

**REQUIREMENTS ANALYSIS OF
COMPUTER AND COMMUNICATION SYSTEMS FOR
LAW ENFORCEMENT**

**Five Year Plan
Volume I**

Executive Summary

Prepared for:

LAW ENFORCEMENT ASSISTANCE ADMINISTRATION

March 1980

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Prepared by:

THEOREM Institute
1782 Technology Drive
San Jose, California 95110

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SECTION I INTRODUCTION

This plan has been prepared for the Law Enforcement Assistance Administration (LEAA) Systems Development Division (SDD). The plan is intended to define a framework and approach for the future application of federal funds for computer and communication projects in support of law enforcement functions.

Approach

In an attempt to clarify the scope of this report and provide direction for future federal funding programs in law enforcement, the following six considerations have been promulgated:

- The projects or programs should be multi-jurisdictional in nature. That is, a program should provide the capability for adaption or transfer to other states or cities. This will require special emphasis for both pre and post program documentation.
- The projects should address themselves to the standardization of law enforcement functions. That is, the programs should provide for the creation of new standards or enhancements to existing law enforcement standards.
- The resultant projects or programs will provide for the development of prototypes or test modules for either communications or computer systems. For example, the implementation of a 900 MHz communication system for small-to-medium size law enforcement agencies would typify such a program.
- The projects or programs have a high likelihood of success in a reasonably short time frame without continuing LEAA costs. For example, a statewide intelligent terminal system utilizing existing telecommunications networks for local application processing (i.e., resource allocation, crime analysis, etc.) operated by a central state repository might be such a project. The project must be within the costs permitted by the SDD budget.
- The projects are designed to collect, analyze, evaluate, or disseminate findings of interest to several states, or of interest directly to SDD for the development and/or management of its own program; and, the projects or programs provide technical assistance to agencies in several states where the assistance delivery system can be more efficiently constructed and managed by the national level.

While not ignoring the other discretionary project categories, the primary focus of this plan is in the third category, those projects which result in a prototype or test module

for potential widespread application. Throughout this project, the plan will refer to projects of this type as "benchmark systems". A benchmark system, whether in the information system or communications area, is 1) carefully designed from the ground up to meet specific and articulated user needs and for transfer to other computers and other sites; 2) to be widely applicable for law enforcement agencies in many states; 3) to be thoroughly documented; 4) to allow careful evaluation of costs, performance and benefits; and, 5) to provide literally, a "benchmark" against which other systems or sub-systems of the same general area can be measured.

The perspective is that information and communication systems exist in order to support the objectives of the law enforcement agencies in which they are placed. Thus, this plan wishes to identify the primary functions of law enforcement services then look at the ways in which information systems and communications improvements can support those functions, and then select specific application areas in which benchmark systems can be designed, constructed, operated, measured and evaluated.

An individual benchmark system project then, is in support of a single law enforcement functional area and covers one or more developmental phases. A program built along these lines consists of a variety of individual projects selected in such a way that the SDD resources are broadly spread over the law enforcement functional areas and over the development phases, resulting in a smooth and constant flow of new benchmark systems for consideration by state and local law enforcement agencies, along with the information dissemination and "marketing" efforts necessary to see that such agencies know what is available and are able to make intelligent decisions concerning the use of such systems.

The report sections that follow then are intended to define program areas over the next three to five years which LEAA/SDD will focus upon in order to enhance the quality of law enforcement through the application of technology across the United States.

Perhaps before defining the specific areas of SDD activity in this plan, one should briefly consider why such an effort is required.

Twelve to fifteen years ago, law enforcement agencies recognized the need to collect and efficiently process information related to incidents, crimes; and offenders and

other routine law enforcement activities. This activity resulted in an avalanche of paper and reports which defied manual procedures. Moreover, the access of information which was collected and processed became an unmanageable nightmare.

Several large law enforcement agencies began to utilize computer technology to collect, sort and process the myriad of information which they collected. As computer technology evolved into the present state-of-the-art, thousands of local, county and state law enforcement and criminal justice agencies employed computer technology to address their critical information needs. The only uniting force has been the Law Enforcement Assistance Administration (LEAA). This has not only been as the funding source for many of the systems, but also as the catalyst for definition of standards, policies, recommendations and cooperation between the many concerned agencies. SDD is only one segment of the LEAA program and applies its endeavors to the improved utilization of technology (computer and communications) by law enforcement agencies. SDD therefore, based upon the limited future funding available, has developed this plan in order to provide maximum benefit to law enforcement through technology while maintaining its posture in support of innovative programs for potential use of multiple agencies.

This plan has been divided into two volumes:

Volume I - Five Year Plan -- is a synopsis of over a year's effort to define problem areas in law enforcement which require applied technology as a viable solution and a plan for implementing required programs to support the problem areas.

Volume II - Project Report -- addresses the basic activities to the project including a brief state of the art analysis project descriptions and other related project material.

The report was prepared with the assistance and guidance of an Advisory Board comprised of the following individuals. The assistance and guidance is greatly appreciated by THEOREM Institute.

- Deputy Chief George Sicaras - Chairman, Hartford (Connecticut) Police Department.
- Mr. Samson K. Chang - International Association of Chiefs of Police (ICAP).
- Mr. Roger Crutchfield - Project Monitor, Law Enforcement Assistance Administration.
- Chief John Faircloth - Highpoint (North Carolina) Police Department.
- Assistant Chief Tom A. Hutson - Dallas (Texas) Police Department.
- Mr. Donal D. Kavanagh - Associated Public Safety Communications Officers, Inc., (APCO).
- Mr. Steve E. Kolodney - SEARCH Group, Inc.
- Sheriff Charles Von Wald - Olmstead County (Minnesota) Sheriff's Department.
- Mr. Paul A. Zolbe - Federal Bureau of Investigation (FBI).

SECTION 2 REQUIREMENTS ANALYSIS

Background

In developing the requirements for projects and associated computer technology, both the historical aspects of law enforcement agency requests for technical grant support and the various law enforcement functions performed on a routine basis were considered.

This section of the report contains a synopsis of the research material utilized in the formation of this report. Over four months of effort was undertaken to ascertain past law enforcement needs which were then utilized as a partial basis for the identification and development of future project areas.

In addition to the historical aspects of law enforcement computer projects, current undertakings were considered as they related to normal law enforcement functions. A sampling of law enforcement agencies currently utilizing computer technology was selected from the LEAA System Directory. Each of the agencies was sent a questionnaire requesting information on the type of functional area support required and requested to define current areas of automated computer support.

The resultant analysis of all data collected seems to reflect three major trends which have developed within the last three years.

First, larger law enforcement agencies and the majority of those serving population centers over 200,000 have begun to apply their resources for computer technology away from operational support applications (i.e., Computer-Aided Dispatch (CAD); warrant systems, etc.) and toward those applications which lend themselves to operational analysis and management (i.e., resource allocation, crime analysis, etc.). There are several readily discernable reasons for this activity. Previous expenditure of available funds for computerization have, since the early 1970's, been directed at providing information as accurately and rapidly to the officer on the street to both provide for increased officer safety and effective performance. These systems involved complex networks of various files at the municipal, county, state, and federal levels.

This, to a large degree, has been accomplished although several efforts related to increasing efficiency of these systems still require attention and support in the future. Also, these systems have resulted in the increased sharing of relevant information among law enforcement agencies thus eliminating the need to duplicate systems by providing information access to other agencies. Finally, as operational problems which lent themselves to computer technology were addressed management, due to budgetary considerations and the increased technical quality of staffs, began to address applications which focused on both improving management's ability to identify law enforcement problem areas within an agency and to apply technology to assist in resolving these problems. This has resulted in the application of computer technology in such areas of manpower allocation, crime trend analysis, research and planning, budgeting, training and other internal agency activities.

The second trend which has emerged relates to the recognition by most of the various sized law enforcement agencies that independent agency development of new computer applications to perform routine law enforcement functions is no longer practical from a time and budgetary expenditure standpoint. In the past, each law enforcement agency developed systems for the most part independently, with little consideration to what was done in the particular area or application by another agency. Agencies, over the past three years have begun to utilize the system developmental efforts of similar sized and organized agencies. This approach, termed technology transfer, has been actively supported by LEAA for over six years and has been partially successful in providing technology to requiring agencies in reduced timeframes and at reduced costs.

The third trend is a result of the rapid growth and development in the computer and communication industries. The advent of both micro and mini computer hardware and its relative inexpensive costs as related to similar powered computer hardware available five years ago has now opened the door to computer technology for the majority of small to medium sized law enforcement agencies. These systems have now provided these agencies with the capability to address both internal and external information processing needs. In order to assure that the costly duplicative development practices which became typical during the implementation of large systems for law enforcement are not repeated, LEAA/SDD has taken steps to provide model systems for use by multiple local agencies. Communication technology has continued to expand the capability and utilization potential of microwave, satellite, laser, and fiber optic methodologies.

Approach

In order to ascertain the focus or plan for future LEAA/SDD activities, as was explained earlier, it is necessary to look at both historical and current law enforcement activities. The formulation of this report was based upon the functions which are routinely encountered by a law enforcement agency in the performance of its duties. These functions were broken down into twelve major areas of activity and included:

- 1.0 Incident reporting
 - Crime detection
 - Telephone access
 - Call routing
 - Complaint operator
 - Dispatching
 - Dispatch Information
 - Incident Data Input
 - Report Utilization
- 2.0 Record Bureau Operations
 - Filing and storage
 - Indexing
 - Statistical Reporting
 - Retrieval and Routing
 - Purging
- 3.0 Arrest Processing
 - Citation
 - Booking
 - Arrest/Clearance Statistics
 - Custody Statistics
- 4.0 Traffic
 - Security and Privacy
 - Special Statistics
 - Citation/Warrants
- 5.0 Property Evidence Control
 - Policy/legal aspects
 - Information systems
 - Criminal Justice (CJ) interfaces
 - Identification problems
- 6.0 Warrant Processing
 - Criminal Justice agency interface
 - Statistics
 - Information Systems
- 7.0 Investigations
 - Intrusion devices
 - Specialized communications

Workload Distribution
Offender Identification
Case Processing

- 8.0 Emergency Operations
 - Mutual aid
 - Criminal Justice interfaces
 - Municipal services
- 9.0 Crime Analysis
- 10.0 Special Operations
 - Pilot information
 - Specialized equipment
 - Special units
- 11.0 Jail
 - Status/Court Information
 - Reports/statistics
 - Schedules/Assignments
 - Manpower Allocation
 - Special information/Personal Property
 - Prisoner Movement/Control
- 12.0 Support Services
 - Cost accounting
 - Manpower expenditure
 - Statistics
 - Inter-agency interfaces
 - Criminal Justice interfaces
 - Crime lab interface
 - Equipment inventory
 - Training

All of the above can be termed problems or functional areas for one or more law enforcement agencies depending on their size, population make-up, geographical configuration, and available resources. It would be impossible for LEAA/SDD to address all of the areas from both a budgetary standpoint (economical or resource basis) or due to the fact that many problems do not lend themselves to the utilization of computer technology.

Research Methodology

Task 2A of the project specified the requirements for the literature search. The essence of the task statement was to "... review all available material that directly relates to the technological state-of-the-art regarding information systems and communications systems that serve law enforcement throughout the United States." The focus of the search was centered on, but not limited to, "the State's

comprehensive plans, many technical assistance reports, Crime Analysis Systems Support (CASS) project reports, and other documentation deemed relevant." Arrangements were made for a member of THEOREM's Project Staff to be on-site for the duration of the literature search.

Data Capture Instrument

With the assistance of the Project Monitor, Mr. Roger Crutchfield, Law Enforcement Assistance Administration, and THEOREM's Project Staff, twelve (12) previously defined Law Enforcement Functional Problem Areas were identified as potential areas to be impacted by communication and information systems technology.

To retrieve pertinent information from the literature, a data capture instrument was designed by THEOREM's Project Staff. The form incorporated three main areas" document identification, demographic data on the agency, and project description. See Figure 1 (Volume II).

During the initial pre-test of the instrument by the Project Staff, it was found that certain information requirements were not being addressed. With revision and additional pre-testing, the instrument was finalized. A development protocol for the forms was established so as to assist in standardizing responses. See Figure 2 (Volume II).

The decision was made to focus the literature search from 1975 to present. The rationale being that since 1975, many innovative technological advances have been made, and by focusing attention on a particular timeframe would provide as accurate a picture as possible on the current state-of-the-art.

State Action Plan

Reviewing the State Action Plans proved to be a formidable task. Initially, it was believed the plans would be available through the State Representatives at LEAA. However, due to a reorganization effort at LEAA, all the State Action Plans were in the process of being microfilmed by a private firm in Kensington, Maryland. After being microfilmed, they were to be destroyed.

Experiencing some delay in accessing the plans, the reviewing process began in Kensington while the plans were being microfilmed. For the years 1976, 1977 and 1978, there were over three hundred (300) volumes.

In-Progress and Completed Projects

The LEAA Project Monitor, Mr. Roger Crutchfield, provided the Project Staff with approximately twenty-five (25) project summaries that were either in-progress or completed. Of the project summaries ten (10) had to do with courts, corrections, or prosecutor projects which were not applicable to this project. Also, the files at SDD/LEAA dating from 1977 to the present were searched for additional projects. All of these projects were funded by Headquarters grants.

Technical Assistance Reports

The primary source of the Technical Assistance (TA) reports was at LEAA, however, other sources included the THEOREM Library, and Search Group, Inc., Sacramento, California. The rationale prompting the examination of the reports was to assess the kinds of problems being addressed by TA, and was their applicability to computerization and communications.

Form Survey Techniques

There were a total of 164 survey forms reviewed. Information on three of the forms was missing due to missing pages in the state plans. In those documents where more than one agency was involved, i.e., State Plans and technical assistance reports, a form was completed for each participating agency.

As the literature search was conducted, a subjective decision was made as to which problem area would be impacted by the technology. In some cases, only one functional area would be appropriate, and in other, several functional areas would be applicable.

Personal Contacts

In conjunction with the literature search, it was also believed important to contact and interview key personnel currently involved in projects impacted by computers and communications. The purpose of the interviews was three-fold: to gain a greater understanding of the technology involved, identify additional source material, and to identify future problem areas.

Those persons contacted were:

Ms. Carol Dorsey, CASS Project Monitor, SDD/LEAA.

Mr. Sam K. Chang, CASS Project Director, International Association of Chiefs of Police, 11 Firstfield Road, Gaithersburg, MD 20760.

Mr. William Simms, CASS Project Consultant, International Association of Chiefs of Police, 11 Firstfield Rd., Gaithersburg, MD 20760.

Mr. Richard Grassie, Project Consultant, Integrated Criminal Apprehension Program, ICAP, Westinghouse, Crystal City, VA.

Mr. James Burrows, Project Consultant, ICAP, Westinghouse, Crystal City, VA.

Mr. James Hudak, Project Director, National Sheriff's Survey, National Sheriff's Association, 1250 Connecticut Ave. Washington D.C.

Mr. Steve Kolodney, Director, Search Group, Inc., 1620 35th Ave., Sacramento, CA 95822.

Mr. Jess Bullard, System Specialist, Search Group, Inc., 1620 35th Ave., Sacramento, CA 95822.

Mr. Jerry Needle, Project Director, National Police Program Performance Measurement Project, American Justice Institute, 1907 7th Street, Sacramento, CA 95814.

Mr. Myron Cohon, Senior Systems Analyst, SDD/LEAA.

SUMMARY OF FINDINGS

STATE ACTION PLANS

In reviewing the state plans it was found that the major expenditure of allocated funds were for upgrading existing communication systems and equipment, and the study and design of inter-agency information systems. In a few instances, fifteen percent (15%), were there any monies allocated for combined communication and information

systems, e.g., CAD. In terms of purchasing new equipment, there was approximately twenty percent (20%) budgeted/expended in this category. Fifty-two percent (52%) of the state plans were budgeting or have expended funds on feasibility studies or planning documents.

DISCRETIONARY FUNDS

Of the one hundred and sixty-four projects reviewed, fifteen were funded by headquarters grants. In terms of applicability to this project, it is apparent that discretionary funds have the greatest potential of impacting on the operational and management aspects of law enforcement service delivery. Most projects are geared to serve as models, whereby transferability to other agencies would be relatively easy.

TECHNICAL ASSISTANCE (T/A's)

To obtain some insight as to the problem areas being addressed by technical assistance, as indicated in the methodology area, several sources were reviewed. In reviewing the T/A's, the majority of the reports had to do with automating manual processes of record bureau functions, incident reporting, support services, and crime analysis. These seem to be the functional areas of law enforcement operation which are most impacted by modern technology in terms of providing more efficient service delivery.

FUNCTIONAL PROBLEM AREAS

Of the twelve identified functional areas, incident reporting was the recipient of the most attention from the state plans. Again, the emphasis in this category was the upgrading of existing systems or planning, as it related to communications or information systems. The two other areas that received considerable attention were Support Services and Records Bureau Operations. As mentioned above, the greatest effort was directed towards criminal justice and inter-agency interface systems.

Summaries of the findings of the research are contained in Volume II, Section 3.

SECTION 3
SDD PROJECT RECOMMENDATIONS

This section of the Executive Summary outlines the recommended project activities for both computer and communication projects to which LEAA/SDD will address itself over the next three (3) to five (5) year period. The computer technology projects are presented first, followed by the communication technology projects.

Recommended Computer Technology Projects

Computer Technology projects have been categorized into four program areas and include:

- | <u>Category</u> | <u>Program Area</u> |
|-----------------|--|
| A | <u>Operational Systems Support</u> — Systems which directly relate to the enhancement of day-to-day law enforcement activities such as responding to citizen's calls for service or the arrest of offenders; |
| B | <u>Law Enforcement System Management</u> — Systems which relate to or enhance the internal management of law enforcement agencies including training personnel, budgeting, fleet management and other like activities; |
| C | <u>Crime Investigation</u> — Application systems which provide enhanced capabilities related to activities such as crime analysis/planning, case investigation, latent fingerprints, stolen property, etc.; and, |
| D | <u>Inter-Agency Support</u> — Systems which provide for the exchange of required information between law enforcement and/or other criminal justice agencies such as warrants or offender status. |

The following tables have been developed as a summary depiction of each of the four categorical areas and the programs contained therein. Several of the programs or potential projects cover more than one of the twelve functional problem areas defined in Section 2 and are thus designated as such.

Detailed discussions of each of the computer technology components of the LEAA/SDD plan are presented in Volume II, Section .

In some cases, there is more than one program area or project recommended inasmuch as there may be more than one technical resolution to a problem or more than one may be necessary to resolve a particular law enforcement problem.

COMPUTER TECHNOLOGY
CATEGORY A
OPERATIONAL SYSTEMS SUPPORT PROGRAMS

Functional Area Addressed	Project Number	Abbreviated Problem Statement	Projected Program Definition
1,2	A.1	Effectiveness of current dispatch procedures are inadequate as related to data capture for decision making.	Expanded development of model micro/mini computer capabilities.
1	A.2	Current procedures and capabilities are often inadequate due to inability to correlate calls for service with officer availability.	Develop alternative systems methodologies and increase utilization of existing systems and networks
2,3,5,11	A.3	Jail operations require improved capabilities for management and operational information related to jail operations and offender status.	Expand and improve capabilities of existing jail management hardware and software systems.
3,6,11,12	A.4	Turn-around time between local and state identification functions related to the offender are too long	Improve capabilities of automated name search and indexing to provide faster turn-around time and potential for "hits".
2,5,7	A.5	Entire problem of property control (identification, classification, data access, purging, storage and disposition) requires assessment and standardization and improvement. Need to provide capability of matching recovered property with that reported pawned, stolen or lost.	<ul style="list-style-type: none"> a. Conduct analysis of functional automated property systems to ascertain availability of models for use by other agencies and "market" model. b. Develop stand-alone mini or micro based property control system for use by medium and large agencies. c. Assess current NCIC property classification system to ascertain feasibility and capability for expansion or modification.

COMPUTER TECHNOLOGY
 CATEGORY B
 LAW ENFORCEMENT SYSTEM MANAGEMENT PROGRAMS

Functional Area Addressed	Project Number	Abbreviated Problem Statement	Projected Program Definition
1,2,4,5	B.1 a-b	Many small and medium-sized law enforcement agencies utilize inadequate record keeping processes (manual and automated) causing slow record availability and manpower wastes.	<ul style="list-style-type: none"> a. Analyze current data entry practices to improve capabilities to reduce manpower and time required for entry/retrieval. b. Evaluate existing word processing technology from operational and cost/benefit standpoint in order to improve data flow and reduce overhead costs. c. Develop standard or "benchmark" report processing/distribution model guidelines for use by multiple agencies. d. Develop series of booklets for manual report/record processing similar to Security and Privacy guideline booklets.
1,2,4,5,	B.2 a-b	No adequate analysis or guidelines are available to law enforcement agencies related to the various automated alternatives available for record storage and retrieval.	<ul style="list-style-type: none"> a. Conduct cost benefit analysis of various types of data entry/storage including OCR, computer tape/disc, cassette, magnetic cards, etc., by information type and access criteria/restraints. b. Develop series of record storage/retrieval guideline booklets for use by agencies for acquisition or management purposes.
	B.3	Small to medium-sized law enforcement agencies have previously been, for the most part, eliminated from technology due to high cost of computer and software.	<ul style="list-style-type: none"> a. Develop standard series of mini/micro processor software packages as models for use by multiple agencies. b. Develop standards for design, programming, and documentation of law enforcement systems.
	B.4 a-c	The technology transfer capabilities between law enforcement agencies require assessment as to the problems involved and the success of the current delivery mechanism to improve effectiveness.	<ul style="list-style-type: none"> a. Establish 3-5 day training course (including curriculum and delivery) for law enforcement agency personnel concerning technology transfer capabilities and problems. b. Develop technology transfer guidelines manual for distribution and use by law enforcement agencies.

COMPUTER TECHNOLOGY
 CATEGORY B (Con't)

Functional Area Addressed	Project Number	Abbreviated Problem Statement	Projected Program Definition
1-12	B.5 a-b	Staff rotation within law enforcement agencies causes problems related to the ability of command level staff to manage complex computer operations	<ul style="list-style-type: none"> c. Conduct an indepth analysis of various operational software applications. Bring systems and/or documentation to level of quality for transfer capabilities other agencies and provide necessary funds for expanded use of programs such as POSSE, CAPTIS, and CASS. a. Develop standardized curriculum and training program for command level staff to familiarize them with data processing basics and operations. b. Develop national law enforcement data processing certification program to enhance both capabilities and promote information exchange.
3	B.6	The movement and transfer of prisoners between jurisdictions is an expensive and complex operation requiring increased coordination and management.	Provide enhancements and further implementation mechanisms for CAPTIS

COMPUTER TECHNOLOGY
 CATEGORY C
 CRIME INVESTIGATION PROGRAMS

Functional Area Addressed	Project Number	Abbreviated Problem Statement	Projected Program Definition
9	C.1 a-b	Current efforts related to the development of standardized crime analysis software are becoming too vendor hardware oriented, thus causing redundant efforts as well as reducing technology transfer capabilities.	<ul style="list-style-type: none"> a. Expand and modify current CASS implementation approach to provide for the one-time development and documentation of multi language and hardware compatible software for distribution to multiple agencies. b. Analyze capability of providing crime analysis functions within those agencies utilizing data base management systems.
3,7	C.2 a-c	Law enforcement agencies require an improved methodology for classification of known offenders and characteristics with crime/case information to improve arrest/clearance capabilities.	<ul style="list-style-type: none"> a. Conduct an assessment of existing latent fingerprint systems, document and modify as necessary for technology transfer and/or Exemplary Projects Program. b. Develop model micro-computer based latent print/case investigation package for distribution to other law enforcement agencies. c. Include latent print/case investigation program module into existing POSSE project.
1,3,5,7,9	C.3 a-c	There is a serious lack of information collected, processed and exchanged related to the crime of arson among public safety agencies and what is available for use.	<ul style="list-style-type: none"> a. Evaluate existing arson investigation training programs to ascertain types of information needed and develop necessary curriculum and standards. b. Design and develop model arson investigation system which could collect data from involved source agencies and provide for correlation of data within regions or states. c. Assess existing arson systems or modules, if any, to ascertain feasibility of transfer to other agencies.

COMPUTER TECHNOLOGY
 CATEGORY D
 INTER-AGENCY SUPPORT PROGRAMS

Functional Area Addressed	Project Number	Abbreviated Problem Statement	Projected Program Definition
3,6,11	D.1 a-b	There exists a continuing need to improve the exchange of information at the level related to the wanted status of an offender arrested or in custody.	<ul style="list-style-type: none"> a. Develop standardized data base dictionary for those agencies involved in developing Subject-In-Process (SIP) or offender status systems. b. Assess existing SIP systems to select model(s) for use and transfer by other agencies.
3,6,11	D.2 a-b	The lack of information exchanged between law enforcement and prosecutorial agencies provides for ineffectual case processing and handling of offenders within a given jurisdiction due to each of the disposition and case numbering conflicts.	<ul style="list-style-type: none"> a. Assess capability for adding a law enforcement segment to PROMIS and make necessary modifications. b. Develop series of standards and guideline manuals for use by small agencies outlining data exchange requirements, procedures and forms where necessary.
	D.3 a-b	Mechanisms related to the improved communication of required field information from available data sources should be enhanced for timeliness and reliability reasons.	<ul style="list-style-type: none"> a. Conduct research into the expanded use of microwave fiber optics, laser, and satellite technology to increase information access/retrieval capabilities. b. Conduct assessment and publish guidelines related to the type of information which is really necessary in field units and the methods of delivery.

Recommended Communication Technology Projects

Communication Technology projects have been categorized into three program areas and include:

- | <u>Category</u> | <u>Program Area</u> |
|-----------------|--|
| A | <u>Agency Communications</u> — Programs which focus on the ability of an agency or group of same to communicate within and external to the agency. |
| B | <u>System Management</u> — Programs related to improving or controlling the internal management or operations of law enforcement communication facilities/personnel. |
| C | <u>Public Access</u> — Programs which address the ability of the public to directly access via alternative means the public safety capabilities of the community. |

The following table summarizes the Communications Technology projects recommended for SDD. As in the previous computer presentation, detailed discussions of the programs are provided in Volume II, Section 4.

COMMUNICATION TECHNOLOGY

CATEGORY A

AGENCY COMMUNICATIONS

Functional Area Addressed	Project Number	Abbreviated Problem Statement	Projected Program Definition
1	A. 1 a-c	A cost model is required for those communities attempting to implement 911.	<ul style="list-style-type: none"> a. Develop software and procedures for use of cost model of 911 and make available to agencies. b. Develop model 911 guidelines for use by supervisory personnel and required T/A support. c. Develop low cost model 911 system.
1	A. 2 a-c	The law enforcement frequency allocation procedures and practices require additional or continual review and modification to meet changing needs and technology enhancements to alleviate congestion.	<ul style="list-style-type: none"> a. Develop guidelines and procedures related to optimum frequency alignment and assignment by community and geographical considerations. b. Improve planning capabilities by developing both computer and manual quantitative frequency utilization and workload models. c. Expand analysis of spectrum conservation techniques and/or alternatives such as APCO's Project 16. Should include trunking considerations and factors.
1	A. 3 a	Many agencies are unaware of data security requirements for data transmittal over radios and the alternative security devices or mechanisms available.	<ul style="list-style-type: none"> a. Assess data security requirements and publish guidelines including alternative means of security.

COMMUNICATION TECHNOLOGY

CATEGORY B

SYSTEM MANAGEMENT

Functional Area Addressed	Project Number	Abbreviated Problem Statement	Projected Program Definition
1	B. 1 a-b	Pre - service and in - service programs for training of communications personnel to increase efficiency should be reviewed and expanded.	<ul style="list-style-type: none"> a. Develop model certification standards and programs for communications personnel. b. Develop standard training programs and curriculums for use by all states and provide training support for both management and staff personnel.
	B. 2 a	Allocation of communications personnel should be related to calls for service and staffing requirements.	<ul style="list-style-type: none"> a. Modify existing law enforcement field resource allocation system to provide similar capabilities for communications management.
	B. 3 a-b	Communication facility design often does not include adequate planning for future requirements or emergency operations	<ul style="list-style-type: none"> a. Develop model guidelines for communication facility planning and design based on population and demographic constraints. Distribute guidelines to agencies. b. Develop and distribute guidelines for emergency operation standards including procedures and equipment
1	B. 4 a	Many agencies do not currently have technical background to maintain equipment nor can they afford maintenance packages provided by vendor.	<ul style="list-style-type: none"> a. Assess and develop standards for maintenance sharing programs among local agencies. Should include development of minimum standards for equipment preventive maintenance.

COMMUNICATION TECHNOLOGY

CATEGORY C

PUBLIC ACCESS

Functional Area Addressed	Project Number	Abbreviated Problem Statement	Projected Program Definition
1	C. 1 a	Alternative methods to telephone access to public safety agencies require additional analysis and expansion where feasible.	a. Analyze alternatives for public access for handicapped and/or other individuals not having access to telephone services. Should include signaling devices, CB radios, teletypes, and other devices.
1	C. 2 a-b	Many agencies lack the "in house" expertise to design complex communication systems to serve the public and therefore rely on hardware vendors for specification of needs and equipment.	a. Increase T/A capabilities to support system design and/or specification development for local agencies. b. Develop standards for utilization of microwave networks as a planning guide for system transfer or participation.
	C. 3 a	Many agencies lack capability or mechanisms to enhance call processing techniques in order to improve service to community.	a. Conduct cost/benefit analysis of both computer and manual call processing technology and possible guidelines to local agencies.

SECTION 4

FIVE YEAR PROJECT SCHEDULE

The five year projected schedule for action by SDD provides for short term or quick result benefit programs and long range program providing for research and/or system development. The nature of the problems facing law enforcement for both computer and communication technology utilization and the descriptions of the programs have previously been described.

In conducting the projects for both communication and computer technology projects, the following seven phases or steps of the LEAA Action Program Development Process (APDP) for system development should be followed.

1. Policy Planning
2. Problem Definition
3. Identification and Selection of Response Strategies
4. Program Design
5. Tests and Evaluation
6. Demonstration and Evaluation
7. Marketing

In developing the following schedules for each of the programs, consideration has been given to merging into existing programs such as the Police Operations Support System Elementary (POSSE), new or expanded model system development efforts. For example, program A5.6 which provides for a mini/micro property control system for small and medium sized law enforcement agencies has been scheduled as a 1981 and 1982 effort. This should allow ample opportunity to complete POSSE components now planned or under development, then provide SDD with the capability to expand the capabilities of POSSE to address information needs.

Other programs scheduled such as C1.a relate to advancing the utilization of existing software of the Crime Analysis System Support (CASS) by making it more transferable and could be addressed in 1980 and 1981 due to the current APDP status of the program.

The following charts should be assessed and modified on an annual basis so as to provide or reflect current status of the programs.

SDD Computer Technology Programs

PROGRAM AREA A Operational Systems Support	Project Number	1980			1981			1982			1983			1984		
Micro Processor Research	A.1															
Network Terminal Upgrades	A.2															
Jail Standards Upgrade	A.3 *															
State Identification Upgrade	A.4*															
Property Control Systems	A.5															
Technology Transfer Analysis	A.5a															
Mini/Micro Model Dev.	A.5-b*															
NCIC Classification	A.5-c															
LEGEND:																
* Denotes Existing SDD Program																

SDD COMPUTER TECHNOLOGY PROGRAMS

PROGRAM AREA B Law Enforcement System Management	Project Number	1980				1981				1982				1983				1984			
Report Generation/Data Entry	B.1a																				
Word Processing Assessment	B.1-b																				
Model System Development	B.1-c																				
Guidelines Manual	B.1-d																				
Record Storage	B.2																				
Cost/Benefit Analysis	B.2-a																				
Guideline Manuals	B.2-b																				
Technology Upgrade	B.3																				
Model Software Dev.	B.3-a																				
Assessment & Standards	B.3-b																				
Technology Transfer	B.4																				
Training Courses	B.4-a																				
Guidelines Manual	B.4-b																				
Documentation Upgrade	B.4-c																				
Management Staff Training	B.5-a																				
Certification Programs	B.5-b																				
Prisoner Movement	B.5-c*																				
LEGEND: * Denotes existing SDD Program																					

SDD COMPUTER TECHNOLOGY PROGRAMS

PROGRAM AREA C	Project Number	1980				1981				1982				1983				1984				
Crime Investigation																						
Crime Analysis	C. 1*																					
CASS Modification	C. 1-a*																					
Data Base System Dev.	C. 1-b																					
Latent Fingerprint sys.	C. 2																					
Transfer Analysis	C. 2-a																					
Model System Development	C. 2-b																					
POSSE System Expansion	C. 2-c*																					
Arson Control	C. 3																					
Arson Training Evaluation	C. 3-a																					
Model Arson System Dev.	C. 3-b*																					
Legend:																						
* Denotes Existing																						
SDD Program																						

SDD COMPUTER TECHNOLOGY PROGRAMS

PROGRAM AREA D	Project Number	1980			1981			1982			1983			1984		
Inter-Agency Support																
Offender Information	D.1															
Standard SIP Data Base	D.1-a															
Model SIP Systems Dev.	D.1-b															
Prosecutorial Interface	D.2															
PROMIS Modification	D.2-a															
Guidelines Manual	D.2-b															
Communications Methodology	D.3															
Transmission Research	D.3-a															
Data Access Guidelines	D.3-b															

SDD COMMUNICATION TECHNOLOGY PROGRAMS

PROBLEM AREA A	Project Number	1980			1981			1982			1983			1984			
Agency Communications	A																
911 Cost Model Development	A.1a*																
Supervisory 911 guidelines	A.1b																
Low Cost 911 Model	A.1c*																
Frequency Guidelines	A.2a*																
Frequency Models	A.2b																
Spectrum Alternatives	A.2c*																
Security Analysis	A.3a																
LEGEND: * Denotes on-going LEAA Program.																	

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SDD COMMUNICATION TECHNOLOGY PROGRAMS

PROGRAM AREA B	Project Number	1980				1981				1982				1983				1984			
System Management	B																				
Certification Standards	B.1a																				
Training Program	B.1b																				
Resource Allocation	B.2a																				
Facility Guidelines	B.3a																				
Emergency Procedures	B.3b																				
Equipment Maintenance	B.4a																				

SDD COMMUNICATIONS TECHNOLOGY PROGRAMS

PROGRAM AREA C	Project Number	1980				1981				1982				1983				1984			
Public Access	C																				
Access Alternatives	C.1a																				
T/A Enhancement	C.2a																				
Microwave Standards	C.2b																				
Call Processing Upgrade	C.3a																				

SECTION 5

FIVE YEAR FUNDING ALLOCATIONS

This section of the SDD computer and communication technology plan outlines the overall proposed budget requirements and allocations over a five-year fiscal period. As with any type of budget program, this program should be reviewed on an annual basis to reflect available resources, changing requirements or special program emphasis established by the administration. Changes in the plan or projected funding allocations should then be made accordingly.

In developing the allocation program, existing budgetary plans for on-going programs have been considered to the maximum extent feasible and have been incorporated where appropriate. Over the next five year fiscal period (1980 - 1984), computer and communication technology programs total a required budget allocation of six million, and twenty-five thousand dollars (\$6,025,000). Communication technology programs total a required budget allocation of four million, nine hundred and seventy thousand dollars (\$4,970,000). The annual breakdown is as follows:

	<u>Computer</u>
1980 -	\$1,115,000
1981 -	\$2,320,000
1982 -	\$1,570,000
1983 -	\$ 685,000
1984 -	\$ 335,000

	<u>Communications</u>
1980 -	\$1,475,000
1981 -	\$1,565,000
1982 -	\$1,140,000
1983 -	\$475,000
1984 -	\$315,000

It should be noted that the budgetary allocations for fiscal years 1983 and 1984 are purposely defined low so as to provide SDD with the ability to define new projects based upon the rapidly changing technology and make the appropriate adjustments.

As described in the previous section of this plan, the immediate three year schedule of computer and communications programs is ambitious and challenging and will require concentrated direction of the various programs. The following tables provide a breakdown of computer technology programs within the four categorical areas and the communication.

COMPUTER TECHNOLOGY
FUNDING ALLOCATIONS

Category	Project Number	1980	1981	1982	1983	1984
OPERATIONAL SUPPORT SYSTEMS						
	A					
MicroProcessor Research	A.1	\$ 75,000	\$ 50,000	\$ --	\$ --	\$ --
Network Terminal Upgrades	A.2	65,000	125,000	50,000	--	--
Jail Management Upgrade	A.3	100,000	65,000	--	--	--
State Identification Upgrade	A.4	150,000	150,000	--	--	--
Property Transfer Analysis	A.5a*	60,000	40,000	--	--	--
Mini/Micro Model Dev.	A.5b	--	100,000	150,000	--	--
NCIC Classification	A.5c	--	75,000	--	--	--
A Subtotal		\$ 450,000	\$ 605,000	\$ 200,000	\$ --	\$ --
LAW ENFORCEMENT SYSTEM						
	B					
Report Generation/Data Entry	B.1a	\$ --	\$ 90,000	\$ --	\$ --	\$ --
Word Processing Assessment	B.1b	--	80,000	--	--	--
Model System Development	B.1c	--	150,000	50,000	--	--
Guidelines Manual	B.1d	65,000	--	--	--	--
Cost Benefit/Analysis	B.2a	--	75,000	50,000	--	--
Guidelines Manual	B.2b	--	--	60,000	--	--
Model Software Development	B.3a	100,000	100,000	75,000	--	--
Assessment & Standards	B.3b	90,000	--	--	--	--
T/T Training Course	B.4a	--	60,000	40,000	--	--
T/T Guidelines Manual	B.4b	40,000	--	--	--	--
T/T Documentation Upgrade/ Marketing	B.4c	--	200,000	325,000	75,000	---
Management Staff Training	B.5a	70,000	30,000	--	--	--
Certification Program	B.5b	--	40,000	10,000	10,000	10,000
Prisoner Movement	B.6	50,000	50,000	--	--	--
B Subtotal		\$ 415,000	\$ 875,000	\$ 610,000	\$ 85,000	\$ 10,000
CRIME INVESTIGATION						
	C					
CASS Modification	C.1a	\$ 100,000	\$ 150,000	\$ 75,000	\$ --	\$ --
Data Base System Dev.	C.1b	--	--	75,000	150,000	75,000
Latent Print Transfer	C.2a	--	75,000	--	---	--
Model System Dev.	C.2b	--	--	60,000	100,000	50,000
POSSE System Expansion	C.2c	--	--	--	50,000	--
Arson Training Evaluation	C.3a	50,000	--	--	--	--
Model Arson System Dev.	C.3b	100,000	200,000	150,000	--	--
Technology Transfer	C.3c	--	200,000	100,000	--	--
C Subtotal		\$ 250,000	\$ 625,000	\$ 460,000	\$ 300,000	\$ 125,000
INTER-AGENCY SUPPORT						
	D					
Standard SIP Data Base	D.1a	\$ --	\$ --	\$ 100,000	\$ 50,000	\$ --
Model SIP Systems	D.1b	--	75,000	100,000	--	--
PROMIS Modification	D.2a	--	50,000	100,000	100,000	--
Guidelines Manual	D.2b	--	50,000	--	--	--
Transmission Research	D.3a	--	--	--	150,000	200,000
Data Access Guidelines	D.3b	--	40,000	--	--	--
D Subtotal		\$ --	\$ 215,000	\$ 300,000	\$ 300,000	\$ 200,000
TOTAL - Computer Technology Programs	A-D	\$ 1,115,000	\$ 2,320,000	\$ 1,570,000	\$ 685,000	\$ 335,000

COMMUNICATIONS TECHNOLOGY

FUNDING ALLOCATIONS

Category	Project Number	1980	1981	1982	1983	1984
AGENCY COMMUNICATIONS						
	A					
911 Cost Model Development	A.1a	\$ 250,000	\$ 175,000	\$ 70,000	\$ --	\$ --
Supervisory 911 Guidelines	A.1b	160,000	90,000	--	--	--
Low Cost 911 Model	A.1c	200,000	150,000	100,000	90,000	90,000
Frequency Guidelines	A.2a	100,000	50,000	--	--	--
Frequency Models	A.2b	--	150,000	--	--	--
Spectrum Alternatives	A.2c	250,000	100,000	100,000	--	--
Security Analysis	A.3a	100,000	50,000	--	--	--
A Subtotal		\$1,060,000	\$ 765,000	\$ 270,000	\$ 90,000	\$ 90,000
SYSTEM MANAGEMENT						
	B					
Certification Standards	B.1a	\$ --	\$ 100,000	\$ 70,000	\$ 50,000	\$ --
Training Program	B.1b	--	150,000	300,000	150,000	150,000
Resource Allocation	B.2a	--	75,000	100,000	50,000	--
Facility Guidelines	B.3a	75,000	50,000	--	--	--
Emergency Procedures	B.3b	90,000	60,000	--	--	--
Equipment Maintenance	B.4a	--	90,000	50,000	30,000	--
B Subtotal		\$ 165,000	\$ 525,000	\$ 520,000	\$280,000	\$150,000
PUBLIC ACCESS						
	C					
Access Alternatives	C.1a	\$ --	\$ 100,000	\$ 100,000	\$ --	\$ --
T/A Enhancement	C.2a	150,000	125,000	125,000	75,000	75,000
Microwave Standards	C.2b	100,000	50,000	50,000	--	--
Call Processing Upgrade	C.3a	--	--	75,000	30,000	--
C Subtotal		\$ 250,000	\$ 275,000	\$ 350,000	\$105,000	\$ 75,000
TOTAL - Communication Technology Program	A-C	\$1,775,000	\$1,565,000	\$1,140,000	\$475,000	\$315,000