primarily to determine the utility and cost-effectiveness of transmitting full-length documents between a mission and AID/W. This channel would also be used fro transmission of voice, cable, or other traffic on an as available basis. Priority should, however, be to full-length text in order to ensure a valid test and associated Benefits-To-Cost information.

- Answering services and voice message forwarding facilities that will facilitate communications.

(2) A "Building-Block" Approach to Implementation Has Been Used.

The system design permits a "building-block" approach to implementation. Since participation is voluntary, it will not be possible for the central management group to specifically pinpoint operating locations until participating organizations identify themselves. The particular configuration of a central, program-controlled communications network can accommodate to an expanding set of connected users.

Overseas missions vary in the degree to which they will be fully integrated within the system. The largest of them, located in cities where adequate maintenance support and operating staff are available, will utilize word processing, data processing, and telecommunications facilities that are equal to those of AID/W. Such locations as Cairo, and Manila are in that class. In such cities, documents will be prepared on word processors of maximum capability. Text will be passed between the mission(s) and Washington in the form of magnetic discs (transported physically between cities). In cities with less maintenance support -- and where operator training may be difficult -- selectric typewriters will utilize a typing font compatible with the Optical Character Recognition (OCR) scanners located

AID/W. Text will be prepared on these typewriters and scanned in Washington. It is thereby automatically entered into the word processing system and network without redundant keyboarding and attendant processing problems.

Another characteristic of the system is its dedication to support of both clerical and professional staff. Provision is made for installation of data processing terminals that are separate from word processing work stations. This will eliminate the possibility of contention for time at these locations. This form of competition, if allowed to continue, can reduce staff motivation and render the system ineffective.

Finally, there are some non-equipment implications of the implementation of the system that should be mentioned:

- Automation, when fully operational, will have an impact on optimum work flows and procedures, in contrast to the situation in the Agency now functioning under largely manual methods
- Successful operation of the system implies the existence of well-trained clerical staff, and an understanding, motivated professional staff. Thus, items such as training, orientation, and equitable assignment of responsibilities are clearly an important component of the office automation implementation.

5. OPERATION OF THE OFFICE AUTOMATION SYSTEM WILL PROVIDE SPECIFIC BENEFITS IN TERMS OF PRODUCTIVITY AND QUALITY OF WORK PRODUCED.

If a typical PID process requires approximately 130 days from origination to approval (or from origination to disapproval), then it is possible that as much as 20 to 30 days could be saved in the total of individual work steps by the combined effects of word processing, data processing and communications support. Typically, half that amount will almost surely be evident in most examples of the PID process. The efficiencies arise from:

- Reduced time in text preparation and revision
- Shorter turnaround time for documents being handled by professionals
- Easier access to individuals via the AID/W network and State cables; better flow of responses to inquiries
- Better access to previous reports, facts and files via data processing support
- Easier budgetary manipulations.

(1) The PID Process Serves as an Example of Agency-Wide Activities That Could Benefit From Office Automation.

The benefits to be obtained from the system in operation can be illustrated in terms of specific examples. The PID/PP process represents an Agency-wide activity that can benefit from office automation in many of its steps of preparation, review, revision,

and implementation. Exhibit II, following this page, illustrates the various steps involved in the progress of the PID portion through AID, and serves as the basis for identifying the impact of automation.

- The PID process begins (1) in a USAID, where the document is originally prepared. Assuming that this is a mission to be equipped with word processing, e.g., Cairo, then the full advantages of ease of text preparation and revision are available.

  Improvements in typing productivity of the order of thirty percent are realized across all of the aspects of text preparation. Since a typical PID can go through at least three, and as many as eight typed versions, it is apparent that word processing can save many days of work time in its preparation.

- During the preparation of the PID, the PD and Tech offices of the regional bureau often support the USAID (2) . Improved communications available in Washington via the message switching network will allow expedited handling of requests. The easy flow of cables via the message switch to action desks will support this process.

- When the PID is approved for transmission to AID/W, it is sent (3) in the form of electrical storage discs (via pouch or messenger), and accepted into the word processing system in the Regional Bureau (4) . Once in the word processing system in Washington, the document can be:

  - Transmitted to all interested parties in the central bureaus for their review (5) and comment back to the regional bureau (6) .

  - Revised in accordance with text changes introduced after the review process is complete (7) , without re-keyboarding the whole text.

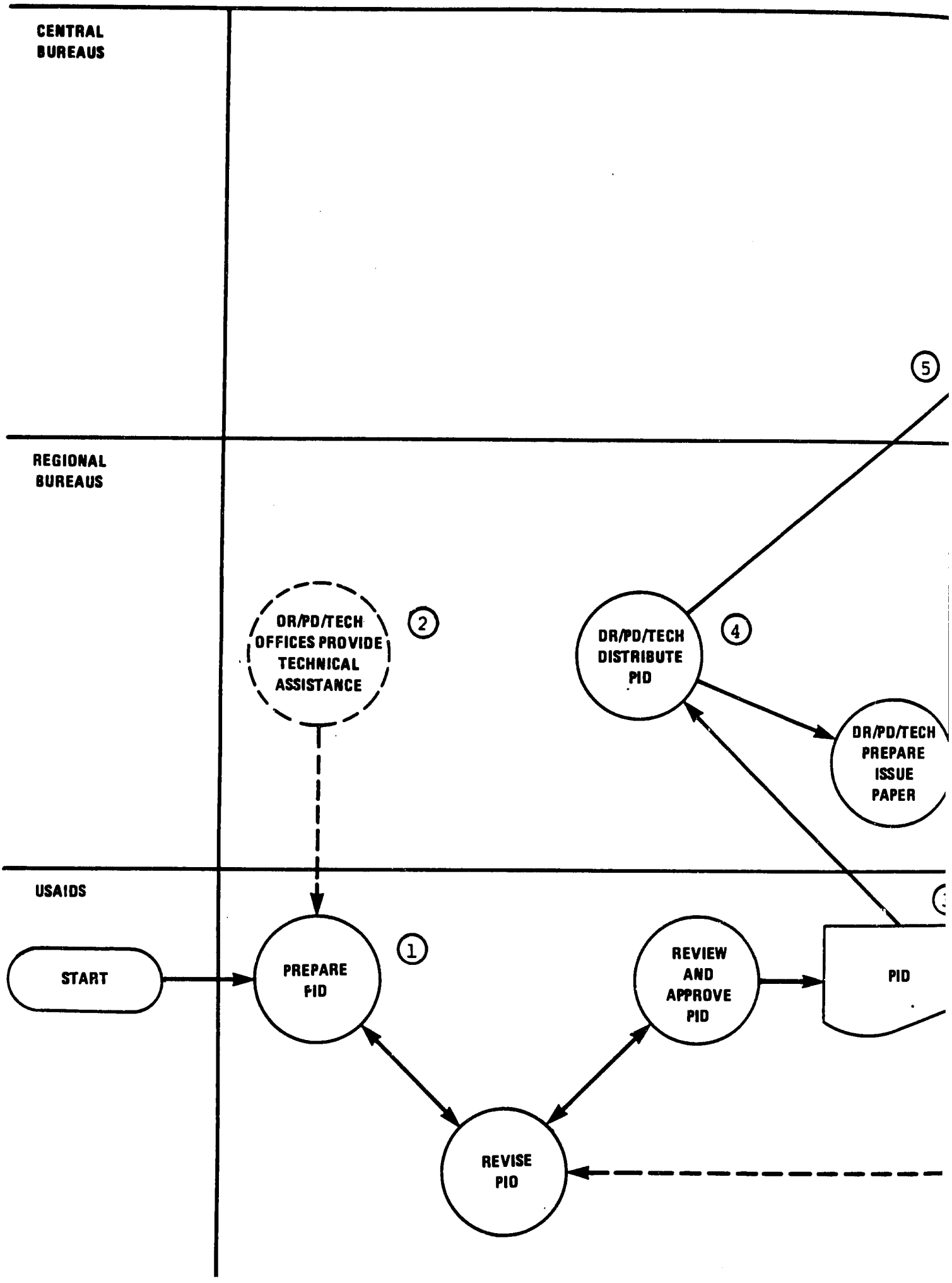
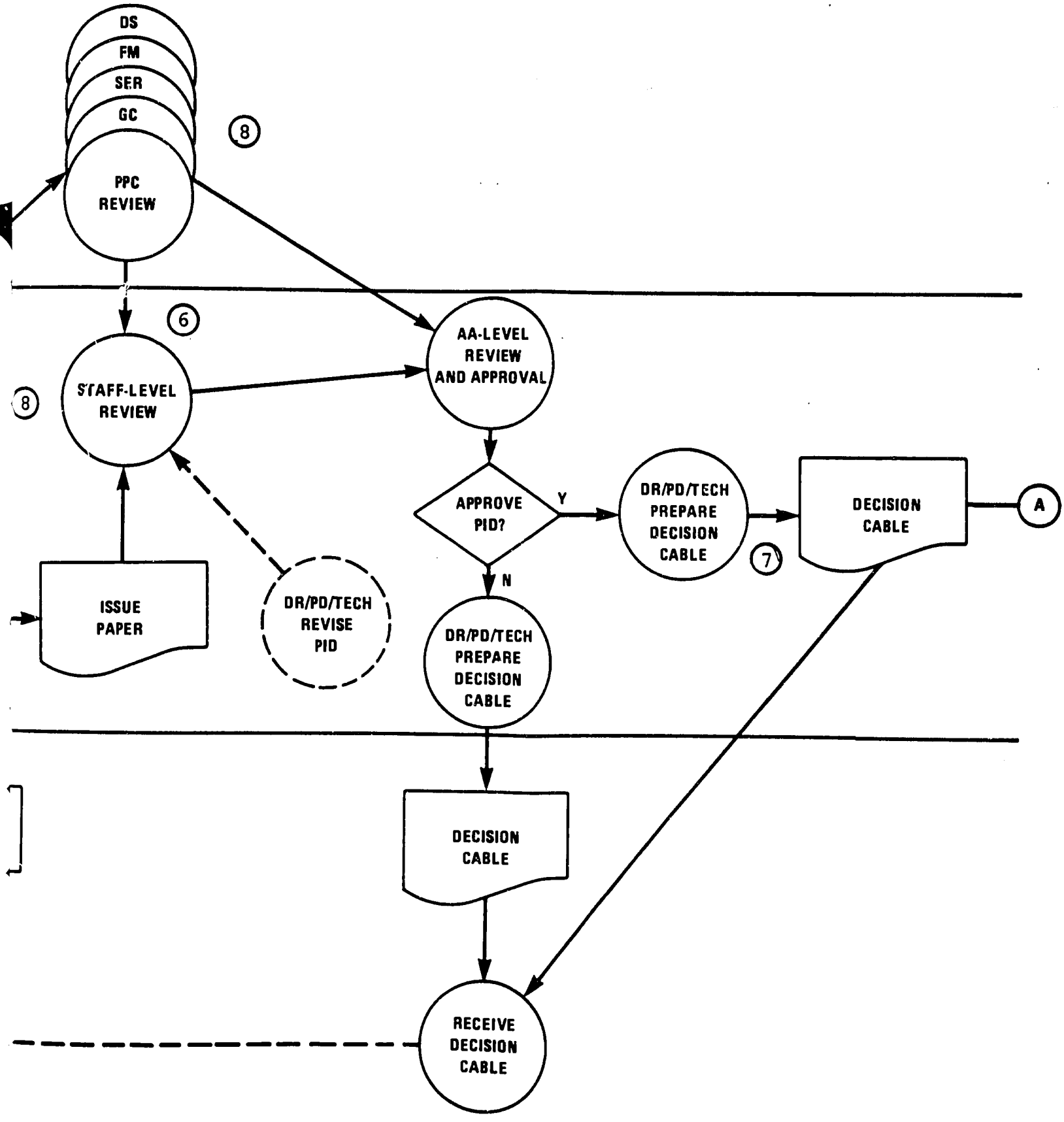

CENTRAL BUREAUS
REGIONAL BUREAUS
USAIDS
START
PREPARE PID
1
OR/PD/TECH OFFICES PROVIDE TECHNICAL ASSISTANCE
2
REVISE PIO
REVIEW AND APPROVE PID
DR/PD/TECH DISTRIBUTE PID
4
5
DR/PD/TECH PREPARE ISSUE PAPER
PID

EXHIBIT II

Work Flow In The PID Process



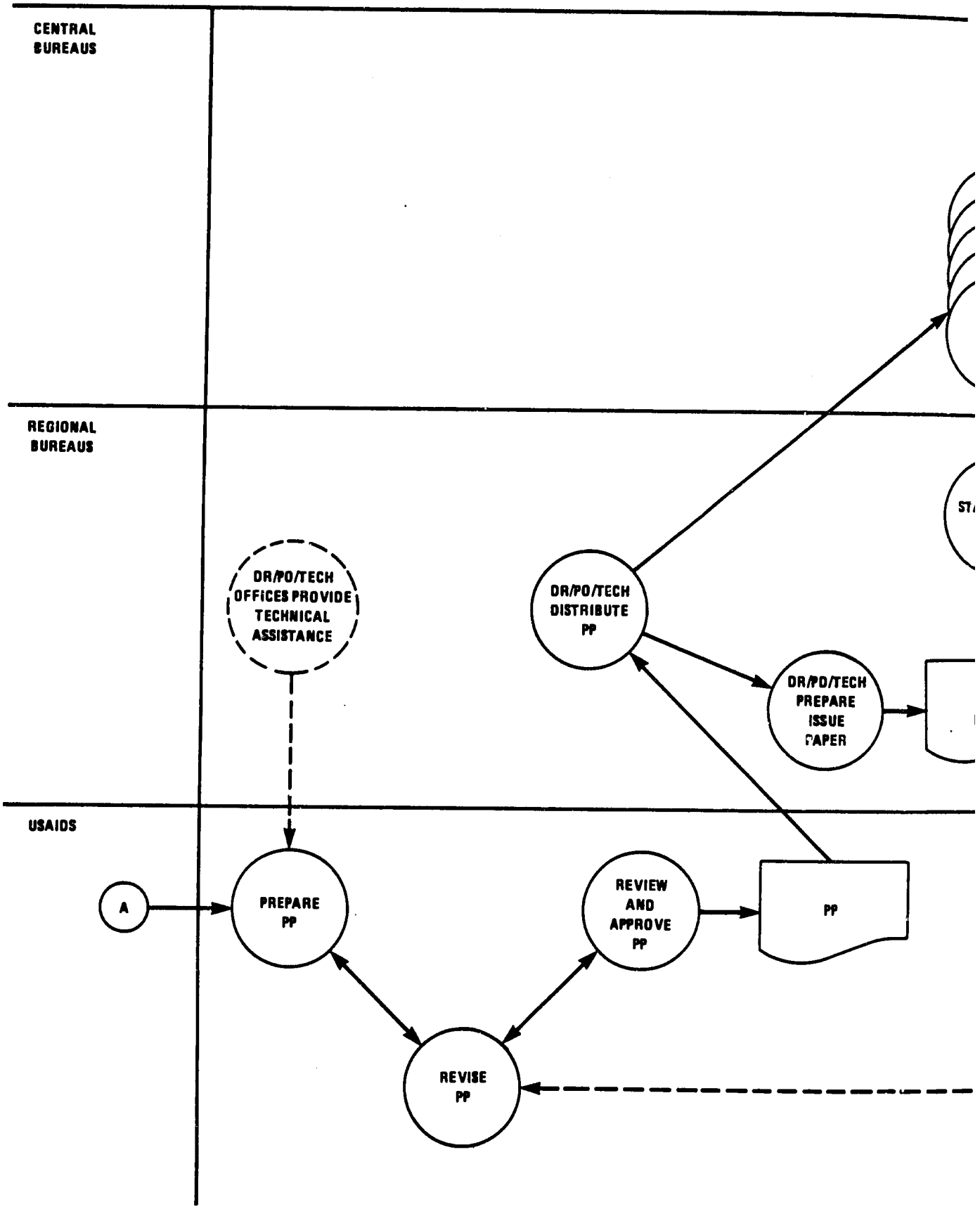
- While the document is circulating in Washington, tentative revisions can be prepared at any office involved in the review process by additions or deletions via word processing.

- Revisions involving budgetary considerations, or existence of supporting facts are aided by data processing assistance available at terminals in central and regional bureaus (8).

(2) All Target Processes Could Similarly Benefit

The flow of the PP portion of the PID/PP process is virtually the same as the PID portion, as is evident from Exhibit III, following this page. The same applications of automation are planned, and similar benefits should be obtained (for all of the target processes). In the case of the PID process that is originated in a smaller mission, e.g., Jordan, the impact on productivity enhancement will be reduced in comparison to that available in a sizable mission.

The primary difference lies in the lack of use of word processing equipment at the mission-level in the process. In this case, selectric typewriters would be employed in the original preparation of the document. OCR-type font would be used, and text, when received in Washington, would be transferred to word processing storage discs for use in subsequent handling throughout AID/W. All of the clerical and productivity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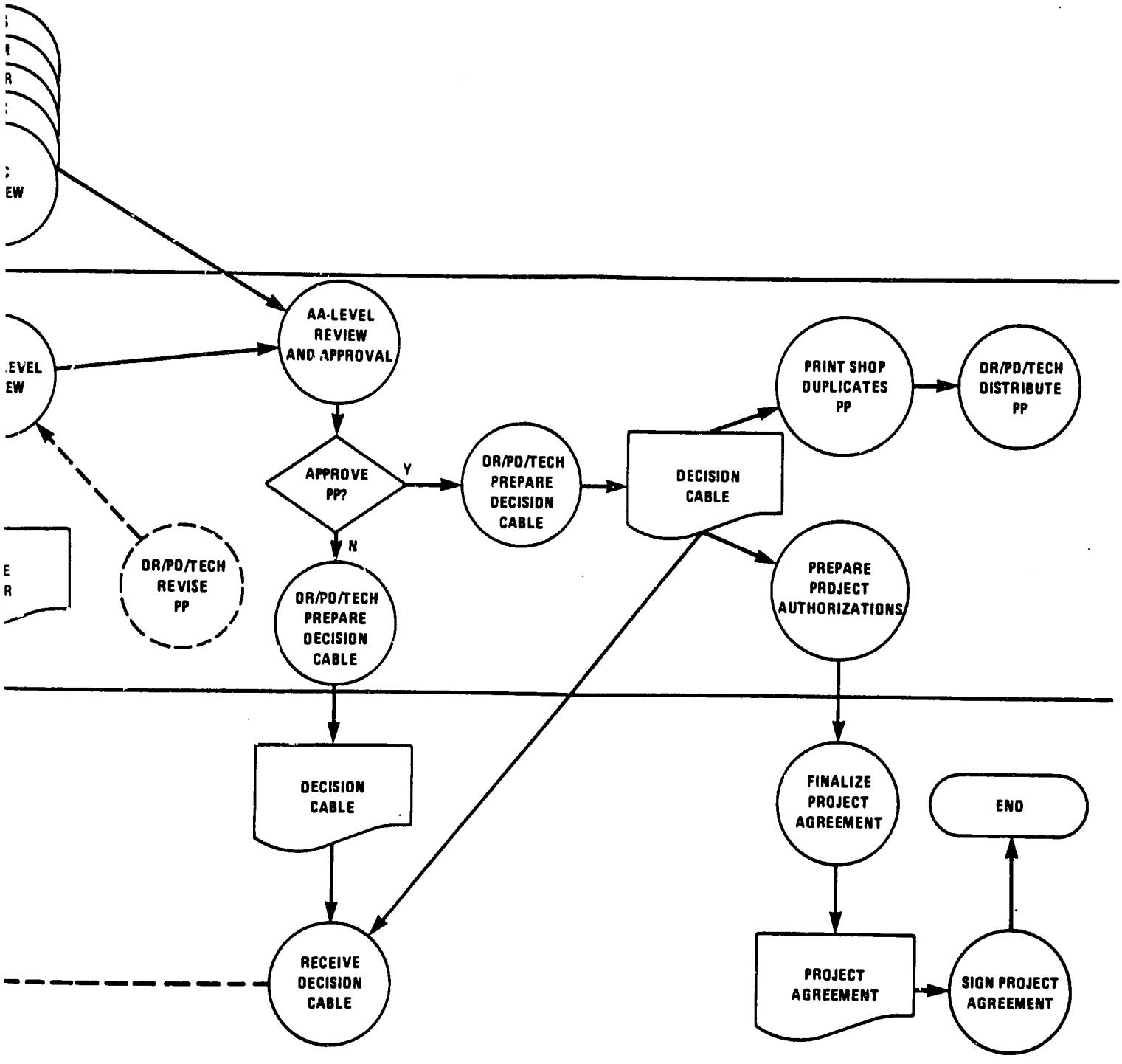
REVIEW AND APPROVE PP
PP
REVISE PP

EXHIBIT III

Work Flow In The PP Process



improvements cited above would be in evidence. Any revisions originating in the mission would continue to be available at the current manual pace.

* * *

The remainder of this report is organized into five chapters. This chapter has presented an overview of the office automation system and characteristics of the Plan to implement that system. Chapter II presents the management structure to implement the Plan. Chapter III presents a discussion of the system description. Chapter IV presents the budget estimates and implementation schedule for Plan "A" (FY 80-FY 81). The last chapter presents the budget estimates and implementation schedule in a general discussion for Plan "B" (FY 82-FY 84).

II. FIVE-YEAR OFFICE AUTOMATION PLAN MANAGEMENT STRUCTURE

II. FIVE-YEAR OFFICE AUTOMATION PLAN MANAGEMENT STRUCTURE

The purpose of this chapter is to describe an administrative and management framework for implementing the Five-Year Office Automation Support Plan. Management control, local operating environments, equipment cost justification and performance evaluation methodology are discussed. The specific management and administrative functions of the central authority responsible for the Plan are defined and delineated. Additionally, the lead AID office beneficiaries of office automation are identified to facilitate implementation of the Plan.

1. A CENTRAL MANAGEMENT AUTHORITY MUST BE ESTABLISHED IN SER.

AID currently has neither centralized office automation planning nor a single organizational unit responsible for applying office automation technology to Agency problems. Office automation support has grown in response to individual office requests. It has proliferated within the Agency on the basis of procurement policies rather than through the use of a central plan for integrated office support.

AID must, therefore, establish central management responsibility to direct the enhanced use of office automation support and to be accountable for the ongoing implementation

of the Agency-wide Plan. Uniform guidelines and controls are needed to ensure that the acquisition and deployment of the technology is well-planned and executed. Enhancement of the office automation capability must contribute to the Agency's ability to satisfy its program goals and operating requirements.

Budgeting and planning for office automation and the implementation of the Plan will be accomplished by the central authority located with SER. It will serve to:

- Establish and implement the Agency-wide Plan
- Supervise and coordinate implementation activities
- Support and guide local users
- Monitor and evaluate system implementation

There are two options for establishing the central authority in the SER Bureau:

- Create a time-limited task force drawing staff from the offices with needed management and technical skills
- Place management responsibilities in one of the two offices with office automation expertise--SER/DM or SER/MO, and provide additional staff resources

The primary role of the central authority will be, however, to provide technical assistance to users of office automation technology and to perform overall administration and management of the Plan. While participation in the Office

Automation Plan is to be voluntary, the central authority will identify potential candidate sites and work with specific AID/W and USAID organizational units to facilitate the Plan's implementation.

2. CENTRAL STAFF WILL ASSESS THE POTENTIAL FOR IMPROVED PRODUCTIVITY THROUGH OFFICE AUTOMATION.

The central authority will develop a methodology for program work measurement and equipment justification. This activity is intended to support:

- Budgetary justifications for office automation equipment and software
- GSA/NARS approval process for the acquisition of word processing equipment, data processing equipment, communications support and software
- Establishment of initial work measurements to provide a baseline to be used in assessing office automation improvements
- Benefits realization analyses conducted subsequent to the installation of office automation equipment to verify the estimates of expected improvement.

(1) Development of the Methodology for Productivity Measurement and Equipment Justification.

The productivity measurement methodology developed by the central authority should encompass both clerical and professional categories of staff activity. The methodology consists of seven activities as follows:

- Specification of the functions to be performed by office automation support

- Documentation of the current staffing patterns -- both professional as well as clerical, job composition and productive output of the affected sites

- Assessment of the staffing patterns and allocation of time under anticipated changes of organizational functions or workloads that may take place after implementation

- Review of the allocation of time and identification of job activities that are not receiving an adequate amount of attention; are not being performed at all; or, are receiving too much attention (e.g., retyping of documents several times; proofreading requirements of professional staff, etc.)

- Assessment of the impact on each staff position upon implementation of the Plan at the site. In this activity, no realignment of job categories nor staffing should be performed so that only the direct impact of the implementation can be identified

- Realignment of job categories or staffing. This includes adding and decreasing the number of full time equivalents (FTEs) in each position such that all positions are staffed to a "meaningful" fraction of a FTE

- Calculation of the Plan's economic benefits -- benefits realization.

Realization of benefits that are expected to result from the implementation of the Plan requires conscientious and careful planning and management attention at all levels and at each phase of the implementation process. Potential benefits refer to saved work. If it

is possible to translate the saved work into saved money, that is called a realizable benefit. If the necessary (follow-up audit) action has been taken, one has a realized benefit.

(2) Tailoring of the Methodology for Professional Activities.

Methods do exist to measure professional productivity although they are more difficult to apply. These methods are based upon the measurement of the time required to accomplish clearly-defined professional tasks and can be tailored to assess the needs of any local Plan participant. The central authority will have to develop such measurements and make them available to AID organizational units.

(3) Tailoring of the Methodology for Clerical Activities

The Plan's office automation support of clerical activities will take many forms of mechanized substitutions for manual labor. The central authority will assist AID offices in determining which, if any, of the following types of office automation support could be justified in a given organizational unit, including:

- Word processing in place of manual or electric typewriters

- Computer-based or mechanical filing and retrieval systems in place of manual filing methods
- Electronic transmission and distribution of memos and documents, in place of physical delivery
- Automatic preparation of printed documents, in place of multi-step keyboarding to achieve a printed result
- Methods of electronic dictation to streamline the preparation of text
- Electronic communications enhancements, such as facsimile, desk-to-desk communicating word processors, electronic mail.

Included in the methodology will be overall operational requirements such as:

- Acceptable data acquisition procedures
- Convenient and efficient handling of input and output data formats and media (e.g., hard copy, magnetic tape, etc.)
- Time involved for satisfactory processing and reporting
- Requirements for standardized processing and reporting formats
- Expected volumes, frequency of production and potential for satisfying expanded growth and program activities -- by AID offices
- Detail interrelationships of the technology components -- such as the "universal use" of OCR fonts for typewriters so that repetitive data entry is not required.

As a result, the ultimate choices of locations for office automation equipment will be based upon the actual knowledge of work flows, and tasks performed by AID organizational units.

3. THE CENTRAL AUTHORITY WILL ENSURE THAT AID ACQUISITION OF OFFICE AUTOMATION EQUIPMENT AND SOFTWARE FOLLOWS STANDARD PROCEDURES.

Acquisition of word processing equipment in AID will adhere to the new GSA regulations. As of October 1, 1979, all requisitions for new word processing equipment will be reviewed with GSA for approval prior to their issuance as solicitation documents or Requests For Proposals (RFPs). Additionally, the Agency will have to adopt and use current GSA regulations, issued by the National Archives and Record Service (NARS). These regulations will require AID to provide positive benefits resulting from the installation of work processing equipment before approvals for acquisitions are granted.

(1) Word Processing Feasibility Studies

As a result of the GSA rules, the central authority will assist project participants in preparing feasibility studies to justify all equipment and programming expenditures. The central authority may assist the user in some cases, by suggesting the desirability of providing an analysis of combined operations. In such cases, local units, with the proper assistance, may be able to demonstrate that equipment performance can display positive net benefits even though selected components do not. (This may be the case, for example, where a

word processor used both as a text editor and computer terminal shows net benefit only when both clerical and professional productivity is improved by using the equipment.)

(2) Telecommunications Acquisition

Telecommunications equipment and facilities will be procured procedurally through GSA schedules. Leased line circuits for a message switching system in AID/W will be obtained through the Automated Data and Telecommunications Service (ADTS) of the GSA, the normal supplier of such facilities.

Circuits for facsimile equipment can either be acquired in a similar fashion, through the dial-up facilities available from the Federal Telephone Network, or via normal C&P Telephone Company arrangements. Facsimile transmission equipment poses no unique procurement problem and can be purchased or leased from normal commercial sources. Similarly, satellite channels and terminals can be leased from commercial satellite carriers, (e.g., COMSAT, Western Union, RCA, American Satellite).

All telecommunications devices and facilities will, however, be procured and cost-justified centrally.

The central authority will serve as the coordinator and manager of AID telecommunications support. While telecommunications service will be divided among local AID organizational units, no effort will be made to allocate telecommunications expenditures beyond the central authority.

(3) Three Types of Compatibility Standards Will Be Utilized by the Central Authority and Adhered to by All of AID During Equipment Acquisition.

The central authority will serve as the coordinator and manager of all of AID equipment acquisition activities. There are three types of compatibility standards that will be a routine part of these acquisitions as follows:

- Communications protocols for all office automation devices will be developed. The protocols, which will consist of compatible pairs, will allow all AID office automation devices to communicate with at least one other device. The protocols need not be mandatory for all equipment, although the central authority must ensure that all equipment possess one or more protocols that are standard throughout AID. Without compatible communications, all office automation equipment would be isolated and stand-alone, inhibiting the development of an Agency-wide office automation network.

- Data transmission-oriented compatible modems will be required at all termination points of the AID network. This will ensure the capability of all office automation devices

to interconnect within the network. This requirement will be rigorously enforced by the central authority.

- Software will be examined to determine its applicability to permit the emulation of one device as if it were another through "translation" techniques. This type of capability permits the recording and revision of text at any station in the office automation technology system. This is an especially valuable resource in the case of word processors. Software of this type is presently available for microprocessors, and a number of different word processors can be interconnected in this manner. Further, for minicomputers and larger word processors, this type of software could be developed and integrated into a message switching minicomputer by the central authority.

(4) Preparation of the Office Automation Acquisition Documents.

The central authority will develop specifications for office automation equipment and facilities that conform to the overall operational requirements. These specifications will conform to generally-accepted competitive procurement practices and will be consistent with government procurement regulations. The types of material that would be included routinely in these specification documents include:

- Section I could be an "overview type" reference tool for potential evaluators to use in screening various contractor offerings. It should contain brief summary-type statements describing contractor capabilities.

- Section II could relate to the actual hardware configuration(s) and would be repeated for each type of configuration that is offered.

- Section III could relate to the software systems in use -- especially for the data processing equipment. It would be repeated for each version where differences exist, and must be identified to the specific configuration(s) where used.

- Section IV could relate to user-support capabilities and procedures -- this is especially important for the more remote overseas sites.

- Section V could be the contractor's policies and procedures in accordance with Government requirements for certifications and such other procurement documentation as is required.

The document(s) would be prepared as a multi-part questionnaire to be completed by the offeror(s). When completed, it would contain complete "generic" descriptions of all hardware-based products and services being offered.

4. OFFICE AUTOMATION SITE PREPARATION WILL BE A JOINT RESPONSIBILITY OF THE CENTRAL AUTHORITY AND THE USER.

Preparation of sites for office automation equipment should reflect the combination of Agency standards as well as the local office environment and available staff resources. Office automation should be installed in sites that are conducive to productive work. Characteristics of such sites might include:

- Flexibility
- Noise free
- Convenient
- Colorful

These sites must be identified by local units and reviewed and approved by the central authority to conform to Agency standards.

The central authority will establish procedures to assist in:

- Site selection
- Inspection of sites after installation to include furnishings, environmental considerations, equipment, and power and communications connections
- Maintenance quality and responsiveness subsequent to initial installation.

Most office automation equipment sites will be in Washington, D.C. These sites will be easier to support both during the installation and maintenance processes. Those overseas locations receiving office automation equipment will be forced potentially to rely on local staff to maintain the quality of the site environment. If necessary, the central authority will support complex overseas site installations on an as needed basis, for example, with the use of TDY staff. (This aspect of initial installation and ongoing

maintenance support must be factored into the preparation of both the budgetary justifications and the benefits realization methodology discussed previously.)

5. THE CENTRAL AUTHORITY WILL PLAY A MAJOR ROLE IN THE INSTALLATION AND TESTING OF OFFICE AUTOMATION EQUIPMENT.

As the single Agency office automation technical resource, the central authority will be actively involved in the acquisition and installation of all AID office automation equipment. The central authority will, at the beginning of a local procurement process, develop test specifications and acceptance criteria to be included in the equipment procurement document. These specifications will be applied by the user at the time of equipment installation. By developing standard Agency equipment test specifications and acceptance criteria, the central authority will eliminate redundant activities and, over time, develop specifications and criteria applicable throughout the Agency.

Special staff from the central authority will assist local AID offices during the equipment installation time period to perform tests, document deficiencies and ensure vendor compliance with technical contract commitments. A comprehensive program of equipment acceptance testing is essential to achieve expected levels of system performance. All categories of equipment will be tested for contract

compliance, including operational performance and compatibility. Test programs will be supported by detail documentation that describes the tests to be made, expected levels of performance, test results, locations of tests and the need for periodic re-testing.

6. THE CENTRAL AUTHORITY WILL MONITOR AND EVALUATE ALL AID OFFICE AUTOMATION EFFORTS ON A CONTINUING BASIS.

After an office automation site has stabilized and user proficiency has reached a high level, the following activities have been shown to be effective in order to ensure that the benefits of the system are fully realized:

- Exploration of possible areas of unused potential by all levels of management. System performance should first be compared to the objectives of the planned implementation to determine in what areas office automation has fallen short of the expectations of system planners. The central authority can then analyze available data on system performance and utilization to identify efficiency bottlenecks, underutilized system functions, inappropriate staffing levels, etc.

- Measurement of performance data. Measurement procedures will be established by the central authority to yield data pertaining to the elapsed item for each constituent portion of a selected work process. Further, data will be used to identify, by class, grade and labor cost, the staff positions involved in each process. As a result, the total cost and elapsed time for constituent components of a work process will be identified and compared to both manual costs and other automation alternative costs.

- Performance reporting will then be utilized on a regular basis to report progress against stated objectives. These reports will be used to project

long-range cost savings, especially during the start-up years when no historical data is available to assist in equipment cost justifications.

- Equipment maintenance and program operation records will also be maintained by the user for central authority use to establish performance data on all installed equipment. Comparative equipment cost records will be used to predict equipment reliability, performance to specifications, and repairability. Performance records maintained on software will also be an essential input for future software development and in future procurements. Questionnaires should be developed to elicit responses from users relative to their acceptance and frequency of use of specific office automation applications.

- Feedback from users regarding areas of unused potential. Not all sources of potential use are directly apparent, and the reasons for underuse may be even less observable. Users can often provide excellent insight as to what areas can provide additional benefits and whether or not functions have been underused or even unused due to understaffing, unfamiliarity with the system, design complexity, policies, etc. User participation in every phase of the office automation activities is stressed as being very important in properly evaluating the effectiveness of the of the automation activities.

- Central authority management will publish periodic reports of status, development, and performance relative to the system. These status and performance reports will be a major influence on obtaining enhanced participation in office automation from other AID units. The reports will be quantified (i.e., productivity improvement statistics) and will serve the internal Agency as public information (i,e., marketing) tools. To a large degree, the enhancement of office automation throughout AID and the proliferation of office automation equipment in the Agency is dependent upon the successes reported in these documents.

- Task observation by the central authority. The central authority must observe a given system-related task or work routine and determine for each task observed if the task can be:

- Eliminated
- Combined with another task
- Done by a worker of a lower skill-level
- Shifted in time to a slack period
- Simplified if related policies can be changed

. Testing of possible solutions to greater benefits realization. The strategies developed to take advantage of unused system potential (e.g., changed procedures, additional terminals, faster printers, revised output formats, etc.) should be tested within several AID units. The testing should be conducted on as small a scale as will still yield valid results in order to minimize costs and disruption of regular activities until their advantages have been demonstrated. Testing should be closely observed by the central authority and should be fully explained to those affected personnel so that misunderstanding do not arise concerning the changes to be made or the reasons for such changes.

7. TO ENSURE UNIFORMITY THROUGHOUT AID, THE CENTRAL AUTHORITY WILL WORK WITH THE AID PERSONNEL OFFICE TO COORDINATE OFFICE AUTOMATION STAFFING PLANS, POSITION CLASSIFICATIONS AND AGENCY-WIDE TRAINING.

The central authority will assist the AID personnel office in the development of office automation staffing plans. These plans will describe the position classifications for office automation units. The plans will be based on information supplied by the user organizational unit and will identify individuals from the local unit to fill each position.

Copies of each unit staffing plan will be maintained by the central authority to permit suggestions for inter-Agency staffing reallocations as vacancies appear or are filled. Staffing action will be initiated and finalized by local user units in conjunction with the AID personnel unit and

central authority. This process will add an overall staff resource allocation control function to AID office automation.

(1) The Single Largest Challenge Is the Training of Clerical Personnel.

Procedures, job classification and training are integral to the successful installation of office automation. The purpose of establishing these procedures is to:

- Ensure management's understanding of the function
- Explain the concept of the function and its relationship to other functions
- Provide guidelines relative to performing the function
- Explain in detail how to prepare forms, enter data, and utilize reports
- Provide a source for answering questions that may arise relative to a function.

The content of the new office automation positions may require some reclassifications and the need to acquire or relocate specific individuals. To overcome potential OPM classification problems and to supplement the potential training of the existing AID office automation staff, the central authority should investigate using contractor-supplied personnel. This solution, if acceptable, could result in the availability of

skilled office automation operators at AID allocated by a central authority. Use of contractor personnel should not impair the flexibility nor availability of office automation equipment operators. To serve as a viable solution, however, suitably qualified contractor firms must be available. Central authority management should explore this alternative further to determine its utility.

(2) Training Activities Should Be Conducted To Educate Both Operators and Users.

A key responsibility of the central authority is the preparation, distribution, and maintenance of all orientation materials and the coordination of all training activities. Training for clerical positions is essential because of the need to provide in-house training for most current clerical employees. This is a reflection of the short supply and intense competition for qualified office automation operator candidates. Further, in-house training of operators is particularly important in consideration of the difficulties implicit in obtaining qualified personnel within AID.

Orientation and training of clerical and professional personnel will be conducted in a variety of ways, and will be coordinated by central authority management.

The types of activities that may be involved in accomplishing this effort include:

- Development of specific materials and tools
- Conducting training sessions to provide formal education in the use of the individual components with emphasis on day-to-day operational requirements.

Materials for training, including manuals, presentations, newsletters, and formal training sessions, are available from many sources, including the Government, outside consultants, and some hardware vendors. Using existing materials from outside sources as well as materials developed specifically for AID, the central authority will be capable of both coordinating and, when desirable, conducting the training of both clerical and professional staff on an "as needed" basis.

* * *

This chapter has described the proposed organizational structure necessary to implement the Office Automation Support Plan within AID. The next chapter describes the implementation of the Plan in terms of the estimated hardware and software support necessary to meet initial AID office automation requirements.

III. SYSTEM DESCRIPTION

III. SYSTEM DESCRIPTION

The Office Automation Support Plan consists of a series of interconnected as well as discrete office automation equipment installations throughout AID. The system has been designed based upon reasonable assumptions as to which organizational units will participate in the Plan. It has been necessary to postulate equipment locations based upon the involvement of AID organizational units in the five target processes. The Plan, describing these configurations, may, however, be used for both the purposes of budgeting and performance estimation as well as for the implementation of the first two years. This assumes an adequate level of cooperation from identified local AID unit participants.

1. THE FIVE TARGET PROCESSES WERE STUDIED TO PROVIDE A FIRST-LEVEL REQUIREMENTS ANALYSIS OF AID OFFICE AUTOMATION NEEDS.

The office automation systems description is based on an analysis of the AID organizational structure and the workflows associated with the five target processes. Each AID organizational unit was reviewed to provide estimates of approximate:

- Clerical and professional staff complements

- Involvement in the target processes in terms of:
  - Document preparation
  - Document review/revision
  - Document coordination/clearance/approval
- Current clerical responsibilities/capabilities
  - Typing
  - Duplication
  - Distribution
  - Filing
  - Data processing
  - AID/W communications
  - USAID communications.

By reviewing the type and level of involvement of each organizational unit in the five target processes, it has been possible to identify concentrations of clerical activities. These concentrations of clerical activities are susceptible to the application of office automation, for the purpose of improving productivity. As Exhibit IV, following this page, indicates, the highest concentration of processing activities in the five study processes include the regional bureaus, DS, PDC, SER, PPC, GC, LEG and OFM.

While actual clerical support requirements vary for each unit based on volume, the units are nonetheless linked by the clerical activities associated with the preparation, revision and coordination of common documents and timeframes. This linkage forms the cornerstone of the office automation system. Additionally, it provides the initial justification for creating the system configuration.

EXHIBIT IV

DOCUMENT PROCESSING RESPONSIBILITIES
IN KEY ORGANIZATIONAL UNITS*

ORGANIZATIONAL UNIT	PROCESSING RESPONSIBILITY				
	PID/PP	ABS**	CP	PIO/T&C	Non-Project Assistance
A/AID	○	○	○	○	○
LEG			●		
GC	●			◒	
OFM		●			
PPC	◒	●	●		
DS	●	●	●	●	●
PDC	●	●	●		
SER	○			●	
AFR	◒	●	●	●	◒
ASIA	◒	●	●	●	◒
LAC	◒	●	●	●	◒
NE	◒	●	●	●	◒

*Document processing responsibilities are identified by the following key:

- ● Original preparation, revision and coordination/clearance
- ◒ Revision and coordination/clearance
- ○ Coordination or clearance

**The ABS column refers only to those offices with responsibility for the ABS program budget or with lead coordination responsibility.

2. THE PLANNED OFFICE AUTOMATION EQUIPMENT CONFIGURATION IS BASED UPON ESTIMATED LEVELS OF REQUIRED TECHNOLOGY SUPPORT AND VOLUNTARY PARTICIPATION BY THE LOCAL AID UNITS.

Using the results of the target processes data volumes and work activity analyses, approximations projected from AID-supplied data, and information from previous AID studies, an office automation system configuration was developed to meet the requirements of the Agency. Exhibit V, following this page, graphically presents that configuration in three distinct technology categories:

- Word processing (hardware)
- Data processing (minicomputer and main frame hardware, software, and user applications)
- Telecommunications (hardware, lines and network).

Initial projections of hardware and associated software have been developed by estimating volunteer participation in the Plan. These projections have been tempered by the realities of the Agency's ability to absorb new technology in a short time period. Additionally, the projections also consider the clerical support needs and existing clerical resources of the specific organizational units involved in the five target processes and included in the Plan.

Exhibit V provides detail hardware and software support requirements for the Agency by major organizational unit and

EXHIBIT V

A Postulated System Configuration

	ESTIMATED NUMBER OF EQUIPMENT INSTALLATIONS IN STRATEGIC LOCATIONS													TOTALS
	A/AID	LEG	GC	OFM	PPC	BS	PDC	SER	AFR	ASIA	LAC	NE	MISSIONS	TOTAL DEVICES
WORD PROCESSING EQUIPMENT														
*Multi-Disk, Full Screen, Communications	1	1	1	1	5	15	2	6	6	5	5	6	-	54
Memory Typewriter	-	-	-	-	-	-	-	-	4	4	3	2	1	14
OCR Input (Scanners)	-	-	-	-	-	1	1	2	2	2	2	2	-	12
Photo-Composition	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Electric Typewriter with OCR Font	-	-	-	-	-	-	-	-	-	-	-	-	●	-
DATA PROCESSING SYSTEMS														
Document/Correspondence Control	●	●		●	●	●	●	●	●	●	●	●		
PIO Processing								●						
Operating Year Budget		●		●	●	●	●	●	●	●	●	●		
COMMUNICATIONS EQUIPMENT														
Connection to Message Switch	●	●	●	●	●	●	●	●	●	●	●	●		
Facsimile	1	1	1	1	3	7	2	6	8	8	7	7	-	52
Answering Service	●				●			●	●	●	●	●		
Satellite Channel	●							●				●		
Package/Voice	●				●	●		●						

* Word Processing Equipment Is Also Scheduled for Cairo and Manila

● Service Location/application user

location. Specific configuration requirements by equipment category are provided based upon study estimates. Major equipment and supporting software recommended for use by the Agency over the next two years include:

- Word processing
  - Multidisk, full screen, communications devices
  - Memory typewriter
  - Electric typewriter with OCR font
  - Photocomposition equipment
  - OCR equipment/scanner
- Data processing
  - Document/correspondence control system
  - PIO processing system
  - Operating year budget monitoring and modeling system
- Telecommunications
  - Message switching connections
  - Facsimile devices
  - Package/voice connections
  - Answering service devices
  - Satellite channel connections.

The estimated budget to obtain this equipment, software, telecommunications facilities and personnel resources necessary to develop and support this effort is approximately $5,448,000 over two years. This budget estimate is based on projected equipment costs and on the configuration described in Exhibit V. Based on actual volunteer participation in the Office Automation Support Plan, modifications will be made to the quantity, type and/or delivery schedule of the

proposed configuration. Further, by adjusting criteria for participation, the budget can similarly be "fine-tuned."

3. OFFICE AUTOMATION TECHNOLOGIES - WORD PROCESSING, DATA PROCESSING AND TELECOMMUNICATIONS - WILL BE INTRODUCED THROUGHOUT AID/W AND IN THE FIELD.

The Plan will provide for the introduction of office automation technology throughout AID. Both AID/W and local AID units will benefit from the initial introduction of office automation equipment and communications links. The first two years of the Plan are directed at the installation of cost-justifiable equipment to support routine operations. Only one aspect of the system, the international telecommunications satellite link between a local AID unit and AID/W is experimental. If this proves cost justifiable, however, it will be expanded to other Agency field locations in subsequent years.

Exhibit VI, following this page, describes the five potential and generic types of word processing equipment, their characteristics and features, capabilities and approximate costs, that will be installed in AID

(1) Word Processing Technology Will Be the Most Common Form of New Office Automation Technology Introduced in AID.

Word processing will provide a wide range of support to clerical operations in AID. The equipment range

EXHIBIT VI

Characteristics of Word Processing Installations

SYSTEM	COMPONENTS	MEMORY	CAPABILITIES	PRICE
Stand Alone Electric Typewriter	. Standard Typewriter	. Little or no Internal Memory (0-1000 Characters) . No External Storage	. Limited Text Editing . OCR Font Available for Automated OCR Scanner Input	≤$2,000
Stand Alone Memory Word Processor	. Integral Keyboard/Printer (Modified Standard Typewriter)	. 0-6000 Characters of Internal Memory . External Magnetic Storage (Card, Cassette, Diskette)	. Standard Text Editing	$5K-$10K
Stand Alone Single Line Display Word Processor	. Integral Keyboard/Printer with Single Line CRT or Plasma Display	. 8K Characters of Internal Memory . External Magnetic Storage	. Standard Text Editing . Communications Available in Some Models	$10K-$14K
Stand Alone Video Display System	. Keyboard . Separate Printer . CRT (6 line to full page) Display	. 8K to 76K Internal Memory (usually 64K) . External Magnetic Storage	. Sophisticated Text Processing . Limited Data Processing . Communications Available	$10K-$20K
Shared Logic Word Processing	. Central Processor . High Speed Printer(s) . Character Printer(s) . Support up to 35 Terminals . Tape & Disk Storage	. Terminal Memory--6-64K . CPU Memory--Expandable . External Storage--Expandable	. Integrated Word and Data Processing . Communications	$25K-$150K

includes standard selectric typewriters with OCR fonts for use in offices (primarily local AID units) not suitable for sophisticated electronic equipment. This equipment will be used in concert with OCR readers at central locations for the foreseeable future. It will transmit hard copy data to the central locations where it will be converted to electronic form by the OCR input scanners. This facility eliminates the need for redundant keystroking operations with its attendant problems of transcription errors, processing delays, etc. Additionally, this capability will provide semi-automated linkage between the office automation system and remote or local AID units, not currently (or in the near-term, if ever) capable of supporting contemporary office automation technology.

The other end of the equipment spectrum is a multidisk, full screen video display, standalone word processing unit capable of communicating and interfacing with other Agency word processing equipment.

(2) Data Processing Technology for the Office Automation System Consists of Both New Hardware and Applications Software.

Additional data processing equipment will be procured to support new telecommunications applications and to

provide assistance to the AID professional staff.

Equipment that will be required for this purpose includes:

- Minicomputer system, connected via a high-speed host to the message switch
- Minicomputer message switch, equipped with disk and tape memory, plus an appropriate number of line units, to service all of the terminal locations in AID/W
- Work station data processing terminals, intelligent-type terminals with programmable function keys, programmable screens, local memory, and limited local processing and computational ability. In some cases, especially where the demands of word processing usage are sufficiently high to permit effective sharing of a terminal between clerical and professional staff, this terminal can be installed for combined use.

Specific improvements will also be made in professional program support by developing a number of new data processing applications, including:

- Document/Correspondence Control System - To track the progress of work throughout the Agency, and to locate text items that should be available to any particular individual.
- PIO Processing System - Automated, computer-generated preparation of contract terms, conditions, and standard phrases, to reduce the time and labor or preparation, while retaining flexibility for individual procurements.
- Operating Year Budget Maintenance and Modeling System - Computer-generated reports and displays that show obligated funds, funds remaining, and provide the ability to improve the fiscal management of individual programs

and projects; provides the ability to construct new spending programs within overall funding limitations, and to tailor, restrict, or expand programs in response to changes in overall funding levels.

(3) Office Automation Improvements in Telecommunications Consist of Additional Hardware and Development.

In the telecommunications category, a number of specific facility enhancements will be undertaken including:

- Message switching to:
  - Link many of the AID/W offices, particularly those involved directly in the preparation of the five processes.
  - Interconnect AID/W offices with State's cable system.
  - Act as an electronic, digital intercom, for improved coordination and communication throughout AID/W.
- Facsimile to:
  - Provide a no-delay document transmittal service between AID/W offices.
  - Serve as an interim measure to supplement AID/W communications while the message switching system is being installed.
- Telephone answering service that will:
  - Establish contact in the absence of one of the two parties to a telephone call. This capability should expedite coordination matters considerably.
  - Involve answering operators (manual); and answering machines, digitized voice and packet-based voice messages (automatic).

- Leased-line telephone network (Washington, D.C. area only) with:
  - Channels capable of 2400 bit per second data transmission speeds.
  - Equivalent modems to accommodate data transmission speeds.
  - Analog channels for 3-minute per page facsimile equipment.

The development of a computer-based message switching system to interconnect AID/W offices is a clearly defined requirement for the Office Automation Support Plan. The separation of offices in the Washington area, combined with the need for coordination and document handling, establishes the requirement for better interoffice document and text communication.

Moreover, the flow of overseas calls into and from the State Department network will be readily accommodated throughout AID by connection to a local AID message switching system. This enhancement of communications support will significantly improve professional productivity, and potentially shorten the elapsed time to complete assignments.

(4) Satellite Channels Will Provide an Assessment of Experimental Document Transmission.

AID/W and a USAID (potentially Cairo) will be linked together for the second year of the office automation

system by a satellite communications channel. The satellite channel will provide AID with an experimental capability in international telecommunications and data transmission. The Cairo USAID and the Near East Bureau have been targeted initially because of the dollar volume of the AID program in Egypt and the technological capabilities (planned installation of a minicomputer and word processing equipment) in the Cairo USAID.

The satellite channel link between the overseas mission and a regional bureau will facilitate the assessment of costs and benefits of expedited transmission of lengthy documents. These documents cannot be accommodated by the State cable network, because of the implied overloads that might occur if their presence on the network were encouraged. Leased satellite channels, however, between overseas points and Washington, D.C. can be used to accommodate AID's experimental purpose.

* * *

This chapter has presented the office automation system configuration. The next chapter presents the projected Office Automation Support Plan costs, development schedules and detail implementation activities.

IV. OFFICE AUTOMATION PLAN "A" BUDGET ESTIMATES AND IMPLEMENTATION SCHEDULE

IV. OFFICE AUTOMATION PLAN "A" BUDGET ESTIMATES AND IMPLEMENTATION SCHEDULE

The overall cost estimate for the first two years of the Plan is approximately $5,448,000. This estimate includes budget amounts for:

- Office automation hardware
- Data processing software
- Telecommunications facilities
- Management support

The overall budget estimate will be encumbered and spent during the first two years of the Plan, assuming an adequate level of user cooperation.

To support the implementation of the Plan, AID will be required to expend approximately 28 staff years of office automation specialists and technology managers. The cost for this personnel complement is included in the overall budget estimate. These resources, a combination of in-house and consultant personnel, will staff the central authority. They will conduct a series of seven major activities concurrently, over the next two years, to ensure adherence to the Plan. The major activities to be performed by the personnel include:

- Establishing the management structure
- Completing the system design
- Acquiring additional equipment

- Installing and monitoring the system
- Operating the centralized system equipment
- Coordinating staff resource usage
- Refining the system.

1. THE OFFICE AUTOMATION SUPPORT PLAN "A" BUDGET IS ESTIMATED AT APPROXIMATELY $5,448,000 SPREAD OVER THREE OFFICE AUTOMATION TECHNOLOGIES AND MANAGED BY A CENTRAL OFFICE WITHIN SER.

Projected Plan expenditures can be divided into three office automation technology cost classifications. Each classification is constructed of approximate equipment and personnel costs in 1979 dollars. It is also based on projected levels of voluntary cooperation in the Plan. If the success of the Plan varies significantly in either direction, however, overall cost estimates will have to be revised. SER management can only ensure an expenditure-level of approximately $5,448,000 by implementing the minimum configuration described in the previous chapter. A more detail analysis of projected costs by category (equipment, staff resources, software, communications) follows. Exhibit VII, following this page, summarizes the budget for the three Office Automation Technologies.

(1) Planned Word Processing Technology Costs Are Estimated at Approximately $1,708,000.

The total word processing-related cost component of the Plan is estimated at approximately $1,708,000.

EXHIBIT VII

Estimated Costs of the Second Alternative

	FYs 80-81 ($000's)	FYs 82-84 ($000's)	Total ($000's)
Word Processing			
CRT word processors	1,187[1]	3,370[2]	4,557
Memory typewriters	112	-	112
Combined WP/DP units	-	780	780
OCR scanners	240	385	625
Photo compositions	25	79	104
Protocol translators	144	-	144
Copying (intelligent, communicating)	-	1,230	1,230
	1,708	5,844	7,552
Telecommunications			
Facsimile	78	240[3]	318
Satellite channels	264	331	595
Leased lines	240	360	600
Message switching terminals	-	170	170
Telephone answering service	-	70	70
Voice message services	-	185	185
Teleconferencing	-	645	645
	582	2,001	2,583
Data Processing			
Minicomputers	500	-	500
Terminals	40	330	370
Graphics	-	130	130
Programs	824	-	824
	1,364	460	1,824
Personnel[4]			
Contractor	1,512	2,280	3,792
AID staff	282	745	1,027
	1,794	3,025	4,819
Total	$5,448	$11,330	$16,778

Notes:
1. Includes $200,000 set aside for installation of word processing equipment at USAIDs.
2. Includes $450,000 set aside for installation of word processing equipment at USAIDs.
3. Includes five digital high-speed units.
4. Estimated at 19 person-years of contractor effort and 94 person-years of AID/SER effort. This excludes operating personnel and training staff.

The various types of word processing equipment will have associated costs as follows:

- Word processing units will cost between $17,000 and $20,000 each for the recommended full screen display, multi-disk, communications, and standalone devices. The 54 units that have been identified will have a total cost of approximately $1,187,000*.
  - About one-third of these word processing units should be equipped with hardware protocol translator devices. These translators will permit otherwise incompatable word processors to communicate with one another.
  - The translator devices average about $8,000 each and for 18 devices the total cost is approximately $144,000. If, in fact the acquired word processors are compatable, this cost would be avoided.
- Memory typewriters will cost approximately $8,000 each. The 14 units that have been identified will have a total cost of approximately $112,000.
- The remaining two word processing-related expenditures are for OCR readers and photocomposition units.
  - About twelve OCR centers will be employed in various regional and central bureaus, each requiring an OCR reader unit costing about $20,000. The total OCR expenditure, excluding OCR type fonts and electric typewriters, will be approximately $240,000.
  - Photocomposition equipment, to eliminate double keyboarding when preparing printed documents, will be installed in one location at a cost of $25,000.

*Refer to Footnote 1, Exhibit VII

Word processing equipment expenditures in the aggregate are approximately $1,708,000 as detailed, which is approximately 27% of the total Plan budget.

Further, it is assumed that standard selectric typewriters with OCR fonts will be installed for use in USAIDs until such time as more sophisticated equipment is able to be installed and maintained. No additional costs have been assigned to the Plan's budget for this equipment.

(2) Planned Data Processing Technology Costs Are Divided Between Hardware and Software Development and Are Estimated at Approximately $1,364,000.

The total data processing-related cost component of the Plan is estimated at approximately $1,364,000. The various types of products and equipment will have associated costs as follows:

- Data processing software development expenditures are budgeted for approximately $824,000. Each of the four major software systems was estimated on a fixed price basis, assuming either in-house or contractor development (three user applications and one systems software). Software costs, by system, are estimated at the following approximate level:

  - Message Switching System Software: $500,000
  - Document/Correspondence Control System: $162,500

- PIO/T&C Processing Systems: $162,500

- Operating Year Budget Maintenance and Modeling System: $162,500

. Data processing hardware expenditures budgeted for the Plan are of two varieties as follows:

- Four intelligent terminals to serve both as workstations to support the four new applications and as word processing compatible workstations will be procured. The terminals should average about $10,000 each for a total of $40,000.

- A larger hardware expenditure is for two minicomputers at $250,000 each. One of the minicomputers will service the Message Switching System Software. The other minicomputer will service the three user applications.

Data processing hardware and software expenditures in the aggregate are approximately $1,364,000 as detailed, which is approximately 25% of the total Plan budget.

(3) Planned Telecommunications Technology Costs Are Estimated at Approximately $582,000.

The total telecommunications-related cost component of the Plan is estimated at approximately $582,000. The various types of equipment and services will have associated costs as follows:

. Facsimile transmission units, at approximately $1,500 a unit, will be distributed to about 52 AID/W offices to facilitate hard copy data transmission. Thus, for an approximate total cost of $78,000, AID/W can improve document distribution in a short time frame with few implementation constraints.

- One satellite communications channel is budgeted for twelve months. The channel, tentatively identified as a Cairo to AID/W link, is experimental (although other sites are acceptable and may prove more desirable).

  - The channel will be used to test the feasibility of transmitting high volume data (i.e., narrative documents) in a high speed, direct electronic mode, bypassing pouch transmission of electronic data (diskettes, cassettes, floppy disks) or hard copy data (reports, letters).

  - To avoid overloading the State cable network, the experiment will be conducted using a commercial satellite link. The twelve month experiment will be closely monitored by the central authority management to determine the need and desire for similar enhancements to other local AID units.

- The remaining telecommunications budgeted amount will be for leased local Washington communications lines. The lines, linking AID/W remote offices, will facilitate interoffice voice and data transmission. The twenty-four month cost will probably not exceed $240,000.

Telecommunications expenditures in the aggregate are approximately $582,000 as detailed, which is approximately 10.5% of the total Plan budget.

(4) Staff Resource Estimates for the First Two Years of the Plan Require More Than 28 Staff Years of Effort.

Staffing requirements to support the Plan are one of the largest single expenditures. Resources are needed to establish and staff the new central authority in SER to direct and/or participate in task activities required for the implementation of the Plan. Typical of the types of tasks that will be performed by these staff resources are the following:

- Preparation of a Management Procedures document that lays the foundation for the remainder of the tasks that are integral to the Plan. As a document oriented to both technical and non-technical readers, the procedures:
  - Define the project management structure of the AID organizations within which the implementation of the Plan will take place
  - Identify environmental constraints and external interfacing requirements that may potentially affect the development and implementation process
  - Define the necessary activities and responsibilities of the various groups directly or indirectly involved in the project
  - Identify potential obstacles and propose methods of avoiding or overcoming them
  - Segment the development effort into related but individually addressable components
  - Propose a time-related work schedule for the execution of the Plan.

- By clarifying project concepts and presenting information required to evaluate the significance and cost advantages of each phase of activity -- at the earliest point in the assignment -- the Management Procedures have distinct benefits for AID. By defining functions and responsibilities and establishing realistic target dates, it also assists in establishing procedures to monitor the Plan's progress and control changes of scope downstream.

- Preparation of a Functional Requirements Study document. The "content" of the document is a comprehensive analysis of system parameters, organizational functions, and decision-making processes requiring informational support, including internal and external reporting requirements; and, operational and managerial fiscal information requirements in light of past, current, and future needs. Information requirements are defined in terms of specific output reports and information retrieval capabilities; automated and manual processing and storage requirements; and specific inputs, including a data element dictionary explaining source, derivation, and usage. Performance factors such as response time, volume, frequency, and error rates are also documented. The report also analyzes current program data, information systems, and procedures to determine their content, applicability, and incorporation into an integrated data base. In summary, the purpose/benefits of the document identifies the following:

  - What information is needed, whey, by whom, and for what purposes

  - Potential system elements, levels of information, levels of activity, and the relative priority of different information requirements

  - How data systems presently work and how they can fit into the new system.

The document is intended for review by the responsible management in the organizational units participating in the Plan.

- Preparation of a Staffing Impact document. The purpose of the document is to establish the Plan's implementation team structure, organization, staffing levels, and responsibilities both in AID/W and the USAIDs.

- Preparation of a Comparative Cost Analysis document. A range of detail costs of installation and operation of an office automation facility will be estimated during this activity. The estimates will include such costs as:

  - Data processing personnel
  - Other personnel
  - Hardware purchase, rental, lease, and maintenance
  - Software purchase, rental, lease, and maintenance
  - System installation
  - Network services
  - Vendor personnel support

- The Comparative Cost Analysis activity could examine whether there are other approaches to implementing the Plan that would produce a "better" product. A better product, in this case, could represent alternative methods to meet the central authority requirements, as well as risk analyses to minimize the overall costs -- labor, time, funds, or materials.

- Preparation of a Policy and Cost Study document. The intent of the document is to provide comprehensive guidelines for agencies when they conduct a comparative cost analysis to determine whether a particular product or service

could be provided more economically by the private sector or by use of Government employees. These guidelines should assure greater accuracy, equity, and consistency in such cost analyses.

- Preparation of Telecommunications Study document. The translation of a functioning system such as office automation work load analyses and translated into terminal requirements, which in turn will be used to derive network requirements requires a number of steps. These in turn will be used to develop a front-end requirements for the host computer in a user-shared operating environment. The work load analyses will, in a similar manner, be converted into computer requirements specifying hardware/ software, storage, and peripherals criteria.

- Preparation of a Data Requirements document. The document will provide detail specifications that identify the elements, fields, records and files that shall be included in a data base to support the needs of AID/W. The data requirements will be examined from a variety of technical considerations. Some of these major technical considerations follow:

  - Evaluation of data collection and preparation techniques

  - Determination of output requirements for AID/W and potential office automation technology users

  - Evaluation of the structure and types of files to be used within the participating USAIDs and AID/W.

- Preparation of a Equipment Performance Requirements document. This document identifies specifications that are suitable as the technical basis for acquisition of equipment for the office automation configurations. Some of the major technical considerations follow:

- Identification of performance capabilities of equipment against established requirements

- Definition of operational performance requirements.

. Preparation of Solicitation document(s). These documents are formalized as Requests For Proposals (RFPs). Form and content shall follow prescribed Federal rules for the procurement of supplies and services.

These tasks can be performed by AID staff or consultants. Given the initial projections in the Plan, at least an estimated 28.3 staff years will be required to meet the objectives of the first two years.

The cost for this staff time has been estimated at $1,794,000, or over 32% of the total projected Office Automation Support Plan budget. Though the actual staff resources could be in-house AID staff or contract personnel, it is likely the staff complement will be mixed. Further, the 28 plus staff year requirement over two calendar years is quite demanding. For the purposes of budgetary estimates, it has been assumed 2/3 of the resources (18.9 staff years) will be contractor personnel at $80,000 a staff year and 1/3 of the resources will be AID staff (9.4 person years) at $30,000 a staff year. These estimates can, of course, be modified by changing the staff composition.

2. THE OFFICE AUTOMATION SUPPORT PLAN "A" REQUIRES THE ACCOMPLISHMENT OF TEN MILESTONES OVER A TWO-YEAR PERIOD.

As discussed in Chapter II, office automation technology is in a rapid period of transition and growth and is anticipated to expand significantly over the next five years. As a standalone effort, the diversity of equipment and clerical functions makes implementation complex. Thus, a carefully structured and agreed-upon implementation plan is the prerequisite to success.

This section of the chapter presents the structure for Plan "A" -- FY 80 - FY 81. The Plan satisfies AID's management objectives for near term. At the end of the first two years, AID will have:

- An interconnected network of word processing devices controlled by a message switching minicomputer that will be on-line and ready for additional stations
- An evaluation of the first two years that will serve to guide the subsequent years in Plan "B"
- A sound basis for rapidly-expanding office automation throughout the Agency.

The upcoming 15 to 45 days are critical to fine tuning and launching the recommended action program embodied in the Plan. There are, however, three major actions required before the Plan's implementation can begin.

- Secure Overall Agreement -- This activity encompasses presentation of the Plan to AID top management to ensure its support for implementation of the recommendations and courses-of-action set forth.

- Assign Management Responsibility for Plan Implementation -- The timeliness and quality of the results of implementing the Plan hinge on its management. Designation of the central authority management group is, therefore, a critical decision which must be made at the earliest time. Similarly, the assignment of an overall Office Automation Support Plan Program Manager and the selection of the outside consultant must also be made.

- Prepare and Issue the Solicitation Document for Contractor Assistance -- To support the implementation of the Plan, AID is expected to need approximately 19 person years of outside specialists in office automation and technology managers. AID management must, therefore, within 30 days, prepare and issue a Solicitation document for this assistance.

These three pre-implementation activities are necessary to ensure that the Plan, as detailed, can be accomplished. The following discussion identifies the major milestones to be met during Plan "A".

(1) There Are Ten Major Milestones That Are Integral to the Implementation Plan.

Ten major milestones have been identified as key points in measuring the progress of the Plan's implementation. Exhibit VIII, following this page, indicates the number of months into the Plan when these milestones are to be achieved. The milestones include:

MILESTONES	Number of Months Into Plan											
	2	4	6	8	10	12	14	16	18	20	22	24
1. Complete the Final System Design					X							
2. Complete the Initial Office Automation Equipment Justification				X								
3. Complete the Final Implementation Schedule			X									
4. Begin Advertising for Bids on Equipment			X									
5. Finalize a Performance Monitoring and Evaluation Methodology				X								
6. Begin Installation of Office Automation Equipment and Monitor Performance						X						
7. Complete Implementation of Message Switching Hardware and Software Applications						X						
8. Complete Implementation of Data Processing Applications												X
9. Complete Arrangements To Assist AID Office of Personnel in Defining Position Classification and Training Coordination					X							
10. Begin Operating the Office Automation System						X						

EXHIBIT VIII
Milestones for Plan "A"

- Milestone 1 -- Complete the Final System Design
- Milestone 2 -- Complete the Initial Office Automation Equipment Justification
- Milestone 3 -- Prepare the Final Implementation Schedule
- Milestone 4 -- Advertise for Bids and Acquire Equipment
- Milestone 5 -- Establish a Performance Monitoring and Evaluation Methodology
- Milestone 6 -- Begin Installation of Office Automation Equipment and Monitor Performance
- Milestone 7 -- Complete Implementation of Message Switching Hardware and Software Applications
- Milestone 8 -- Complete Implementation of Data Processing Applications
- Milestone 9 -- Assist in Developing Agency Office Automation Position Classifications and Coordinate Training for Designated Staff
- Milestone 10 -- Operate the Office Automation System.

The next section of the Plan discusses how these milestones are accomplished in terms of work activities and attendant tasks. Several milestones are incorporated into activities and/or tasks. The designation milestones is to highlight those points in the Plan when a significant work effort has been accomplished. Some milestones are independent and others interdependent upon other activities. As a milestone is reached,

AID management will have an opportunity to review the progress to date and make any adjustments to the Plan deemed necessary to keep it on schedule.

3. THE OFFICE AUTOMATION SUPPORT PLAN CONSISTS OF 26 TASKS IN SEVEN CATEGORIES COVERING A TWO-YEAR PERIOD.

AID will expend more than 28 staff years during the next two calendar years to implement the Plan. The following section describes those tasks that will be performed and indicates the summary personnel requirements next to each. Exhibit IX, following this page, presents a summary of the level of effort required to accomplish these tasks. Exhibit X, following Exhibit IX, indicates the calendar time duration of each individual task, clearly showing the substantial overlap among the tasks.

(1) Establish the Management Structure

AID must develop a single management and administration authority for the Plan. The authority, to be located in the SER Bureau, will serve as the central office automation technical resource and the coordinator for all local organizational unit office automation activities. To effectively manage the Plan's implementation, AID must:

EXHIBIT IX

SUMMARY OF PLAN CATEGORIES

CATEGORY	STAFF MONTHS	MONTH INTO PLAN IMPLEMENTATION
(1) ESTABLISH THE MANAGEMENT STRUCTURE	44	14
(2) COMPLETE FINAL SYSTEM DESIGN	44	11
(3) ACQUIRE ADDITIONAL OFFICE AUTOMATION EQUIPMENT AND SOFTWARE	72	15 24
(4) INSTALL AND MONITOR THE SYSTEM	52	24
(5) OPERATE THE OFFICE AUTOMATION SYSTEM	56	By 24
(6) COORDINATE HUMAN RESOURCES	30	By 24
(7) REFINE THE SYSTEM	36	By 24
TOTAL	334	

EXHIBIT X (1)

Implementation Task Plan

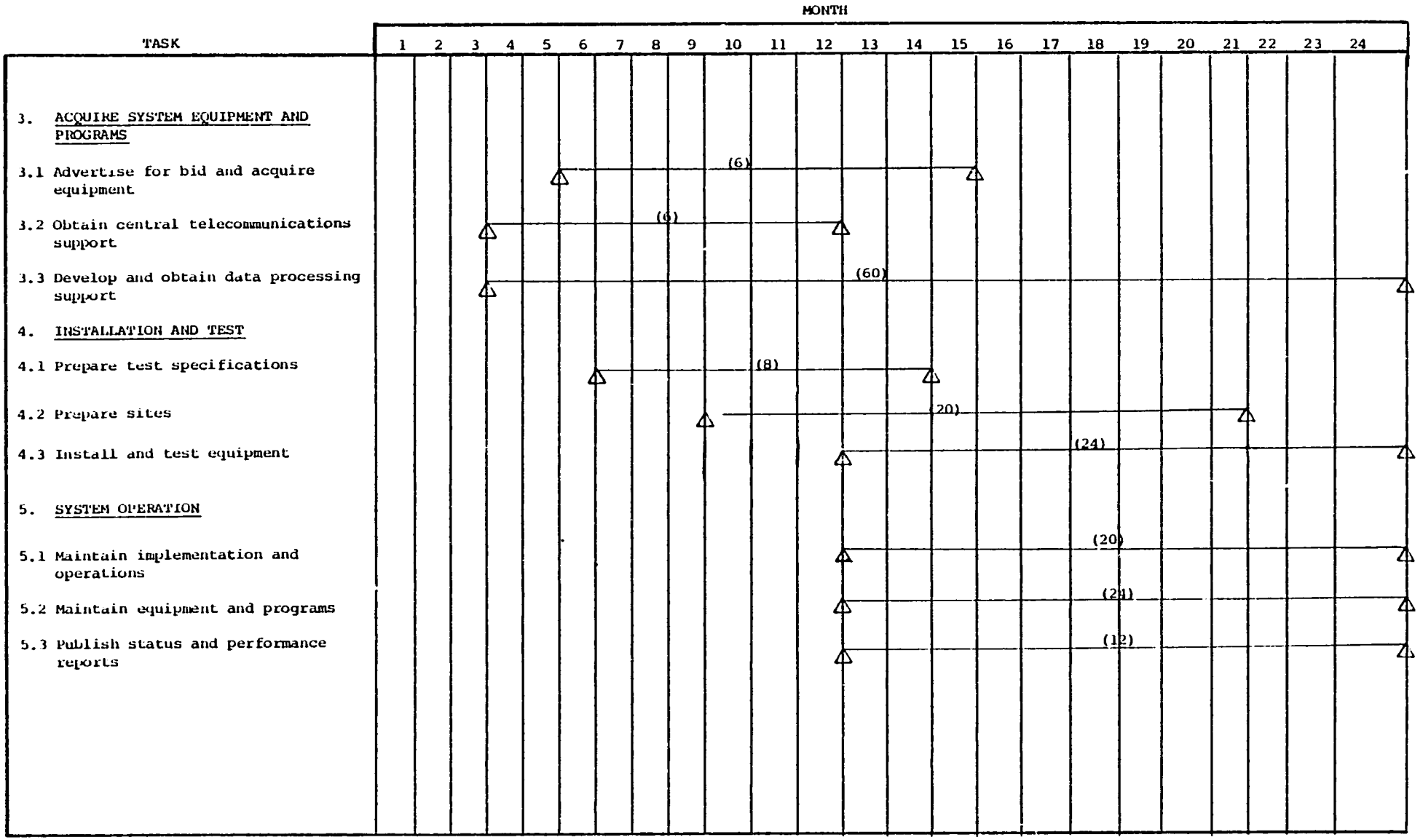

MONTH
TASK
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
3. ACQUIRE SYSTEM EQUIPMENT AND PROGRAMS
3.1 Advertise for bid and acquire equipment
(6)
3.2 Obtain central telecommunications support
(6)
3.3 Develop and obtain data processing support
(60)
4. INSTALLATION AND TEST
4.1 Prepare test specifications
(8)
4.2 Prepare sites
(20)
4.3 Install and test equipment
(24)
5. SYSTEM OPERATION
5.1 Maintain implementation and operations
(20)
5.2 Maintain equipment and programs
(24)
5.3 Publish status and performance reports
(12)

EXHIBIT X (2)

EXHIBIT X (3)

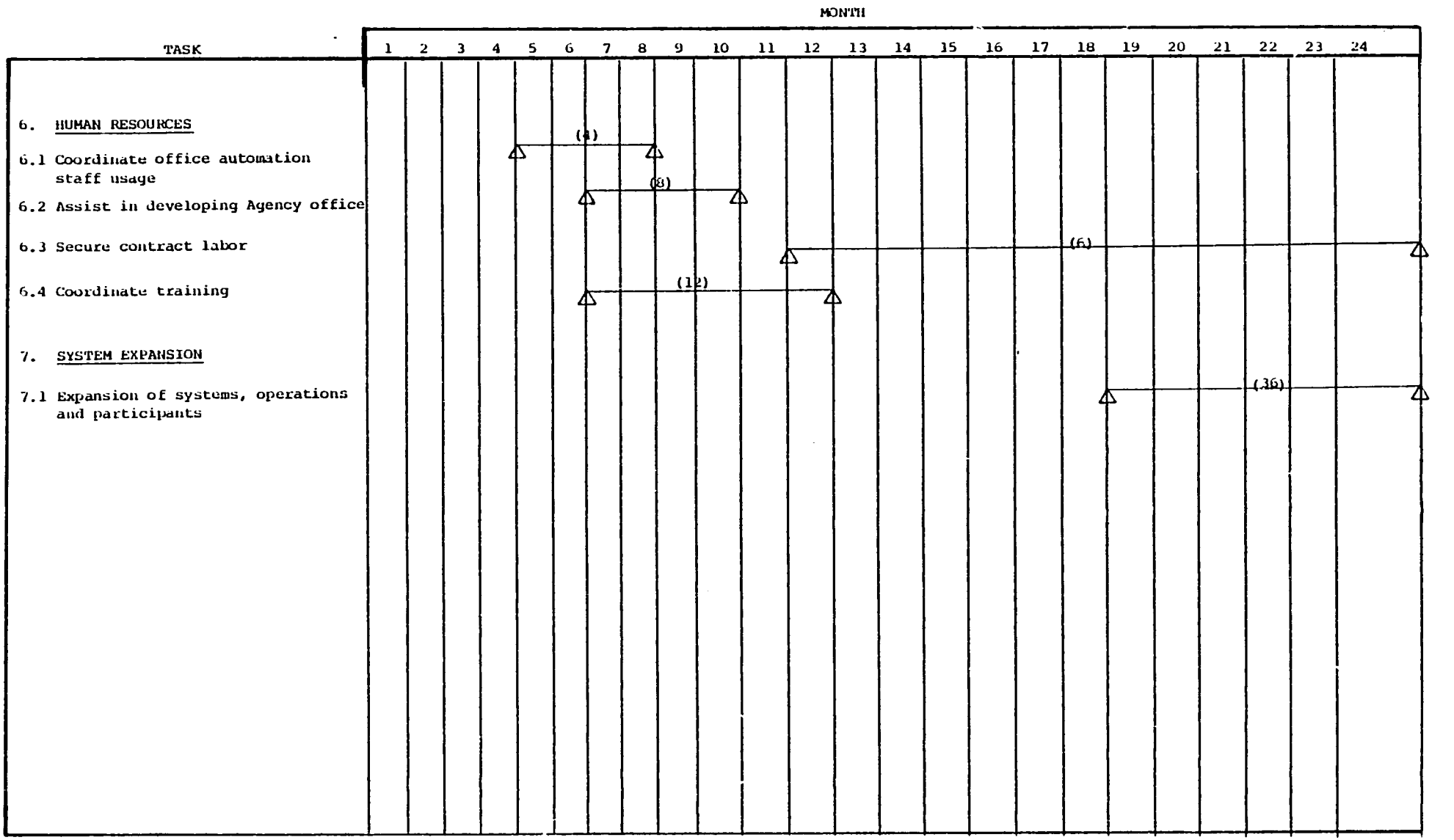


EXHIBIT X (3)

- Designate the central management group
- Prepare and distribute participation guidelines
- Solicit and obtain participants for the office automation system
- Document standards, procedures and policies
- Prepare and submit the budget for the first two years and the final three years of the Plan
- Prepare and distribute final implementation schedule
- Monitor progress and achievements and disseminate status reports.

1. Designate the central management group --

Since the management of AID word processing, data processing and telecommunications resources, currently resides in the SER Bureau, it is logical that the central authority come under SER jurisdiction. An existing unit with office automation resources in SER or a newly-created unit must be designated as the central administrative and management authority.

2. Prepare and distribute participation guidelines --

Office automation technicians and specialists must develop and distribute standard guidelines for participation in the Plan. The guidelines

should elicit participation as well as define the parameters of the office automation system in terms of eligibility and requirements.

3. Solicit and obtain participants -- A formal time period should be allocated for soliciting participants. It should not be difficult to obtain voluntary cooperation in the Plan, especially in view of the twenty pending word processing requests. It will be necessary, however, to screen potential participants and match individual requests with implementation plans and standards.

4. Document office automation system standards, procedures and policies -- A series of uniform and consistent feasibility, procurement, and implementation standards, procedures and policies should be developed for the office automation system. These guidelines will be disseminated throughout AID to both actual and potential project participants. Once finalized, the guidelines will be adhered to stringently.

5. Prepare and submit the Plan's budget -- Two budgets must be prepared for the short and long

term requirements for the Plan. These budgets are formulated from the estimates provided in this preliminary Plan and its companion document describing years three through five. They will reflect refinements based on approved AID expenditure-levels and actual participant cooperation in the system.

6. Prepare final implementation schedule -- A final detail implementation schedule must be developed prioritizing hardware delivery and software development for Plan participants in the first two years. Specific month by month dates must be established to enable adequate site preparation, acceptance testing, training and staffing. The schedule will be developed by AID/W staff in conjunction with participants.

7. Monitor progress and disseminate status reports -- A close comparison of planned versus actual expenditures and accomplishments must be maintained by AID staff. In addition to monitoring progress, the staff must publicize the initial achievements of the system to encourage participation. They must also publicize initial problems to warn of pitfalls.

The management structure should be established and fully operational with all necessary documentation complete by the end of the fourteenth month of the Project. Documentation refinement and status reporting will, of course, continue for the life of office automation at AID. Approximately 44 staff months are estimated as the necessary level-of-effort needed to implement the proposed management structure.

(2) Complete Final System Design

The system design presented in this Plan must be reviewed and modified as necessary to reflect AID management concerns as well as system refinements necessitated by the needs of specific participants. Included in the preparation of the final system design are three work activities:

- Define the operational parameters of the system
- Establish a performance monitoring and evaluation methodology
- Establish equipment specifications, including standards for equipment compatibility.

1. Define system operational parameters -- As users identify their specific office automation needs and as the final AID management determinations are made pertaining to the complexities of

the desired level of office automation support, the system can be defined more clearly. During this activity, AID staff must delineate the capabilities and limitations of the system. These parameters must be defined in terms of hardware, software and user support.

2. Establish a performance monitoring and evaluation methodology -- The performance of the office automation system overall and on an individual basis is closely linked to the success of the system. During the initial start-up period, a series of standards and techniques will be developed, tested, and implemented to monitor and evaluate its performance. The methodology will be developed and applied uniformly by the central authority.

3. Establish equipment specifications and comp tibility standards -- A series of uniform and consistent equipment specifications and attendant compatibility standards must be developed centrally for all of AID. Since equipment procurement is a user activity, performed with only the assistance of the central authority staff, the standards and specifications will be

developed early in the Plan to assure ongoing uniformity.

The entire system design effort will be completed prior to the eleventh month of the Plan. The activities associated with the design are labor intensive. They require an estimated 44 staff months, thus indicating the probable use of outside expertise to complete this task in a timely manner.

(3) Acquire Additional Office Automation Equipment

Hardware requests will be initiated by the local office users, but procurement will be a centralized function to assure cost effective and timely purchases. The central management group in SER will, either directly or through supervision of a procurement staff, perform the following activities:

- Advertise for bids and acquire equipment
- Explore and obtain services of commercial vendors for telecommunications network and channels
- Design systems and programs for enhanced data processing support.

1. Advertise for bids and acquire equipment -- All procurement activities will be processed centrally. Once local users have cost justified their request and have had those requests approved by the central authority, a standard procurement process will be put into motion. Procurement activities will merge user specifications with system compatibility standards and Agency procurement requirements.

2. Obtain central telecommunications support -- All telecommunications facilities (leased lines and satellite channel) will be procured centrally. Telecommunications equipment (facsimile transmission devices and minicomputers for message switching) will also be procured centrally. Facsimile equipment will be distributed to AID/W offices as it is individually justified. Minicomputers, attendant message switching software and the telecommunications lines/channels will be obtained only after a detail study of exact Agency requirements and vendor capabilities is performed.

3. Design and obtain enhanced data processing support -- The application software development efforts for the three identified systems: (1) Document/Correspondence Control; (2) PIO/T&C

Processing; and (3) Operating Year Budget Maintenance and Modeling must be centrally managed. It may be possible for AID to develop these systems in-house. If outside assistance is necessary, the systems should be obtained on a fixed price basis.

Though these applications are not integral to the office automation process, per se, they would enhance professional productivity. The data processing systems development effort will require the entire two calendar year period to complete by the fifteenth month of the Plan if initial Plan goals are to be achieved. Acquisition activities, over the first two years, should require an estimated 72 person months, to ensure adequate coverage of the procurement process.

(4) Install and Monitor the System

The central management group will supervise all site selection, preparation and initial testing of office automation hardware during the initial implementation phase of the Plan. Working in close conjunction with the local office sites, the central authority will: (1) Prepare sites; (2) Install and test equipment and systems. The burden of these activities will be borne by central AID staff to assure uniformity with Agency standards. Additionally, the primary technical expertise is resident in that staff.

1. Prepare test specifications -- The central authority staff will prepare, with the assistance of the local user, a series of specific user acceptance test criteria for the selected equipment. The equipment must meet both local and Agency criteria to be accepted. The test specifications will consist of standard components for the chosen equipment and unique user criteria, developed jointly to protect user interests.

2. Prepare sites -- The central AID staff will assist local offices in all site preparation activities. Using technical knowledge of the equipment and its requirements, and human engineering knowledge of optimal staff productivity using the equipment, the central staff will advise the user about location and environment issues. The central staff will also define external (i.e., power, cleanliness, noise) factors and assist the local user in meeting those requirements.

3. Install and test equipment -- The central staff will supervise vendor installation of the equipment. User staff will perform the actual acceptance testing. The central staff will assist in these activities and monitor the entire installation.

It is likely that all Phase I equipment will not be installed until the end of the twenty-fourth month, given the need for a staggered schedule, beginning the second year. Approximately 52 staff months of effort will be needed to monitor and to assist in the equipment installation process.

(5) Operate the Office Automation System

Although actual equipment operation is a local responsibility, AID must centrally monitor the progress and efficiency of the system. Three steps will be performed to meet this requirement:

- Monitor implementation and operation of the office automation system
- Maintain equipment and programs
- Publish status and performance reports for distribution Agency-wide.

These activities will be performed in an effort to fine tune and refune the system in an ongoing fashion.

1. Monitor implementation and operation -- The central authority will maintain a monitoring posture throughout the first two years of the Plan. All system installations will be measured against performance standards identified in original equipment justifications. The intent

of this effort is to fine tune the overall system. It will facilitate improving equipment configurations, staffing plans and office automation support. It will also measure individual unit productivity. Information from monitoring activities will be used to improve existing installations as well as avoiding pitfalls in future expansion efforts.

2. Maintain equipment and programs -- Central system equipment (telecommunications lines, minicomputer message switching system, computer resources) must be maintained and operated by system technicians. This ongoing effort is in support of all AID office automation efforts.

3. Publish status and performance reports -- The status reports published as a result of this activity will specifically present installations that have achieved or exceeded their initial performance estimates. Information developed at one installation that might prove helpful at another, either to avoid problems or increase productivity, will be disseminated. This information exchange should serve to improve overall system performance.

All system operation activities will occur during the second year of the Plan. The estimated level-of-effort required for these activities is approximately 56 staff months.

(6) Coordinate Human Resources

Office automation equipment operators are local office staff resources. The central management group must, however, coordinate Agency staffing and training activities to maintain and utilize office automation equipment effectively. Equipment operators must be properly trained. The central authority will perform several human resource-related activities to ensure this occurs:

- Coordinate the use of highly trained or specialized staff who are assigned to certain automation activities
- Assist AID personnel staff in developing office automation position classifications and grades
- Secure contract labor where necessary
- Coordinate the establishment of central training programs and orientation guides.

1. Coordinate office automation staff usage -- The central authority will assist user units in developing staffing plans. By analyzing existing clerical support, joint decisions as to unit staffing plans will be made.

2. Assist in developing Agency office automation position classification -- The ultimate authority for position classification and grade identification is the central AID personnel office. It is advisable to permit the central AID staff technicians to assist in this process due to the technical nature of office automation. Their technical expertise in conjunction with Agency personnel expertise will simplify a difficult and complex process.

3. Secure contract labor -- As necessary, to supplement AID personnel, the Agency will hire contract office automation equipment operators. The central authority, based on local user request will identify, screen and contract with vendors to supply trained operators. The contract staff will report directly to the user for supervision.

4. Coordinate training -- The central authority will coordinate all office automation system training. Using vendor, government and contract training materials and courses, the central authority will serve as the training focal point and central resource.

The activities associated with human resource coordination stretch over the first two year period and require an estimated 30 staff month commitment to complete.

(7) Refine the System

As the Plan is implemented, the original hardware configuration and human resource estimates will require modifications as a result of the hard tests of experience. Performance feedback data, on both achievements and disappointments, will be continually assessed and evaluated. These data will provide a basis for modifying and improving the overall system. A well-designed and well-managed office automation support system will be expanded. The central management group will expand the system by: (1) inclusion of new processes and related operations; (2) additional organizational units in AID/W and overseas; and (3) application subsystems that enlarge the scope and content of automation support. This expansion activity will take place during the last six months of the second year of the Plan and will require 36 staff months of effort to complete.

* * *

This chapter has discussed the overall Plan organization, estimated costs and planned activities. Of paramount importance is the recognition that the system is dynamic and subject to the changing needs of AID. The Plan must be reviewed

regularly by central management. It must be updated on a six-month basis to reflect the realities of the AID environment, including those portions of the Plan behind and ahead of schedule.

V. OFFICE AUTOMATION PLAN "B" BUDGET ESTIMATES AND IMPLEMENTATION SCHEDULE

V. OFFICE AUTOMATION PLAN "B" BUDGET ESTIMATES AND IMPLEMENTATION SCHEDULE

The previous chapter described the first two years of the Plan that establish the start-up of an office automation system. The following three years discussed in this chapter are devoted to an expansion of the automation system, involving broader penetration throughout AID and additions to automation equipment. This section of the Plan is predicated on the assumption that the results of the first two years of office automation expansion will have been rigorously evaluated. Further, it assumes that the improvements that were anticipated for the expansion will have been realized.

This chapter presents the structure for Plan "B" -- FY 82 - FY 84. The Plan satisfies AID's management objectives for the longer-term. At the end of the last three years, AID will have:

- Increased support to professional staff with additional data processing applications
- Expanded the scope of the system beyond the program processes
- Enlarged the number of AID organizational units that participate in the system
- Refined the system implemented in the first two years.

This section describes system expansions, specific tasks, equipment additions, and funding estimates for FY 82 - FY 84.

1. A MAJOR OBJECTIVE OF THE EXPANSION PLAN IS TO EMPHASIZE SUPPORT PROVIDED TO THE PROFESSIONAL STAFF.

The first two years of system operation concentrated on the installation and use of word processing facilities and improved communication links. Over 50 new word processing work stations will have been added to AID. A message switching system, facsimile units, telephone answering facilities, and satellite transmission of documents are all planned for this initial period. As a result, there should be considerable improvement in the ability to originate, revise, transmit and distribute text, cables, plans and reports. These improvements are primarily aimed at improving the productivity of the clerical staff. The professional staff will benefit, however, from the faster availability and turnaround time relating to its paperwork.

During the three years of the Plan "B", the features that are introduced are intended to directly impact professional staff activities. These will consist of enhancements to the data processing and telecommunications portions of the system. They represent a continuation of the programming application development undertaken during the first two years of the Plan.

(1) Computer Programming Development Is the Principal Means To Provide Direct Support to the Professional Staff.

Support to professionals as they perform specific tasks derives from an ability to obtain, sort, compare and manipulate information. Data processing provides such facilities and computer-controlled communications transports the information. During the expansion phase of the system, new programs will be started that provide the following:

- Report Writing -- combines text retrieval, text display, and composition of text to produce finished documents
- Expanded Filing and Retrieval -- performs key-word and key-word-in-context searches to make accurate selection of previously filed materials
- Personal Files and Processing -- uses minicomputers or time-shared files to offer computer-based file management at the local office level; computing facilities to permit statistical and mathematical computations whenever required
- Calendar and Meeting Control -- performs computer-based processing of meeting invitations and planning; establishes satisfactory dates for large groups with on-line displays of dates, requests, and availability.

(2) Communications Enhancements Will Be Needed To Expand Support to the Professional Staff.

Augmented data processing applications will rely on expanded communications including:

- Message switching software, started during the first two years of system operation -- will need extensions to include additional line-handling capacity to serve additional offices, and compatibility software to handle an increased variety of terminals and processors.

- Replacement of facsimile by digital communications -- use of additional high-speed digital character transmission to critical locations in place of relatively slow facsimile; e.g., addition of computer mail or communicating word processors to replace facsimile in offices that generate high volumes of urgent text.

- Expansion of satellite channels -- identification of routes between overseas locations and AID/W that can benefit from high-speed large-document transmission; additions to terminal facilities that support these additional broad-band high-volume channels.

- Teleconferencing as a substitute or supplement for travel -- use of broad-band channels (either the leased satallite channel or any other commercially available communication link equipped for teleconferencing) for video (picture), two-way transmission as a means for conducting meetings between individuals in different locations.

Additional work stations consisting of displays, processors and printers will be required to serve the professional staff. Previously installed word processing work stations will be inadequate to support the professional staff. Contention will be avoided by installing terminals at locations dedicated to professional use.

2. THE SCOPE AND CONTENT OF AGENCY WORK SUPPORTED BY THE SYSTEM WILL BE EXPANDED.

Automation support for offices involved in the five program processes will be expanded. In addition, as systems and procedures are modified to make maximum benefit of office automation, larger amounts of the work load associated with each process will be handled by the system, including:

- Existing facilities -- such as standalone word processors that will require expansion of capacity in order to handle increased work loads
- Overseas locations -- previously dependent on OCR input typewriters, will be upgraded to word processing machine status in those countries that can maintain them, and acquire appropriate staff
- New locations -- that are the site of increased process involvement will receive word processing facilities
- Additional points of interface with the State cable network -- are required to expand access for transmission and receipt of overseas messages
- Message switching system -- that accommodates growth by expansion of line-handling capacity to connect additional offices into the system.

The central management group responsible for system operation could add to the effectiveness of the automation system by identifying the need for improved work procedures, including:

- Operational measurements performed on work flow to reveal the need for methods that make more effective use of the automation support facilities

- Recommendations concerning improvements to systems and procedures, and in the organizational responsibilities for components of each process will be prepared by the system's central management group; these are to be considered for implementation by AID senior management.

The scope of the work handled by the system is to be enlarged by extending support to non-process operations. These are the multiple demands placed upon executives and professionals that take the form of: (1) inquiries; (2) unexpected or unplanned events; or (3) other ad hoc or on demand requests placed upon individuals that can frequently be of major importance to the Agency.

The same data, files, communications channels and facilities that support the preparation of AID processes could be useful in the handling and reaction to these non-process events. Supporting them with system facilities adds to the net benefits available from its presence. During its initial period of use, central management and operating departments may tend to discourage the use of facilities for what appear to be marginal applications. By the time Plan "B" is operational, these restrictions will be relaxed. Broader involvement with overall operations will be encouraged.

3. THE NUMBER OF AID ORGANIZATIONAL UNITS THAT PARTICIPATE IN THE SYSTEM WILL BE EXPANDED.

Expansion by increasing the number of participants is planned for the third and subsequent years of system operation. Initial use will have demonstrated benefits and effective methods of utilization. Staff will have been motivated to utilize the system.

Those components of the five AID processes that have remained as manual procedures will be added to the system.

(J) System Central Management Prepares Recommendations for Organizational Expansion, and Submits These Plans to Affected Bureaus for Concurrence and Implementation.

Expansions of this type are accomplished under the same ground rules that are in force for the entire system. Participation is encouraged, providing there is justification for the installation of additional equipment, compatibility for interconnection and willingness to measure work flows.

As much as an additional 30 to 40% of the AID organization is likely to become part of the system during the three years from 1982-1984. As much as 75% of all of AID will probably participate to a significant degree by the end of the fifth year.

(2) Organizational Expansion of the System Will Include Overseas Locations.

Extending automation to overseas locations is potentially more difficult by the absence of adequate maintenance facilities, and the difficulties associated with training local-country personnel. Two factors are at work to improve this situation:

- Vendors are increasing their penetration into overseas markets, with the result that more of them are in place in more of the countries in which AID maintains operations. This trend, continuing into 1983/1984, will improve the probabilities of securing adequate maintenance.

- Equipment is becoming easier to use as a result of increased memory and processing power in individual units. The result is the availability of programmed, self-training systems that utilize the terminal itself as an aid for teaching. Thus, training can be continued indefinitely at a pace consistent with the trainee's capabilities, utilizing available equipment. The operational environment is, therefore, "friendlier," requiring less skill on the part of the user.

4. THE OFFICE AUTOMATION SUPPORT PLAN "B" REQUIRES THE ACCOMPLISHMENT OF SIX TASKS DURING THE EXPANSION YEARS.

Overall, the Plan is to be implemented in five years. It has been presented in two sections, as Plan "A" for the near-term and Plan "B" for the longer-term. Plan "A" is to be assessed in terms of actual-to-planned accomplishments through established performance monitoring and evaluation

methodology. At the conclusion of Plan "A", an assessment of the preliminary work activities that have been formulated as six tasks for the accomplishment of Plan "B" will be reviewed. Changes will be made to the work content if required.

(1) Planned Preliminary Tasks and Associated Work Activities.

These preliminary tasks, and the accompanying staff resources allocated to them during the three Plan years, are described below:

Task 1 -- Development of Continuing System Requirements

- Perform a systems and operations analysis of processes and non-process operations to be incorporated into the office automation system
- Define and detail operational requirements
- Identify additional participants
- Project volume-of-use and traffic estimates for terminals, processors, and communication channels
- Identify application programs for support to professional staff and develop program specifications.

Task 2 -- Measurements of System Performance

- Conduct a measurement of elapsed time, work time, and labor content of events and steps involved in processes and non-process operations. Measurements will be made on the activities of clerical and professional staffs during stated intervals

- Perform an analysis of measurement data, by:

  - Maintaining records of process times and labor content prior to the introduction of automation

  - Projecting probable time and labor expenditures when changing to an automated environment

  - Measuring actual time and labor expenditures subsequent to the participation in the automation system

  - Preparing reports that describe the performance and actual results compared to projections.

- Assist in the preparation of the justifications for the participation of additional units and locations, by:

  - Providing guidance and overall system and subsystem data to assist participating units in the development of justification and feasibility studies

  - Providing uniform response and documentation to external agencies in support of automation planned and actual expenditures.

Task 3 -- Planning, Budgeting, and Acquisition of Equipment

- Prepare equipment specifications in accordance with the system requirements developed in Task 1, including:

  - Updating the specifications for word processing, data processing, communications, micrographics, duplicating and composing equipment to prevent system obsolescence

  - Preparing an equipment acquisition plan that projects the installation of replacement units, and makes provision for additional operating locations

- Maintaining files on equipment vendors in order to identify suitable sources of supply

- Preparing contractual documentation to support procurement actions.

. Prepare budgets to cover the costs of acquiring, installing, operating, and maintaining equipment.

Task 4 -- Development of Requirements for Computer Programs

. Prepare specific statements of requirements for computer applications by the:

- Development of requirements by continuing interaction with operating staffs in Bureaus and Missions

- Analysis of results obtained by operating staffs while using application programs, and the preparation of requirements for program modifications.

. Prepare requirements for expansion and improvement of message switching and similar programmed communications facilities by:

- Planning for growth in volume and geographical extent of communications facilities

- Planning for the growth and expansion of compatibile software to accommodate an expanding variety of terminals and protocols.

Task 5 -- Operation of Training and Orientation Programs

. Provide training materials for in-house training of the operating staff in the use of automation systems, procedures and individual equipment

. Provide orientation presentations and short courses for the benefit of the professional staff that:

- Explain system operations and potential benefits

- Instruct on the use of terminals, communications, and dictation facilities.

. Prepare reports on the effectiveness of training and orientation methods, and make results available to the staff involved in the development of system and equipment requirements.

Task 6 -- Personnel Classification and Specification Activities

. Prepare staff personnel specifications that describe the qualifications, training and experience level of individuals who can fill positions in the operation of the automation system

. Prepare position description that defines the various jobs associated with the automation system

. Prepare classification recommendations that designate levels of required skills commensurate with successful system operation

. Prepare materials that describe job upgrading opportunities resulting from the operation of the automation system.

(2) Staff Resource Estimates for the Following Three Years of the Plan Require More Than 44.5 Staff Years of Effort.

The level-of-effort that will be required to implement the Plan during FY 82 - FY 84 has been estimated at approximately 44.5 staff years. Exhibit XI, following this page, presents a summary for the three years in accordance with the six task activities.

EXHIBIT XI

STAFF YEAR LOADING BY TASK

TASK	FY'82	FY'83	FY'84	TOTALS
1. Development of Continuing System Requirements	3	3	2	8
2. Measurements of System Performance	3	3	1.5	6.5
3. Planning, Budgeting and Acquisition of Equipment	3	2	1.5	6.5
4. Development of Requirements for Computer Programs	3	3	3	9
5. Operation of Training and Orientation Programs	3	3	3	9
6. Personnel Classification and Specification Activities	2	2	1.5	5.5
TOTALS	17	15	12.5	44.5

These staff year figures apply only to personnel attached to the central management group. They do not include resources supplied by the Bureaus or USAIDs.

5. THROUGHOUT EACH OF THE THREE PLAN YEARS, EQUIPMENT WILL BE ADDED IN EACH CATEGORY AS A RESULT OF GROWTH IN SYSTEM APPLICATION AND ARE ESTIMATED AT APPROXIMATELY $8,305,000.

Equipment additions in each category are estimated as shown in the following table.

TABLE 1

Equipment Additions

	Additional Hardware Units To Be Installed			
Word Processing	1982	1983	1984	Total
CRT Word Processors	30	30	20	80
Memory Typewriters	15	20	15	50
Combined WP/DP Units	5	10	10	25
OCR Scanners	5	5	5	15
Photocomposition	10	10	5	25
Protocol Translators	--	--	--	--
Copying (Intelligent, Communicating)	5	10	5	20
	70	85	60	215
Telecommunications				
Facsimile (Stations)	20	10	5	35
Satellite/Document (Channels)	6	3	4	13
Leased Lines	--	--	--	--
Message Switching Service (Stations)	20	10	10	40
Telephone Answering Service	20	20	20	60
Voice Message Service	30	20	10	60
Teleconferencing	10	5	10	25
	106	68	59	233

TABLE 1 (continued)

Equipment Additions

	Additional Hardware Units To Be Installed			
	1982	1983	1984	Total
Data Processing				
Minicomputers	--	--	--	--
Terminals	30	30	20	80
Graphics	5	10	5	20
Programs	--	--	--	--
	35	40	25	100

The total estimated acquisition costs of the equipment additions that are presented in the table for the three Plan "B" years is approximately $8,305,000. These costs are detailed by category in Exhibit VII in Chapter IV.

When added to the order to magnitude cost estimates for the first two years of the Plan, the approximately $8.3 million investment in FY 82 - FY 84 brings the total estimate for the five-year office automation plan to approximately $17 million.

* * *

This material concludes the discussion of the Office Automation Support Plan.