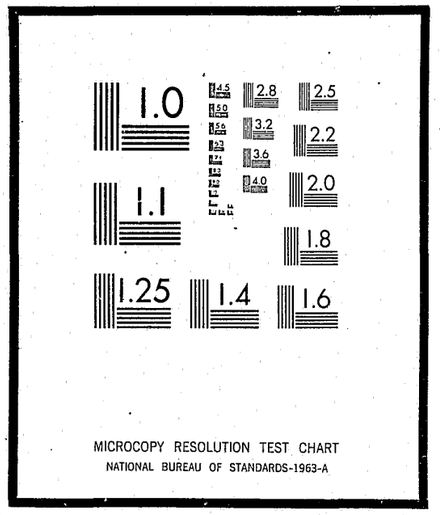

MTR-2721

A MULTILEVEL CRIMINAL JUSTICE INFORMATION SYSTEM FOR CONNECTICUT

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THE MITRE CORPORATION

Prepared For

Connecticut Planning Committee
On Criminal Administration
Thomas J. Meskill, Governor

Project 2060

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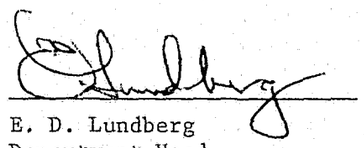

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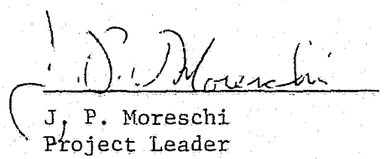

J. P. Moreschi
Project Leader

ABSTRACT

This study places all criminal justice information system activity in the state of Connecticut into context, with primary emphasis on local/regional activities and their interaction at the state level. Information transactions necessary for both operations and management and their critical characteristics have been analyzed to establish requirements. A conceptual design, serving each government level - state, local, and regional - was devised to satisfy these requirements. Because of limitations in funding and time, much of the research was conducted using existing reports and studies, including a concurrent study of the state-level criminal justice information system.

In addition to a conceptual design for each level, this study discusses the problems of regionalization and briefly analyzes the economics of different data processing options as applied to different local/regional population bases. Implementation considerations are also discussed.

ACKNOWLEDGEMENT

We would like to express our appreciation to Mr. Nobel Benson of the Planning Committee on Criminal Administration, for the guidance and assistance he provided. We also would like to thank the staffs of the Bridgeport, Hartford, Manchester, New Haven, Norwalk, Stamford and West Hartford police departments for the information that they furnished to the study.

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SECTION I

EXECUTIVE SUMMARY

This report relates and places into context the information system projects, both planned and in progress, that support the Connecticut Criminal Justice System. Connecticut's criminal justice (CJ) agencies employ more than 10,000 people to protect the lives and property of its citizens, and include both the state and local police, criminal courts, Probation Department, Corrections Department (including Parole), and the Department of Motor Vehicles. Each of these agencies requires information of three types to carry out its responsibilities: operational data to support day-to-day activities; management information to plan and direct these activities; and interface information to facilitate interagency cooperation.

INFORMATION REQUIREMENTS (See Section III)

To determine each agency's requirements for these three types of information, it was necessary to analyze the major characteristics of key CJ data files and the information transactions among agencies and between an agency and a file. Since another study was underway which would provide information requirements for state-level CJ agencies, our state-level analysis focused only on interfaces among agencies. At the local level we analyzed all police functions and their associated information transactions. Information requirements for operations, operational control, management control, and strategic planning were determined. In the course of this analysis, three general types of files were identified:

- Those files of state-wide scope and interest, such as files on wanted persons, stolen cars or property, vehicle registration, other registered property, criminal histories, etc.
- Those files primarily of interest to individual local agencies (i.e., the police) and regional combines of

local agencies, such as files on incidents, investigations, etc.

- Those files needed to operate a state-level agency, but not of general interest, such as files on Probation or Correction cases and activities.

Sixteen general operational files were identified, from which all the CJ information transactions here considered could be satisfied.

Files of State-Wide Scope and Interest

- Hot (Wanted and Missing Persons and Stolen Property)
- Criminal History Files
- Motor Vehicle Files
- Other Registered Property Files

Files Primarily of Local Interest

- Local Incident Data
- Local Intelligence
- Location Characteristics
- Crime Investigations
- MV Accident Investigations
- Arrest Data
- Local Property Data
- Parking and Traffic Data
- License, Inspection, or Permit Data

Files Used to Operate State-Level Agencies

- Circuit and Superior Court Data
- Adult Probation Data
- Corrections and Parole Data

It was concluded that:

- The most demanding requirements for quick response time from files and for file currency are to support initial actions

taken by the local police relative to a crime or request for service. Both selected state-level files (e.g., Hot and Motor Vehicle) and selected local files (especially Incidents and Location Characteristics) should meet these requirements.

- The major files of regional interest are Intelligence and Incident files; there is also some regional interest in Crime Investigations and Local Property data.
- Most of the data necessary for agency management can be obtained from summaries and/or analyses of data generated by the agency's operations. However, certain additional information is needed from other CJ agencies and from outside the CJ system.

SYSTEM CONCEPT (See Section IV)

An information system concept satisfying requirements at all CJ levels was devised. The significant characteristics of this Multilevel Criminal Justice Information System (MLCJIS) concept are:

- Three major mechanization options are available for those agencies with CJIS terminals: (1) Manual processing with a CJIS terminal; (2) batch (computer or punched card) processing with a CJIS terminal; (3) on-line computer processing. Other mechanization aids, such as microfilm and powered files, can also be used to safeguard information, reduce file volume, and improve file access.
- The CJIS design, as proposed by the CMAI/SDC study (Reference 3), meets the state level requirements of the MLCJIS.

- The Local/Regional System Segment of the MLCJIS provides operational and managerial support to the 91 full-time local police departments of the state, and to whatever regional combinations of departments may be formed.
- The local police department should have direct, rapid, and convenient access to key state level files (Hot, Criminal History, Motor Vehicle, Other Registered Property) through the MLCJIS; these files should not be duplicated at the local level. Municipalities not served by a CJIS terminal should have voice telephone access to a central state information agency. The local police also require effective access to the files of "Primary Local Interest" and communications with other municipal (non-police) agencies, other police departments, state-level agencies, and the National Crime Information Center (NCIC).
- Regional arrangements among local police departments can provide economies of scale, reduce facility duplication, and reduce per capita cost of police data handling. Suitably configured regions can also produce significant operational benefits resulting from sharing of certain data and cooperating on common operational problems. Special organizational and confidentiality problems must be overcome, however.
- Size of population base served is a good index of police operation size, and can be used for studying both a single local police department, and a regional aggregation of such departments.

- Principal attention was focused on the mechanization options most appropriate to population bases of 50,000, 137,000 and 400,000 persons. Benefits of each mechanization option were delineated. An equipment configuration and a staffing allocation were developed for each option at each population base. Approximate one-time (start-up) and operating costs were estimated for each case.
- Benefits of Option (2) (batch-terminal) over Option (1) (manual-terminal) include the generation of a computerized data base, and the preparation of more sophisticated and complete regular and ad hoc reports for operational control and management. The benefits of Option (3) (on-line) over Option (2) consist in its rapid and accurate access to key operational police files, its ability to use interactive data entry and file search techniques, and its ability to share selected operational data between departments with greater ease than Option (2).
- At the 50,000 population level, Option (1) (manual-terminal) was lowest in operating cost. The added 18% cost increment for operating Option (2) (batch-terminal), with shared use of a computer center, is difficult to justify in relation to the additional benefits received, but a more limited use* of batch computations might be appropriate.

*The batch/terminal option, as priced, assumes production by the computer of a large set of output reports; a more selective use of the computer would also be possible.

- At the 137,000 population level, Option (1) (manual-terminal) was again the lowest in operating cost. Option (2) (batch-terminal) was 6% higher if shared operation is used, and about 20% higher for dedicated operation. For shared operation, the batch-terminal option appears viable in view of the increased benefits. Option (3) (on-line) was about 50% higher than Option (1), and is hard to justify. (The on-line calculation, however, assumed a dedicated computer system; some form of computer sharing might reduce costs to an acceptable level.)
- At the 400,000 population level, Option (1) (manual-terminal) and Option (2) (batch-terminal), with shared use of a computer center, were about equal in operating cost, and were lower than the other options. Option (2) with dedicated use of a computer, was about 9% higher in operating cost. Of these possibilities, Option (2) with shared computer is prefered, but that same option with dedicated computer should also be acceptable if shared use of a computer center is not feasible. Option (3) (on-line), about 25% higher than Option (1), could be justified in some situations in view of the added benefits of this option.

IMPLEMENTATION CONSIDERATIONS (See Section V)

Since the criminal justice system is not a single organization, but a group of independent agencies that work together, implementing the MLCJIS requires some special considerations:

- In addition to determining requirements, developing an information system concept, and formulating a general implementation plan, it is necessary to secure their

acceptance, evaluate and select both state-level and local or regional projects in accordance with the concept and plan, implement system components, review results achieved and problems encountered, and if necessary modify the requirements, the concept or the plan.

- The MLCJIS implementation plan should cover such items as: In what sequence should subsystems be implemented? What legislation is needed? Who will monitor, coordinate, and manage the system? What standardization will be required? What are the security and privacy requirements? What are the relations between implementers and users? What regionalization is contemplated?
- Securing acceptance of the concept and the plan is a major problem at the local level; it requires countering local uncertainties and difficulties with adequate benefits and a suitable program of education and incentives.
- Important incentives include making full use of Federal funds in design, implementation, and test and making the system inexpensive to use operationally (in particular, there should be no deterrents, such as charging on a usage basis).
- Implementation proposals should be evaluated against a set of criteria including: conformance to the MLCJIS concept, conformance to the implementation plan, impact on criminal justice, potential for expansion, and the capabilities of the proposing agency.

- Frequent review of the program status and results achieved is necessary. There should be a formal mechanism for modifying the statement of requirements, the system concept, and the implementation plan as appropriate.

SECTION II

INTRODUCTION

The Criminal Justice System (CJS) in Connecticut is a loose aggregation of agencies at the local and state levels that work together in the prevention of crime, the apprehension of offenders, the prosecution and adjudication of charges, and the rehabilitation of offenders. In order to operate and manage this system, each agency requires certain information - some of it internally generated, some from external sources. At the state level, this information is stored and processed by the Criminal Justice Information System (CJIS), while the combined state/local/regional levels are served by the Multilevel Criminal Justice Information System (MLCJIS).

Figure 1 depicts the steps required to design and implement a comprehensive information system serving all levels (state, local, and regional) of the criminal justice system. The requirements for a MLCJIS (step (1) of Figure 1) are established in Section III of this report, by analyzing the information transactions of each agency. A MLCJIS concept (step (2) of Figure 1) that satisfies these requirements is developed in Section IV. Finally, Section V presents several considerations that might facilitate the implementation of a MLCJIS concept (steps (3) through (7) of Figure 1).

This study was undertaken for the Comptroller of the State of Connecticut, in his capacity as head of Connecticut's Data Processing Facility. The primary source of funding was the Connecticut Planning Committee on Criminal Administration (CPCCA), which also provided guidance and direction for the project. The study represents an attempt to relate and coordinate the numerous information system projects underway at the local, regional, and state levels of the Criminal Justice System, and to provide a comprehensive multilevel concept into which each of the individual efforts will fit.

Due to limitations of time and funding, much of the background information for the study was obtained from previously published

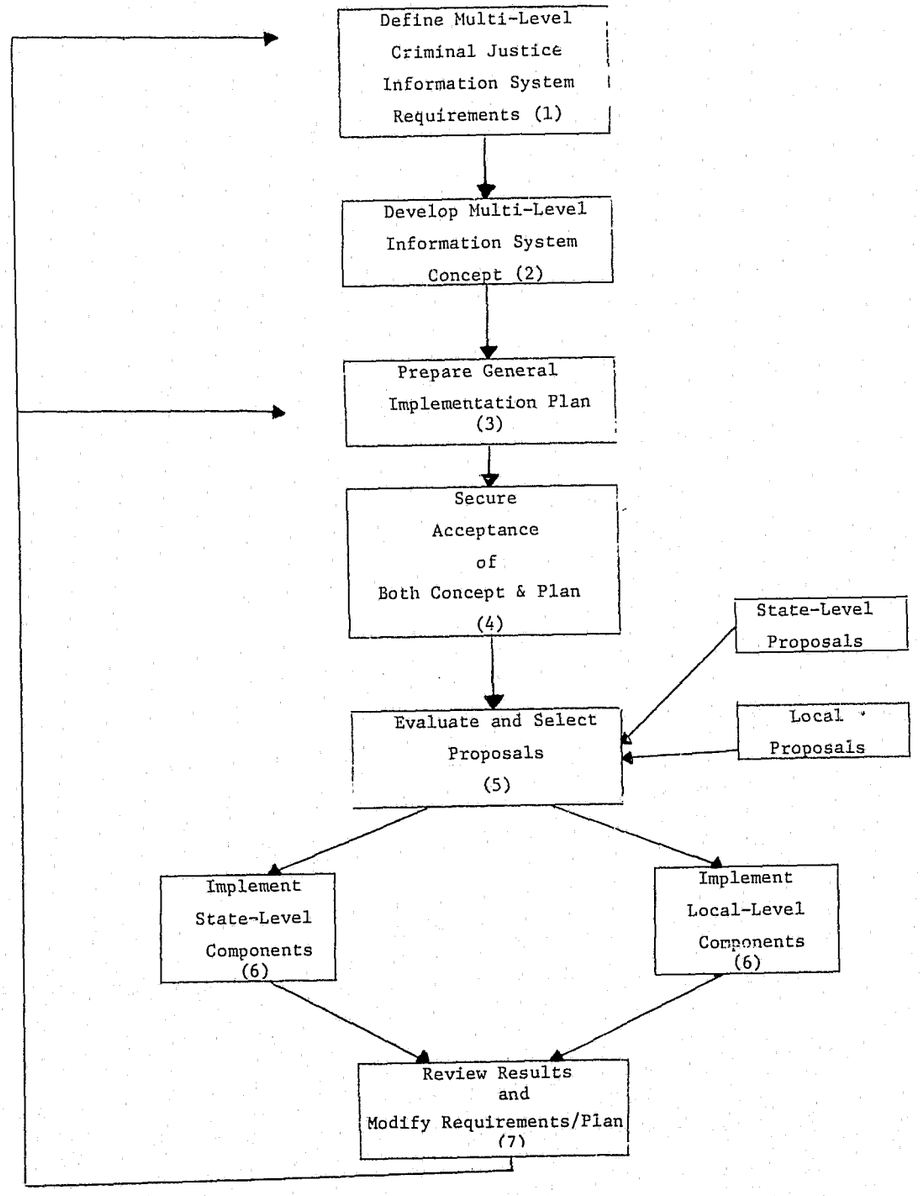

Figure 1: Implementing a Criminal Justice Information System

material. In addition, several local police departments and state-level agencies were visited by MITRE personnel.

This study was concurrent with another project which concentrated on analyzing and designing a state-level Criminal Justice Information System (CJIS). That CJIS project, performed by Computer Management Assistance, Inc. (CMAI) and Systems Development Corporation (SDC), produced an information systems concept and implementation plan serving state-level agencies. The multilevel information system study reported here in no way duplicated that effort; rather, it incorporated the recommended state-level system into the multilevel concept. While the CJIS effort looked at state-level requirements primarily, this report focuses more on local and regional activities and their interaction with the state-level. Analysis of state-level activity is performed only on a gross level, except in those areas where it impacts the local police.

SECTION III

CRIMINAL JUSTICE INFORMATION SYSTEM REQUIREMENTS

This section discusses the requirements that a modernized and improved Connecticut Criminal Justice Information System (CJIS) must meet in order to support the operation and management of criminal justice agencies at all levels of government.

3.1 DERIVATION OF REQUIREMENTS

Information requirements for criminal justice agencies are functionally determined by the operational and managerial activities specific to them. Section 3.2 defines the Criminal Justice System of Connecticut in terms of agency characteristics, their operational processes and workloads for various portions of those processes, and the nature of agency management activities. (Appendices I and II supplement the information in Section 3.2.) Section 3.3 defines a conceptual data base or set of information files for criminal justice activities. Section 3.4 (and associated Appendices III, IV, V, and VI) identifies detailed operational and managerial activities, emphasizing local police work. On this basis, information transactions (data input, query and response, data output) necessary for each agency are identified. Section 3.4 also includes an estimate of the quantitative and semiquantitative parameters -- characterizing the amounts of data involved, transaction frequencies, allowable delays, and other factors -- for each information transaction. Aggregating the parameters of groups of similar transactions creates the summary picture of data handling requirements presented in Section 3.5.

3.2 THE CRIMINAL JUSTICE SYSTEM

This subsection reviews the overall characteristics of the criminal justice process in Connecticut, providing a framework for subsequent discussion of criminal justice agencies and the information transactions necessary to support them. Although we are concerned with the entire scope of criminal justice activities, primary emphasis

is given to local police activities.

3.2.1 Criminal Justice Agencies

The types of organizations or agencies that participate in the Connecticut criminal justice (CJ) system are:

- Local Police Departments
- State Police Department
- The Courts
  - Bail Commission
  - Circuit and Superior Courts
- Department of Adult Probation
- Department of Correction
  - Jails, Prisons, and Parole Division
- Parole Board
- State Motor Vehicle Department

This list includes only agencies having a major impact on the criminal justice information system; all are state-level organizations except for the local police departments. Also note that agencies dealing with juveniles or youths are not included in this discussion.

The Connecticut criminal justice processes also involve data transactions with agencies outside of the State, such as other states, and the FBI (i.e., National Crime Information Center).

Table I* shows the number of individual units or branch offices for each of the agencies listed above. This table shows that there are some 260 criminal justice agencies, branches, or other units operating in Connecticut, not counting the several central administrative operations in and around Hartford.

---

*Except where otherwise indicated, data for Tables I, II, and III was obtained from The Criminal Justice System in Connecticut - 1972, prepared by the Connecticut Planning Committee on Criminal Administration (1).

Table I

Agencies Participating in the Criminal Justice Process

LOCAL POLICE DEPARTMENTS[2]	
Full time police departments	91
Full time personnel and resident state trooper	10
Resident State trooper only	35
Served by Local State Police Barracks	4
	140
STATE POLICE DEPARTMENT	
Central Administration	
Connecticut State Bureau of Identification	1
Field Operations - Troops/Barracks	11
Criminal Laboratory Services - Police, Toxicology[3]	2
	14
THE COURTS[4]	
Central Administration	
Bail Commission Operations (by Circuit)	18
Circuit Courts	18
Superior Courts	9
	45
DEPARTMENT OF ADULT PROBATION	
Central Administration	
Branch Offices	24
DEPARTMENT OF CORRECTION	
Central Administration	
Community Correction Centers (Jails)	6
State Correctional Institutions	4
Other Facilities (Camp and Pre-release center)	2
Parole Division: field operations	5
	17
PAROLE BOARD	
MOTOR VEHICLE DEPARTMENT	
Central Administration	
Branch Offices	16

(1) List includes only those agencies having large impacts on the Criminal Justice Information System. List excludes Juvenile Court, Domestic Relations Bureau, and Department of Children and Youth Services, since it is believed that their records would be largely or wholly separate from the main CJIS.

(2) There are also 45 municipalities not covered on a full-time basis.

(3) The State Toxicology Laboratory is actually part of the State Health Department

(4) The list excludes the Appellate Session of the Court of Common Pleas and the Supreme Court because of their relatively limited workloads.

The number of personnel associated with each type of criminal justice organization is given in Table II, providing a general measure of the magnitude of activities conducted by each. As Table II indicates, approximately 2/3 of the personnel in the listed agencies are police employees, of whom more than 5/6 are employees of local police departments. (For local police departments, Table II lists only the state-wide aggregate of full time employees. Details of the relation between size of local police departments and size of municipality served, and other related information are given in Appendix I.)

The key operational functions carried out by these CJ agencies are listed in Table III. These do not include indirect or support functions such as training, records keeping, communications, coordination, general administration, finance, or management. (The management function is discussed in Section 3.2.3.)

3.2.2 Steps in the Criminal Justice Process

The steps involved in the State's criminal justice process were outlined in the 1970 Action Plan prepared by the Connecticut Planning Committee on Criminal Administration (CPCCA). The Action Plan flow chart summarzing the steps in the process is reproduced in Appendix II.

Certain of the steps shown in Appendix II are particularly important to the criminal justice information system because of their informational impact. Other activities -- such as facility inspection, issuance of licenses, and motor vehicle regulatory activities -- although not strictly within the criminal justice process, also have significant implications for the information system.

As a result, a different flow chart (shown in Figures 2 and 3) is more directly applicable to our present purpose. Section 3.4 further details the steps shown in Figures 2 and 3 in terms of the individual actions which form the basis for determining information

Table II
Number of Personnel Staffing
The Criminal Justice Agencies

LOCAL POLICE DEPARTMENTS	
Full-time employees (excludes assigned State Police)	5,549
STATE POLICE DEPARTMENT	
Full time personnel (includes 759 sworn personnel)	1,009
THE COURTS	
Bail Commission	31
Circuit Court*	631
Superior Court*	392
	1054
DEPARTMENT OF ADULT PROBATION	
Probation Officers	113
DEPARTMENT OF CORRECTION	
Parole Division	20
Staffing for eleven Institutions	1356
	1376
PAROLE BOARD	
Membership	7
MOTOR VEHICLE DEPARTMENT	
Personnel	about 1,000

* Includes justices, prosecutors, clerks, and supporting personnel.

Table III

Operational Functions of Criminal Justice Agencies

Local Police

Provide preventive patrols to deter crime, assist with traffic control and enforce traffic laws; receive and respond to citizen complaints and requests for assistance; investigate criminal cases and traffic accidents; follow-up as necessary on other violations; identify and apprehend suspects, make arrests, make bail/detention decisions; provide testimony in court; recover stolen property; carry out licensing and permit functions; assist generally in maintaining public order and public safety.

State Police

Provide essentially the same functions described above with added emphasis on highway patrol, investigating accidents and assisting injured; provide support to local police when requested to investigate crimes; conduct undercover activities; provide services to local police such as the Connecticut State Bureau of Identifications and the State Police Laboratory; conduct special activities related to inspection, issuing permits and licenses and enforcing safety regulations.

Bail Commission

Interview and determine bail (for arrested persons not released by the police).

Circuit Court

Conduct presentment hearing for all arrested persons (except those arrested on a bench warrant); conduct arraignments for defendants within its jurisdiction*, and probable cause hearings for defendents to be bound over to the Superior Court; for defendents within its jurisdiction; conduct hearings and trials and sentences those defendents found or pleading guilty. Court functions include judicial and related activities, clerk's responsibilities, prosecution activities, and the defense of indigent persons.

*Circuit Court jurisdication includes all crimes for which the penalty is up to 5 years imprisonment or a fine of $5,000.

Superior Court

Conduct presentment hearing for defendants served with a bench warrant; conduct arraignments, hearings and trials for defendents within its jurisdiction, and sentences defendents found or pleading guilty. Court functions include judicial and related activities, clerk's responsibilities, prosecution activities, the defense of indigent persons and investigative and support functions.

Adult Probation

Provide services for the Circuit and Superior Courts: conduct pre-sentence investigations when requested on convicted offenders (if subject to incarceration for over one year); supervise and counsel all offenders placed on probation by the courts.

Department of Correction

Provide housing and control for all defendents incarcerated by police/bail commission decision prior to trial and sentence, and for all defendents found or pleading guilty and sentenced by the court to incarceration; operate eleven facilities of various types for male prisoners and one facility for female prisoners; conduct inmate diagnostics, evaluation and classification; provide rehabilitation programs such as education, vocational training and work, counseling, etc.; provide services for inmates returning to the community such as pre-release social education, work and educational release, etc.

Parole, Division of Department of Correction

Supervise and counsel parolees (from Correctional Institutions at Somers, Enfield, Cheshire and Portland). Note: The Parole Board is an independent body which reviews and acts upon parolee requests, and conducts discharge and revocation hearings.

Motor Vehicle Department

Provide education; license drivers; process vehicle titles and register vehicles; regulate dealers and repairers; monitor auto safety and reliability; inspect motor vehicles. (Motor Vehicle inspectors can arrest violators and issue summonses.)

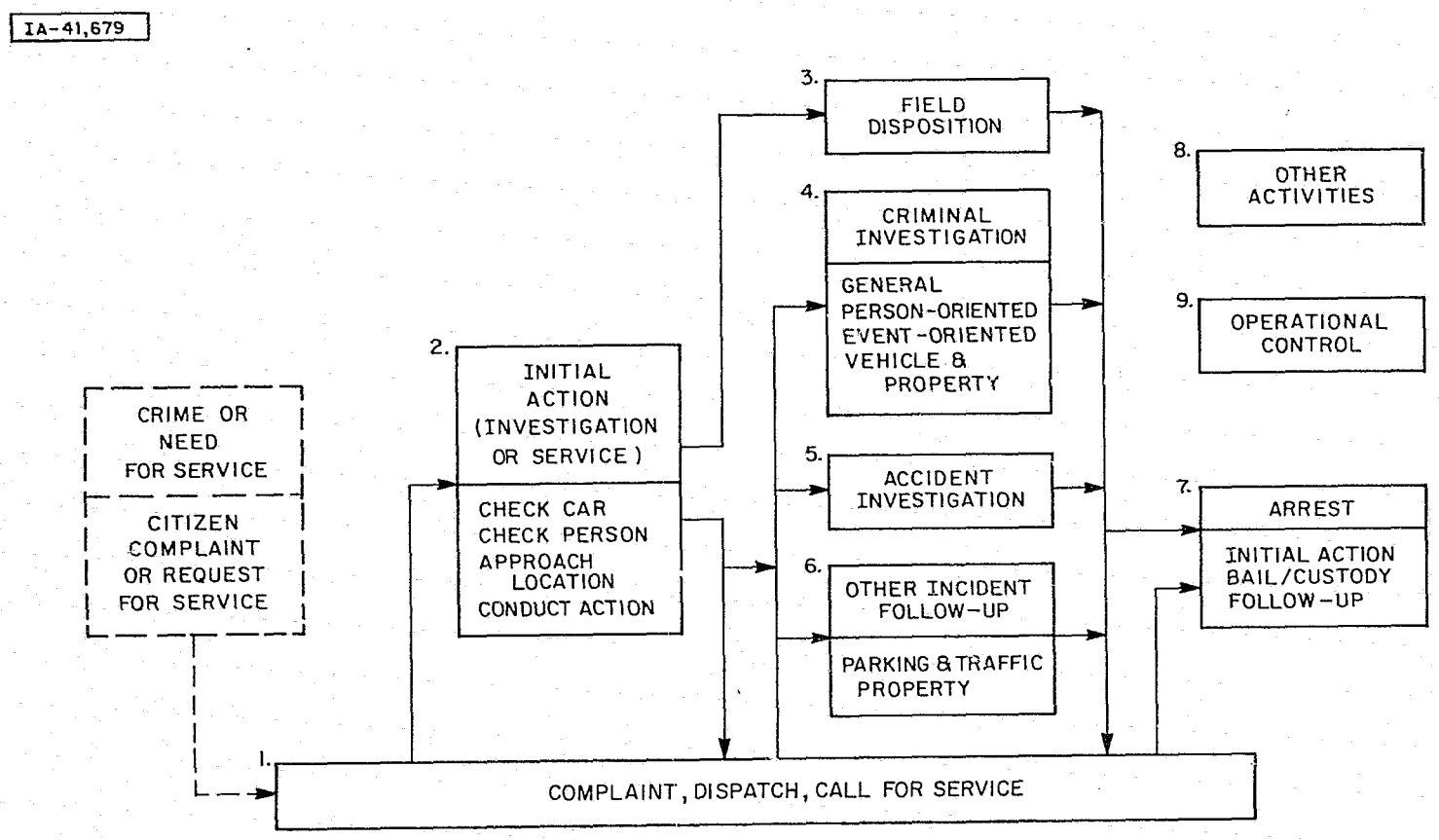

Figure 2 STEPS IN POLICE OPERATIONS

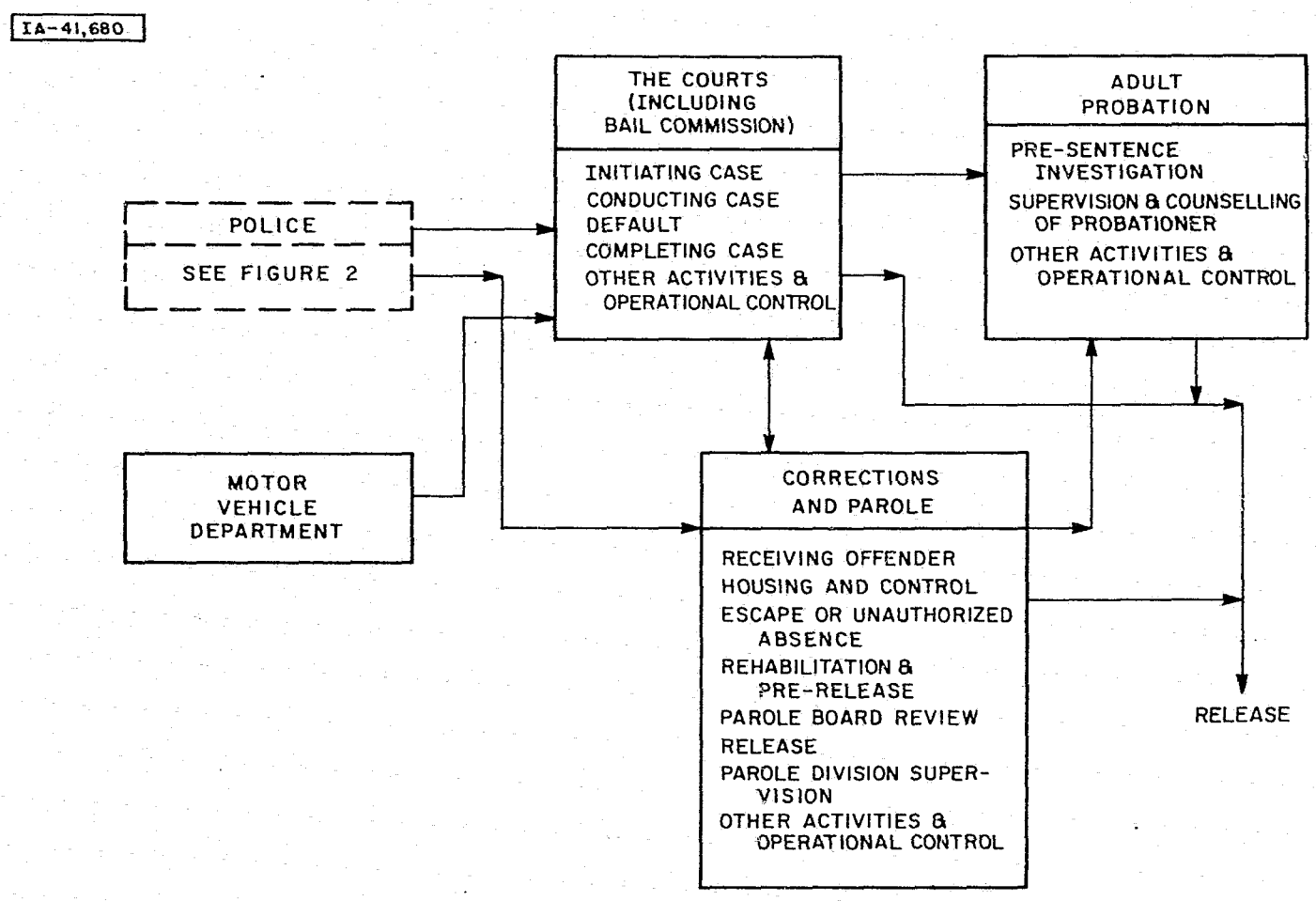

Figure 3 STEPS IN OTHER CJ OPERATIONS

transactions.

Appendix II provides the state-wide workloads associated with the various steps in the CJ process. Volumes are tabulated for incidents, known crimes, arrests, bail interviews, court cases, probation activities, correctional inmates, parole activities, and certain motor vehicle activities.

3.2.3 Management Activities

Until now we have been concerned with criminal justice operations. These are the direct, substantive processes concerned with responding to police incidents, making investigations, processing cases through court, supervising parolees, etc. Such operations generate most of the input data for the criminal justice information system, and also are responsible for the bulk of the data use.

We must now consider another type of agency function, that of management activities, which also require data for their support. However, the nature of management data needs is somewhat different from operational data needs.

In considering management, we shall be concerned with both strategic planning and management control. Under Robert Anthony's definition (2):

> "Strategic planning is the process of deciding on objectives of the organization, on changes in these objectives, on the resources used to attain these objectives, and on the policies that are to govern the acquisition, use and disposition of these resources."
>
> "Management control is the process by which managers assure that resources are obtained and used effectively

> and efficiently in the accomplishment of the organization's objectives."

We assume that "Operational control," the third component of planning and control systems as defined by Anthony, is included in the operational functions already discussed. ("Operational control is the process of assuring that specific tasks are carried out effectively and efficiently.")

Strategic planning deals in the long-range considerations of the agency or organization, involves many variables, and results in the setting of policies or goals. It deals on an ad hoc basis with relatively unstructured studies of special problems or requirements. By contrast, management control deals with shorter-range problems, deals with fewer variables, and results in actions which implement established policy. Management control is often performed on a regular basis with recurrent problems or conditions. In strategic planning, as the name suggests, planning is clearly dominant; but in management control, both planning and control are emphasized.

Strategic planning in the Criminal Justice agency, to the extent that it is carried out, deals with such questions as:

- What changes in agency objectives and functions may be appropriate in view of probable future trends in people's expectations and in social and economic conditions? (For example, should more emphasis be placed on prevention and on rehabilitation?)
- What new programs may be necessary to improve the overall results of agency work? (For example, to reduce recidivism.)
- What long range trends may be anticipated in the demand (workload) for agency services?
- What new resources may be required to meet such changes, and how can they be acquired or developed?

Management control in the Criminal Justice agency is concerned with how best to conduct activities within the constraints of current objectives, policies, functions, and resources. It allocates and organizes available resources to meet the anticipated demand for services. Management control also reviews current operations to detect deviations from planned activities or their results, and to take corrective actions. It involves detailed budgeting of dollars and staff for programs, monitoring current operations, and measuring results versus plans.

In order to simplify the subsequent analysis, we shall deal here with selected typical management processes for the criminal justice agencies. These are:

Strategic Planning (typically to 5 or 10 years in the future)

- Projecting future demands for agency services
- Studying probable effects of major shifts in agency programs and emphasis
- Gauging long-range outcomes of agency work
- Studying different doctrines for resource allocation to meet possible future demand patterns.

Management Control

- Developing a comprehensive plan of operation (dollars, people, and activities)
- Generating suitable statistics defining operations and outputs
- Gauging the efficiency and effectiveness of agency operations
- Measuring results vs. plans, identifying significant deviations or exceptions, and identifying appropriate corrective actions
- Comparing current resource allocation patterns with current demand patterns to identify possible needs for

allocation changes.*

Even though the nature of the substantive operations varies greatly from one criminal justice agency to another, the above elements of management have many interagency similarities.

3.3 THE CONCEPTUAL CRIMINAL JUSTICE DATA BASE

The Connecticut Criminal Justice Information System (CJIS) generates, updates, and uses, at all levels throughout the state, the large body of data contained in the Criminal Justice Data Base. The data base is treated in purely conceptual terms here -- types of data and their logical structures only. The physical storage of data is a question taken up in Section IV.

3.3.1 Operational Data

Table IV outlines the major types of data files used in the direct operations of the Criminal Justice agencies; files are listed under sixteen different headings.

As Sections 3.4 and 3.5 show, files under the first four headings have data generally of state-wide interest. These file classifications are:

(1) Hot People/Property Data
(2) Criminal Histories
(3) Motor Vehicle Data
(4) Other Registered Property (Vehicles and Boats) Data

The next nine headings comprise files primarily associated with the local police, although the State Police and the Motor Vehicle Department are also involved in some categories. The classifications

*For example, crimes by local area and time of day and week versus police deployment.

Table IV

Conceptual Files of Operational Data for the Criminal Justice System

FILES OF STATE-WIDE SCOPE AND INTEREST	FILES PRIMARILY OF LOCAL INTEREST	FILES USED TO OPERATE STATE-LEVEL AGENCIES
1. HOT PEOPLE/PROPERTY DATA	5. LOCAL INCIDENT DATA (LOCAL POLICE)	14. CIRCUIT OR SUPERIOR COURT DATA
Wanted Persons	Calls for Service (Crim. Complaints & Requests for Assistance)	Cases and Defendents, Bail, Persons Participating, Case Event Chronology & Decisions
Missing Persons	Incident Data: Incident Desc., Units Dispatched, Times, Action Taken, Results	Calendar and Related Schedules
Stolen Autos	Chronology (Blotter or Journal)	Resources, Including Jury List
Stolen Other Property	Name Index	
Suspended or Revoked Driver's Licenses	Summons and Warrants	
2. CRIMINAL HISTORIES (STATE POLICE)	6. LOCAL INTELLIGENCE (POLICE)	15. ADULT PROBATION DATA
Index and Identification	Index	Defendent Background (re: Investigations)
Finger Prints and Mug Shots	Persons and M.O.'s	Probation Case Plan, Schedule Performance
Current Status	Places	
Detailed History (Rap Sheet)	Vehicles	
3. MOTOR VEHICLE DATA (MV DEPT.)	Associations and Linkages	
Vehicle Registrations, Titles	7. LOCATION CHARACTERISTICS (LOCAL POLICE)	16. CORRECTIONS AND PAROLE DATA
Driver Licenses	Potentially Dangerous Locations	Prisoner Background
Driver Histories	Burglar Alarms	Prisoner Case Plan, Schedule Performance, Spec. Pgms.
4. OTHER REGISTERED PROP. DATA	Closed Houses	Parole Board Hearings
Snowmobiles (MVD)	Chronic Complainers	Parolee Case Plan, Schedule Performance
Boats (MVD)	Medical Alerts	
Bicycles (Police)	Exceptional Children	
(See Also Item 11.)	Other Special Conditions	
	8. CRIME INVESTIGATIONS (POLICE)	
	Known Crimes by Category	
	Case Folders	
	9. MV ACCIDENT INVESTIGATIONS (POLICE)	
	Accident Report Forms and Supporting Papers for Personal Injury and Property Damage Only.	
	Accident Logs by Intersection	

are:

(5) Local Incident Data
(6) Local Intelligence
(7) Location Characteristics
(8) Crime Investigations
(9) MV Accident Investigations
(10) Arrest Data
(11) Local Property Data
(12) Parking & Traffic Data
(13) License/Inspection/Permit Data

The last three categories comprise files that are characterized here in very broad terms only, relating to the judicial, probation, and corrections processes. These classifications are:

(14) Circuit or Superior Court Data
(15) Adult Probation Data
(16) Corrections and Parole Data

In setting up this file classification (both its structure and its levels of detail), several factors were taken into account. First, there was the study's primary emphasis on local police -- both their internal activities and their interactions with other agencies. In addition, the file classification was structured to relate in a simple way to the operational steps shown in Figures 2 and 3 of Section 3.2.2. Finally, there was the desire to simplify the analysis of the input/output and query/response transactions covered in Sections 3.4 and 3.5.

3.3.2 Management Data

Table V lists the types of data that are useful in operational control, management control, and strategic planning. Only generic file names that could apply to any of the criminal justice agencies are used here.

Table V

Conceptual Files of Management Data

for the Criminal Justice System

OPERATIONAL CONTROL DATA (ALL AGENCIES)

- Daily and weekly schedules of facility utilization and agency personnel assignments or deployments
- Files associated with agency resources: facilities, CJ personnel, property, etc.
- Current status of all work being processed by the agency; data on overdue actions or cases.
- Daily schedules for all scheduled events, (e.g., cases and associated people: suspects, witnesses, defendents, prisoners, probationers, parolees, etc.).
- Other data associated with the day-to-day conduct of the CJ business

MANAGEMENT CONTROL DATA (ALL AGENCIES)

- Annual operational plan
- Statistics on operations actually conducted and on results (outputs)
- Deviation or exception data
- Efficiency and effectiveness data
- Data on patterns of demand and of resource deployment
- Supporting data on planning factors and evaluation standards and indices

STRATEGIC PLANNING DATA (ALL AGENCIES)

- Data on criminal justice environment and possible future changes, including goals, policies, priorities, practices, etc.
- Data modelling operation of criminal justice system
- Data summarizing and projecting patterns of crimes committed, arrests made, court dispositions, etc.
- Long term case history summaries for study of outcomes

Comparing the management data files listed in Table V with the operational data files shown in Table IV, one can see that many of the categories of management data are closely related to, and summaries of, operational data. Section 3.4.5 discusses the exact relation between operational and management data more fully.

3.4 CRIMINAL JUSTICE ACTIVITIES AND RELATED DATA TRANSACTIONS

This subsection identifies the specific activities, both operational and managerial, carried out by the Criminal Justice agencies identified earlier, and the data transactions required to support these activities. First, detailed operational activities of local and State Police are discussed together with related data transactions. Next, the other state-level CJ agencies to be considered -- the Courts, Adult Probation, Corrections and Parole, and Motor Vehicles -- are discussed, but in less detail. Finally, management control and strategic planning are discussed for all agencies.

Before undertaking the discussions outlined above, however, concepts and terms used in characterizing data transactions need to be defined.

3.4.1 The Characterization of Data Transactions

Data transactions are considered to be of two types: Input/Output (I/O) and Query/Response (Q/R). They are also considered to involve two parties. A "party" may be a CJ agency or portion of an agency, or it may be a file in the CJ data base.

In I/O transactions, the first party is the source of the information, so that the transaction is an output from this party. The second party is the recipient of the information, so that the transaction is an input to the second party. In Q/R transactions, the first party makes the query and the second provides the response.

An I/O transaction may be comprised of a message sent from one agency to another, such as a request for assistance from one local police department to another. More commonly, an I/O transaction involves initiating or updating a record in a file, such as local police posting the HOT persons (missing or wanted persons) file. Another type of I/O transaction may involve the preparation or transmission of an operational document (such as a citation, notice, or summons) or of a report (such as a case summary, a court schedule, or a statistical summary of agency activity). Most I/O transactions are either scheduled periodically (as in a daily listing of events, or a monthly report) or are event-triggered. The event-triggered transaction may take place either after the triggering event (e.g., entering a new police incident into the incident file), or before the triggering event (e.g., sending a notice to appear in court).

Consequently, an I/O transaction is characterized by the following descriptors:

- Brief narrative title explaining its nature
- Name of party for whom the transaction is an output
- Name of party for whom the transaction is an input
- Allowable timing if event-triggered (time after or before triggering event)
- Typical frequency if regularly scheduled

A Q/R transaction usually involves a first party that is an agency (such as the local police) making a query of a second party that is a file (such as the HOT Persons file). The Q/R is further described in terms of the desired or needed response time from the point of view of the first party; in terms of how up-to-date the information in the file (called "file currency") should be; in terms of what kind of file search is required (e.g., search on numeric index or

conditional search)*; and in terms of the geographic scope involved.

Consequently, a Q/R transaction is characterized by these descriptors:

- Brief narrative title
- Name of party making query
- Name of party providing response
- Geographic scope involved
- Needed response time
- Search mode required
- Required currency of file

The geographic scope, defined as state-wide, regional, or local (i.e., one city or town), is the probable area of interest to a person making a query. For example, a police detective inquiring whether a certain person's name is on the wanted persons list would like to have access to a state-wide list (and occasionally a multi-state or national listing). By contrast, a patrol officer inquiring whether a certain address in his patrol area has any significant characteristics or associations need have access only to local information.

Times involved in transaction descriptions, namely response time, file currency, and allowable timing for event-triggered I/O transactions, are roughly estimated in terms of the following list:

- Minute
- Few Minutes
- Hour
- Few Hours
- Day

*A conditional search is one in which a number of specific conditions (criteria) are specified and any file entry that satisfies those conditions is reported.

- Few Days
- Week
- Month

Search modes for Q/R transactions are specified as follows:

- Search on index number
  (registration number, vehicle identification number, license number, etc.)
- Search on person's name, AKA's (aliases), or name and date of birth
- Search on location address
- Search on partial information of above types
- Conditional search
  (e.g., want all CRIMINAL history records of persons with certain identification characteristics)

3.4.2 Activities and Data Transactions of the Police

The functions of the state and local police have been described in Section 3.2.1. Specific police activities and related data transactions are considered under the following nine functional headings, initially presented in Figure 2.

(1) Complaint/Dispatch/Call for Service
(2) Initial Action (Investigation/Service)
(3) Field Disposition
(4) Criminal Investigation
(5) Accident Investigation
(6) Other Incident Follow-up
(7) Arrest
(8) Other Activities
(9) Operational Control

Appendix III provides a detailed discussion of typical police activities carried out under each of the nine functional headings and

a listing of the data transactions that are related to these activities. Summarized results of this analysis of police data transactions are given in Section 3.5.

3.4.3 Activities and Data Transactions of Other Criminal Justice Agencies

The activities and data transactions of Criminal Justice agencies other than the police are discussed in Appendix IV. Since the main focus of this report is the interaction between the local police and state-level activities taken as a whole, state-level agencies are not characterized in great detail.

The following functional areas, initially presented in Figure 3, are discussed in Appendix IV:

- The Courts - principally the Circuit and Superior Courts and the Bail Commissioners
- Probation - the Department of Adult Probation
- Corrections and Parole - the Department of Correction, including its Parole Division, and the Parole Board
- Motor Vehicles - the Motor Vehicle Department

After discussing the functions of the various agencies, their activities and corresponding data transactions are characterized. Only those data transactions involving the police, interagency transfers of responsibility, or posting or use of state-level files of major use to the police (HOT, CRIMINAL, and MOTOR VEHICLE), are covered in detail. Summarized results of this analysis are given in Section 3.5.

3.4.4 Management Control and Strategic Planning Information Requirements

In addition to the operational activities and the information necessary to support them, criminal justice agencies require information for various management activities.

As described in Section 3.2.3, such management activities are not concerned with day-to-day operations, but with two types of management processes -- management control and strategic planning.

Appendix V presentes a description of the information requirements necessary to satisfy management control activities of the following types:

- Developing a comprehensive operational plan
- Generating suitable statistics defining actual operations and outputs
- Gauging the efficiency and effectiveness of agency operations
- Measuring results vs. plans, identifying significant deviations or exceptions, and identifying appropriate corrective actions
- Comparing current resource allocation patterns with current demand patterns to identify possible needs for allocation changes

Table V-I of Appendix V describes the specific information requirements of management control activities for each criminal justice agency.

Appendix VI discusses strategic planning information requirements for criminal justice agencies for each of the following types of strategic planning activities:

- Projecting future demand for agency services
- Studying probable effects of major shifts in agency programs and emphasis

- Gauging long range results of agency work
- Studying different doctrines for resource allocation to meet possible future demand patterns

An important characteristic of the information required for this type of activity is the need for comparable data from all criminal justice agencies in order to observe and evaluate long-term results and trends. This necessitates consistent and easily related data on people, crimes, and cases.

This section discusses the relationship between the information required for both management control and strategic planning and that required for operational activities; relationships between the following types of data are described more explicitly:

- Operational Data
- Data for Operational Control
- Data for Management Control
- Data for Strategic Planning

3.4.5 Relationship Between Operational and Managerial Data

Most of the data utilized in the Criminal Justice process is generated by the CJ agencies themselves in the course of their daily activities. The data generated by detailed agency operations is a large part of what is needed for operational control; when it is processed further and aggregated, it furnishes most of the basic data needed for management control. Strategic planning draws not only on the foregoing categories, but on external data as well.

Figure 4 shows the type of data flow involved for a generic CJ agency. Operations, together with operational control, generate (and also use) data on actual demand for agency activities, activities conducted, resources used, and results achieved. These types of data,

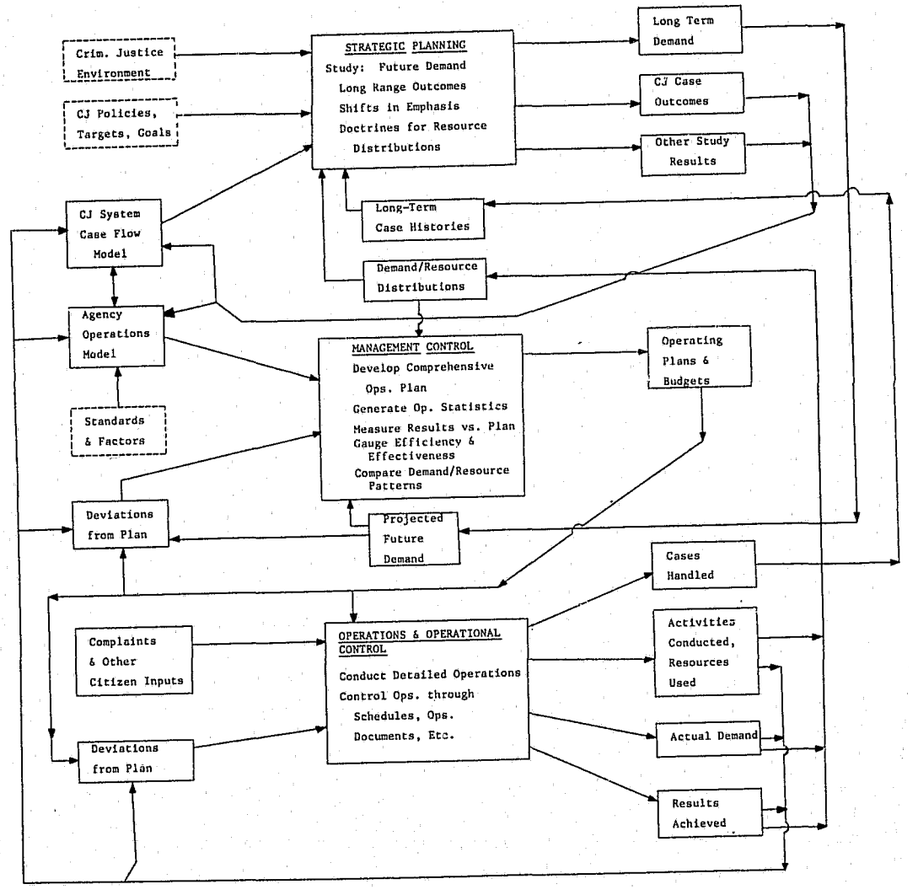

Figure 4: Operational and Management Data Flows

in turn, are processed in various ways, to form the case-data aggregates, offender histories, measures of deviations, agency models, crime pattern data, etc., needed for management control and strategic planning. Three types of data are required from outside the system:

- Standards for comparison
- Statements of CJ goals, policies, and general targets
- Data characterizing the environment in which the CJ system operates

3.5 CONSOLIDATED REQUIREMENTS

Having completed a discussion of criminal justice activities and related data transactions and data files, we can now present a consolidated picture of the requirements for a multilevel Connecticut criminal justice information system. In accordance with the study emphasis described earlier, this presentation focuses primarily on the information needs of the local police and the information interactions between the local police and state-level CJ agencies.

3.5.1 Summary of Operationally-Related Data Transactions

Tables VI and VII summarize the detailed data transactions given in Appendices III and IV. Note that these transactions support only agency operations and operational control. Both the I/O and Q/R transactions indicate the source or querying party and the recipient or responding party. Table VI shows the transactions related to police activities, while Table VII shows those related to activities of the courts, probation, corrections and parole, and motor vehicles.

Note that the source party for an I/O transaction is always an agency, part of an agency, or the public. The recipient party for an I/O transaction is usually a file, but may also be an agency. For a Q/R transaction, the querying party is always an agency or part

Table VI

Police I/O and Q/R Transactions

I = Input to Agency or File
R = Response from File

POLICE ACTIVITY \ AGENCY OR FILE	AGENCIES: POLICE, OTHER	COURTS	BAIL COMM.	PROBATION	CORRECTIONS	PAROLE	MV DEPARTMENT	STATE FILES: HOT	CRIMINAL	MV	OTHER PROPERTY	OPS/MANAGEMENT	LOCAL FILES: INCIDENT	LOCAL INTEL.	LOCATION CHAR.	CRIME INVEST.	ACCID. INVEST.	ARRESTS	PROPERTY	PROP. REG.	PARKING VIOL.	TRAFFIC VIOL.	MV TOWED	LICENSE, Etc.	MANAGEMENT	OTHER
COMPLAINT - DISPATCH	I							I					I	R												
	I													I				I								
INITIAL ACTION																										
Check Car								R	R	R			R													
Check Person								R	R				R													
Check Location																R										
Conduct Action	I																									
FIELD DISPOSITION		I						R					I								I		R		(1)I	
																							I			
CRIMINAL INVEST.													R		R											
General													I		I											
Person Oriented								R						R												
Event Oriented													R												(2)R	
Property Oriented								R		R	R								R	R						
ACCIDENT INVESTIGATION								R		R		I	R			I										
										R																
OTHER FOLLOW-UP																										
Park. & Traffic		I								R											R	R			(3)I	
Property								R		R									R		I	I				
ARREST																										
Initial Action		I																I								
Bail/Custody			I		I			R	R				R					I								
Follow-Up	I	I										R						IR								
OTHER (4) ACTIVITIES									R				R	R			R	R	R	R	I	R	R	R	I	
OPERATIONAL CONTROL																									R	
																									I	

(1) Imput to SUMMONS file in some cases
(2) Query of M.O. file if one is available
(3) Notice to Owner of Car in Parking Cases, if no owner response
(4) Includes queries from public and internal queries

Table VII

Other Criminal Justice Agency I/O and Q/R Transactions

I = Input to Agency or File
R = Response from File

CRIMINAL JUSTICE ACTIVITY \ AGENCY OR FILE	AGENCIES: POLICE	COURTS	BAIL COMM.	PROBATION	CORRECTIONS	PAROLE	MV DEPARTMENT	KEY STATE FILES: HOT	CRIMINAL	MOTOR VEHICLE	OTHER PROPERTY	OTHER STATE-LEVEL CJ FILES: COURT CASE	COURT CALENDAR	PROBATION INVEST	PROBATION CASE	PRISONER	PAROLE BD. HEAR.	PAROLE DIV. CASE	COURT OPERATIONS	PROB. OPERATIONS	CORRECTION OPS.	LOCAL POLICE FILES: INCIDENT	INTELLIGENCE	OTHER
COURTS																								
Initiating Case	I	I			I		I		R			I												
Conducting Case	I			I					I	R			I											
If Default	I																							
Completing Case	I			I	I		I	I	I															
Other Act. & Ops. Ctrl.					I				R			I							I					
												R	I						R					
PROBATION																								
Pre-Sentence Invest.		I			I				R				I											
Super. & Counseling		I												I										
Other Act. & Ops. Ctrl.														R					I					
																			R					
CORRECTIONS																								
Receiving Offender					I										I									
Housing & Control															I									
If Escape		I							I	I					I									
Rehab. & Pre-Release															I									
Parole Board Review					I	I									I									
Prisoner Release		I		I	I				I						I									
Parole Div. Supervision									I						I									
Other Act. & Ops. Ctrl.																I								
																			I					
MOTOR VEHICLE DEPARTMENT	(1)I								I	I														(1)I
									R	R														

(1) An arrest made by MVD results in posting an arrest file, and notifying circuit court.

of an agency, but the responding party is always a file.

From Tables VI and VII it should be noted that the HOT, CRIMINAL, and MOTOR VEHICLE files are all updated and queried by a number of different CJ agencies at a number of different stages in the CJ process.

3.5.2 Summary of File Characteristics

This section summarizes the related properties of the CJ files. Basic data is presented in Appendices III, IV, V, and VI which details the information requirements for operation and management of criminal justice agencies.

Table VIII tabulates the following characteristics for each operational file found in the conceptual data base of Table IV:

- Name of file
- Characteristics of most demanding use of file: required response time, query mode, and required file currency
- Geographic scope of most demanding use: state, regional, local
- Duration of value of filed information: operational, for referral, archival
- Purging characteristics: automatic update, becomes inactive, cummulative, cyclic renewal

The "most demanding use" of a file is that use requiring the shortest response time, most complex query mode, greatest file currency, and/or widest geographical coverage. The tabulated data is obtained by inspecting the transaction listings given in Appendices III and IV. For some files, two or more sets of parameters must be tabulated to characterize the full scope of file demands. The table lists HOT, CRIMINAL, MV, and OTHER REGISTERED PROPERTY files as "state level" files, since the scope of most of their Q/R transactions

Table VIII

Summary of File Characteristics

	FILE DESCRIPTORS / FILE DESIGNATION	MOST DEMANDING USE: RESPONSE TIME	QUERY MODE	REQ'D CURRENCY	GEOGRAPHIC SCOPE	"DURATIONS OF VALUE": OPERATIONS	REFERENCE	ARCHIVAL	PURGING CHARACTER
STATE LEVEL FILES	HOT FILES					WHILE ACTIVE ACTIVE		BY STATUTE	
	Persons	M	Name	H	S				AU
	Vehicles	M	Name No.	D Ms	S				AU
	Other Property	Ms	No.	Hs	S				AU
	Suspended/Revoked License	M	Name No.	Hs	S				AU
	CRIMINAL FILES	M	Name	D		DURING CASE PROCEDURE	DURING LIFE OF PERSON		
	Index & Ident.	D	Partial	D	S				BI
	Status	Ms	Name	D	S				AU
	History	Ms H	Name No.	Ds Ds	S				Cum.
	MOTOR VEHICLE FILES	W M	Name No.	W Ds	S S	CURRENT PERIOD		BY STATUTE	
	Reg. & Title	Hs	Partial	Ds	S		+1Y		CR
	License						+1Y		CR
	Driver History	Ds	Name	D	S	During Case Proc.	3Y		Cum.
	OTHER REGISTERED PROPERTY	Hs	No.	Ds	S	While Active	+1Y		
LOCAL POLICE FILES	INCIDENT	M	Cond.	Ms	L/R	Mo	2Y		BI
	LOCAL INTELLIGENCE	H	Name &	D	L/R	Mo	5Y		BI
	LOCATION CHAR.	M	Address	D	L	While Active	+2Y		BI
	CRIME INVESTIGATION	Ms				1-12Mo	2Y	2 - 10 YEARS - BY STATUTE OR ORDINANCE	BI
	ACCIDENT IVESTIGATION	Ms				3 Mo	3Y		BI
	ARRESTS	Ms				1Y	3Y		BI
	PROPERTY I.,R,F.	Ms	No.&Desc.	Hs	L	While Active	+1Y		AU
	REGISTERED PROPERTY	Hs	No.	Ds	L	Current Period	+1Y		CR
	PARKING VIOLATION	Ms	No.&Desc.	Hs					
	PARKING VIOLATION	Ms				6Mo	1Y		BI
	TRAFFIC VIOLATION	Ms				6Mo	2Y		BI
	MV TOWED	Ms	No.	Ms	L	1W	1Y		AU
	LICENSE, PERMITS	Ms	Name,Add	D	I.	Current Period	+1Y		CR
	LOCAL INTEL. INDEX	Ms	Name	D	L/R	Mo	5Y		BI
	LOCAL INCIDENT, INDEX	M	Cond.	Ms	L/R	Mo	Y		9I

KEY: TIME PERIODS: Minute(s); Hour(s); Day(s); Week(s); Month; Year
GEO. SCOPE: Local; Regional; State
PURGING CHAR: Auto Update; Becomes Inactive; Cumul.; Cyclic Renewal

appears to be state-wide.

The "duration of value" of filed information refers to that period, in days, weeks, or years, during which it is used in each of three ways. The first use is in direct "operations," such as police response to incidents, case investigations, conduct of a court case, etc., the second use is for general "reference" by CJ agencies or the public; and the third use is "archival," that is inactive data which may be consulted only occasionally and which is retained in accordance with ordinances and statutes. The time periods given in Table VIII are estimates derived from a general knowledge of how the agencies utilize data in their operations.

The term "purging characteristics" refers to the type of process required for long term file maintenance. Criminal History and Driver History files are cumulative, and new events are added to old records to generate a complete chronology. Registration and License files undergo cyclic renewal in that renewal applications are made periodically by the public. Police Incident files become inactive as far as operational use is concerned and quickly revert to the reference or archival status. HOT files have automatic update properties in regard to many of their records through case closure; records on cases not closed simply become inactive. Both the cumulative and becoming inactive files must normally be purged periodically to restrict their size and thereby improve their utility.

The overall generation of basic CJ operational data files, for use by the police in both operation and management, is summarized in Table IX. For each of the main files, this table shows which agency (or agencies) is responsible for generation of the data, and shows what the principal police uses of the data in operations, operational control, management control, and strategic planning are.

Table IX

Overall Generation of Operational Data and Use by the Police

FILE		HOW GENERATED	USE IN POLICE OPERATIONS	USE IN POLICE OPS. CONTROL	USE IN POLICE MGT. CONTROL	USE IN POLICE STRAT. PLAN
COMPLAINT-INCIDENT		CITIZEN COMPLAINTS; ACTION TAKEN	DISPATCH, PATROL ACTION, COURT TESTIMONY	UNIT ASSIGNMENT	$A_{B_{C_{D_E}}}$	$F_{G_{H_I}}$
LOCAL INTELLIGENCE		INVESTIGATIVE ACTIVITIES	INFOR. FOR INVESTIGATION			
LOCATION CHARACTERISTICS		INCIDENTS & INVESTIGATION	INFOR. FOR PATROL			
CRIME INVESTIGATION		DETECTIVE INVESTIGATION	APPREHENSION COURT TESTIMONY	CASE CONTROL	A_B	F_G
ACCIDENT INVESTIGATION		TRAFFIC INVESTIGATION	SAFETY MEAS. COURT TESTIMONY	CASE CONTROL	A_B	F_G
ARRESTS		BOOKING ETC.	COURT INFO.	COURT CASE INITIATION	$A_{B_{C_{D_E}}}$	$F_{G_{H_I}}$
PROPERTY	STOLEN, RECOV. EVIDENCE	CITIZEN REPTS., INVEST. ACTIVITY	AID TO INVEST., COURT TESTIMONY	PROPERTY CONTROL		
	OTHER REGISTERED PROPERTY	REGISTRATION BY CITIZENS	INFORMATION FOR INVESTIGATION			
PARK & TRAFFIC	PARKING VIOLATIONS	PARKING TICKET ISSUED	POLICE FOLLOW-UP, COURT	CONTROL OF POLICE FOLLOW-UP	A_{B_C} E	F_G I
	TRAFFIC VIOLATIONS	TRAFFIC CITATION ISSUED	POLICE FOLLOW-UP, COURT	CONTROL OF POLICE FOLLOW-UP .	A_{B_C} E	$F_{G_{H_I}}$
	VEHICLES TOWED	TOW PROCESS	CITIZEN QUERY	REVIEW OF TOWING	A_R	
LICENSES & PERMITS		APPLICATION & ISSUE PROCESS	PROCESS. APPLICATIONS	REVIEW OF ISSUED.	A_B	F
HOT	PERSONS & PROPERTY	POLICE, COURT, CORRECTIONS OPS.	INFO. FOR PATROL & INVEST		C	F
	SUSPENDED & REVOKED LICENSES	MVD FORM POLICE & COURTS	INFO. FOR PATROL & INVEST			
CRIM.	IDENT., STATUS HISTORY	POLICE, COURT, CORRECTIONS, PROBATION OPS.	INFO. FOR PATROL & INVEST			H
MOTOR VEHICLE	REGIST., TITLE LICENSE	MV APPLIC. & ISSUE PROCESS	INFO. FOR PATROL & INVEST PARK. FOLLOW-UP			F
	DRIVER HISTORY	MVD FROM COURT DISPOSITION	INFO. FOR ACCIDENT INVEST			
OTHER REG. FILES	SNOWMOBILES BOATS, BICYCLE	MVD AND POLICE OPS.	CHECKS RE: STOLEN & RECOV. PROPERTY			

A. DEVELOPING COMPREHENSIVE OPERATION PLAN
B. GENERATING STATISTICS RE OPERATIONS
C. DETERMINING EFFICIENCY AND EFFECTIVENESS
D. IDENTIFYING DEVIATIONS, DET. CORRECTIVE ACTIONS
E. COMPARING RESOURCE & DEMAND PATTERNS

F. PROJECTING FUTURE DEMAND
G. STUDYING EFFECT OF POLICY SHIFTS
H. DET. LONG RANGE OUTCOMES
I. STUDYING DOCTRINES FOR RESOURCE ALLOCATIONS

3.5.3 Results of Analysis

Our analysis of criminal justice information requirements identifies the CJ agencies, their operational and management functions and activities, and the major files and information transactions needed for their support. It shows how agencies' functions, activities, files, and transactions are interrelated.

A number of general conclusions, summarized below, emerge from this analysis:

- The major operational data files of importance to this study may be divided into three groupings: files of state-wide scope and interest; files of local or local and regional scope and interest (primarily associated with the local and state police); and files utilized in the operations of individual state-level justice agencies (courts, probation, corrections, and parole).
- The several HOT files, CRIMINAL HISTORY files, MOTOR VEHICLE files, and the OTHER REGISTERED PROPERTY files comprise the state-wide files. Of these, the HOT and CRIMINAL HISTORY files are heavily involved in Q/R and I/O data transactions in all stages of the CJ process, and with both local police and state agencies. Query response times required for the HOT files are generally severe (under a minute or so); response time requirements for the CRIMINAL HISTORY files are more scattered. MOTOR VEHICLE files are also heavily used, particularly by the police, and of course by the MVD. Required currencies of the various state-wide files are generally from one to a few days, except for the HOT files which are minutes to hours.

- The local police functions that lead to Q/R transactions with the most severe response times are Complaint/Dispatch/Call for Service, and Initial Action. In queries arising out of other local police functions, such as Crime Investigation, there is an advantage in a quick response to a question - Is such a person's name or such a vehicle registration in your CRIMINAL HISTORY, DRIVER HISTORY, or LOCAL INTELLIGENCE files? The associated detailed information is not needed so rapidly.
- The major requirements for files of regional interest are in the areas of LOCAL INCIDENT data and LOCAL INTELLIGENCE data. (The latter category includes M.O. data.) Transaction traffic among local police departments primarily involves Police Bulletins, requests for assistance, and Q/R of files of regional interest.
- Operationally generated information provides the main data base necessary for management control and strategic planning. However, to be effective in these functions, all relevent event and activity descriptors must be recorded and available. Also, because multi-agency data is required for some of these management functions, interagency data standardization is necessary. Thus, strategic planning studies such as determination of long-range outcomes really require consistent data on case processing throughout the entire CJ system.
- For strategic planning and management control, certain information is required from outside the operating agencies themselves, particularly information on the

CJ environment; on CJ goals, policies and general targets; and on operational standards and comparison factors.

The requirements established from this analysis form the basis for the conceptual multilevel criminal justice information system concept presented in Section IV. Information on population distribution, budgets and staffs of local police departments, and workload volumes, as presented in Appendices I and II, are also employed.

SECTION IV

THE CONCEPT OF A MULTILEVEL CRIMINAL JUSTICE INFORMATION SYSTEM

We will now describe a multilevel CJIS (MLCJIS) concept based on the requirements developed in Section III. After presenting an overview of the conceptual design, the elements of data handling and the various options for mechanizing the elements are discussed. State, local and regional aspects of the MLCJIS are discussed and the functional and cost characteristics of several mechanization options for local or regional information handling are described in relation to the population base served.

4.1 OVERVIEW OF THE MULTILEVEL SYSTEM CONCEPT

The MLCJIS concept is described here in general terms; in subsequent sections a description of each of the major segments is provided.

The MLCJIS contains all data handling elements necessary to carry out information transactions (input/output and query/response) and provides for the storage of all data files described in Section III and Appendices III and IV. The allocation of each file to system level is made on the basis of which agencies generate the input data for the file, which agencies may need to query the file, and which agencies need outputs from the file for operational and managerial purposes. The allocation also takes into account the geographical scope of interest of those queries to the file -- statewide, local, or regional.

The total multilevel Criminal Justice Information System (MLCJIS) includes two main system segments: State-Level and Local/Regional Level. The overall characteristics of each segment are described below and outlined in Figure 5.

4.1.1 State-Level Segment

The State-Level Segment of MLCJIS provides operational and managerial support to the various State Police activities (including

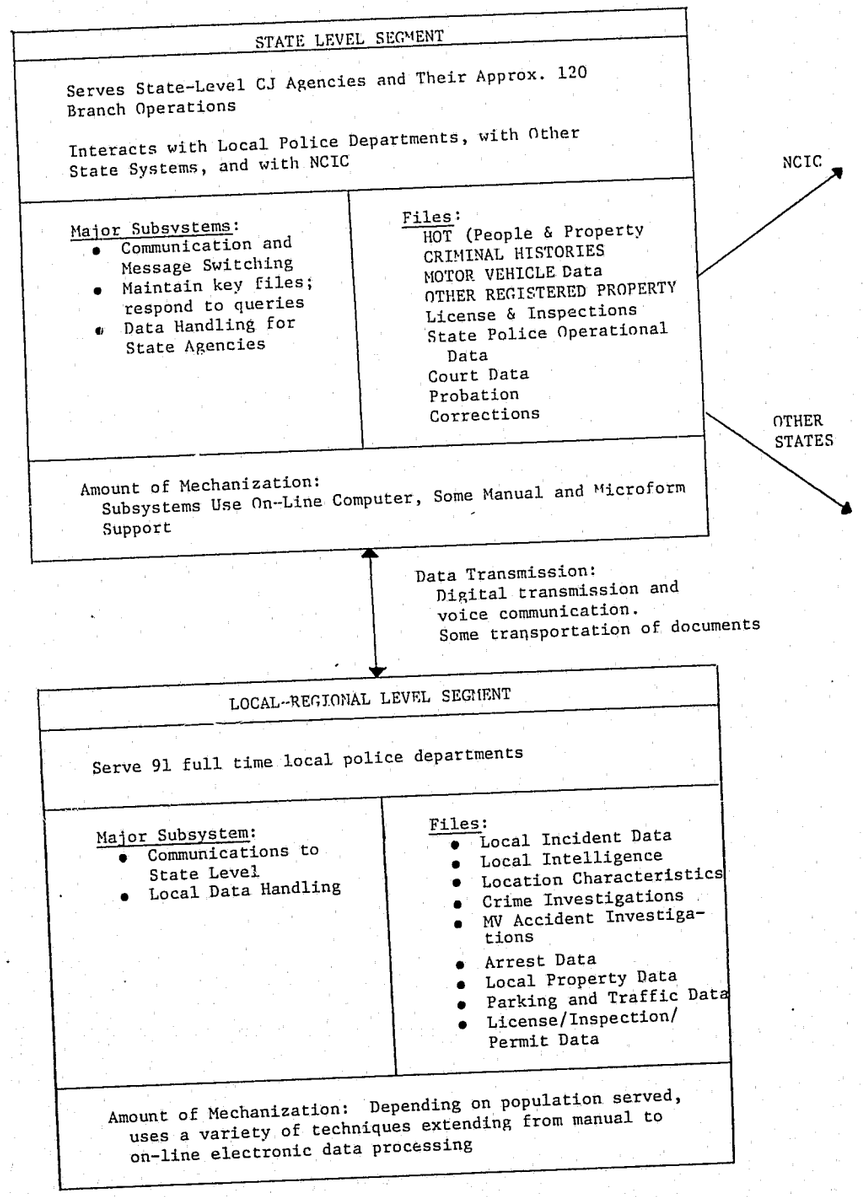

Figure 5: Multilevel System Concept

the barracks), the individual courts and their central administration, the headquarters and branches of the Adult Probation Department, the Corrections Department and its various custodial facilities and its Parole Division, the Parole Board, and the Motor Vehicle Department and its branch offices. As indicated in Tables I and II of Section III, there are some 120 branch locations and a total of some 4500 people involved in the activities of these state-level agencies. Thus the State-Level Segment provides storage for the operational and managerial files used by the state-level agencies. It also provides for data terminals, communications, and other capabilities for information transactions within and among these agencies.

In addition, the State-Level Segment contains the key central state-level files (HOT, CRIMINAL, MOTOR VEHICLE and OTHER REGISTERED PROPERTY) that are utilized by all state and local CJ agencies. Means for handling transactions to and from the local police departments are also provided. The State-Level Segment interacts with other states' information systems as well as with the Federal Government National Crime Information Center (NCIC). All contacts with other states or with NCIC are handled by the State-Level Segment.

4.1.2 Local/Regional Segment

The Local/Regional Segment of the MLCJIS provides support to the operations and management of the 91 local police departments of the state and to regional combinations of these departments. It does not, however, duplicate capabilities provided by the State-Level Segment. Thus the Local/Regional-Level Segment stores the files that are generated and used by each local police department and handles local data transactions as well.

The Local/Regional Segment provides for storage of the following key police files necessary for local police operation and management:

- Local Incident Data
- Local Intelligence
- Location characteristics
- Crime Investigations
- MV Accident Investigations
- Arrest Data
- Local Property Data
- Parking and Traffic Data
- License/Inspection/Permit Data

In addition, the Local/Regional Segment provides the local data terminals and communications neccessary to effectively conduct data transactions with the State-Level Segment, including especially the HOT, CRIMINAL, MOTOR VEHICLE, and OTHER REGISTERED PROPERTY files.

As described in Section III, there are operational requirements for multi-community or regional information. Local Incident and Intelligence data represent the major files* that should be available for query on a regional basis. In addition, there are economies obtained by sharing use of data handling procedures and equipment.

Regional collaboration in data handling will be treated as a desirable objective, but no fixed pattern of regionalization will be assumed. The discussion of functional and cost characteristics of mechanization options will be applicable either to an individual city/town or to a regional aggregate of cities and towns.

4.2 ELEMENTS OF DATA HANDLING AND MECHANIZATION OPTIONS

The manner in which each segment of the MLCJIS is implemented depends upon the amount and type of mechanization utilized. This section defines and discusses the basic data handling elements. Three basic mechanization options are established, to be applied to each segment later in this section of the report.

*In addition, there is some regional use of Crime Investigation and some types of Property Data.

4.2.1 Data Handling Elements

In Section III we described data handling requirements for support of agency operations and management in terms of data transactions and data files. The transactions, which were classified as input/output or query/response, took place between one agency and another, or between an agency and a file. Analysis of these transactions produced a set of requirements for the MLCJIS.

In order to characterize a system concept meeting these requirements, we need to be more specific about the functions included in data handling. Thus, the simple ideas of transactions and files must be replaced by elements more closely related to means of mechanization. The following elements of data handling will be used in this discussion:

- Data preparation and input
- Message switching and transmission
- File establishment and maintenance, including responding to queries
- Data processing
- Generating outputs for operational and managerial purposes

Looking at the above list of elements, one sees that a data transaction is broken down into input, transmission, and output elements, plus whatever file manipulation and data processing is appropriate.

To implement each of the above data handling elements, a number of alternatives exist. The appropriate choice is governed in large part by the magnitude of the data handling operation. For a police department, this is directly related to the population base served. The population base for a single department may be as small as a few thousand persons, while a large region, such as a Standard Metropolitan Statistical area, may contain nearly a million persons.

Some of the mechanization alternatives for each of the above data handling elements are shown in Table X.

The above list presents several equipment alternatives for each data handling function. The abbreviated list below shows those which will be discussed in detail for MLCJIS data handling. Other mechanization alternatives were eliminated*, either because of excessive cost or limited flexibility (See items marked (EC) or (LF) in Table X).

- Data preparation and input: manual methods, keypunch/keytape, and graphic (microform)

- Transmission: voice, transportation of documents, or digital techniques

- Filing and Retrieval: "ordinary document" files (perhaps with powered operation); microform files; punched card files; electronic digital files (using magnetic tape or random access devices)

- Data Processing: manual processing, card processing, or electronic digital computer processing

- Generating outputs: maunually operated typewriters, digital printers, and CRT displays

*This elimination from further discussion is not meant to suggest that the techniques cannot be used effectively under certain circumstances; but their general applicability is felt to be limited.

Table X

Mechanization Alternatives for Elements of Data Handling

<u>For Data Preparation and Input</u>

- Manual methods, perhaps using typewriters and other mechanical aids
- Graphic input devices, such as
  - Microform cameras (for microfilm, microfiche, or aperture cards)
  - Videotape recorders (EC)*
  - Facsimile input devices (LF)*
- Keypunches, key tape units, and related digital recorders
- Keyboard digital terminals, perhaps combined with CRT display or printer output
- Document-to-digital reading devices, such as those employing optical scanning or optical character recognition (EC, LF)

<u>For Data Transmission</u>

- Voice telephone or radio
- Transportation of documents
- Facsimile transmission of graphic material (LF)
- Digital data transmission

<u>For Storage of File Information</u>

- "Ordinary" documents in manually operated files
- "Ordinary" documents in powered files
- Microform storage (microfilm, microfiche, aperture cards, etc.)
- Video magnetic tape (for graphic material) (EC)
- "Ordinary" (IBM) punched cards
- Special (usually dual purpose) cards, such as edge-notched cards, or inverted file punched cards** (LF)
- Digital magnetic-tape
- Random access digital storage of various types

<u>For Data Processing</u>

- Manual methods, perhaps aided by calculators and other mechanical aids
- Graphic retrieval and processing systems
  - Microform
  - Video Tape (EC)
- "Ordinary" punched card processing systems
- Special card processing systems** (LF)
- Digital computers, operating in the batch processing mode, the on-line, time-sharing mode, or the composite mode

<u>For Data Output</u>

- Manually operated typewriters
- Graphic output devices, such as
  - Microform readers with display or copier
  - Video tape reader with display or copier (EC)
  - Facsimile output device (LF)
- Digital page printers (of various speeds/costs)
- Digital display readouts (LF)
- Cathode Ray Tube (CRT) displays for digital or graphical data

*EC means eliminated from further discussion because of excessive cost
LF means eliminated from further discussion because of limited flexibility

**Examples are McBee Keyport and Remac Termatrex

This abbreviated list can be grouped into three general mechanization options - manual, batch, and on-line. Each is described in Table XI. It should be emphasized that the alternatives are not rigid since much flexibility can and does exist within each. However, these three general options will be considered for the MLCJIS segments. A functional and economic evaluation of each option, as applied to local or regional operations of different sizes, is provided in Section 4.6.

4.2.2 Discussion of Mechanization Options

The previous section described, in general terms, the five elements of data handling and grouped them into three mechanization options. This section discusses each option in more detail, and then covers data transmission, powered file, and microform techniques that might apply to all options.

4.2.2.1 Manual Processing

Manual records systems are familiar to most people. They are characterized by manual (typewritten or handwritten) entries, paper or card documents, file cabinets, and summary reports prepared by hand, perhaps with the aid of tally sheets and calculators.

While they are simple to implement, manual systems are extremely limited. Each file can be organized by only one index (e.g., by last

Table XI

Data Handling Characteristics of Mechanization Options

	Manual	Batch	On-line
DATA PREP	- Manual generation of working documents and posting of files	- Manual generation of initial documents and posting of files - Keypunch or equivalent for Input to Batch Processing	- Interactive Data Entry - Manual generation of other documents and files
TRANSMISSION	- Voice or transport of documents	- Voice, transportation of documents - Some digital transmission of batch inputs	- Computer switch (not store and forward) digital transmission - Some voice, transport of documents
FILES & RETRIEVAL	- Manual files - (option) Microfilm; for inactive and history, files - (option) Powered files for large volumes	- Manual operating files - Microfilm inactive and history - Some batch computer files - (option) Powered files for large volumes	- On-line retrieval of computer files (with manual back-up) - Some manual operating files - Microfilm inactive and history - (option) Powered files for large volumes
PROCESSING	- Manual data processing perhaps aided by calculator	- Manual data processing of most operating data - Batch computer statistical processing	- On-line file management - Batch computer production
OUTPUT	- Manual generation of statistical reports (typewritten)	- Manual generation some reports - Batch computer generation and printings of operational listings, stat. & mgnt. reports	- Terminal output from computer of some operational documents - Batch computer generation & printing of operational listings, stat. & mgnt reports - Manual generation some supplementary reports

name). Extracting data by another characteristic (i.e., address, date, next scheduled appearance, etc.) requires either a search of the entire file or a second file arranged by the secondary characteristic (i.e., another index). Searching the file for a single entry by the primary file index is relatively quick and inexpensive. Any searches by other characteristics are slow and time consuming. The cost of maintaining a number of manual indices to a manual file can be very high.

Statistics produced in manual record systems suffer from a similar problem. Simple tallies are readily obtained, but the number of different aggregations and "slices" of data is limited by the number of tally sheets that can be maintained. To obtain statistics after-the-fact requires reviewing all entries during the period.

Minimal effort is required to enter a manual record, or to retrieve it by its index. Transmission of data is usually by voice (telephone) or by transporting a document.

As numbers of entries, queries, and/or statistics increase, a manual system must expand its labor force. Because of complexities in manually processing large numbers of records, such systems often require proportionally more personnel to process large volumes than they do for small volumes.

4.2.2.2 Batch Processing by Punched Card Equipment or Computer

Use of batch processing computer techniques, in conjunction with either sequential or random access computer files, is advantageous for processing extensive repetitive data where the allowable response time is on the order of a day or more. High productivity per dollar plus the ability to automatically generate many "slices" of outputs from a single set of inputs are batch processing's chief advantages.

The technique is cost-effective only where there is either a large amount of processing or a large amount of output from a small amount of input. Data is normally recorded manually and later prepared (i.e., keypunch, key-to-tape) for batch entry into the computer.

Because of the turn-around time, batch computer operation is clearly applicable to the generation of periodic management reports and special analytic studies, but is less effective for direct operational support. With a dedicated batch operation, a daily cycle for some activity summary reports might be practical; with a shared batch operation this might be more difficult. Generally, queries cannot be effectively processed in batch mode, but certain limited special file searches are possible within the time constraints.

Many of the benefits of batch processing can be obtained in a smaller police department (i.e., serving 25,000 people) by the use of "ordinary" (IBM) punched card equipment.

The minimal set of punched card machines that can be usefully employed in generating simple statistics (i.e., tallies), is a keypunch (perhaps with a verifier) and a card counting sorter. Totals are read manually from the card counting dials and used manually in preparing reports.

A "full" punched card installation containing, for example, a keypunch, verifier, tabulator, summary punch, and perhaps a collator and a calculating punch, would be considerably more expensive than the minimal configuration. It would also be much more automatic and more versatile. A variety of calculations and summarizations could be carried out, and reports could be prepared directly by the tabulator. But batch processing of the same punched cards either on a shared computer or on a dedicated modern mini-computer can produce similar outputs at the same or less cost.

4.2.2.3 On-Line Processing by Computer

On-line computer operations can provide operational support as well as management support. Such computer installations usually carry out some applications in the on-line mode, but find it cost effective to do other applications in batch mode.

On-line processing allows data to be captured directly at its source, by the persons creating it. Errors can be detected by the machine, the operator notified, and immediate corrections made. Thus, files will be much more up-to-date. This is extremely important in many criminal justice applications. Moreover, many management reports are also more useful if they reflect up-to-date status, since management attention can then be focused on problems in their initial stages before they cause too much trouble.

An on-line system encourages close "interaction" between the user and the computer. Rapid response (i.e., in a few seconds) by the computer to user commands and queries can often facilitate information handling. Where appropriate, the computer can provide step-by-step guidance and assistance while the user carries out complex data preparation and entry processes; reviews, edits, and routes data; carries out complex file searches; or otherwise manipulates files or interactively processes data.

Although there is currently great interest in and a certain "prestige" associated with the use of on-line digital computer techniques, it must be recognized that they are very expensive and limited in cost-effectiveness for applications at the local level. Effective employment of on-line techniques usually requires (in addition to data conveniently representable in digital form -- that is, not mug shots -- and a process well enough structured to permit computer programming) that there be a high volume of usage and/or a requirement for extremely rapid response or complex search.

4.2.2.4 Techniques Applicable to All Options

In order to be used as part of a MLCJIS, each of the three mechanization options -- manual, batch, and on-line processing -- requires some means for data transmission. In addition, each option may utilize powered files instead of ordinary files and/or employ some type of microform storage for bulk files.

Digital data transmission is a great advantage in handling high volumes of data transactions between two agencies, or between an agency and a file, particularly where accurate and rapid response to queries are required. A data terminal can be used to compose the initiating query or other message; the message can then be checked by the sender and transmitted to its destination. The response can be presented either on a CRT display* or as a hard copy document produced by an associated printer.

For lower transaction volumes, or wherever digital communications are not available, voice telephone or radio can be used when rapid responses are required. Otherwise, transportation of documents by mail or by courier may be adequate. (For graphical information at low to medium resolution, facsimile may also be useful.)

Most filing of "ordinary" documents, cards, case folders, and other "manual" records is done using file cabinets. For important records however, and where there is a necessity to conserve space, powered file equipment may be advantageous. This provides more effective utilization of floorspace and easier retrieval, while retaining the original documents. It also aids in controlling and safeguarding the data.

Microfilm, microfiche, and other microform techniques provide significant advantages in the storage and retrieval of data and are therefore applicable to many CJ agencies. Such systems yield a high degree of compactness; they can handle graphic as well as alphanumeric

*CRT stands for Cathode Ray Tube, which is nothing more than a television-like screen on which printed messages can be displayed.

material; they permit relatively high speed retrieval; and they can provide either a display or a printed copy. Original documents can be destroyed or removed to remote, inexpensive storage.

Microfilm is most effective for files with a large amount of data requiring occasional or moderately frequent reference, and for archival files. When considering any microform application, it must be remembered that a separate index is normally required to allow the user to locate the desired image on the roll or cassette of microfilm. Many agencies find it advantageous to microfilm all key records, as a safeguard against loss, and to utilize the microfilm file as the main record once the major operational use of the data has been completed.

Microfiche is useful particularly where there is a group of documents or records associated with a single case, such as in a crime investigation, accident investigation, or criminal history.

Microform is relatively inexpensive and can be used by even quite small agencies, especially if the camera can be shared with other users.

Sharing microform data among agencies is constrained by the difficulty of transmitting the microform data. Since it cannot readily be converted to digital form by automatic means, a copy or print is usually transmitted (by mail or courier). Digital information retrieved from a microform file can also be manually keyed into a CJIS terminal for digital transmission to other agencies.

4.2.2.5 Summary of Mechanization Discussion

A summary of the characteristics of the three mechanization options, and of means for data transmission, powered files, and microform storage, is given in Table XII.

Table XII

Operational Characteristics of Mechanization Options

Manual Processing

Suitable for all kinds of operations in the small department, but limited practically to files organized according to a single index and to the simplest kinds of statistics.

Batch Processing by Punched Card Equipment or Computer

Suitable for computer generation of reports for all types of operational control and management control, and for making statistical analyses for strategic planning of limited use in some operational support roles such as handling simple intelligence files, property files, or the processing of parking and traffic violations.

Punched Card processing is similar to computer processing, but cost effective only for the smaller department and the simpler processing requirements.

On-Line Processing by Computer

Provides for interactive data preparation and entry of data to be used subsequently in digital form; storage and retrieval of active event and other data requiring quick access; and storage and retrieval of intelligence data needed for complex searches and processing, especially where interactive operation is required.

Data Transmission

Digital transmission is the main mode for handling of interagency CJIS transactions by the larger agency, particularly where high transaction volume and rapid and accurate response is required.

Voice communication is suitable for interagency CJIS transactions by small agencies with no CJIS terminal; it is also a supplementary mode of CJIS transmission for larger agencies.

Transportation of documents is a supplementary mode used by all agencies.

Powered Files

An optional means of file storage for original documents that is more compact, convenient, and secure than "ordinary" files.

Microform Filing and Retrieval

Microfilm provides archival storage for bulk data that needs to be preserved; back-up storage for any records requiring this safeguard; and storage for any inactive bulk records requiring occasional or moderately frequent reference.

Microfiche provides storage for active, inactive, or archival records where there are many documents associated with a given case (crime investigation, accident investigation, criminal history).

4.3 STATE-LEVEL SYSTEM SEGMENT

The State-Level System Segment of the MLCJIS was outlined briefly in Section 4.1. It is based generally upon the system concept described in the July 6, 1973 report* of Computer Management Assistance, Inc. and System Development Corp. This concept utilizes the on-line computer mode of mechanization.

The central components of this CJIS concept include a message switching and teleprocessing capability with interconnections to the National Crime Investigation Center; maintenance of the key state-level files of HOT, CRIMINAL, and MOTOR VEHICLE; response to queries from terminals throughout the state; and a complete computer subsystem for each of the state-level agencies and their branches. Figure III, page 14 of the referenced report illustrates this concept.

A recent publication by a Federal commission on State-Local Relations in the Criminal Justice System** concluded (emphasis added):

> "The Commission further recommends that, where needed, an appropriate State agency be encouraged to provide centralized records and crime laboratory services to all local agencies within a State; that a uniform intrastate and interstate crime reporting system be established; and that all local agencies be required, on a periodic basis, to report directly or indirectly all felony arrest and identification records to the State agency."

*Conceptual Design of the Criminal Justice Information System for the State of Connecticut, Computer Management Assistance, Inc. and System Development Corp., submitted July 6, 1973 (3).

**State-Local Relations in the Criminal Justice System, by the Advisory Commission on Intergovernmental Relations, August, 1971 (4).

The proposed State-Level Segment, which provides for the storage of the HOT and CRIMINAL files with update and query capabilities available to both state and local users, satisfies most aspects of this recommendation. The concept also provides access to the MOTOR VEHICLE files for state and local users. Finally, the concept is designed to support all day-to-day data handling for state-level agencies and their branches, including the State Police, the Courts, Adult Probation, Motor Vehicles, Corrections, and Parole.

Terminals are provided for CJIS users -- both state agencies and local police departments. The basic terminal is visualized as a "combination CRT/keyboard unit with a character printer," except that in some low-use locations it may be a teletype-like unit.

It is estimated that the system described would utilize some 300 on-line terminals, divided approximately as follows: 100 for state and local police, 100 for Motor Vehicles, and 100 for the other justice agencies as a group. The assignment of local police terminals would be made largely to the more populous cities and towns, with sometimes more than one terminal per city. (See Section 4.4 for a listing of terminal assignments as they are now visualized.)

The CJIS concept presented by CMAI and SDC in Reference 3 meets the general state-level requirements established in Section III of this report. Accordingly, our State-Level System Segment is based on their presentation.

Two comments do need to be made, however. First, the CJIS concept gives primary attention to "offender-based tracking and case following." The basic offender/case files meet many of the operational needs of the state-level CJ agencies and can furnish at least part of the inputs for management reporting functions. Other files would be needed, however, to conduct the full range of management reporting activities described in Section III of this report.

Second, the concept is based on the use of digital data storage and retrieval techniques exclusively. While these techniques are undoubtedly suitable for most of the files described, some consideration might be given to the use of microfilm for a portion of the criminal history file. Offender identification and current status could remain on-line, supplemented by microfilm for detailed and/or inactive criminal histories. (See Section 4.2.2.4 for discussion of microform filing and retrieval.) Section III identified relatively limited requirements for rapid response from the Criminal History File, other than needing to know if a given individual did, in fact, have a record. In those few cases where rapid response is necessary, voice (telephone) from the central microfilm file via WATS lines or a keyed-in message via digital transmission could provide the information as needed.

4.4 LOCAL/REGIONAL SYSTEM SEGMENT - LOCAL CONSIDERATIONS

As explained in Section 4.1, the Local/Regional System Segment supports the local police departments in their operations and management functions. This section discusses how the data handling requirements of an individual police department can be met. Section 4.5 discusses meeting the requirements for an aggregate of several police departments (i.e., for a region).

Although there are 169 cities and towns in Connecticut, there are only 91 municipalities with full time police departments. The MLCJIS is primarily directed toward meeting the requirements of these municipalities. Some 50 other municipalities are served by state troopers, and the State Police portion of the MLCJIS should satisfy most of their state-level needs. The remainder of the municipalities would need some kind of access to the MLCJIS, which could probably be provided by voice telephone or radio to a central state location.

The nine basic activities of the local police, necessary for operations and operational control, were listed in Section 3.4.2 and described in Appendix III. These activities are: Complaint/Dispatch, Initial Action, Field Disposition, Criminal Investigation, MV Accident Investigation, Other Incident Follow-Up, Arrests, Other Activities, and Operational Control. The management control and strategic planning activities were described in Section 3.2.3 and in Appendices V and VI.

4.4.1 Functions that are Required

Any local police department, regardless of size, will need to perform certain information functions, although the means of implementing these functions (i.e., the degree of mechanization) may vary widely.

One such function is information transfer. Figure 6 shows the main paths between a local police department and the other agencies with which it exchanges information. As indicated in Section III, a large fraction of the data transactions between the local police and the State-Level Segment involves four key state-level files: HOT, CRIMINAL, MOTOR VEHICLE and REGISTERED PROPERTY. Transactions with these files are very time-critical and can be highly structured; therefore, they are prime candidates for digital data transmission. The important transmission links between the state-level segment and the local police are discussed in more detail in Section 4.4.4. The CJ agencies (State Police, Courts, Probation, Corrections and Parole and Motor Vehicles), are less time-critical, and do not necessarily require digital data transmission.

Communication paths are also required between a local police department and other municipal (non-police) agencies and other nearby local police departments. Because of the unstructured and relatively

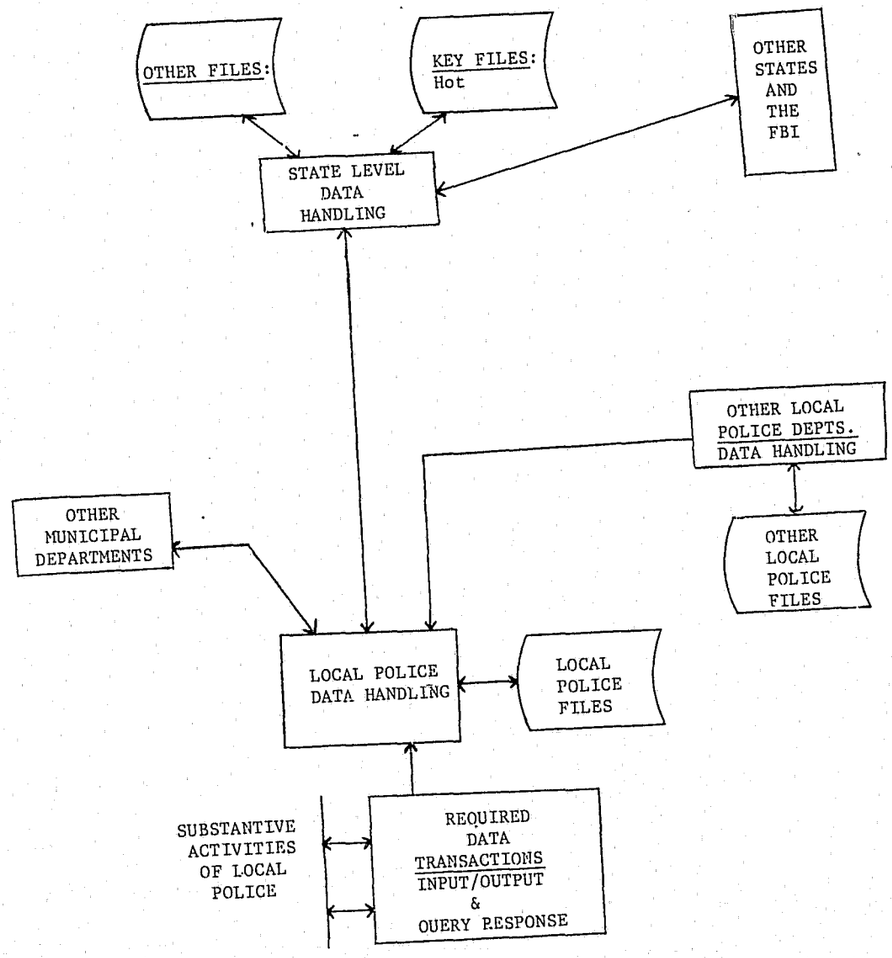

Figure 6: Interagency Transaction Paths of Typical Local Police Department

infrequent nature of these communications, voice (telephone or radio) is usually satisfactory.

The remaining information functions are depicted in Figure 7. The Substantive Activities of the police department (Box A) give rise to the Associated Data Transactions (Box B). These transactions in turn necessitate the Data Handling (Box C), that deals with the Local Files (Box D) and the external agencies and files (Box E). All of these information functions are necessary for any local police department; the manner in which they are implemented (i.e., the amount of mechanization) depends primarily on the department's size.

The data transactions upon which this design is based were summarized in Section 3.5, and the basic files were described in Sections 3.3 and 3.5. Certain additional comments are appropriate, however.

Local intelligence files may not now be kept by every department, but intelligence information (names, places, vehicles, associations, potential problems) is retained in the minds of operating personnel. Similarly, a location file, showing addresses at which there are histories of criminal problems, old persons living alone, or special medical alerts, is not now formally maintained in most departments. In both cases, it appears desirable to keep formal files for the larger departments.

In Figure 7, the Name/Index is intended to provide an index not only to the incident file, but also to other files such as Local Intelligence, Location, Crime Investigations, Arrests, etc.

Management and Planning data, also listed under local files, is derived in large part by aggregating operational data on Incidents (nature of complaint and action taken by police), Crime and Accident Investigations, Arrests, and Parking and Traffic Violations. Certain

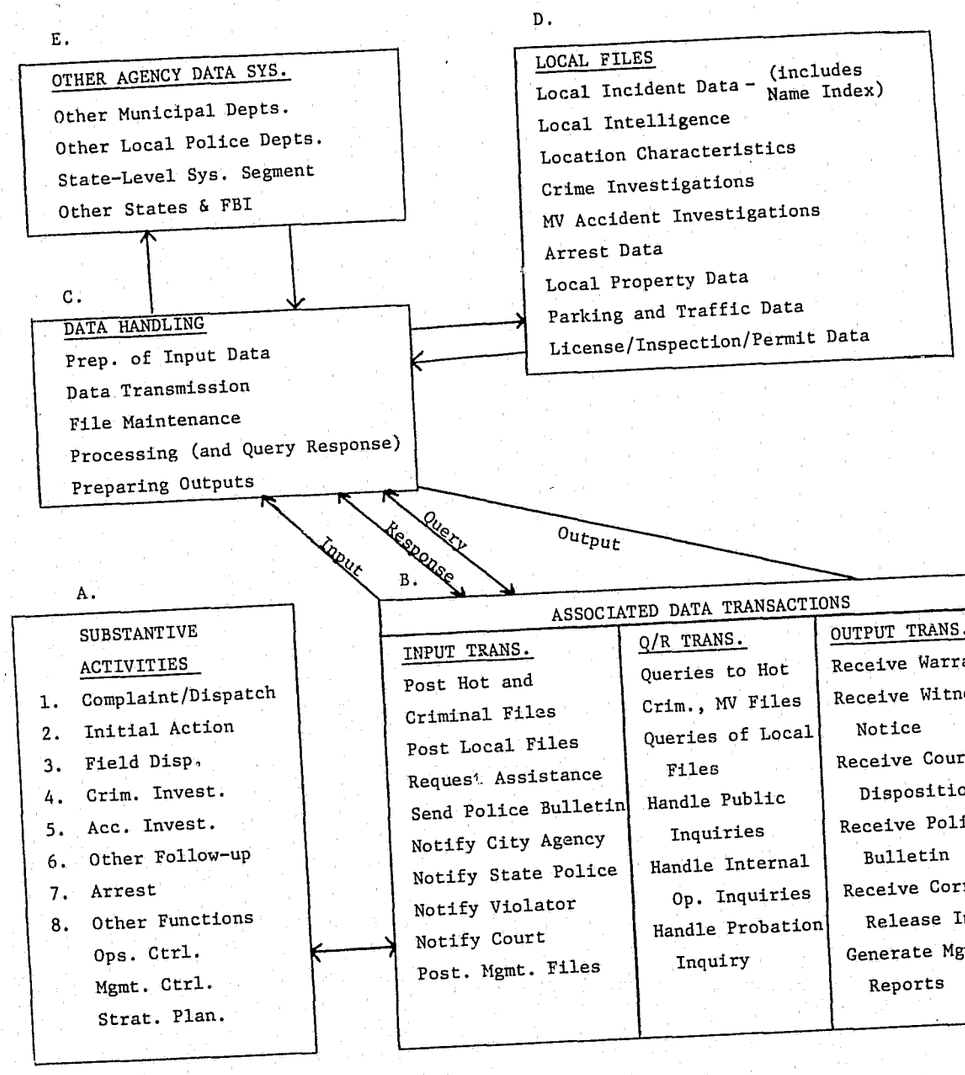

Figure 7: Internal Transaction
of Typical Local Police Department

types of external information, as described in Section 3.4, are also required. It should be noted that we are considering here only the basic files directly related to the substantive activities of the police. Other files that may be employed, such as those relating to personnel and financial administration, are not material to our discussion.

4.4.2 Functions that are not Required

It is necessary to emphasize that many information functions carried out within the criminal justice system do not have to be performed at the local police level. The MLCJIS concept provides for the ready availability to all local police departments of the following key state-level files: HOT, CRIMINAL, MOTOR VEHICLE and OTHER REGISTERED PROPERTY. It is further assumed that these files are suitably updated and otherwise maintained by cognizant state agencies, and that the operational and financial conditions of their use are satisfactory. It is not, therefore, planned that these files would be duplicated at the local police level. Similarily, the other operating and management files maintained by the state-level CJ agencies, including their branch operations, would be made accessible to the local police as required, and so would not require replication at the local level.

A special problem is posed by the need for querying motor vehicle car registration records (part of the MOTOR VEHICLE file) in order to identify the names and addresses of owners of cars that have acquired parking violations. As stated in Appendix II, it is estimated that about half of the estimated 1.2 million parking violations per year require such a query. This is a large volume and relatively low priority set of data transactions that can overload the MLCJIS if it is not properly handled. The system concept described here assumes the queries will be suitably batched and

processed periodically in periods of low activity by the State-Level System Segment. It further assumes that the local police are not charged for the service provided in this manner. There would, therefore, be no reason to duplicate the MOTOR VEHICLE records for this purpose. (It is recognized that local tax listings provided by the MVD can be used, but these are often a year out of data when available to the local police.)

It is assumed that the transfer of digital data between two Connecticut cities or towns, where both are not participants in the same regional data processing system, but where both do have CJIS access terminals, will normally take place through the CJIS communications network, and not through some independent (and therefore redundant) capability.

Finally, it is further assumed that the State-Level System Segment will maintain suitable facilities for digital data exchange with the National Crime Information Center, and with other states as required. These data exchange capabilities should be available to any local police agency that has, or can get access to, a CJIS query terminal. Thus, no separate communication capability for out-of-state data transfer needs to be maintained by local departments. (This approach would not prohibit a possible special arrangement for digital data transfer between a Connecticut city and a closely associated city in an adjacent state (e.g., Greenwich or Stamford - N.Y.C..)

4.4.3 Mechanization of the Local Segments

Having discussed those information functions that are to be included in the local segment (Section 4.4.1) and those which are not included (Section 4.4.2), it is now desirable to see how these would be implemented in various local police departments. Because of the large variation in size of local police departments, there

will necessarily be different degrees of mechanization. More than one mechanization option can usually be selected for any given size of department, depending upon applicational emphasis, possible ability to share use of facilities, and other factors.

Even when a particular form of mechanization (i.e., batch or on-line) is adopted, several alternatives are available. Some police departments will have completely self-contained systems, with no dependence on outside facilities (except for the State-Level System Segment). Other police departments will make use of a municipal data center that also serves non-police applications such as tax billing and general municipal payroll; some may also make use of a commercial data processing service bureau. Still other police departments may form regional combines with police departments in other municipalities. (Regionalization is discussed in Section 4.5.)

Each of the three mechanization options is discussed and evaluated for different size population bases in Section 4.6. However, one element of data handling common to all three options at the local level is discussed below.

4.4.4 Data Transmission Between Local and State-Level Segments

Data must be transmitted between the on-line State-Level Segment and the local police departments. As described in the CJIS report and Section 4.3 of this report, most access to the HOT, CRIMINAL, MOTOR VEHICLE and OTHER REGISTERED PROPERTY files will be via CJIS terminals at local police departments, with digital data transmission.

Present plans for the implementation of the state-wide COLLECT system (a portion of the complete CJIS) call for one or more terminals to be established in 73 municipalities. These municipalities, and their estimated 1971 populations, are listed in Table XIII. The

Table XIII

List of Municipalities Assigned One or More Data Terminals for the COLLECT System

CITY OR TOWN	POP.	CITY OR TOWN	POP.	CITY OR TOWN	POP.
ANSONIA	21.4	MERIDAN (2)	56.2	STONINGTON	16.2
AVON	8.6	MIDDLEBURY	5.7	STRATFORD	50.3
BERLIN	14.6	MIDDLETOWN	35.0	TORRINGTON	31.7
BETHEL	11.1	MILFORD (2)	52.0	TRUMBULL	32.3
BLOOMFIELD	18.7	MONROE	12.3	VERNON	27.7
BRANFORD (2)	20.4	NAUGATUCK	23.6	WALLINGFORD (2)	35.0
BRIDGEPORT	153.7	NEW BRITAIN	82.2	WATERBURY	107.4
BRISTOL	53.4	NEW CANAAN	17.9	WATERFORD	17.2
CHESHIRE	19.3	NEW HAVEN (2)	135.4	WATERTOWN	19.2
CLINTON	10.6	NEWINGTON	26.5	WEST HARTFORD	67.9
COVENTRY	8.4	NEW LONDON	32.0	WEST HAVEN (2)	53.6
DANBURY	51.9	NORTH BRANFORD(2)	11.0	WESTPORT	28.1
DARIEN	20.9	NORTH HAVEN (2)	22.4	WETHERSFIELD	27.0
DERBY	12.2	NORWALK	79.8	WILTON	14.4
EAST HARTFORD	57.2	NORWICH	42.0	WINDHAM	19.9
EAST HAVEN (2)	25.1	OLD SAYBROOK	8.9	WINDSOR	22.8
ENFIELD	45.9	ORANGE (2)	13.9	WINDSOR LOCKS	15.2
FAIRFIELD	57.2	PLAINVILLE	16.9	WOLCOTT	12.9
FARMINGTON	14.6	PLYMOUTH	10.5		
GLASTONBURY	21.8	PUTNAM	8.6		
GREENWICH	60.1	RIDGEFIELD	19.3		
GROTON (3)	38.5	ROCKY HILL	10.3		
GUILFORD (2)	12.3	SEYMOUR	13.1		
HAMDEN (2)	50.8	SHELTON	27.9		
HARTFORD	157.6	SIMSBURY	18.1		
MADISON (2)	10.5	SOUTHINGTON	31.4		
MANCHESTER	49.2	SOUTH WINDSOR	15.8		
MANSFIELD (4)	18.6	STAMFORD	110.2		

NOTES: (1) Terminals are also provided to the eleven State Police Barracks

(2) Indicates the thirteen communities that form the planned New Haven Region

(3) There is a Terminal for Groton Town and For Groton City

(4) UCONN Security has a terminal

Sources: • Line Configuration for S.I.A.S. (Now COLLECT) March 26,1973

• Populations from Weekly Health Bulletin, April 5, 1971, Conn. State Dept. of Health

municipalities to be served with COLLECT terminals represent 68 out of 78 cities and towns having a population of more than 10,000, plus 5 of the 91 towns having a population of less than 10,000. In this discussion we assume that the local terminals available for MLCJIS will be the same as those for COLLECT.

Some of the smaller towns that will not have such a terminal are served by the State Police, and so could make use of their communications capabilities. (Each of the eleven State Police Barracks will have a COLLECT terminal.) Other towns will have to use voice (telephone or radio communications) to a CJIS user who does have a terminal. Two approaches could be used for handling this type of transaction. Queries to the state-level files could be answered by a state-level "information service," reached through incoming WATS lines. Or, small local police departments could be asked to route their queries through a larger department that has a terminal. The state-level information service appears to be the more straight-forward way to handle such voice queries. If routed through other police departments, complex priority and financial problems will have to be solved. It does not seem that the complaint/dispatch function of one department would have much incentive to undertake an additional query workload unrelated to its responsibilities. Since state-level agencies already provide many services to the local police (e.g., State Police investigations, Crime Lab, Criminal History files), an extension of this service concept would provide a CJIS query service. Such a state-level service would also provide excellent back-up for departments with CJIS terminals in the event of terminal or communications line malfunction.

The large departments having access to an on-line computer will normally use direct computer-to-computer data transmission to the State-Level System Segment. This would permit several local terminals to communicate with the State-Level Segment through one

(relatively high speed) transmission line, thereby reducing the total cost and the number of entry ports required at the central facility. Such computer-to-computer transfers would be particularly effective, however, for regional combines of police departments (see Section 4.5).

4.4.5 Security and Privacy

No discussion of local police information processing is complete without a brief discussion of the security (safety) and privacy (confidentiality) of the system.

Security is generally provided by physically limiting access to the information processing facility, whether it is a sophisticated on-line computer or a simple manual system. Other safeguards may include special keys or badges for equipment and passwords for computer software. The fact that local police CJIS terminals have access to the state-level system, which in turn has access to the National Crime Investigation Center (NCIC), also raises security problems. The NCIC has a set of policies on security and privacy that must be adhered to.

There are two principal kinds of police data that should be held confidential and released only to suitably authorized persons. The first type is data on identified individual citizens and locations, and the second is certain data on identified police personnel. The most sensitive of these is intelligence data on citizens, which typically consists of much unsubstantiated information, useful in investigations, but possible highly damaging if improperly released. Arrest data, although public information in one sense, should not be released indiscriminantly. Arrest data on persons later found not guilty is confidential by Connecticut law. Information on juveniles is also subject to special restrictions.

Generally, the security and confidentiality problems, where there are terminals and/or non-dedicated computing equipment, require a combination of safequards embodied in hardware and software design, facility design and control, policies and procedures, careful selection and training of personnel, and supervision and audit. With purely internal data handling facilities and personnel, and a dedicated computer (if any), the confidentiality problem can be handled by internal policies and procedures, in combination with suitable methods of supervision, inspection, and audit. However, if use of facilities or equipment is shared with other external organizational units, the confidentiality problem can become more complicated.

Sensitive files, such as intelligence and arrest records, are not normally recommended for a computer facility that is shared with non-police users.

4.4.6 Summary of Local Considerations

The preceeding discussion of local considerations in the Local/Regional Level Segment emphasized a number of points, as listed below:

- Information transfer is required between local police and the key state-level files (HOT, CRIMINAL HISTORY, MOTOR VEHICLE, OTHER REGISTERED PROPERTY), and between local police and the state CJ agencies, other local police departments, and other agencies in the city or town.
- Key local police files are: Local Incident file, Local Intelligence, Location Characteristics, Crime Investigations, MV Accident Investigations, Arrest Data, Local Property Data, Parking and Traffic Data, License/Inspection/Permit Data.

- The local police should be able to utilize effectively the key state-level files and other files for state CJ agencies; duplication of these files at the local level is not required. Special care is required to ensure that local consultation of MV registration files for identifying parking violators is convenient and economic, since this represents a large local workload.

- According to present plans, CJIS terminals will be provided for 73 municipalities plus eleven State Police Barracks. Municipalities not served by one of these should be able to make a toll-free call to a central state "information agency".

- Microfilm is effective for large files requiring occasional or moderately frequent reference, or for archives. Microfiche is particularly useful where there are many documents or records per case.

- Handling the confidentiality problem requires internal policies and procedures and suitable means of supervision, inspection, and audit. Shared facilities pose special problems.

- The manner in which a local police department processes information (i.e., the amount of mechanization) depends on may factors, the most important of which is the size of the population to be served.

4.5 LOCAL/REGIONAL SYSTEM SEGMENT CONSIDERATIONS

Having described data handling considerations at the local police level for the MLCJIS concept, it is necessary to examine regional level possibilities for cooperative arrangements among two or more police departments in different municipalities. Such

cooperation in the handling of police data we shall term "regionalization."

4.5.1 Definition of a Region

The term "region" can be used in many different ways. It sometimes denotes one of a set of similar partitions of the state, which taken together include all the cities and towns in the state. The former division of Connecticut into counties, and its present division into eleven State Police jurisdictions (troops) are regions of this type. Such a formal and complete division of the state into several mutually exculsive geographical areas implies some form of state control and management. The type of region under discussion here, however, arises in a very different way.

By "region" we refer in this report to a voluntary association among two or more municipalities (cities or towns), to cooperate and share resources for certain purposes (specifically, to improve their capabilities in police information systems). Thus the definition of a region is a flexible one. The domain of a particular region is here determined not by some state-level plan for partitioning the state, but by the pragmatic factors governing inter-municipality cooperation. A region can thus be any grouping of municipalities, from two cities or towns to an entire Standard Metropolitan Statistical Area (SMSA)* (or similar grouping) involving up to 20 or 30 towns.

Although the geographic configuration of a region is arbitrary, it will be shown that certain configurations are more advantageous to local police departments and should be encouraged, while others are of much lower utility.

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*SMSA is an aggregation of towns usually centered on a major city which has been defined by the U.S. Bureau of Census, such as Greater Hartford.

4.5.2 Operational Police Cooperation

Local police departments cooperate operationally in a variety of ways. Certain types of incidents require support from several local departments. Examples of such incidents include the pursuit of a car across municipal boundaries, major incidents that exceed the reaction capacity of a single department (such as riots), and rescue or other work requiring special units or equipment sometimes not available in a given department. There can also be more extensive forms of cooperation involving unified communications, a joint complain/dispatch unit, or sharing of support facilities such as a crime or photographic laboratory or vehicle maintenance shop.

Such operational cooperation among police departments is based on the fact that all police departments face similar problems. Sharing of seldom-used resources and material support in times of emergency allows all departments to perform more effectively and at far less cost.

Police departments in a central city and its surrounding towns cover overlapping populations. People who live in the suburbs may work, shop, and obtain recreation in the city, and (with suburban industrial parks and shopping centers) vice versa. Thus crimes and threats to public order in one municipality may frequently involve people from another, and actions taken by one police department may affect the problems or workload of other departments. More and more such departments find it beneficial to work together on a variety of operational problems that pertain to their area as a whole.

4.5.3 Police Cooperation in Information Processing

Our concern here is regional cooperation and resource sharing with regard to information processing. Such cooperation makes sense in terms of the same commonalty of function and overlapping population

concerns cited above. The Federal Commission on State-Local Relations in the Criminal Justice System clearly believes that regional (particularly metropolitan) cooperation in providing police services is desirable. It states that:

> "The Commission recommends that counties be empowered and encouraged to perform specialized, supportive (staff and auxiliary) police services for constituent localities in single county metropolitan areas. These services should include communications, records, crime laboratory, and other related functions. The Commission further recommends that in multicounty or interstate metropolitan areas, States authorize and encourage appropriate areawide instrumentalities such as regional criminal justice planning agencies, councils of government, or multifunctional, multicounty agencies to perform these supportive police services."*

Since this report concentrates on criminal justice information systems, we will discuss regional cooperation in the context of data handling (i.e., records) only.

Two types of benefits result from cooperation in information processing: increased effectiveness of police operations, and increased efficiency of the information processing functions.

The effectiveness of police operations improves as they share data on common problems. For example, sharing of Intelligence data, use of Name Indices, availability of M.O. (modus operandi) files, reference to stolen and recovered property files, and access to many

*State-Local Relations in the Criminal Justice System, by the Advisory Commission on Intergovernmental Relations, August, 1971 (4).

other files clearly helps the police prevent crimes and apprehend the guilty. Cooperation also permits economies of scale in police operations as a result of the reduction in equipment and manpower duplication and the sharing of development and operating costs. Thus, the efficiency of each police department, in terms of per capita cost of information processing, improves.

It should be noted that both benefits may be obtained simultaneously. In certain circumstances, the type of regionalization adopted may yield one without the other.

4.5.4 Options for Cooperative Police Data Handling

Five options for cooperative police data handling are listed below:

(1) No cooperation except for handling normal data transactions between departments, such as requests for assistance, or for information on a particular person, event, location or item of property.

(2) The foregoing, plus standardized data handling procedures, forms, data elements, and computer programs (if computers are used). Such standardization may also result in the sharing of data through the exchange of standard records.

(3) The foregoing, plus joint use of a batch data processing facility for the generation of management reports and other types of off-line or non-operational data handling. This may include both the sharing of data and the use of batch processing to analyze data.

(4) The foregoing, plus joint use of an on-line data processing facility for operating files, for query/response, and for other transactions. Shared data

is assumed to be an integral part of this option.

(5) The foregoing, plus a complete data system merger in regard to all essential operational and managerial information handling.

Each of the five alternatives has certain potential benefits, risks, potential problems, and costs; Table XIV summarizes the benefits and problems for each. As this table shows, economies of scale tend to reduce the per capita cost of police information processing as the degree of resource sharing is increased. Police effectiveness also increases as certain operational data is shared, but the potential organizational problems, and the difficulties in obtaining the necessary prior municipal approvals, increase as resources are shared.

It should be noted that options (1) and (2) above could even be carried out by a region in which the municipalities are non-contiguous, since the mode of cooperation involved is not necessarily coupled with police operations. However, contiguous towns will not achieve the benefits of increased effectiveness through shared data. Option (2) allows any local police department to adopt the system of another department merely by using standard forms, data, etc. If computer programs are available, these too may be used, but on separate computers. Data can be shared, if desired, by exchanging copies of standard forms, but files would be independently maintained.

In option (3), most of the above is true, but the departments also share computer resources. Normally, this means that one department will pay another to run certain batch reports. Joint reports of certain data may also be prepared on the computer. Although option (3) provides improvements in economy of data handling, options (4) and (5) provide this as well as direct benefits to police operations. These benefits arise from the ease of access to common files

Table XIV

Benefits and Problems of Police Cooperation in Data Handling

	Options / Aspects	(1) Just Handle Normal Transactions	(2) Standardized Procedures, Forms, Data Elements, Computer Programs	(3) Share Batch Operation for Management Reports	(4) Joint Use of On-Line Operational Files	(5) Complete System Merger (On-Line)
BENEFITS	Reduction in Start-up cost	None	May be considerable	Considerable	Large	Large
	Economy of Scale in Operation	No Saving	No Saving	Considerable Saving	Large Saving	Large Saving
	Per Capita Op. Cost of Police Data Processing	Standard	Standard	Reduced	Greatly Reduced	Greatly Reduced
PROBLEMS	Problem of Confidentiality *	Standard	Standard	Standard	Severe	Very Severe
	Increased Effectiveness Through Data Sharing	None	May have some; if contiguous exchange reports	May have more than(2); if contiguous, some joint reports	Most Data Shared; Some Privacy Restrictions	Complete Sharing
	Obtaining Necessary Prior Approval for Joint Operation **	Not Applicable	Small Problem	Small Problem	Difficult Problem	Typically Unsurmountable ***
	Obtaining Police Acceptance	Not Applicable	Small to Moderate Problem	Moderate Problem	Difficult Problem	Typically Unsurmountable ***
	Probable Organizational Problems	None	Minor Problems	Minor Problems	Large Problems	Prohibitive ***

*See Section 4.5.6
**By Civilian Authorities
***Unless there are operational mergers of departments.

of region-wide operational data. Although possible for non-contiguous municipalities, options (4) and (5) are of much greater interest and benefit to communities that are contiguous, deal with many of the same citizens, and have a good deal of existing cooperation. Option (5) is feasible only if police operations are also merged.

From the practical point of view, greatest interest should be focused on options (3) and (4) in the above list. These options offer enough resource sharing to allow substantial economic benefits and the possibility of improved efficiency, but they do not require the complete system merger of option (5).

4.5.5 Relation of Police Regionalization to Municipal Regionalization

In some municipalities, such as West Hartford, the sharing of a data processing center with other communities has begun in non-police areas. Under such conditions, it would be natural to extend this resource sharing to police data handling.

Thus, clues as to where police cooperation in information processing may be successfully established may be found in existing patterns of sharing for non-police applications. The type of police cooperation most likely to succeed, and therefore the appropriate option (either (2), (3), or (4) above) may also be predicted.

4.5.6 Confidentiality

Regionalization carries with it additional problems of confidentiality, the magnitude of which depends upon the type of data being handled on a regional, rather than a local basis.

If the regional cooperation extends only to standardization of procedures, forms, data elements, and perhaps computer programs (option (2)), no confidentiality issues appear to be involved. Even

if there is joint use of a data processing facility for the generation of management reports, as in option (3), there may still be no problem. The work in the shared facility could probably be organized so that no individual citizen's name or address would appear.

On the other hand, if there is sharing of data under options (2) or (3) or joint use of operating files in options (4) or (5), then confidentiality does become a serious issue. Operating files such as Incident files, Name Indices, M.O.'s and Intelligence files (which would be logical candidates for sharing), do have identified citizen names and addresses. In particular, Intelligence files and M.O.'s (if they refer to a suspect) contain unsubstantiated information (not just incidents, arrests, and convictions) that is potentially damaging if revealed to the wrong people.

The situation can be alleviated if the shared files include only the Index to the Name and/or Intelligence files. The Index would then indicate only that some information exists, but would not indicate the nature of that information. To carry a query beyond the Index would require explicit approval from the police department that "owns" the data.

If the above arrangement were still not satisfactory, the system could be designed so that every access to an individual's records would have to be individually reviewed and approved by the data owner. But this would probably make the system too cumbersome to be effective in information sharing. (The departments would still, of course, obtain the economic benefits of scale from a service bureau type of computer operation.)

For all options, confidentiality problems are increased if the data processing facilities are shared with non-police agencies for billing, payroll, or other municipal data handling. It should also be

noted that the U.S. Department of Justice is concerned about connecting systems that are not wholly police-dedicated to their National Crime Information Center (NCIC) files. Safeguards must be provided to prevent unauthorized disclosure of these files.

In summary, a confidentiality problem exists if data is shared with or even processed by another police department. Similar problems exist when resources are shared with other municipal users. However, both sets of problems can be reduced or eliminated by careful software and hardware design, physical restriction of access, education, and procedural safeguards.

4.5.7 Organizational Approaches

Two different organizational approaches can be taken to regional cooperation, each with its advantages and disadvantages. One approach involves a city such as New Haven or Bridgeport assuming the lead and taking on operations from one or more other towns. The city could develop an initial processing capability and then offer other towns the ability to participate in an enlarged facility that would handle their applications as well. This approach has the advantage of allowing a city to go ahead initially with an advanced system without the encumbrance of a regional organization. Thus, if the city has considerable interest and shows initiative, it can advance its capabilities rather rapidly. The difficulty with this approach is that the city-developed system may not adequately answer the requirements of other potential participants, and may not, therefore, be easily and effectively extended. Such an approach can be used with either option (3) or (4). In option (3), any town might join the initial city, but in option (4) only towns that can work together operationally (i.e., towns surrounding a major city) would join the initial city. Only within a contiguous region would the increased effectiveness resulting from regional data sharing be achieved.

A second approach would be to start with a cooperative venture in order to design a system embodying satellite towns as well as core city operations. Such a system design would be more likely to produce an effective regional operation, but might be very difficult to get started because of the problems in developing a concept acceptable to all participants. Such an approach would be more likely to include the sharing of key police data for improved operations.

Either of these approaches would be much easier to establish if the municipalities involved were already cooperating extensively in police operations or other functional areas. Thus, contiguous towns or towns surrounding major cities would be more likely to adopt options (3) or (4).

It appears that no one organizational approach is suitable in all circumstances; rather, any regional proposal that offers significant operational or economic benefits should be considered.

4.5.8 Candidate Regions

So far we have emphasized the need for flexibility in defining possible regions and the importance of pragmatic factors based on what communities seem able to work together. There are, nevertheless, preferred regional configurations, and these should be identified as general goals for resource sharing by police departments.

Regional configurations are most advantageous where they provide opportunities for effective operational collaboration as well as effecitve sharing of data and data processing resources. Accordingly, a region is most desirably composed of contiguous municipalities.

From the standpoint of maximum effectiveness in operational cooperation, a region should be large enough to include the entire population base that in some sense acts as its social and economic unit. This does not necessarily suggest a region as large as a Standard Metropolitan

Statistical Area (SMSA), but one which at least approaches it in size.

Thus we arrive at the set of illustrative target regions shown in Table XV. This table is structured on the basis of a list of potential core cities, a list of the towns contiguous to each city, and the defined SMSA's in Connecticut. A "small" region involves just the core city and contiguous towns over 10,000 population; a "large" region embraces the entire SMSA. A more complete analysis would of course take into account other factors, such as: highway configuration and usage, place of residence vs. place of crime commission for arrested persons, and patterns of collaboration between the state and local police.

4.5.9 Summary of Regional Considerations

Several points should be emphasized regarding the potential for regional sharing of data and data processing resources.

- Regional sharing of facilities can provide economies of scale by reducing duplication and development costs, thereby reducing the per capita cost of police data handling. With any such "regional" configuration, (i.e., any cooperative sharing by even non-contiguous municipalities) there can be benefits in preparing management reports and other batch data processing.
- Suitably configured regions (e.g., core city and contiguous towns) can also often derive significant operational benefits. This normally would involve sharing of data as well as data processing facilities.

Table XV

Illustrative Regions

Core City (Cities)		Contiguous Towns Over 10,000		SMSA	
Name	Population*	Towns Included	Population*	Chief Cities/Towns	Population*
Hartford	158	E. Hartford	57	Hartford	827
		W. Hartford	68	Bristol	
		Wethersfield	27	New Britain	
		Bloomfield	19		
		Windsor	23		
			194		
New Haven	135	W. Haven	54		
		E. Haven	25		
		N. Haven	22		
		Hamden	51		
			152	New Haven	755
Waterbury	107	Naugatuck	24	Waterbury	
		Cheshire	19		
		Wolcott	13		
		Plymouth	11		
		Watertown	19		
			86		
Bridgeport	154	Stratford	50		
		Trumbull	32		
		Fairfield	57		
			139	Bridgeport	809
Stamford	110	Greewich	60	Stamford	
Norwalk	80	New Canaan	18	Norwalk	
		Darien	21	Danbury	
		Wilton	14		
		Westport	28		
			141		
Danbury	52	Ridgefield	19		
		Bethel	11		
		Brookfield	10		
			40		
Norwich	42	Waterford	17	Norwich	235
Groton	39	Montville	16	Groton	
New London	32	Ledyard	15	New London	
		Stonington	16		
			64		

* in thousands

- There are significant organizational problems and problems of confidentiality in a regional arrangement if data is processed by an outside agency, and particularly if person-identifying data is shared.
- While certain types of geographical configurations are preferable, almost any proposed configuration is worthy of consideration if it seems to be feasible and would lead to economies of development or of operation.

Questions of choosing equipment and software for regional operations are very similar to those for local operations. The major difference is the size of the system, which is based upon the population base to be served. The following section evaluates several equipment and software alternatives.

4.6 FUNCTIONAL AND ECONOMIC ASPECTS OF MECHANIZATION IN THE LOCAL/REGIONAL SYSTEM SEGMENT

The structure of the State-Level System Segment is already largely determined (3) and its implementation has begun (e.g., Project COLLECT). Hence, further analysis of this segment does not seem appropriate. But a functional and economic analysis of the Local/Regional System Segment, which is less well structured, is in order.

The major mechanization options applicable to MLCJIS data handling were discussed in Section 4.2. The general characteristics of the Local/Regional Level Segment were covered from a local and a regional point of view in Sections 4.4 and 4.5 respectively. It has been suggested that the choice of mechanization techniques at the local/regional level depends primarily on the volume of data transactions and the size of files, which in turn are related to the size of the population base that is served. To be more explicit about the evaluation and selection of a mechanization option, we must discuss operating and make-ready costs for establishing each mechanization alternative - manual, batch, and on-line. Since the principal variable is the population base to be served, the discussion will cover both individual cities and towns, and regional aggregations.

The following sections present the three mechanization options, as applied to three population bases ranging from 50,000 to 400,000, for the local/regional segments of the MLCJIS. Each of these options is then priced. The final section applies the results of this

analysis, to the complete range of population bases, from a small town to a large SMSA.

4.6.1 Characteristics of Mechanization Options as Applied to Local/Regional Segment

The three mechanization options to be considered for a Local/Regional Segment are:

- Manual-terminal
- Batch-terminal
- On-Line

Each is described below. However, two facts should be established; first, these are not rigid options. They were selected because they seem to represent three distinct levels of information handling capabilities which have gained prominence throughout the law enforcement community. Second, the functions accomplished by the options are not comparable. That is, more can be accomplished using a Batch-terminal system than with a Manual-terminal system, and an On-Line system will accomplish more than either. (These functional differences among the three options are discussed below.) Thus, when comparing the costs of these three options, the reader must bear in mind that the benefits differ.

The manner in which data handling functions are performed in each of the three options is summarized in Tables XVI and XVII. (The local police files referenced in Table XVI are described in Table XVII.) Here, the ten files utilized by a local police department (first identified in Table IV of Section 3.3), are divided into six classes according to three properties: utility in on-line files, utility as a basis for operational statistics, and appropriateness for microfilming.

Table XVI

Functional Characteristics of Local/Regional Segment of Mechanization Options

(Note: Data Files are coded A through F, and explained in Table XVII)

	Manual-terminals	Batch-terminals	On-line
DATA PREPARATION	• Terminal input to CJIS • Manual generation of working documents and posting of files	• Terminal input to CJIS • Manual generation of working documents and posting of files • Keypunch or equivalent for Statistics Input (A + C + E)	• Terminal input to CJIS • Interactive Data Entry** for A, B, and C. Also could use for Statistics inputs (C,E) • Manual generation of other documents and files
TRANSMISSION	• Digital transmission to CJIS for Queries, and for entry to HOT, CRIMINAL files	• Digital transmission to CJIS for Queries and for entry to HOT, CRIMINAL files	• Computer switch (not store and forward) digital transmission to CJIS
FILES & RETRIEVAL	• Manual, files, A-F • Microfilm (option); for inactive and history, files A, C, E	• Manual operating files A through E • Microfilm inactive and history (A, C, E) • Batch computer files of Statistics inputs (A, C, E)	• On-line computer files A + B (+ C?) with manual back-up • Manual operating files re: D, E, and perhaps C • Microfilm inactive and history (A, E, E)
PROCESSING	• Manual data processing perhaps aided*	• Manual data processing re: most operating data • Batch computer statistical processing using Statistics Inputs (A, C, E)	• On-line file management and O/R for A, B, and perhaps C • Batch computer statistics processing using Statistics input (A, C, E)
OUTPUT	• Terminal output from CJIS • Manual generation of statistical reports	• Terminal output from CJIS • Manual generation some reports • Batch computer generation and printing of operational listings, statistics and management reports	• Terminal output from computer & CJIS • Printout some operational documents re: A, B, C. • Batch computer generation and printing of operational listings, statistics and management reports • Manual generation of some supplementary reports

* Aided by calculators, edge punched cards, et al.

**For three reasons:
(1) Generation of operating documents
(2) On-line files input and O/P
(3) Subsequent use in batch processing

Table XVII

File Classifications Utilized in Mechanization Options

Files	File Class Designation
1. Local Incident Data	A
Name Index	A
2. Local Intelligence Detail	D
Local Intelligence Index	B
3. Location Characteristics	B
4. Crime Investigations	E
5. MV Accident Investigations	E
6. Arrest Data	E
7. Property Lost, Retrieved, Held in Evidence, Registered	C
8. Parking and Traffic Data	E
Towed Vehicles	A
9. License, Inspection, Permit Data	C
10. Management Files	F

Explanation of Class Designation

Class Designation	Class Characteristics		
	Useful in on-line files?	Used as basis for oper. statistics?	Desirable to microfilm when inactive?
Operating Files A	Yes	Yes	Yes
B	Yes	No	No
C	Yes?	Yes	Yes
D	No	No	No
E	No	Yes	Yes
Management Files F	-	Yes	-

4.6.1.1 Manual-terminal

In this option, to be used primarily by smaller police departments, all local records are maintained manually. Data is recorded by handwriting or typing for all police files. Statistics are prepared using copies of incident and complaint documents, tally sheets, or similar means. Although a calculator may be employed for some statistics, little additional mechanization is envisioned.

Consequently, the variety of output reports will be limited. In general, correlations of data for management decisions will not be provided. Those reports that are produced will tend to be straightforward summaries of events (calls for assistance, arrests, summonses, etc.), rather than more sophisticated correlations.

Some departments with heavier work loads and limited space may use powered files to store active records, and may use microfilm to store historical documents.

Communications with the State-Level Segment is by CJIS terminal for cities and towns of reasonable size (i.e., all municipalities greater than about 16,000 in population, and some smaller). All CJIS functions, such as inquiries and updates to the HOT and CRIMINAL files, and dissemination of bulletins, will be directly available through these terminals. Costs of the communication lines should preferably be borne by the state.* Each terminal** would consist of a keyboard, a cathode ray tube (CRT) display device, and a hard-copy pageprinter. Messages can be composed on the screen using the keyboard and then sent. Responses are viewed on the CRT, with hard copy available on the printer when desired.

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* See recommendation in Section V.

** Smaller towns might not have the CRT.

Voice communication with a state level information system is proposed as an alternative for towns that do not have a CJIS terminal. A state law enforcement data service, utilizing several incoming WATS lines and operators with on-line CJIS terminals, could process inquiries and/or updates to the HOT or CRIMINAL files. It is suggested that this operation be established. (Such a service would also provide excellent back-up for terminal users of these state-level files).

4.6.1.2 Batch-terminal

Most local department records will continue to be kept manually under this option. Ordinary files of written/typed records are utilized as in the Manual-terminal option. However, by keypunching (or otherwise entering) basic operating data, many useful management reports (see Table XVIII) can be produced by batch processing on computers or punched card systems. Such reports, both routine and special, provide fairly sophisticated decision-making data for operational control, management control, or long range (strategic) planning. Data entry to the computer or punched-card system could be done on a monthly, weekly, or even on a daily basis.

If the computer is employed in batch operations, it can either be used exclusively for police work (dedicated), or can be shared with other municipal functions such as general payroll or tax billing. In the latter case, only a part of the computer operating cost would be allocated to the police.

Microfilm can be used to store historical data and to conserve space. Statistical input data is stored in data processable format such as magnetic tape for possible future use (e.g., special studies for strategic planning). In departments where the volume of manual records required for operation exceeds available space, powered files might also be employed.

Table XVIII

Batch Processing Outputs

By Computer or Punched Card System*

Daily Outputs (operational control)

1. Control listings re: incident assignment and follow-up, including response time.
2. Daily tally of incidents and activity, journal, or chronological listing of incidents.

Weekly and Monthly

1. Incidents by type, area, time, time to respond, time to clear, type of disposition.
2. Officer activities; how effort applied.
3. Special reports (e.g., Burglaries, Larcenies, Assaults)
4. Accidents - include location, time, type, etc.
5. Parking violations by area.
6. Moving violations by type, time, location.
7. Property listings (recovered, stolen, held as evidence).
8. Arrests, adults and juvenile.
9. Known crimes vs. clearances vs. dispositions.
10. State and FBI(Uniform Crime Report A).
11. Investigation Assignment Reports (Detective, Accidents).
12. Performance re: budget and operational plan

Annually	Strategic Planning Studies
1. Summaries of weekly and monthly reports	Mostly ad hoc, special studies
2. FBI (Uniform Crime Reports B and C, and Age, Sex, Race of Persons Arrested)	
3. Budget and Operational Plan	
4. Special Studies	

*If punched card (EAM) equipment is used, the range of outputs would be more limited.

Communication with the state-level information system would be by CJIS terminal, on which the queries and updates to the HOT and CRIMINAL files and police bulletins can be entered and received. Such a terminal, consisting of a keyboard, CRT, and printer, is directly connected by digital communications to the state-level CJIS computer. (Costs of lines should preferably be borne by the state.) Since CJIS terminals will have an associated printer, hard copies of responses are available to the police.

4.6.1.3 On-Line

When an on-line computer is used for local police data handling, a number of significant changes ensue. Basic data (i.e., requests for services, incidents, etc.) can be entered directly into the computer. Accuracy and timeliness will be improved by such interactive data entry, whereby the computer checks and verifies inputs, notifies the terminal operator of errors, and immediately updates operating files with validated entries. Since a number of terminals are being used, all may access the same data base and all will receive virtually "instantaneous" response. This data base contains much of the basic information used by the department(s); many of the basic reports, both for operational and management control, would be produced from it. All outputs available under the batch option would be available in a more timely fashion from the on-line data base. Additional operational reports citing exception conditions could also be produced rapidly - for example, on a daily basis.

Additional benefits accrue with rapid access to files. Investigators can "browse" through incident or name index files, while personnel who deal with the public can answer inquiries more readily.

Because police departments operate 168 hours per week, use of an on-line computer system for operational data requires both the provision for good preventive maintenance and availability of on-call service at

all times, and a back-up manual system for use when the on-line computer is not operative.

Microfilm and powered file equipment will still play an important role, since basic documents and non-digital data (e.g., fingerprints, mug shots) must be retained. Computer files must be purged periodically, with inactive data retained in computer processable format. Printouts of key reports might also be microfilmed for storage.

Communications with the state-level information system would be via high speed digital line from the on-line computer directly to the state-level computer(s) containing CJIS files. Each on-line terminal in the police department(s) could, therefore, be connected through the local computer to CJIS. Line costs should preferably be borne by the state.

4.6.2 Cost Characteristics of Mechanization Options

The preceeding section described three mechanization options for a Local/Regional Segment to illustrate the range of alternatives available to the individual department or to regional combinations of police departments. It is now necessary to discuss the economics of these options as functions of the population base being served.

The following cost factors are considered:

One-Time Costs (to establish a new system)

- Procurement cost for purchased equipment
- Labor cost for
  - Systems analysis
  - Programming (if required) and development of procedures
  - Training, test, and pilot operation
- Overhead and materials

Annual Operating Expenses (after the system is established)

- Cost of equipment leased (including maintenance)
- Labor Cost for
  - General clerical work
  - Computer (or punched card) Operation
  - (data preparation, other direct support)
- Overhead and materials cost

The variable used to characterize the magnitude of the police operation and its associated information system is the size of the population base being served. We are interested in the range of population bases shown below:

(1) Up to 8,000 population (small town)
(2) 8,000 to 25,000 population (medium town)
(3) 25,000 to 75,000 population (small city, large town, or group of small or medium towns)
(4) 75,000 to 200,000 population (medium or large city or city with surrounding towns)
(5) 200,000 to 600,000 population (city with many surrounding towns or small SMSA)
(6) 600,000 population and over (large aggregate of cities and towns or large SMSA)

The three illustrative mechanization options are most competitive with each other in population classes (3), (4), and (5). In classes (1) and (2) there is little need for computerization (especially on-line); and in class (6), the manual approach would generally be inadequate. Accordingly, sample calculations are made at the population midpoints (50,000, 137,000, and 400,000 respectively) of classes (3), (4), and (5).

All costs have been estimated based on the authors' experience; the limited scope of the project did not allow surveying of police

departments for actual cost and manpower requirements. Costs given should be considered only as rough approximations. Actual costs encountered in a particular installation will depend on a number of factors that are outside the scope of the simplified analysis given here.

Table XIX shows assumed equipment configurations for each of the three mechanization options (manual-terminal; batch-terminal; on-line), at each of the three population levels (50,000; 137,000; 400,000). Two suboptions are considered under the batch-terminal option. The first assumes a dedicated computer is used for the police work; the second assumes the use of a shared computer center. Thus, four types of mechanization are considered for each population level. Microfilm and power file techniques are considered separately from the options defined above, since they are largely independent of the degree of computerization. Additional details of the mechanization options identified in Table XIX are provided in Appendix VIII.

For each mechanization option, Table XX provides estimated one-time and annual operating costs, estimated manpower requirements, and a summary of the anticipated benefits. The per capita annual operating costs for each option are portrayed graphically in Figure 8. Data for both Table XX and Figure 8 are extracted from Appendix VIII, where typical equipment configurations for each option are identified and priced. Manpower requirements are estimated and priced at $12,000 per man year for one-time tasks, and at $10,000 per man year for operational work. Combined overhead and materials costs are assumed to be 40% of labor costs. For the batch-terminal option using a shared computer, it is assumed that the police are charged for 25% of the operating cost of the data center. (Actual "out-of-the-pocket expense" to the police depends of course on the specific financial arrangements made.) Two or three alternate equipm configurations are costed for the dedicated batch-terminal and the

Table XIX

Equipment Configurations for Mechanization Options for Selected Population Bases

Mechanization Option	Equipment Category	SIZE OF POPULATION BASE: 50,000 population (large town or small city)	137,000 population (large city)	400,000 population (large city, 6 suburbs)
Manual/ Terminal	CJIS connection	1 CJIS Terminal	2 CJIS Terminals	8 CJIS Terminals
	Calculators et al	3 Calculators and other mechanical/electronic aids	6 Calculators and other mechanical/electronic aids	24 Calculators and other mechanical/electronic aids
Batch/Terminal 2 suboptions: dedicated computer or p.c. system; shared computer	CJIS connection	1 CJIS Term. (L)	2 CJIS Term. (L)	8 CJIS Term. (L)
	Computer or Punched Card Sys.-dedicated	1 Very Small Batch[1] Computer (L) or punched card system (L) 1 Keypunch/Verifier (L)	1 Small Batch Comp.[1] (L) 2 Keypunch/Verifier (L)	1 Medium Batch Comp.[1] (L) 4 Keypunch/Verifier (L)
	Computer-shared	1 Small batch computer (L) 2 Keypunch/Verifier (L)	1 Medium batch computer (L) 3 Keypunch/Verifier (L)	1 Large batch computer (L) 5 Keypunch/Verifier (L)
On-Line (dedicated only)	CJIS connection	1 CJIS Term. (L)	not required[2]	not required[2]
	Computer (dedicated only)	1 Very Small On-Line Computer, with 2 Term. (3) (L)	1 Small On-Line Computer, with 4 Term. (3) (L)	1 Medium On-Line Computer, with 16 Term.[3] (L)
Separate Data Storage Options	Microfilm and Powered File[4]	1 Microfilm Camera (P) 1 Microfilm Viewer/Ptr. (P) 1 Powered File (P)	1 Microfilm Camera (P) 2 Microfilm Viewers/Ptr. (P) 2 Powered Files (P)	1 Microfilm Camera (P) 8 Microfilm Viewers/Ptr. (P) 8 Powered Files

[1] Range of computers possible

[2] Computer connects computer terminals to CJIS

[3] Computer terminals are used for data entry; range of computers possible; computer also does batch computation

[4] Use of microfilm and powered file equipments are an option separate from use of manual, batch or on-line data processing

Note: L indicates equipment lease; P indicates equipment purchase.

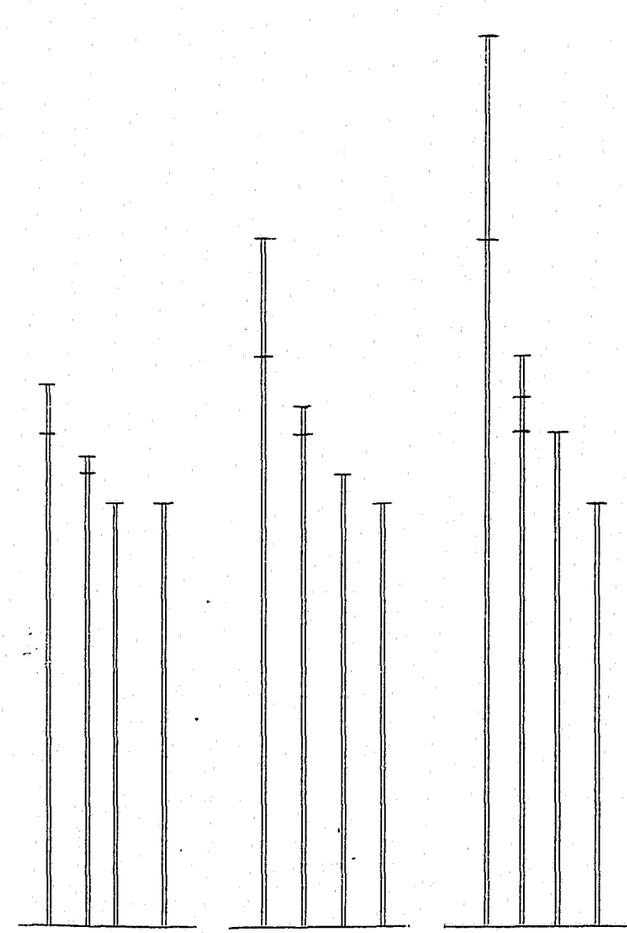
Table XX

Estimated Manpower Requirements and Costs – Both One-Time (Start-Up) and Operating

Note: K = thousand; MY = man years; P = persons

OPTION	BENEFITS	MANPOWER OR COST CATEGORY	SIZE OF POPULATION BASE		
			50K	137K	400K
MANUAL-TERMINAL	Base line for Benefits	One-Time Manpower	1.2 Man Years	1.4 Man Years	4.2 Man Years
		One-Time Cost(1)	$21K	$25K	$78K
		One-Time Cost per Capita	$0.42	$0.18	$0.20
		Operating Manpower	8 P	22P	64P
		Equipment Lease Cost	$2K	$5K	$19K
		Annual Operating Cost	$114K	$313K	$915K
		Annual Operating Cost per Capita	$2.28	$2.28	$2.29
DEDICATED BATCH-TERMINAL (dedicated computer or purchase card system)	• Unified data base • More sophisticated management reports(3) • Ability to do ad hoc reports • Ease of coordination between departments	One-Time Manpower	3.1 MY	3.3 MY	8.7 MY
		One-Time Cost (1)	$52K	$55K	$146K
		One-Time Cost per Capita	$1.04	$0.40	$0.37
		Operating Manpower	9P	23½P	63½P
		Equipment Lease Cost	$10;18;28K	$33;56K	86;126K
		Annual Operating Cost	$136;144;154K	$362;385K	$975;1015K
		Annual Operating Cost per Capita	$2.72;2.88; 3.08	$2.64;2.81	$2.44;2.54
SHARED BATCH-TERMINAL (shared computer)	• Unified data base • More sophisticated management reports (3) • Ability to do ad hoc reports • Ease of coordination between departments	One-Time Manpower	3.0MY	3.0MY	7.5MY
		One-Time Cost (1)	$50K	$50K	$126K
		One-Time Cost per Capita	$1.00	$0.36	$0.32
		Operating Manpower	8.4P	21.5P	61P
		Equipment Lease Cost	$16K	$32K	$59K
		Annual Operating Cost	$134K	$333K	$913K
		Annual Operating Cost per Capita	$2.68	$2.43	$2.28
ON-LINE (dedicated)	• Unified data base • More sophisticated management reports (3) • Ability to do ad hoc reports • Ease of coordination between departments • Interactive data entry and data searches • Rapid accurate access to local on-line files • Ability to share critical operational files between departments	One-Time Manpower	5.4MY	6.6MY	16.2MY
		One-Time Cost (1)	$91K	$111K	$272K
		One-Time Cost per Capita	$1.82	$0.80	$0.68
		Operating Manpower	11P	24½P	63P
		Equipment Lease Cost	$32;91K	$70;170K	$200;300K
		Annual Operating Cost	$186;245K	$413;513K	$1082;1182K
		Annual Operating Cost per Capita	$3.72;4.90	$3.01;3.74K	$2.71;2.96K
MICROFILM AND POWERED FILE	Compactness of storage and ease of retrieval	Purchase Cost of Microfilm	$5K	$7.5K	$22.5K
		Purchase Cost of Powered File	$8K	$16K	$64K

(1) Includes cost of purchased calculators
(2) Includes alternative configurations, and thus range of operating costs
(3) Capability limited, however, if punched card system used



* Costs are shown for 2 or 3 different equipment configurations

Figure 8: Annual Operating Costs Per Capita for Mechanization Options

on-line options. In all cases it is assumed that the CJIS terminal and all computer or punched card equipment, including data entry devices, are leased. Calculators, microfilm, and powered file equipments are assumed to be purchased.

The one-time (start-up) costs per capita shown in Table XX decrease as the size of the population base increases. For a given mechanization option, the per capita costs for a base population of 400,000 are only 30% to 50% of those for a base population of 50,000. The costs per capita are greater, of course, as the degree of mechanization increases. At the 400,000 population level, for example, one-time costs per capita vary from $0.20 for the manual-terminal option to $0.68 for the on-line option. In actual practice, the one-time costs will depend not only on the type of mechanization and the population base, but also on the approach to implementation. Copying an existing system, for example, is much less expensive than developing a new system (which Table XX assumes). "Out-of-the-pocket expense" to the police may be reduced by LEAA funding, or by drawing on city resources that may not be charged at full value.

The graph in Figure 8 shows that annual operating costs per capita are about $2.28 for the manual-terminal option, regardless of population base. The other options are generally higher in operating cost per capita, except at 400,000 population, where the shared batch-terminal cost is also about $2.28. For each of the three population bases, dedicated batch-terminal is more costly than shared batch-terminal, and on-line is more costly than dedicated batch-terminal. The spread in per capita costs greatly decreases as we go from a population base of 50,000 to one of 137,000 and then to one of 400,000.

But one-time costs or annual cost per capita are not the only considerations in choosing among the options. The benefits offered,

which are summarized in the second column of Table XX, are also important. If it is felt for example, that the benefits of batch-terminal (dedicated or shared) are worth a 10% increase in per capita annual operating cost of police data handling, and that the benefits of on-line are worth a 20% increase, then the preferred options would be as shown below:

- 50,000 population - manual-terminal
- 137,000 population - shared batch-terminal
- 400,000 population - shared batch-terminal; or perhaps on-line (using the lower cost on-line configuration)

Other valuations placed on the benefits would of course lead to different results.

The ultimate benefits achieved by improved police operations would be a reduced crime rate and a greater case clearance rate for crimes committed. An improved police information system is, of course, only one necessary ingredient in improving police performance. Or, to put it differently, information alone will not prevent or solve a crime. People -- patrolmen, detectives, and their superiors -- must capitalize effectively upon the outputs of a good operational and managerial information system. This requires well trained and well supervised patrolmen with the desire and ability to use information in improving police performance.

Thus, a new police information system that in one department could provide a significant increase in police effectiveness, might, in another department, provide no increase at all. Because the benefits achievable through an upgraded information support system are so dependent on other aspects of the police department, no precise statement of benefits can be made. The subsequent discussion of the applicability of the different mechanization options should be read with this caveat in mind.

4.6.3 Implications of Sample Calculations

In the preceding section, costs were estimated for each mechanization option across three different size population bases. The costs were derived on the basis of a highly simplified operational model. The results derived from this analysis are, therefore, only approximate; in practice many additional factors could affect the actual costs and influence the results. However, these approximate results are important; they provide a comprehensive view of data handling costs for individual local police departments or aggregations of departments, and they give a general indication of the most desirable alternatives.

An overriding factor in the annual operating cost estimates is the manpower required to perform the general data handling (clerical) functions and to run the computer facility (if there is one). For the dedicated batch option, 10% to 20% of the total annual data handling costs are for equipment. For the on-line options, when considered for population bases of 137,000 to 400,000 (which might realistically support such a system), manpower costs range from approximately 15% to 30% equipment costs. While the introduction of mechanization does reduce the number of persons needed for general clerical work, it requires the addition of some personnel to operate the computing system. There are, moreover, many miscellaneous clerical tasks in the police department that are not greatly affected by the automation of selected high volume and high priority records and data handling processes. Using the 400,000 population base as an example, we note the estimate of 64 persons required for the manual-terminal option to be used for "general clerical work". In the on-line option, the estimates are 51 people needed for general clerical work, and 12 for operating the computer system, so that total number of personnel required is virtually unchanged.

In every case, when a computer is applied, a reduction in the department's general clerical manpower has been projected. (Manpower thus displaced could be shifted to line operations, transferred to the new data processing area, or otherwise utilized.) It is essential that the need to transfer displaced personnel be borne in mind when reviewing these options. Without these manpower transfers, the conclusions would be altogether different.

The next three sections discuss the conclusions regarding mechanization options and costs for each of the three sample population bases.

4.6.3.1 Mechanization for a Population Base of 50,000

The figures in Table XX indicate that if everything else is equal, a manual-terminal system is less expensive than other options for the smaller city or large town. Estimated annual operating costs are lowest for this option, and one-time costs are minimal. The per capita annual cost for this option is $2.28, while the other options vary from $2.68 to $4.90, representing increases of 18% and 115% respectively.

The shared batch-terminal option is priced assuming that a full range of batch processing outputs is obtained (see Table XVIII), and that the police must pay 25% of the operating costs of a municipal computer center in order to obtain these results. It appears that the benefits obtained might not fully justify the added operating cost (18%) over a manual-terminal system. But the police could be more selective in their use of the computer, obtaining fewer reports, and incurring lower costs. Or they could utilize an "outside" computer service for a limited set of output reports. Thus, either the manual-terminal option, or a limited version of the shared batch-terminal option, could be appropriate to this size population base.

Microfilm and powered files could also be utilized, particularly where the volume of documents to be stored is large, and the storage space limited.

Cities/towns appreciably smaller than 50,000 in population would use a manual system, either with or without a CJIS terminal. If smaller than about 10,000 to 15,000, such a town would probably have too low a message traffic to be allocated a CJIS terminal. Hence, the town would use a manual/voice system (e.g., telephone to a state-level law enforcement data service). The equipment cost to the town would be $2.4K less per year. Also, the state could decrease its line costs by using non-dedicated incoming WATS lines.

4.6.3.2 Mechanization for a Population Base of 137,000

For a city or group of towns of this size, manual-terminal remains the least expensive system. However, the shared batch-terminal option is only about 6% higher in operating expense, and the added benefits of the batch reports would probably justify such a cost increase. One-time or start-up costs for the shared batch option are nearly 2½ times the one-time cost for manual-terminal option.

A dedicated batch-terminal system would be 16% to 23% more expensive than a manual-terminal system, while the on-line option would be 32% to 64% more expensive; thus, both dedicated batch and on-line are difficult to justify.

A shared batch operation would face the problems of privacy and security described in Sections 4.4 and 4.5.4. These would have to be taken into account in the design of the system.

Another possible approach for this size population base is shared on-line operation. This option was not costed, but might be substantially less expensive than dedicated on-line. (See discussion in 4.6.3.3.)

The use of microfilm and powered files for this size operation would remain appropriate for departments with storage space limitations and large volume of documents.

4.6.3.3 Mechanization for a Population Base of 400,000

Since no city of this size exists in Connecticut, this population base represents a city and surrounding towns. Here, manual-terminal and batch-terminal with shared computers are the least expensive options. Thus the shared batch-terminal option is clearly the preferred choice since it would provide more comprehensive management reports and other benefits, as shown in Table XX.

A dedicated on-line system for a city of this size would be 18% to 29% more expensive on an annual basis, and the one-time costs are about 2 times greater than a shared batch system. Depending on the funding of start-up costs and the value attached to the additional benefits of an on-line system, this might also be considered a viable option.

An alternative not explored is the possibility of sharing an on-line computer facility. Probably less expensive than a dedicated on-line facility, it might even be slightly less costly than a dedicated batch facility. However, certain additional security and privacy considerations (see Sections 4.4.5 and 4.5.6) must be taken into account when involved in on-line operations. If these can be overcome successfully and economically, local police use of a shared on-line computer facility provides the most attractive alternative for a region of this size.

It appears that a region embarking on data processing should, if possible, pursue the following course; first, develop a management and operational reporting capability on a batch computer which is shared with several police departments and, perhaps, for non-police functions also. When the region has developed a familiarity with data processing

(the discipline it imposes on records and the benefits it provides), it could consider moving into an on-line facility. Most of the batch reports would still be produced; on-line capabilities might alter the way data is gathered for these reports. Also, a number of important additional functional capabilities would be made available with an on-line facility.

As in the case of the smaller population bases discussed in Sections 4.6.3.1 and 4.6.3.2, microfilm and powered files could often be employed to advantage.

For regions having a population base larger than 400,000 people, the on-line option would steadily increase in attractiveness relative to the shared batch option. As the population approached one million people, the on-line and shared-batch operating costs might be nearly equal.

SECTION V

IMPLEMENTATION CONSIDERATIONS

A variety of problems -- technical, economic, and political -- must be overcome to implement a Multilevel Criminal Justice Information System. Figure 9, first introduced in Section II of this document, depicts the sequence of events that must occur. Each task is listed below and described in the following sections. This discussion assumes the continued existence of an overall coordinating and funding body (e.g., the Connecticut Planning Committee on Criminal Administration).

(1) Define requirements for information at all levels.
(2) Develop a Multilevel CJ Information System concept.
(3) Prepare a general plan for implementation, identifying relationships between system elements (i.e., which must precede others).
(4) Secure acceptance of both the concept and plan by participants and users at all levels.
(5) Evaluate and select proposals in view of the concept and the plan.
(6) Implement approved projects for which adequate funding is available.
(7) Review results and modify the requirements, design concept and plan as necessary.

These steps represent an iterative process to be repeated in accordance with the annual funding cycle.

5.1 DETERMINING CRIMINAL JUSTICE INFORMATION REQUIREMENTS

Every criminal justice agency, at local, state, or regional level, requires certain types of information, which must be both accurate and available in a timely manner. Some information is necessary to carry out day-to-day operations; other information is required to manage the organization or to allow long-range planning.

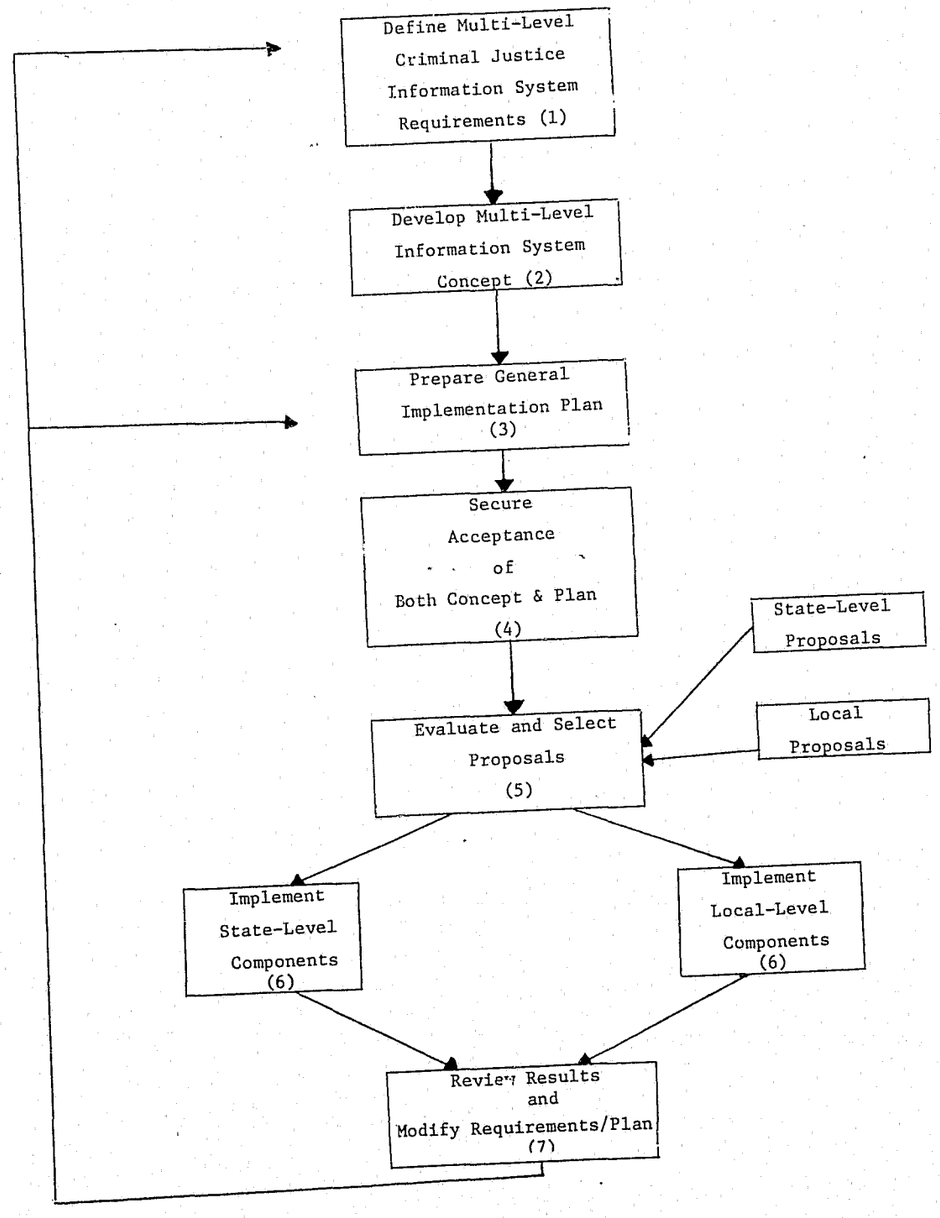


Figure 9: Implementing a Criminal Justice Information System

Information satisfying the requirements of a specific agency may be obtained from records maintained by that agency itself, or may be provided by another agency in the form of data inputs or responses to queries. Since all criminal justice agencies work together in the apprehension, prosecution, adjudication, and rehabilitaion of offenders, none is totally independent. Each contributes information to and receives information from other CJ agencies.

A comprehensive analysis must be performed to determine the exact information required, how quickly it must be provided, how up-to-date it must be, its appropriate source, and the most direct way in which it can be provided. Such requirements, developed for the CJS as a whole, rather than for each agency independently, will result in a set of requirements which eliminates redundant information, unnecessary transfers, and duplicate data storage. Such a comprehensive set of requirements will suggest the most effective and efficient information system.

Section III of this document provides such analysis of Connecticut's Criminal Justice Information requirements. Although there will be changes to these requirements as conditions in the CJ environment change, and as laws are modified and new innovations in criminal justice occur, this analysis provides an initial set of comprehensive criminal justice information requirements.

5.2 DEVELOPING A MULTILEVEL INFORMATION SYSTEM DESIGN CONCEPT

In developing an information system design concept, CJ information requirements must be satisfied within the constraints imposed by organizational environments and available funding and technology. The multilevel design presented in Section IV of this report provides an initial version of such a system concept. Although it may be modified and improved as requirements change, a clearly defined,

state-wide, Multilevel Criminal Justice Information System concept should exist at any point in time.

Within this overall system concept, all elements or subsystems are complementary; that is, they fit together in support of one another as a comprehensive unit, without competing or overlapping. This, in fact, is the goal of the multilevel design concept -- to produce an information system in which all the elements function together smoothly.

Revisions of the initial concept must be measured against one essential criterion: What provides the greatest benefit to the citizens of Connecticut with the resources available? "Benefit" here should be construed as any action contributing to the goals of the Connecticut Planning Committee on Criminal Administration (CPCCA). Although this criterion may at times be difficult to evaluate, it should remain the overriding consideration. When comparing potential benefits, it may be difficult to determine whether an improvement to the police or the courts system would provide a greater benefit than an improvement to corrections. However, such comparisons can and must be made, if only in the grossest sense.

One common problem, that of "technology for technology's sake," can often be avoided by applying this criterion. Just because something can be done on a computer, doesn't mean that it should be done. Not only may it be of less benefit than a task performed by some other agency, it may actually cost more than doing it by improved manual methods.

An information system concept must, of necessity, go beyond the mere depiction of the files that each agency maintains and the flows of data between them. In order to achieve an optimum system, some agencies may have to take on new roles and responsibilities. The information system concept should identify such changing roles.

The suggested Law Enforcement Data Service, to provide state-level information to small local police departments via incoming WATS lines, is an example of such a new or expanded role.

In summary, it is recommended that a viable, detailed concept for an information system supporting all levels of the criminal justice system be maintained. This report provides an initial version of such a concept. The CPCCA is the most likely body to maintain and improve this concept as requirements and technology change and evolve.

5.3 PREPARE GENERAL PLAN

Implementing an information system of the magnitude described in Section IV is a formidable task even in an optimum environment (i.e., within a monolithic organization). However, the Criminal Justice System, with its multiple levels of government, separate agencies, and lack of central authority, is a particularly difficult environment. Careful planning is necessary. Because of the fragmented nature of the environment, however, initial planning cannot be very detailed; rather it must start very generally and be progressively refined.

The planning referred to here is not that of generating details of the information system (i.e., fleshing out the concept); such a task would be more appropriately termed "detailed design". Rather, planning in this sense means identifying the necessary steps and the sequence in which they must be performed to effectively implement the system. For example, what portion (subsystem or group of subsystems) should be implemented first? What tasks (e.g., studies) must be performed prior to implementation?

Because no one manager has control over all agencies, such a plan is difficult to implement. (However, the steps described in

this section should help to smooth that implementation.) Planning will be done in a gross sense, to be continually refined and modified. Certain tasks will clearly take precedence over the others. In some cases, what would be an optimum implementation plan may be altered by one agency's reluctance to participate, or by another agency, with greater capabilities, proceeding at an accelerated pace.

In spite of a lack of control over the exact manner of implementation, a generalized implementation plan should be prepared. Within existing constraints, the plan should attempt to identify and define those tasks which are necessary and the sequence in which they should be performed. This plan should address the following questions:

(1) Which subsystem or group of subsystems should be implemented first? Implementing agencies' capabilities and the costs and benefits to accrue must be considered. How much would each subsystem cost and how would it be financed? In establishing a timetable for implementation, anticipated available funding must be reflected.

(2) What legislation is needed to implement the system or portions of it? Who will define this legislation? Who will sponsor it? What "fall-back" position can be developed if it fails to pass? Areas in which legislation will be useful include mandatory fingerprinting for specified classes of crimes and defining privacy requirements and sanctions.

(3) What agency, or group of agencies will monitor, coordinate and manage the implementation of the MLCJIS? As separate subsystems evolve, there will be detailed questions to be resolved, often in very short time. The answers to such questions must reflect a system-wide perspective, rather than an individual agency's view. In general, the greater the degree of interaction between subsystems, the greater the importance that these questions be properly resolved.

Such leadership and decision-making is required continuously as information systems proceed through design into implementation. A committee, comprised of representatives of Criminal Justice agencies, may provide the breadth of perspective necessary, but would not be able to react promptly, to provide follow-up, and to undertake substantial studies. This will require a full-time staff experienced both in information systems and in the criminal justice field.

(4) What types of standards are required for use by all portions of the MLCJIS? Physical descriptors, crime codes, location codes, name formats, town abbreviations, etc., may have to be standardized. Who will define those standards? How will they be implemented? When are they needed? What will be the method for approval or for change?

(5) What are the security and privacy considerations? Who should have access to which types of information (i.e., police information needs on offenders may be different from court information needs).

Who shall have the authority to grant access and to authorize special studies? How will abusers be policed? What penalties will be provided for noncompliance? Will criminal offenders be permitted to review their own records?

(6) When some portions of the total information system are to be implemented by one agency, but the primary users are other agencies (e.g., the HOT files maintained by State Police for local police use), what assistance must be provided to encourage acceptance by the user-agencies?

(7) When regional information systems are contemplated, what are the likely regions? How can potential members be encouraged to participate?

5.4 SECURING ACCEPTANCE OF SYSTEM CONCEPT AND PLAN

The greatest single problem to be faced in implementing a criminal justice information system is securing an endorsement of a comprehensive information system concept and implementation plan from those persons who are in a position to authorize its final implementation. In the Criminal Justice System this is a complex problem because there is no single central authority to be persuaded. Rather, there are several large state agencies, scores of local agencies, and an undetermined number of regional groupings to be convinced.

Gaining acceptance for the system concept at the local police department level is particularly difficult. Perhaps not fully understanding the system and not being fully convinced that state-level information would be made available in a suitable fashion, the local department can see many problems and may be uncertain.

Table XXI suggests how the prospect of participating in the MLCJIS may appear to the local police department, depending upon the proposed mode of participation. Efforts to gain the endorsement of this group must focus on educating them as to the benefits they may expect and on providing them with incentives to cooperate.

5.4.1 Education

The information system concept and its impact on the criminal justice system must be described and explained to the responsible criminal justice agency officials. During these presentations the emphasis should be on the benefits to accrue to the user agencies. For example: a local police chief should realize that by listing a stolen car on a statewide file he will, in effect, have all the police in the state helping to locate that vehicle. The likelihood of a successful recovery is much greater and the elapsed recovery time will probably be less. To the citizen who wants his auto returned, the police in general and his local police in particular will appear more successful and more professional.

The points to be emphasized to each agency official are:

- By accepting and endorsing the information system concept he will benefit
- Some corresponding duties/rules must be followed; operational changes may become necessary
- To be effective and up-to-date in the 1970s, an improved information system will be necessary.
- To be certain that each agency's system fits together with all others in an optimum manner, and to minimize costs, a comprehensive concept must be adopted.
- To be certain the concept is successfully implemented, a plan (the one proposed or a modification) must be prepared and followed.

Table XXI

Benefits, Undertainties, and Difficulties as Perceived at the Local Level

	Local Police Department Considering MLCJIS Participation As		
	(1) Independent Participant	(2) Satellite to Regional Combine	(3) Core City for Regional Combine
Benefits	• Financial assistance, • Opportunity to develop own capabilities, • Better access to state-level data.	Items under (1), plus - • Assistance in development by Core City • Very much lower development effort and cost	Items under (1), plus - • Opportunity to spearhead development and take leadership role.
Uncertainties	• Lack of knowledge concerning state system, • Lack of demonstrated state CJIS capability, • Possible negative experience with past systems	Items under (1), plus - • Doubt concerning regional feasibility • Doubt concerning whether town control can be maintained • Fear of dominance by Core City	Items under (1), plus - • Doubt concerning regional feasibility.
Difficulties and Problems	• Problems of interlevel coordination, • Cost of supplying input data for state-level files, • Complexities of formulating proposals for grants, • City or town approval for matching funds*	Items under (1) plus - • Town approval for regional participation required, • Complexities of decision-making in regional org., • Town approval to "surrender" data to regional system required (if joint operations are planned)	Items under (1) plus - • City approval for regional participation required • Complexities of decision-making in regional org., • Problems in selling concept to satellite towns.

*Probably minor difficulty unless cash matching is required.

CJ agency officials are not the only ones who need to be educated regarding the benefits of the MLCJIS; both local officials and the general public (who will eventually be asked to bear the financial burden) must also be convinced. Care must be taken to describe both the operational features and the "safety" features (such as protection of privacy). A campaign of education for all groups -- agency officials, elected officials (including legislators), and the general public - is necessary to build a consensus and develop support for a comprehensive criminal justice information system.

Specific methods of providing this education to members of the criminal justice community include seminars, meetings, general publicity, and participation of key agency representatives in design and review of the concept. Seminars and meetings throughout the state would be useful to describe the concept, the projected impact, and the required changes to local and regional criminal justice agency officials, and to representatives of government (e.g., city managers).

Special educational material might be prepared to describe the concept, or key parts of it, the benefits to the user, and the cost, financial and otherwise. Visits by key persons to other jurisdictions which have taken advantage of the latest technology, or seminars and demonstrations by representatives of such jurisdictions, could provide a persuasive form of education for potential system users.

5.4.2 Incentives

Although the primary motivation for endorsing or accepting the MLCJIS concept will be the benefits accruing to the individual agencies and to the public, a secondary motivation will be the financial incentives provided. Two types of incentives -- development and operational -- are required.

The major development incentive is, of course, the availability of Federal funds to design, implement, and test portions of the information system. To this end, full advantage should be taken of all LEAA programs, both state block grant funds and federal discretionary funds (i.e., Comprehensive Data Systems programs).

Of equal importance in motivating the criminal justice agencies are the incentives provided by the design concept itself. The information system must be inexpensive to use -- no financial penalty can be associated with its use. For example, charging for each inquiry into a central file will greatly diminish the incentive to use the file, thereby reducing the system's effectiveness. Similarly, charges for a terminal or for lines to a central facility should not be contemplated for any centralized (i.e., state-wide or regional) portion of the system, since this would be an incentive not to participate. Normally, information system services provided by one CJ agency to others should be free to the users, with cost absorbed by the state and/or LEAA. When LEAA funding is phased out, such support should come from general tax revenues, since communities will normally require these services, in approximate proportion to their total tax bill.

Other portions of the MLCJIS will be developed and used exclusively by one agency, either state-level or local. While LEAA is likely to fund development, the costs of operating such systems would eventually have to be borne by the agency itself. Planning for a gradual phase-over of costs will ease the burden on the agency's budget. This same phase-over of operational costs would apply to all portions of the system.

5.4.3 Summary

In summary, the information system concept and the implementation plan has to be "sold" to its users. They must enthusiastically accept and endorse it. Without such acceptance, the additional effort

required to implement the system will not be forthcoming, and the result will be its ultimate failure. Such a sales approach has two components -- education (i.e., what the information system can do for each agency and how it will operate), and financial incentives (i.e., what it will cost to implement and operate).

Success in this approach will mean that all agencies concur with the information system concept and the general manner in which it is to be implemented. The next step requires these agencies to initiate proposals for projects. The concept should depict the roles of state-level agencies clearly; the nature of the proposals required of these agencies (either individually or in groups) should then be clear.

The local criminal justice agencies will still be in competition for relatively limited funding. A statement of evaluation criteria should be provided to help them prepare their proposals. Table XXII is a sample listing of such criteria.

5.5 EVALUATING AND SELECTING PROPOSALS

When the MLCJIS concept and implementation plan have been accepted by the users, they will, in effect, establish the goal for all (or almost all) criminal justice information system projects. LEAA funding requires that applications be submitted by agencies of government, and that awards then be made to selected recipients.

The primary consideration here is that selections and awards be made in concert with the established concept and plan. If all portions of the system are to operate effectively and be implemented at minimum cost, they must conform to the comprehensive concept and plan. Of course, changes to the concept and plan can and will occur. The point to be made is that these changes must be consciously made after considering the impact on all other portions of the system.

Table XXII

Criteria for Evaluating Criminal Justice Information System Grant Applications

Conformance to Multi-Level Information System

- Performs those functions indicated for the agency.
- Performs no functions indicated for other agencies or levels.
- Will use standard interfaces to other information system components.
- Will use other system standards - data, record formats, etc.

Conformance to General Implementation Plan

- Necessary preceding activities will be complete when needed.
- Necessary interfaces will be available when needed.

Criminal Justice Impact

- Importance to successful implementation of overall system and plan.
- Importance to one city or region.
- Impact Potential (i.e., reduction of crime incidence, improvement in apprehension, improvement in rehabilitation, etc.)

Potential for Expansion

- Transfer to other agencies or locations.
- Expand to regions.

Agency Capabilities

- Management of project. Will project result in useful product as proposed?
- Technical - does agency have staff to perform project; to interact effectively with vendors?
- Management support of project - does top level management actively and enthusiastically support the project?

The criteria actually used for evaluation should be those which have been made available to agencies for use in preparing applications (see Table XXII).

As time goes by, the system concept may be modified, and certainly the plan will be refined. Portions of the system will be implemented while others will not. Proposals will continue to be received, but as portions of the system are completed, some proposals may be concerned with applications beyond the scope of the concept.

A problem may occur when one agency is technically far superior to its peers and has completed its portion of the system concept. In order to maintain its enthusiasm and momentum, that agency may desire to attack more challenging problems. The danger is that of getting into less beneficial and more expensive areas. Every attempt should be made to maintain and reward enthusiasm and initiative, but within the system concept and plan. The criteria of providing the greatest benefit to the citizens of the state must be applied continually, since the resources available for distribution are limited.

5.6 IMPLEMENTING SYSTEM COMPONENTS

If all preceding steps are reasonably successful, portions of the conceptual information system will be implemented in accordance with a system plan.

5.7 REVIEWING RESULTS AND MODIFYING REQUIREMENTS, DESIGN CONCEPT AND PLAN

Periodically, the program will have to be reviewed, and the plan, requirements, or both modified. Changes in requirements will normally result in corresponding changes to portions of the information system concept. Such changes must be closely controlled or they could

damage the concept and plan seriously. Careful consideration must be given to all changes by weighing the costs, benefits, and delays.

Changes can result from delays in achieving certain objectives, new or revised laws, changes (increases or decreases) in available funding, innovations in criminal justice, or any one of a number of other factors. When such changes occur, all agencies in the Criminal Justice System should be notified formally.

This will allow those agencies planning to implement portions of the system to modify their applications for funds in accordance with any changes to the concept, the plan, or the criteria for judging applications.

Changes to the concept could also necessitate changes to those portions of the system already implemented or underway. Agencies with completed projects or with projects in progress must, therefore, also be advised of any changes. For this reason, it is obvious that care must be taken to examine any proposed change in light of not only what will be done, but what has been done already.

APPENDIX I

SIZES OF MUNICIPALITIES, REGIONS, AND LOCAL POLICE DEPARTMENTS

A detailed examination of the Local Segment of the Criminal Justice Information System requires consideration of the sizes of the 91 local police departments. The department size, as measured by budget or number of employees, can in turn be related to the size of the population served.

DISTRIBUTION OF CITIES AND TOWNS BY SIZE

There are 169 cities and towns in Connecticut, varying in population from Hartford (about 158,000) to Union (about 400). In 1971, the population was distributed by size of municipality as shown below:

Size Range	Number of Cities/Towns	Approx. Total Population
100,000 and over	5	664,000
50,000 to 100,000	13	773,000
25,000 to 50,000	16	535,000
10,000 to 25,000	44	691,000
less than 10,000	91	388,000
	169	3,063,000*

The above table shows a rather even distribution of total population among the various size categories.

REGIONAL CONFIGURATIONS

Although county government no longer exists in Connecticut, the State is divided into a number of different regional configurations for various purposes. Superior Court jurisdictions are based upon the old county boundaries, with an extra jurisdiction around Waterbury. The State Police divide the state into three divisions (Eastern, Central, and Western) and eleven troop areas. In addition, there are

*Total population includes about 13,000 institutional inmates not allocated to cities and towns.

six regional crime squad areas: Capitol, South Central, South West, Central Naugatuck Valley, Greater Bridgeport, and Eastern Connecticut.

Another way of dividing the state is in terms of Standard Metropolitan Statistical Areas (SMSA's), Other Cities, and Rural Areas. (Some FBI crime statistics are given by this classification.) The four SMSA's used in the FBI statistics, and their 1971 populations, are:

- Bridgeport, Danbury, Norwalk, Stamford, etc. 809,000
- Hartford, New Britian, Bristol, etc. 827,000
- New Haven, Waterbury, etc. 755,000
- Norwich, Groton, New London, etc. 235,000

The total state population breaks down as follows:

Four SMSA's	2,626,000	85%
Other Cities	177,000	6%
Rural Areas	279,000	9%
Total State	3,081,000*	100%

From the above table, it is seen that the great majority of the population live in the four SMSA's.

DISTRIBUTION OF POLICE DEPARTMENTS BY SIZE

As indicated above, the cities and towns in Connecticut vary in population over a wide range; correspondingly, the 91 local police departments with full time coverage by local police personnel also vary widely in size.

There are, on the average, 30 to 32 police employees per 10,000

*This State total does not agree with the figure given earlier in this section; the data is from a different source.

population* for communities below 75,000 population, and 39 employees per 10,000 for cities over 75,000 population. The average for the entire state is 33. Average per capita annual police costs increase with the size of the municipality served, the average varying from about $15 per year to about $40 per year. In a survey of the functional distribution of personnel by category (1971), nearly half the departments polled had a "records unit," and this accounted for 3.2% of the total police personnel. Departments not reporting a records unit evidently lump the records function under administration, which is responsible for 4.8% of the total personnel. Adding the records and administration categories, we obtain 8.0% of the total personnel. It appears that perhaps 5.0% of total personnel may be handling records, either in formally identified records units or otherwise.

The foregoing data, together with a distribution of employees and budget size of city or town provide the data for Table I-I. The distribution data is used in Section 4.6 in discussing the economics of data handling equipment.

*These figures and other data on local police department characteristics are taken from The Criminal Justice System in Connecticut - 1972, by the Connecticut Planning Committee on Criminal Administration (1).

Table I-I

Distribution of Police Budget and Manpower
by Size of Municipality

(K = Thousands; M = Millions)

CATEGORY	TOTAL OR AVERAGE	POLULATION OF MUNICIPALITY				
		BELOW 25,000	25,000 - 50,000	50,000 - 75,000	75,000 - 100,000	100,000 and ABOVE
TOTAL BUDGET FOR POP. GROUP	$68.1M	$12.9M	$10.8M	$18.6M		$25.8M
AV. BUDGET PER DEPARTMENT	$687K	$199K	$673K	$1431K		$5,153K
AV. PER CAPITA BUDGET	$24	$16	$20	$24	$26	$39
TOTAL NUMBER OF EMPLOYEES:						
SWORN	5,172	1,045	827	1,106	313	1,881
CIVILIAN (1)	2,435	931	424	437	147	476
SUPERNUMERARY	1,674	692	354	378	45	205
% OF TOTAL EMPLOYEES	100%	28.7%	17.3%	20.7%	5.5%	27.8%
EST. AV. NUMBER OF EMPLOYEES PER DEPARTMENT (2)	---	30?	113	194	270	490
POLICE EMPLOYEES PER 10,000 POP.	33	32	30	31	31	39
EST. RECORDS EMPLOYEES PER 10,000 POP. (3)	1.7	1.6	1.5	1.6	1.6	2.0

(1) INCLUDES PART-TIME CROSSING GUARDS

(2) CALCULATION MADE ON BASIS OF MUNICIPALITIES OF 10K, 37.5K, 62.5K, 87.5K, 125K.

(3) FIGURED AS 5% OF EMPLOYEES

APPENDIX II

SOME DETAILS REGARDING THE CRIMINAL JUSTICE PROCESS

STEPS IN THE CRIMINAL JUSTICE PROCESS

The steps involved in the State's criminal justice process were outlined in the 1970 Action Plan prepared by the Connecticut Planning Committee on Criminal Administration (CPCCA). The Action Plan presented a flow chart summarizing the steps in the process, and is reproduced in Figures II-1A, II-1B, and II-1C. The process is divided into seven broad stages, with each stage divided into individual steps. The stages are: Police Community Services, Enforcement Activities, Superior and Circuit Court, Juvenile Court, Adult Probation, Correction, and Children and Youth Services. Each stage corresponds to a separate organizational jurisdiction, except that both local and state police departments share responsibilities for community services and law enforcement.

WORKLOADS IN THE CRIMINAL JUSTICE PROCESS

In order to compute the volumes for information system transactions (file updates, query-responses, and file outputs), we need to determine the workloads associated with certain criminal justice activities. These are defined in terms of the number of events involved (such as the number of complaints or requests for police assistance), the number of cases handled (such as the cases investigated by the police or tried in superior court), or the number of people processed (such as inmates in a correctional institution, or persons on parole).

In some of the categories, the desired data was directly available (principally from The Criminal Justice System in Connecticut - 1972). In others, estimates were made, extrapolating from partial data available on the state of Connecticut, or from hopefully applicable ratios or indices for other states, or for the United States as a whole. The volume of Police Incidents, Arrests, and

OVERVIEW OF CONNECTICUT CRIMINAL JUSTICE SYSTEM

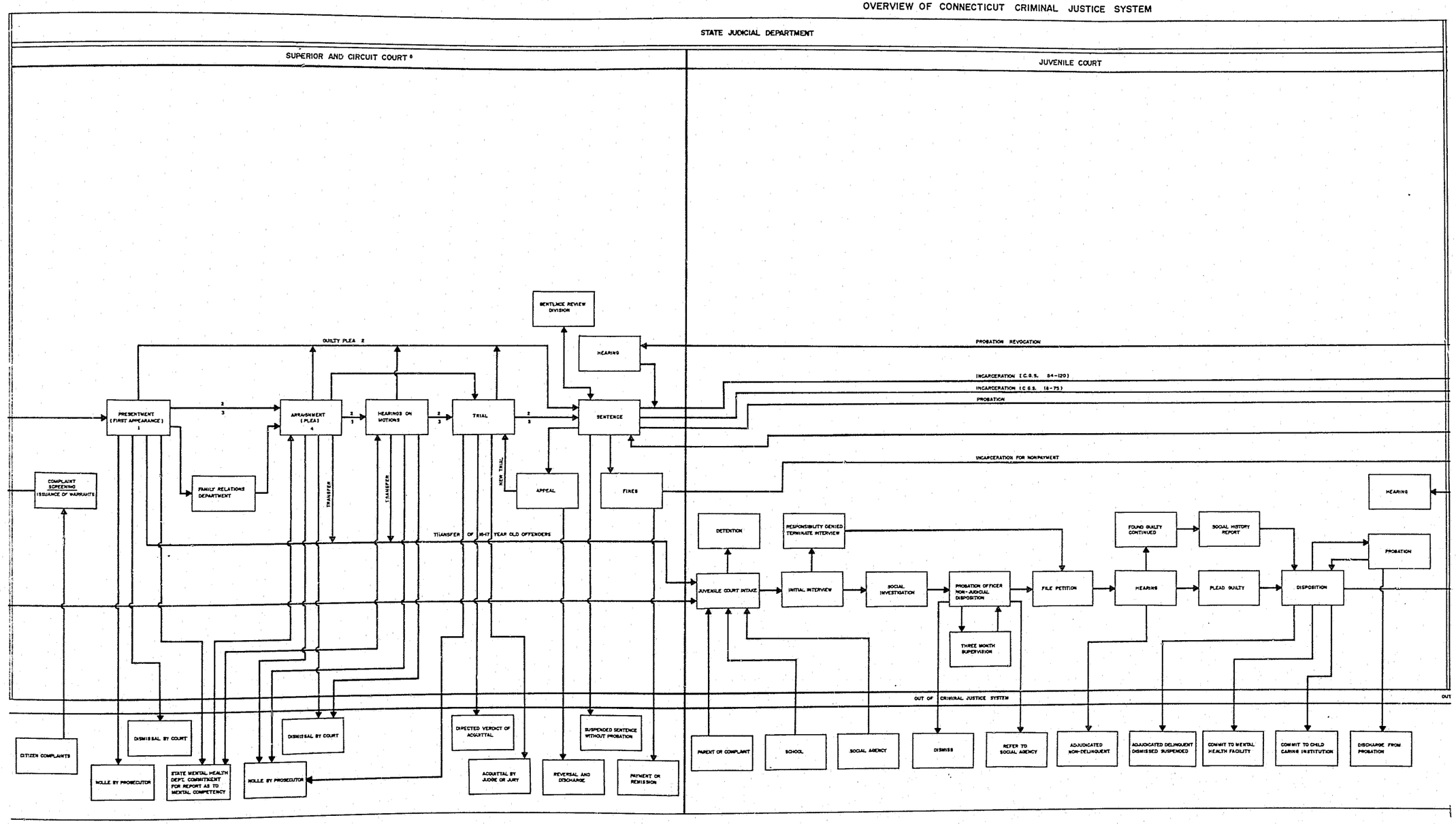


Figure II-1B Overview of Connecticut Criminal Justice System (continued)

OVERVIEW OF CONNECTICUT CRIMINAL JUSTICE SYSTEM

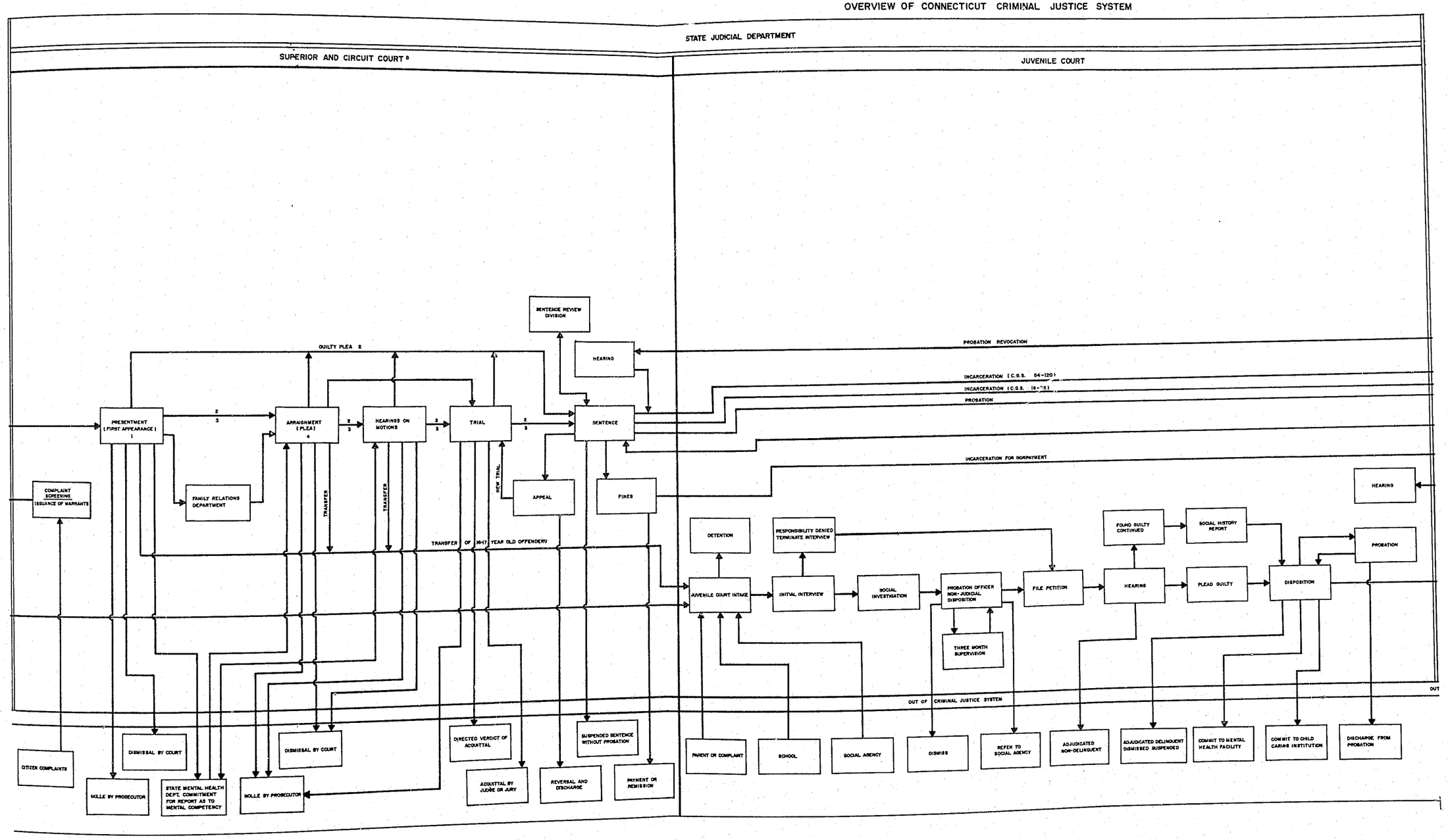


Figure II-1B Overview of Connecticut Criminal Justice System (continued)

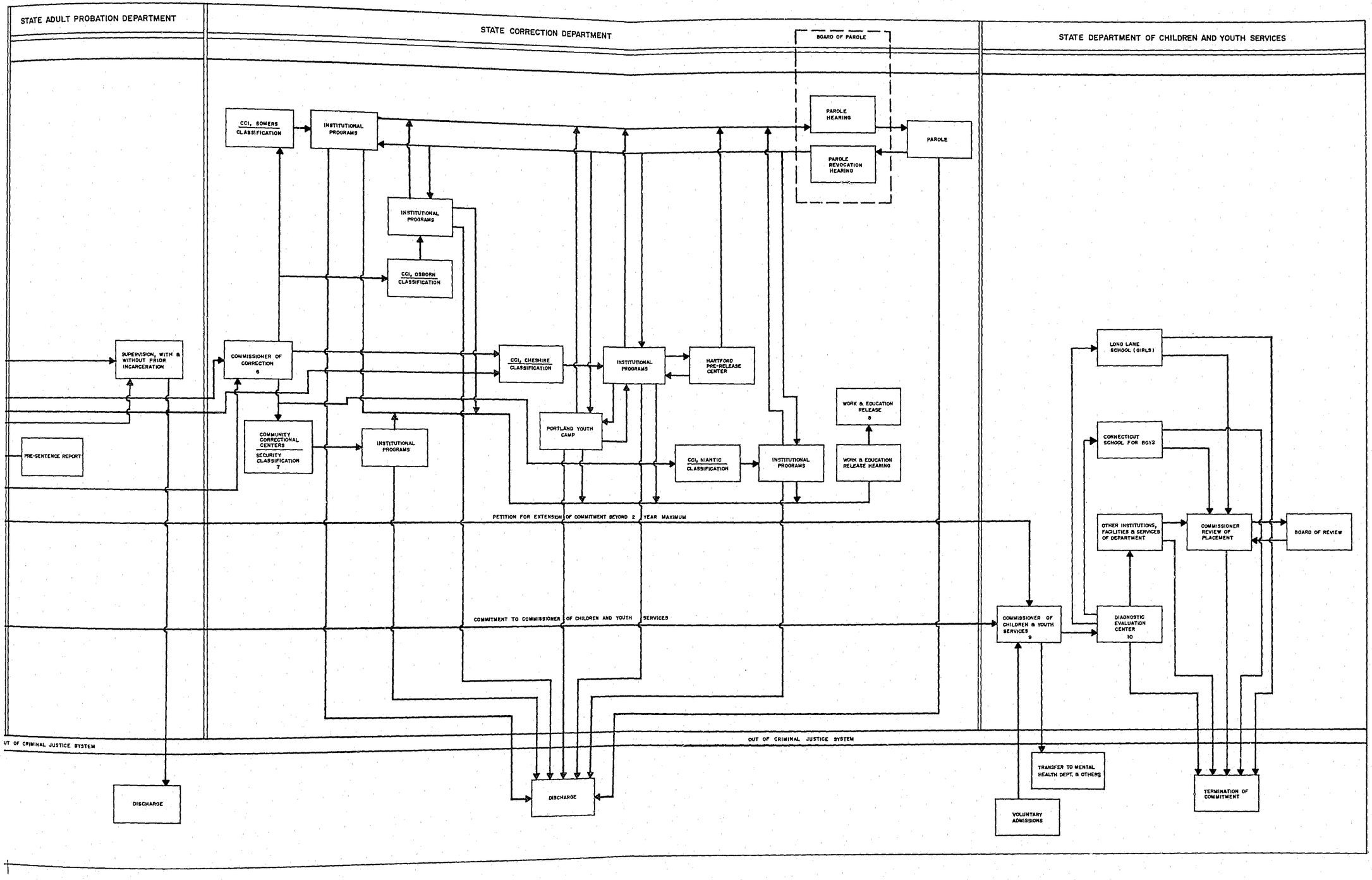


Figure II-1C Overview of Connecticut Criminal Justice System (concluded)

Other Police Activities, presented the largest problems in regard to data availability.

Table II-I gives the workload values that could be obtained directly, or inferred by some indirect computation, for the state-wide CJ system. In this table, Police Incidents are estimated values that cover all police activities -- for 91 local police departments and the State Police.

Figure II-2 shows the flow of incidents and cases through the state-wide CJ system. The volume figures given are taken from Table II-I.

In some subsequent sections of this report, it will be necessary to estimate workload values applicable to individual local police departments, or to regional groupings of such departments. Except in the relatively few cases where individual department statistics have been obtained, local and regional workloads will be estimated by prorating state-wide figures on the basis of population.

Statistics on parking violations are of importance in estimating the volume of queries to MOTOR VEHICLE files. As shown in Figure II-2, the total estimated annual volume of parking violations is 1.2 million. Of these, 0.6 million are cleared rapidly and do not require a query by the police to determine the owner's name and address. The remaining 0.6 million do require such police follow-up.

Table II-I

State-Wide Workloads in the Criminal Justice System

K = Thousand; M = Million

POLICE INCIDENTS

Calls for Service (Criminal complaints plus requests for assistance)	1.6M (1970)
Detective Investigation	120K* (1972)
Accidents	60K* (1972)

*Crude projections from partial data

KNOWN CRIMES

Index Crimes	(CY 1972)	76.1
Property		70.1
Violent		6.1
Part I Crimes		105.0*
Part II Crimes		480.0K (1972)*
Parking Violations		1.2M (1972)*

*Crude projections from partial data

ARRESTS (1972)

Index	16.4K, est.
Part I	22.6K
Part II	86.2K
Non-Motor Vehicle	80.7K
Motor Vehicle	132.6K
Total	213.3K

OTHER POLICE ACTIVITIES

Permits, licenses (State Police only)	10.0K
Inspections (State Police only)	100.0K

BAIL ACTIVITY

Interviews (1972) 32.1K

Outcomes 9/32 not changed from police
8/32 reduced
15/32 changed to written promise or non-surety bond

CIRCUIT COURT CASES

Cases (FY72):
On hand - 25.9K
Received during year*- 213.3K
Disposed of during year - 211.7K
On hand, end of year - 27.5K

% Guilty 46.9%; violations bureau 21.4% N.G. 1.7%; transfers, bindovers 3.6%; nolles 26.4%

*MV 15K; Other 84K

SUPERIOR COURT CASES

Cases (FY72)
On hand - 2.1K
Received during year* - 4.2K
Disposed of during year - 4.7K
On hand, end of year - 1.6K

*bindovers 78%, bench warrants 22%

PROBATION ACTIVITY

Presentence Investigation (FY72) 7.3K

Probationers (FY72)
On hand - 10.1K
Received during year - 8.8K
Disposed of during year - 7.4K
On hand, end of year - 11.5K

CORRECTIONAL ACTIVITY

Av. in-residents (FY72)	3.3K
No. of admissions	30.3K
Population breakdown:	
sentenced Felon	1212
sentenced misdemeanants	636
unsentenced	1157
Av. monthly population	
Somers-Enfield	1309
Cheshire	403
Miantic	153
Portland	30
6 Centers	1110
Total	3005

PAROLE ACTIVITY

Av. daily population 1700

MOTOR VEHICLE ACTIVITY

Drivers licensed (1973)	2.7M
Registered Vehicles (1973) (not all active, however)	4.8M

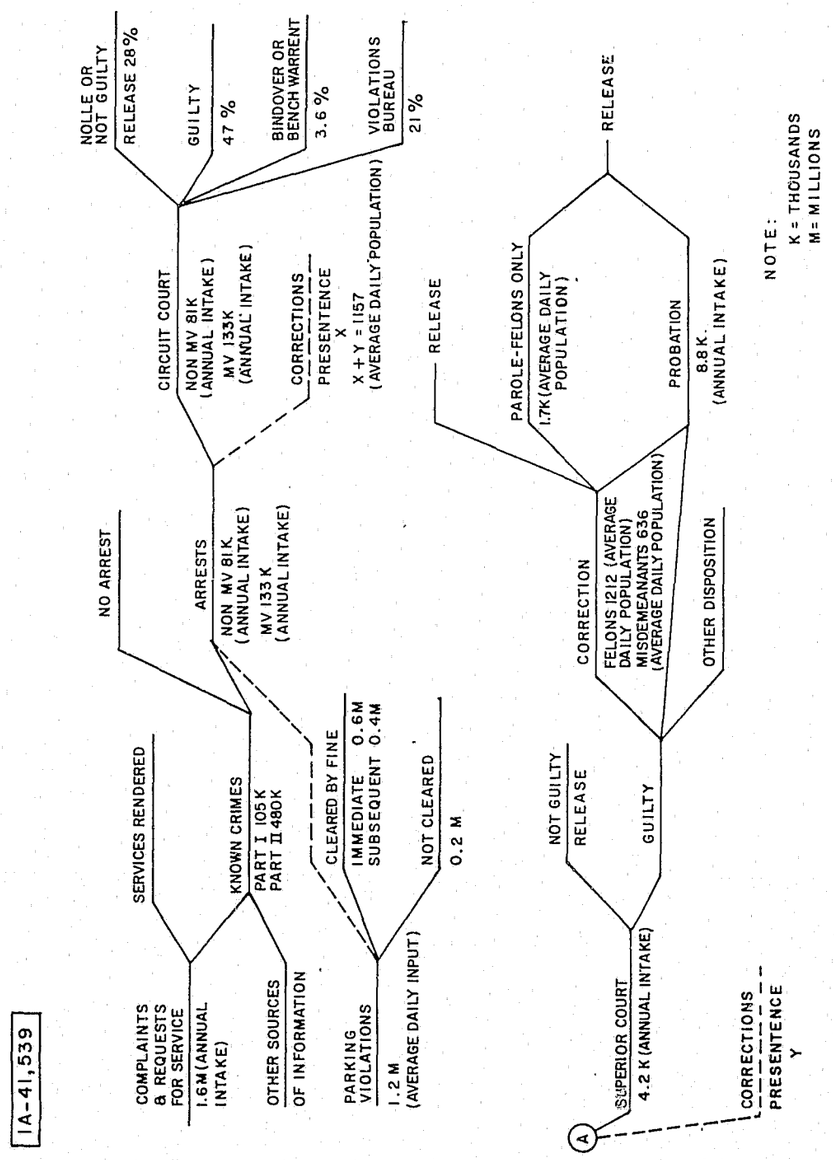


Figure II-2. CASE FLOW THROUGH CJ SYSTEM

APPENDIX III

POLICE FUNCTIONS AND ASSOCIATED INFORMATION TRANSACTIONS

This appendix contains an expanded description of the police functions presented in Figure 2 of Section III of this document; only those functions directly related to providing police services to the public are examined. All information transactions and their key characteristics are tabulated for each function in Table III-III of this appendix, and operational police requirements for the multilevel criminal justice information system are then derived on the basis of that tabulation.

Because this document emphasizes local police requirements, police functions and their associated information transactions are examined in greater detail than those for other criminal justice agencies. Data for this section is based on MITRE's experience with police departments in Massachusetts, visits to several Connecticut police departments, and documents describing the Connecticut Criminal Justice System.

FUNCTIONS OF THE POLICE

Local and State Police perform a number of functions associated with the general objectives of crime deterrance and community service: law enforcement, case investigation, apprehension of suspects, recovery of stolen property, and maintenance of public order and safety. This appendix treats the functions of local and State Police jointly, indicating differences only where they are significant in terms of information transactions. The functions are broken down under nine separate headings below.

Complaint/Dispatch/Call for Service

When police communications (or a patrol unit) receives information on an incident such as a crime in progress, a criminal complaint from a citizen, or a request for assistance from a citizen or municipal department, one or more units are dispatched to deal with

the incident. Police communications records some or all of the following:*

- Time complaint received
- Time unit dispatched
- Time unit arrived
- Time unit cleared assignment
- Time unit returned to patrol (for later use in management reports)

Other actions may be required under this function, such as sending police bulletins or posting HOT files.

Initial Action (Investigation/Service)

This function involves the immediate response/action of the assigned or discovering police unit to a criminal incident, or to a request for service. A criminal incident may involve the threat of a crime, a crime in progress, or the results of a crime that has been committed. The most common crime categories are given in Table III-I. Certain incidents may involve special tactical situations with special information transaction implications. Three such special tactical situations are:

- Checking a suspicious car.
- Checking a suspicious person.
- Approaching an unknown or potentially dangerous location.

A request for service may be any one of several types; Table III-II lists the common service categories.

Field Disposition

Many incidents are disposed of in the field, without any follow-up

*Data could permit determination of out-of-service times.

Table III-I

Most Common Crime Categories

(See Note)

Crimes against the person

- Assault and battery
- Robbery
- Other crimes (murder, manslaughter, rape, etc.)

Crimes against property

- Stolen motor vehicle
- Breaking and Entering, with or without larceny
  - Residence
  - Other establishment
- Larceny from motor vehicle
- Stolen bicycle
- Other larceny
- Malicious damage

Crimes against public order

- Moving or non-moving motor vehicle violations
- Parking violation
  - Ordinary
  - Vehicle towed
- Family disturbance
- Street or other disturbance
- Narcotics
- Intoxication
- Disorderly conduct
- Other crimes

* FBI Index Crimes are murder, forcible rape, robbery, aggravated assault, burglary, larceny $50 and over, and auto theft. Part I crimes are Index Crimes plus larceny less than $50.

Table III-II

Common Service Categories

Health-Related Services

- First aid at home or on the street
- Ambulance runs
- Rescues
- Child birth assistance
- Other care for sick persons

Other Personal Assistance

- Providing transportation
- Finding lost children
- Finding lost or wandering senile person
- Assisting locked out persons
- Reporting open doors and windows
- Investigating burglar alarms

Hazards to Public Safety and Public Order

- Abandoned motor vehicles
- Animal Complaints
- Prowler Complaints
- Health Complaints
- Noise Complaints
- Fireworks Complaints
- Burning Complaints
- Reporting faulty conditions or equipment on streets or sidewalks
- Policing fires

investigation or other action being required. These include issuing a summons or citation for either a traffic violation or a minor non-traffic violation, reporting an identified suspect, issuing a parking ticket, and towing an illegally parked car under appropriate circumstances.

Criminal Investigation

The initial police action, investigation, and classification taken on the basis of a criminal complaint or an observed crime have been covered above. If the crime incident cannot be fully disposed of in the field at the time of the initial action, further investigation (usually by the detective unit) may be necessary. Such investigation is normally carried out for any felony-type crime not fully cleared by the initial action. In some not too serious felonies (e.g., some larcenies), there may be so little opportunity to develop further information that no investigation is appropriate.

The nature of the ensuing investigation is dependent on the type of crime and its seriousness. Typical queries may be divided into three classes: person-oriented, event-oriented, and vehicle-and property-oriented.

Accident Investigation

Motor vehicle accidents may require special investigations if there is personal injury and/or serious property damage. Accidents producing fatalities are investigated in great detail. The investigation may involve taking pictures, making measurements and producing diagrams, interviewing participants and witnesses, examining vehicles involved, determining road, weather, and traffic control equipment conditions, and collecting other data. It may also be necessary to consult various files to get supplementary information on the cars,

occupants, and pedestrians involved. Finally, the police may determine that criminal charges should be filed.

Other Incident Follow-up

A variety of follow-up activities, other than detective investigations and accident investigations, are required for certain kinds of incidents. Some of the most common are: processing parking violations, processing moving or non-moving motor vehicle violations, and handling recovered or discovered property.

Arrest

This function covers certain initial activities such as preparing a request for the court to issue a warrant, apprehending the suspect and taking him into custody (with or without a warrant), informing him of his rights, booking him, and obtaining fingerprints and a mug shot.

The police also determine what bail/custody conditions should be imposed. A defendant retained in custody (either because no release on bail was permitted, or because the prescribed bail could not be raised) must be reviewed by a Bail Commissioner (see Courts). Custody is provided by a Connecticut Correction Center (see Corrections) or by a police lock-up. In addition, there are follow-up activities concerned with preparing charges and initiating a presentment in court.

Other Activities

This miscellaneous category includes the processing of applications for certain permits or licenses and the carrying out of certain inspections. Licenses and permits issued by the State Police are principally for advertising signs, auctioneers, carnivals and circuses, fireworks displays, motor vehicle race tracks, amusement parks, theatres, raffles

and bazaars, bingo games, and for individuals to carry firearms. State Police inspections are carried out on buildings, explosives, carnivals and circuses, amusement parks, theatres, and motor vehicle race tracks.

Also included in the category of other activities are the registration of certain property and the handling of all types of public inquiries.

Operational Control

Operational control functions include manpower scheduling and assignment; case assignment for investigation; the control of major incidents, special events and details; and the handling of internally generated operational inquiries.

Table III-III

Detailed Data Transactions for Police Functions

FUNCTION / Subfunction / Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
COMPLAINT/DISPATCH/CALL FOR SERVICE									
Receive, Record Complaint (or Request for Assistance); Dispatch Unit(s)	Police	Complaint Doc.	I/O	—				Minute	
Request Info. re Address	Police	Location Characteristic, File	Q/R	Local	Minute	Address	Day		
Receive, Post Arrival, Clear Notifications	Police	Complaint Doc.	I/O	—				Minute	
File Complaint Document	Police	Complaint File	I/O	—				Few Minutes	
Receive, File Incident Report	Police	Incident Report File	I/O	—				Hour	
Send Police Bulletin	Police	Network Terminals	I/O	—				Minute	
Request Assistance of Other Depts. for Major Incident et al	Police	Other Police Department(s)	I/O	—				Minute	
Post Hot Files as Appropriate	Police	Hot Persons File	I/O	—				Few Minutes	
Post Hot Files as Appropriate	Police	Hot Property Files	I/O	—				Few Minutes	
Post Local Records	Detective	Stolen Prop., Recovered Prop., Prop. held in Evidence	I/O	—				Day	
Add Significant Location Data	Detective	Location Characteristics File	I/O	—				Day	

Table III-III Continued

FUNCTION / Subfunction / Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
INITIAL ACTION (INVESTIGATION/SERVICE)									
Check Out Suspicious Car									
Determine if car stolen or missing	Police	Hot Vehicle File	Q/R	State	Minute	Vehicle Reg.No., VIN	Few Minutes		
Determine if Driver License susp. or revoked	Police	Hot Revoked or Suspended License File	Q/R	State	Minute	License No.	Day		
Determine if Driver License susp. or revoked	Police	Hot Revoked or Suspended License File	Q/R	State	Minute	Name, Address	Day		
Check if Possibly Relevant Incident is Known	Police	Local Incident File	Q/R	Local/ Regional	Minute	Conditional Incident Characteristics	Few Minutes		
Check if Driver's License is Valid	Police	MV License File	Q/R	State	Minute	Name, Address	Week		
Determine Owner of Car	Police	MV Registration File	Q/R	State	Minute	Vehicle Reg.No., VIN	Week		
Determine if Driver is Wanted or Missing	Police	Hot Persons File	Q/R	State	Minute	Name, Address	Hour		
Check Out Suspicious Person									
Check if Suspect is Known in CRIM HIST File	Police	CRIM Index for Ident.File	Q/R	State	Minute	Name, Address AKA	Week		
Determine if Person Wanted or Missing	Police	Hot Persons File	Q/R	State	Minute	Name, Address	Hour		

Table III-III Continued

FUNCTION Subfunction Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
Check if Possibly Relevant Incident is Known	Police	Local Incident File	Q/R	Local/ Region	Minute	Conditional Incident Char-acteristics	Few Minutes		
Approach Unknown or Potentially Dangerous Location									
Determine if Location has Known Problems or Conditions	Police	Location Char-acteristics File	Q/R	Local	Minute	Address	Day		
Conduct Action									
Request Assistance from Other Unit(s)	Police	Police Commun.	I/O	--				Minute	
Notify Other Agency (e.g., Hospital, Fire Dept.)	Police	Other Agency	I/O	--				Minute	
Report Hazardous Condition	Police	Police Commun.	I/O	--				Few Minutes to Hour	
FIELD DISPOSITION									
Issue Summons/Citation* & File Copy	Police Officer	Summons File	I/O	--				Few Days	
Report Suspect to Police Comm.	Police Officer	Incident File	I/O	--				Few Hours	
Issue Parking Ticket & File Copy	Police Officer	Parking Ticket File	I/O	--				Day	
Query for Stolen/Wanted Car	Police Officer	Hot Vehicle	Q/R	State	Few Minutes	Registra-tion Number	Few Minutes		
Query for repeat offender	Police Officer	Car to be Towed List	Q/R	Local	Few Minutes	Registra-tion Number	Few Minutes		
Car Towed and File Posted	Police Officer	Towed Car File	I/O	--				Few Minutes	
Inform Court of Summons or Citation	Police	Circuit Court	I/O	--				Day	

*Could be for traffic violation, or for minor non-traffic violation; for serious violations, arrest function would be involved.

Table III-III Continued

FUNCTION Subfunction Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
CRIMINAL INVESTIGATION									
General									
Check Incident Document	Detective	Incident File	Q/R	Local	Few Minutes	Incident No.	Hours		
Set up Case Record	Detective	Case File	I/O	--				Day	
Post Added Incident Data	Detective	Incident File	I/O	--				Day	
Check Case Record	Detective	Case File	Q/R	Local	Minute	Case No.	Hour		
Person Oriented									
Describe/Identify Suspect	Detective	CRIM.Ident.	Q/R	State	Few Min. Day	Name Ident. A.K.A.Index Partial Des-cription	Day		
Determine Suspect Status	Detective	CRIM. Status	Q/R	State	Few Minutes	Name Index	Day		
Attempt Fingerprint Ident.	Detective	CRIM. Fingerprint	Q/R	State	Day	Fingerprint Classifica-tion	Day		
Identify Known Associates	Detective	Local In-telligence	Q/R	Local/ Regional	Few Hours	Name Index	Few Days		
Event Oriented									
Attempt Modus Operandi Match (selected crimes only)	Detective	Modus Operandi File*	Q/R	State	Day	M.O.	Day		
Identify Similar Incidents (non-M.O. crimes)	Detective	Local Incident	Q/R	Local/ Regional	Few Hours	Incident Descriptors	Few Days		
Vehicle and Property Oriented									
Identify Vehicle Owner	Detective	Vehicle Reg. & Title File	Q/R	State	Few Min.	Reg. No. Veh. Ident. No.	Few Days		
Identify Vehicle & Owner	Detective	Vehicle Reg. & Title File	Q/R	State	Few Hrs.	Partial Description	Few Days		

Table III-III Continued

FUNCTION / Subfunction / Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
Identify Property Owner	Detective	Various Registered Prop. Files	Q/R	State & Local	Few Hours	Ident. No.	Few Days		
Determine if Vehicle used is stolen	Detective	Hot (Stolen Vehicle File)	Q/R	State	Few Min.	Reg. No.	Few Min.		
Determine if Property is stolen	Detective	Hot (Stolen Property)	Q/R	State	Few Min.	Ident. No.	Few Hrs.		
Determine if Property Recovered is stolen	Detective	Local Stolen Property	Q/R	Local	Few Min.	Descript. & Ident. No.	Few Hrs.		
ACCIDENT INVESTIGATION									
Review Incident File	Police Officer	Local Incident File	Q/R	Local	Min.	Incident No.	Hr.		
Process Accident Report	Police Officer	MVD Accident Rpt. File	I/O	—				Few Days	
Process Accident Report	Police Officer	Local Accident Rpt.File(s)	I/O	—				Few Days	
Identify Car Owner	Police Officer	MVD Vehicle Registration	Q/R	State	Few Min.	Reg. No.	Few Days		
Investigate Driver	Police Officer	Hot Suspended/Revoked Driver License	Q/R	State	Few Min.	Driver Lic.No.	Few Hrs.		
Investigate Driver	Police Officer	MVD Driver History	Q/R	State	Few Min.	Driver Lic.No.	Few Days		
Review Local Accident File	Police Officer	Local Accident Rpt. File(s)	Q/R	Local	Min.	Accident No.	Hr.		

Table III-III Continued

FUNCTION / Subfunction / Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
OTHER INCIDENT FOLLOW-UP									
Parking and Traffic Violations									
Identify Car Owner (Parking Violation)	Police	MVD Vehicle Registra.	Q/R	State/ Region.	Week	Reg. No.	Week		
Notify Owner (Parking Violation)	Police	Vehicle Owner	I/O	—				Week	
Initiate Court Case (Parking or Moving Violation)	Police	Court	I/O	—				Week	
Update Parking & Traffic Files*	Police	Parking File Traffic File	I/O I/O	— —				Day Day	
Discovered/Recovered Property									
*Determine if Identified Vehicle Stolen	Police	Hot Motor Vehicle	Q/R	State	Few Min.	Reg. No.	Hour		
Determine owner's name for Vehicle	Police	MVD Vehicle Reg./ Vehicle Iden. No.	Q/R	State	Few Min.	Reg. No. V.I.N.	Few Days		
Determine if Property Stolen	Police	Hot Stolen Property	Q/R	State	Few Min.	Ident. No.	Hour		
Determine if Property Stolen	Police	Local Stolen Prop. File	Q/R	Local/ Region.	Few Min.	Property Desc. & Ident.	Hour		
ARREST									
Initial Activities									
Prepare Complaint	Police	Court Complaint	I/O	—				Hour	
Book Suspect	Police	Local Arrest File	I/O	—				Few Min.	
Obtain Fingerprints & Mug Shot	Police	Local Arrest File	I/O	—				Hour	

*Also Q/R for Parking and Traffic Files

Table III-III Continued

FUNCTION Subfunction Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
Bail/Custody									
Determine Criminal Record	Police	Hot Persons File	Q/R	State	Hour	Name, Address	Day		
Determine Criminal Record	Police	CRIM History File	Q/R	State	Hour	Name, Address	Week		
Determine Criminal Record	Police	LOCAL INTELLIG. File	Q/R	Local/ Region.	Hour	Name, Address	Week		
Record Bail/Custody Decision	Police	Local Arrest File	I/O	--				Few Min.	
Provide Transfer Information (if to be held in CCC)	Police	Corrections	I/O	--			With transfer of Prisoner		
Inform Bail Commission (if not released)	Police	Bail. Comm.	I/O	--			Few Hours		
Follow-up									
Review Local Arrest File	Police	Local Arrest File	Q/R	Local	Min.	Arrest No.	Hour		
Prepare Charges and Complete Local Arrest Records	Police	Local Arrest File	I/O	--				Hour	
Process Papers to Court to Initiate Case	Police	Circuit Court	I/O	--				Before Start of Court Scheduling	
Forward Papers to State Police	Police	State Police	I/O	--				Day	
Check on Case Schedule for Police Witness	Police	Court Calendar File	Q/R	Court Region	Minutes	Defendant(s) Name(s)	Hour		
OTHER ACTIVITIES									
Check Criminal Record re Permit or License	Police	CRIM History File	Q/R	State	Day	Name, Address (Other Ident.)	Week		
Check Criminal Record re Permit or License	Police	LOCAL INTELL. File	Q/R	Local/ Region.	Day	Name, Address	Week		
Register Identified Property	Police	LOCAL PROPERTY File	I/O	--				Day	
Check Permit/License Status		LOCAL PERMIT etc.	Q/R	Local	Few Min.	Name, Add.	Day		
Update Permit/License File		LOCAL PERMIT etc.	I/O					Day	

Table III-III Continued

FUNCTION Subfunction Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
Handle Public Inquiries - urgent	Public via Police	See List 1	Q/R	Local	Minutes	Variable	Minutes		
Handle Public Inquiries - routine	Public via Police	See List 2	Q/R	Local	Minutes	Variable	Hours		
OPERATIONAL CONTROL									
Manpower Assignment (Daily Sched.)	Police	Daily Assign. Schedule	I/O	--				One day prior	Daily
Case Assignment for Investigation	Police	Case Assign. List	I/O	--				Few Minutes to Day	
Controlling Major Incidents, Spec. Events, Details	Police	Variable	I/O	--				Variable	
Internal Operational Enquiries - urgent	Police	See List 1	Q/R	Local	Minute	Variable	Minutes		
Internal Operational Enquiries - routine	Police	See List 2	Q/R	Local	Minutes	Variable	Hours		

Footnote: List 1 - Incident
Arrest
Towed Vehicle
Property Recovered

List 2 - Detective Case
MV Accident
Property Stolen
Property Held in Evidence
Other Registered Property
Parking Ticket
Traffic Violations

APPENDIX IV

FUNCTIONS AND INFORMATION TRANSACTIONS OF NONPOLICE CRIMINAL JUSTICE AGENCIES

Section 3.2.2 described the functions of nonpolice criminal justice agencies (see Figure 3). This appendix expands that description and identifies associated information transactions. For each transaction, certain key characteristics are also tabulated (see Table IV-I of this appendix). Unlike Appendix III, which dealt with internal police functions and transactions, this appendix concentrates on functions and information transactions either of primary significance to the entire criminal justice system (such as determining a defendant's guilt, setting bail, or releasing a prisoner from jail), or involving information transfers between agencies. From this tabulation of information transactions and their characteristics, nonpolice criminal justice agency operational requirements for the multilevel criminal justice information system are identified.

Data for this section is based on literature describing Connecticut's Criminal Justice System and also MITRE's experience with such agencies in other states.

THE COURTS

The criminal court system in Connecticut includes a supreme court; two statewide trial courts -- the superior and the circuit courts; and a juvenile court system. Appeals are handled by the court of common pleas (for the circuit court), the superior court (for the juvenile court), and the supreme court (for the superior court). The Bail Commission is also considered part of the judicial branch.

For this report we are concerned only with the superior and circuit courts and the bail commission.

Circuit Court Functions

> "The circuit court has jurisdiction of all crimes and of all violations of ordinances, regulations and bylaws of any town, city, borough, district or other municipal corporation or authority which are punishable by a fine of not more than $5,000 or imprisonment for not more than 5 years, or both. Thus, the court is the principal court for disposition of all misdemeanors, including almost all violations of the motor vehicle laws.
>
> "Upon the initiation of the prosecuting attorney, and where the charge is for an offense punishable by imprisonment for more than 5 years, the court conducts a "bindover" hearing to determine if there exists probable cause to believe the defendant has committed the offense(s) charged. If probable cause is found to exist, the defendant is bound over to the superior court for trial and disposition of the case. At any time, while any proceeding is pending before the circuit court, the issuance by a superior court judge of a bench warrant for the arrest of the defendant terminates the circuit court's jurisdiction."*

*The Criminal Justice System in Connecticut - 1972, by the Connecticut Planning Committee on Criminal Administration (1).

Circuit court sessions are held at eighteen locations throughout the state. The functions of the circuit court and the types of personnel involved in each are:

- Judicial (judge; and in a jury trial, the jury)
- Court administration (chief court administrator, chief judge)
- Clerical and support (chief clerk, clerks, assistant clerks, clerical assistants, court reporters)
- Prosecution (chief prosecuting attorney, prosecuting attorneys, and assistant prosecuting attorneys)
- Defense of indigent persons (public defenders and assistant public defenders)
- Investigative (these personnel are provided by the local and state police)

Other functions are performed by noncourt personnel such as defendants, witnesses, and private (defense) attorneys.

(Certain traffic violations can be settled by mail payment of fines, and certain minor nonmotor violations can be settled through the Violations Bureau.)

The Bail Commission, which functions as part of the circuit court structure, is concerned with reviewing bail/custody decisions by the police.

The principal steps carried out by the circuit court are:

(1) Receipt of case due to an arrest by local or State Police or by the Motor Vehicle Department, or due to the filing of a complaint or violation by the police and issuance of a summons. The Bail Commission may review bail/custody conditions for the defendant.*

(2) Presentment, or first court appearance. (For some minor infractions, if the defendant pleads guilty, the sentence may be imposed at this appearance.) The bail commissioner assists the presiding judge in bond determination and related matters.

(3) Arraignment or pleading to the charge. A plea of guilty or nolo contendere may be followed by immediate sentencing. For cases that are bound over, a probable cause hearing is conducted.

(4) Hearings on motions (possibly involving a guilty plea).

(5) Other steps: possible continuances or reschedulings.

(6) Trial (also possible guilty plea).

(7) Presentence investigation by Probation Department (requested in only a small fraction of circuit court cases) or criminal history report check by Prosecutor.

(8) Sentencing.

(9) Completion of case; transfer of responsibility to Probation or Corrections; or

*The Bail Commission reviews all cases in which the police refuse to release the defendant, or in which the defendant cannot raise the prescribed bail.

(10) Completion of case; defendant determined not guilty, case dismissed, etc. (may occur at any point from (4) on).

Superior Court Functions

"In criminal cases, the superior court has sole jurisdiction of any offense not within the jurisdiction of the circuit court. This means that the superior court has exclusive jurisdiction over all felonies for which the maximum penalty exceeds five years imprisonment. (By legislative action in the 1971 session of the General Assembly (Pub. Act 870), the jurisdiction of the circuit courts was increased to include all crimes for which the penalty is up to 5 years imprisonment or a fine of $5,000). The superior court has the authority to exercise its original jurisdiction over any criminal case through the issuance of a bench warrant. It uses this authority but continues to receive most of its cases by way of bindover from the circuit court."*

Criminal sessions of the superior court are held in nine locations throughout the state. The functions of the superior court and the types of personnel involved in each are:

- Judicial (judge; and in a jury trial, the jury)
- Court administration (chief court administrator, chief judge)
- Clerical and support (clerk, assistant clerks, clerical assistants, and court reporters)
- Prosecution (state's attorneys and assistant state's attorneys)
- Defense of indigent persons (public defenders and assistant public defenders)
- Investigative (county detectives)

*The Criminal Justice System in Connecticut - 1972, by the Connecticut Planning Committee on Criminal Administration.

- Sentence review (committee of judges)
- Medical examination (coroners aided by medical examiners)

Other functions are performed by noncourt personnel such as defendants, witnesses, and private (defense) attorneys.

The Bail Commission review of bail/custody conditions is also a part of superior court functions.

The principal steps carried out by the superior court are:

(1) Receipt of case due to bindover or a bench warrant. Possible Bail Commission review of bail/custody conditions.

(2) Presentment, or first appearance (for bench warrant cases only).

(3) Arraignment, or pleading to the charge.

(4)-(10) These steps generally involve the same functions as steps (4) - (10) for the circuit court. In step (7), however, the presentence investigation by Probation is always required.

Comments Applicable to Functions of Both Courts

Since the steps involved in the circuit court and superior court processes are similar, a composite set of steps applicable to both processes will be used to discuss information transactions. The following points should be kept in mind:

- Review of the case/defendant/family by the Family Relations Department and/or the State Mental Health Department may also be involved, generally after presentment or as the result of a hearing.

- In the event that the defendant fails to appear for a scheduled court event, the court may issue a default warrant, which is then served by the police.
- At various stages the defendant can be released due to nolle by prosecution, dismissal by court, a directed verdict of acquittal, or an acquittal by judge or jury. A verdict or finding can be appealed, and a sentence can be reviewed.

The principal outcomes of the case process are:

- Nolle, dismissal, or acquittal (not guilty), or
- Guilty, with
  - Suspended sentence
  - Probation, with or without prior incarceration (Probation Department assumes responsibility)
  - Fine
  - Incarceration, with or without fine (Corrections Department assumes responsibility for incarceration)

Information Transactions for Circuit and Superior Courts

Information transactions for the circuit and superior courts are discussed in Table IV-I of this appendix under the following headings:

- Initiating a Case. This covers transactions associated with step (1) above.
- Conducting a Case. This relates to steps (2) through (8) above.* From the standpoint of information transactions, these steps are all similar.

*Presentence investigations by Probation are covered under the Probation Department.

- If there is a Default. This situation requires a special information transactions.
- Completing a Case. This relates to steps (9) and (10) above.
- Other Activities and Operational Control. This covers transactions associated with scheduling and assignment of court cases and court personnel (including jurors), and the handling of public inquiries.

PROBATION

The Department of Adult Probation is an independent agency providing probation services for the circuit and superior courts. These services include the presentence investigation of convicted offenders and the supervision and counseling of offenders placed on probation by the courts. Twenty-three local or branch offices are involved in this work.

Functions Carried Out

The presentence investigation provides information for the court concerning the family, social, and mental background of the convicted defendant. The investigation requires personal interviews with the defendant, members of his family, social agencies, medical personnel, and others who might be helpful. Schools, police departments, and employers are also contacted. The results are presented in a structured report.

The objective of the supervision and counseling of probationers is to bring about an improvement in the attitude, conduct, and conditions of the probationer, and to satisfy the courts that probation requirements have been compiled with. Each probationer is required to report to his probation officer, in accordance with a pre-arranged schedule, for guidance and counseling. The officer also makes periodic contacts with families, employers, schools, and social agencies.

Information Transactions for Probationers

The information transactions are presented in Table IV-I under the following headings:

- Presentence Investigation
- Supervision and Counseling of Probationers
- Other Activities and Operational Control

CORRECTIONS AND PAROLE

The corrections and parole functions include the correctional facilities and the Parole Division, which are part of the Department of Corrections, and the Parole Board, which is an autonomous body. The correctional facilities are concerned both with the pretrial and presentence custody of defendants, and with the custody of offenders sentenced to incarceration by the courts.

Correctional Facilities Functions

Three Correctional Institutions, six Community Correctional Centers, one Youth Camp, and one Correctional Prerelease Center exist for male prisoners. Of these, the six Community Centers are for prisoners awaiting disposition of their cases and for convicted persons serving short terms of incarceration. There is a single Correctional Institution for all women prisoners.

All correctional facilities are concerned with inmate housing and control. In addition, some or all of the facilities are concerned with the following special activities:

- Inmate diagnostics, evaluation, and classification
- Rehabilitation programs including education, vocational training and work programs, counseling, family services, recreation, alcohol and drug treatment for offenders (including chemotherapy for drug dependence), and inmate transfers to the mental health program.

- Prerelease Services for inmates returning to the community, including prerelease social education, work and educational release, furlough, and half-way house services.

Correctional facilities are also required to make prisoners available for court appearances as defendants or witnesses.

The principal steps carried out by corrections for presentence incarceration are:

(1) Receipt of prisoner from the police (review by Bail Commission may subsequently release prisoner); classifying and assigning prisoner.

(2) Housing and Control; conducting all operations associated with housing and control of prisoners*.

(3) Other Activities; making prisoners available for court appearances as a defendant or witness (includes prisoner transportation).

(4) Release or Transfer; releasing prisoner if outcome of court process does not lead to a requirement for further incarceration, and closing case after prisoner release; or reclassifying, reassigning, and perhaps transferring prisoner if further incarceration is required.

The corresponding steps for postsentence incarceration are:

(1) Receipt of prisoner from court, or from previous incarceration; diagnosing, evaluating, and classifying prisoner.

*In addition, special actions are required in the event of a prisoner escape or unauthorized absence.

(2) Housing and Control; conducting all operations associated with housing and control of prisoners.*

(3) Other Activities; conducting appropriate rehabilitation activities and appropriate prerelease preparation and orientation activities. The results of these may lead to reevaluation and reclassification of the prisoner.

(4) Release; releasing the prisoner when his term is completed, or when the Parole Board determines that he should be released under the supervision of a parole officer; closing the case after prisoner release.

Since the steps for presentence and postsentence incarceration are similar, a single composite set of steps will be used for discussion of information transactions.

Board of Parole Functions

Although associated with the Department of Correction, the Board of Parole is an autonomous body. The Board has two functions:

> "To determine if there is a reasonable probability that an inmate, if released, will adhere to the conditions of his parole, refrain from further law violation, and not constitute a danger to society;" and
>
> "to determine if a parolee has violated the conditions of his parole, and, if so, whether he should be incarcerated again."**

*Special additional actions are required in the event of an escape or unauthorized absence.

**The Criminal Justice System in Connecticut - 1972, by the Connecticut Planning Committee on Criminal Administration.

Parole Division Functions

The Parole Division is a component of the Department of Correction. Its function is to supervise and counsel those offenders who are transferred from custody to parolee status by action of the Parole Board.

Information Transactions

Information transactions associated with the corrections and parole functions are discussed in Table IV-I under the headings given below. (Primary emphasis is given to information transactions between agencies, or among corrections and the basic CJ HOT and CRIMINAL files.)

- Receiving Offender
  Initiating prisoner records and other transactions associated with prisoner classification.
- Housing and Control of Prisoner
  This fundamental corrections area is covered only briefly.
- Escape of Unauthorized Release
  Covers the transactions that may be associated with this type of special event.
- Rehabilitation and Prerelease
  This complex program area is covered only briefly.
- Parole Board Review
  Forwarding of records to the Board and documenting and distributing the results of the review.
- Prisoner Release
  Notifying various agencies and posting basic CJ files.

- Parole Board Supervision
  Establishing, updating, and completing the case file, and posting the basic CJ files.
- Other Activities and Operational Control
  This covers briefly the transactions associated with handling citizen inquiries and scheduling and controling operations.

MOTOR VEHICLE DEPARTMENT (MVD)

The mission of the Motor Vehicle Department is:

> "the protection of life and property by the administration of motor vehicle laws; the regulation, discipline and education of motor vehicle operators; the protection of consumers by the regulation and monitoring of automobile dealers and repairers; and the obtaining of revenue through licensing to provide funds for the construction and maintenance of state highways."*

The importance of the MVD to the criminal justice system may be seen from the large numbers of registered vehicles and licensed drivers, the large numbers of summonses issued for traffic and parking violations, the magnitude of the threat to public safety that car accidents represent, the value represented by stolen cars, and the increasing use of automobiles in the commission of crimes.

The MVD operates a central office in Wethersfield, and 15 branch offices.

*The Criminal Justice System in Connecticut - 1972, by the Connecticut Planning Committee on Criminal Administration.

MVD Functions

MVD functions include:

(1) Driver Licensing, Training, and Monitoring.
The MVD conducts driver training classes and driver applicant examinations, and processes and issues driver licenses and license renewals. The MVD also monitors the state's drivers, conducts hearings on drivers with bad records, suspends a license for cause, revokes a license by court order, and conducts a rehabilitation course for drivers convicted of drunken driving.

(2) Automobile Titles and Registrations
The MVD processes automobile titles and registrations, including registration renewals.

(3) Dealer and Repairer Regulation
The MVD licenses and monitors all new and used auto dealers, all automobile repairers, gasoline stations, auto junk yards, and wrecker services.

(4) Other Functions
The MVD also monitors new cars for possible defects, makes spot inspections of automobiles, inspects every school bus and public service vehicle in the state twice yearly, conducts safety education programs, and registers snowmobiles and boats. It should be noted that the MVD has the power of arrest.

Information Transactions

Only general transactions pertaining to the key MVD files of Driver License, Driver History, and Vehicle Registration, to the HOT suspended/revoked license file, to the CRIMINAL history file, and to the arrest function are covered in this report.

Table IV-1
Detailed Data Transactions for Nonpolice Functions

FUNCTION / Subfunction / Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
COURTS									
Initiating a Case									
Issue Warrant to Police	Circuit Court	Police	I/O	--				Hour	
Bind-Over Case	Circuit Court	Superior Court	I/O	--				Few Days After Event	
Bench Warrant	Superior Court	Circuit Court	I/O	--				Day	
Post Case Initiated	Court	CRIM History	I/O	--				Day	
Initiate Case Records	Court	COURT Case File	I/O	--				Day	
Review Bail/Custody Status of Defendant	Bail Comm.	COURT Case File	I/O	--				With transfer of Prisoner	
Provide Transfer Info. to Corrections (if remanded to custody)	Court	Corrections	I/O	--				Few Hours	
Report Change of Defendent Status	Court	CRIM Status	I/O	--				Day	
Notify MVD (if Traffic Arrest)	Court	MVD	I/O	--					
Acquire Criminal History	Court	CRIM History	Q/R	State	Few Days	Name Index	Day		
Acquire Driver History (if Traffic Offense)	Court	DRIVER HISTORY (MV)	Q/R	State	Few Days	Name Index	Day		
Conducting a Case *									
Update Case Records	Court	COURT Case File	I/O					Day	
Notify Witnesses and Other Non-Court Participants	Court	Police, Defendant, Defense Attorney	I/O					One Week Prior to Event (Mail)	

* Conducting a case may include the following court events — presentment, arraignment, hearing(s), trial, sentence.

Table IV-I Continued

FUNCTION / Subfunction / Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
Request Pre-Sentence Investigation	Court	Probation	I/O	--				Day	
If there is a Default									
Court Issues Default Warrant	Court	Police	I/O	--				Few Hours	
Post Warrant	Court**	HOT Persons	I/O	--				Few Hours	
Post Warrant	Court**	CRIM Status	I/O	--				Few Hours	
Post Warrant	Court**	CRIM History	I/O	--				Day	
Completing a Case									
Complete Case Records	Court	COURT Case File *	I/O	--				Day	
Post Case Disposition (If Criminal Offense)	Court	CRIM History	I/O	--				Day	
Post Case Disposition (If Status Change)	Court	CRIM Status	I/O	--				Few Hours	
Notify Orig. P.D. or MVD of Disposition	Court Court	Police MVD	I/O I/O	-- --				Day Day	
Post Case Disposition (If Traffic Offense)	Court	DRIVER HISTORY (MV)	I/O	--				Day	
Provide Transfer Information (If Sentenced to Incarceration)	Court	Corrections	I/O	State				Few Hours	
Provide Transfer Information (If Sentenced to Probation)	Court	Probation	I/O	State				Few Minutes	

* Completed Case File includes Initiating Documents, Bail Commission Record (if any), Criminal History and/or Driver History, Record for each Court Event (including result), any Transfer Document(s), and printed docket containing narrative summary of case.

** May be posted by the Police

Table IV-I Continued

FUNCTION / Subfunction / Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
Other Activities and Operational Control									
Maintain Court Calendar File	Court	Court Calendar File	I/O	--				Hour	Also daily printout
Schedule and Control Operations	Court	Court Operational Files *	I/O and Q/R	--		Variable			
Transmit Jail List	Court	Correction Facility	I/O					One Day Prior to Event	Daily
Check Prospective Jurors	Court	CRIM History	Q/R	State	Week	Name Index	Day		
Handle Inquiries	Public via Court Police	Court Calendar File	Q/R	Court Region	Minute	Defendant Name or Case No.	Hour		
Handle Inquiries	Public via Court	Court Case File	Q/R	Court Region	Minutes	Defendant Name or Case No.	Day		

* Operational Files Include, for example: court facility utilization schedule, court personnel assignment schedule, jury lists.

Table IV-I Continued

FUNCTION Subfunction Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
PROBATION									
Pre-Sentence Investigation									
Acquire Criminal History	Probation	CRIM History	Q/R	State	Few Days	Name Index	Day		
Request Info. from Local Police	Probation	Police Intelligence	Q/R	Local or Regional	Few Days	Name Index	Day		
		Police Incident	Q/R	Local or Regional	Few Days	Name Index	Day		
Prepare & File Investigation Report	Probation	PROBATION Investigation File	I/O					Few Days Prior to Sched. Sentencing	
Forward Investigation Report	Probation	Court	I/O					Few Days Prior to Sched. Sentencing	
Forward Invest. Report (if sentenced to incarceration)	Probation	Corrections	I/O					Few Days after Sentencing	
Supervision and Counseling of Probationer									
Initiate and Maintain Probationer File	Probation	PROBATION Case File *	I/O					Day	
Notify Court of Successful Completion	Probation	Court	I/O					Few Days After Completion	
Notify Court of Probation Violation(s)	Probation	Court	I/O					Few Days After Violation(s)	
Other Activities and Operational Control									
Handle Public Inquiries	Public via Probation	PROBATION Case File	Q/R		Minutes	Name Index	Day		
Schedule and Control Operations	Probation	PROBATION Operational Files **	I/O and Q/R			Variable			

* PROBATION Case File includes Defendant Background Info., Court Transfer Document, Case Schedule and Chronology, Results of Interviews with Probationer and Others, contacted, Final Notification to Court.

** PROBATION Operational Files includes for example: Personnel assignments and schedules.

Table IV-I Continued

FUNCTION Subfunction Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
MOTOR VEHICLE DEPARTMENT *									
Maintain Driver Data	MVD	DRIVER LICENSE, DRIVER HISTORY Files	I/O					Few Days	
Maintain Revoked/Suspended License Data	MVD	HOT Revoked/ Suspended File	I/O					Day	
Maintain Vehicle Data	MVD	VEHICLE REGISTRATION File	I/O					Few Days	
Query Applicant Criminal Record **	MVD	CRIM HISTORY File	Q/R	State		Name Index	Few Days		
Query Applicant Driver Record **	MVD	DRIVER HISTORY File	Q/R	State		Name Index	Few Days		
Handle Public Inquiry	Public via MVD	DRIVER LICENSE, VEHICLE REG.	Q/R		Few Min.	License or Reg. No. Index			
Handle Public Inquiry	Public via MVD	DRIVER HISTORY File	Q/R		Hour	Name, Address; License No.			
Generate Arrest Records	MVD	MVD Arrest File	I/O					Hour	
Transfer Arrest Document to Court	MVD	Circuit Court	I/O					Day	

* The only MVD transactions covered here are those relating to maintenance and agency and public query of MVD files on drivers and vehicles and those relating to arrests by MVD.

** Present MVD practices may not include these transactions.

Table IV-I Continued

FUNCTION Subfunction Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
CORRECTIONS									
Receiving Offender									
Initiate Prisoner Records	Corrections	Prisoner Files	I/O					Day	
Diagnose, Evaluate & Classify Prisoner, Prepare and File Report	Corrections	Prisoner Files	I/O					Day	
Transfer Records (if Prisoner Transferred)	Correction Facility A	Corrections Facility B	I/O					Day Before Event	
Housing and Control of Prisoner									
Record significant prisoner events, interviews, etc.	Corrections	Prisoner Files	I/O					Day	
If there is an Escape or Unauthorized Absence									
Post HOT Persons File	Corrections	HOT Persons	I/O					Few Min.	
Send Police Bulletin	Corrections	Police	I/O					Few Min.	
Post CRIM Status File	Corrections	CRIM Status	I/O					Few Min.	
Post CRIM History File	Corrections	CRIM History	I/O					Day	
Post Prisoner File	Corrections	Prisoner Files	I/O					Day	
Rehabilitation and Pre-Release									
Document Planned Prisoner Participation	Corrections	Prisoner Files	I/O					Day	
Document Actual Participation Analyze and document results achieved	Corrections	Prisoner Files	I/O					Day	
Parole Board Review									
Forward Prisoner Records to Parole Board*	Corrections or Parole Div.	Parole Board	I/O					Few Days before Hearing	

* Hearing may be to consider release from incarceration to parole, or to consider revocation of parole.

Table IV-I Continued

FUNCTION Subfunction Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
Parole Board conducts hearing, makes and documents decision *	Parole Board	Parole Brd. Hearing File	I/O					Day	
Board forwards decision	Parole Board	Corrections and/or Parole Div.	I/O					Day	
Prisoner Release									
Document Release Decision	Corrections	Prisoner File's	I/O					Day	
Provide Transfer Information (if sentenced to Probation following incar.)	Corrections	Probation	I/O					Few Days	
Provide Transfer Information (if released to Parole)	Corrections	Parole	I/O					Few Days	
Post Offender Release from Incar.	Corrections	CRIM Status	I/O					Few Hours	
Post Offender Release from Incar.	Corrections	CRIM History	I/O					Day	
Notify Local Police of Furlough or Release	Corrections	Police	I/O					Day before Event	
Parole Division Supervision									
Establish Parolee Records, Record Planned Schedule	Parole Division	Parole Case File	I/O					Day	
Document Results of Interviews and Other Contacts	Parole Division	Parole Case File	I/O					Day	
Prepare Summary Report	Parole Division	Parole Case File	I/O					Day	

* Hearing may be to consider release from incarceration to parole, or to consider revocation of parole.

Table IV-I Continued

FUNCTION Subfunction Information Transaction	OUTPUT FROM OR QUERY BY	INPUT TO OR RESPONSE BY	TYPE OF TRANSACT.	GEOG. SCOPE	QUERY/RESPONSE: RESPONSE TIME	QUERY/RESPONSE: SEARCH MODE	QUERY/RESPONSE: REQ'D CURRENCY OF FILE	I/O: ALLOWABLE TIMING FOR EVENT-TRIGGERED TRANS.	I/O: FREQUENCY OF SCHED. OUTPUT
Post Offender Release from Parole	Parole Division	CRIM Status	I/O					Day	
Post Offender Release from Parole	Parole Division	CRIM History	I/O					Day	
Other Activities and Operational Control									
Schedule and Control Operations	Corrections	Corrections Files	I/O and Q/R				Variable		
Handle Citizen Inquiries	Public via Corrections	Correction Files	Q/R	State or Regional	Minute to Hr.	Name of Prisoner or Parolee	Day		

APPENDIX V

MANAGEMENT CONTROL

The nature of the Management Control function was described in Section 3.2.3. As considered in this appendix, Management Control involves five activities:

- Developing a comprehensive operation plan
- Generating suitable statistics defining actual operations and outputs
- Gauging the efficiency and effectiveness of agency operations
- Measuring results vs. plans; identifying significant deviations or exceptions, and identifying appropriate corrective action
- Comparing current resource allocation patterns with current demand patterns to identify possible needs for allocation changes

The agencies (organizations) participating in the Criminal Justice process differ greatly in the substantive nature of their operations. Nevertheless, all agencies are faced with somewhat similar problems in Management Control. The information transactions and files associated with Management Control for a generic agency are described below and the generic agency is then related to the specific agencies considered here.

MANAGEMENT CONTROL PROCESS IN A GENERIC AGENCY

In developing a comprehensive plan of action, the agency first projects its expected workload for the next year. This takes into account both the expected backlog and case-load at the beginning of the period and the expected addition of new cases during the period. The projection is made using projections of long term demand (See Appendix VI, Strategic Planning) and/or data on current and past workload levels, hopefully coupled with any projections of expected outputs for the previous stage in the criminal justice process. (The

projection is best made on the basis of a planning model of case flows through the sequential stages of the criminal justice system.) The workload measures are then utilized in an agency planning model with a set of associated workload/resource ratios and distribution factors to estimate and allocate dollars, personnel, and other resources. This computation may be iterated in order to come up with an operating plan that meets all of the agency's constraints. At the same time, an overall operating schedule and a set of milestone indicators are developed together with measures of the desired outputs and other results.

The basis for generating suitable statistics defining actual operations and outputs is the operating data of the agency, including data on the actual demand experienced (i.e., new cases received, the number of currently active cases, the effort and dollars expended, and the results achieved). Naturally, the operating statistics must be stated in terms of variables consistant with those used in the operating plan.

Gauging the efficiency and effectiveness of agency operations entails such measures as units of activity per unit of resource expended, workload handled per unit of resource expended, time taken to complete a case, size of backlog, and fraction of cases in which a "favorable" result was achieved. In utilizing such measures the agency looks at trends for the agency itself, makes comparisons with other similar agencies, makes comparisons with generally accepted standards or norms (where available), or makes comparisons with targets that the agency has set for itself.

Note that many of the Criminal Justice agencies are replicated within the state, so that interagency comparisons can be made easily. This applies to local police departments, state police barracks, circuit courts, superior courts, probation offices, community

correction centers, etc. The results of these comparisons may suggest the need for remedial action by management.

Measuring results vs. plans and identifying significant deviations or exceptions to anticipated results permits management attention to be focused where action is probably required. Deviations are analyzed to determine how they arose and to determine what their probable impact has been or will be in the future. Such analysis in turn suggests actions that should be taken to modify the operations plan or to change the way in which it is being implemented, or both.

Comparing current resource allocation patterns with current demand patterns to identify possible needs for allocation changes is a persistent, difficult problem faced by CJ agencies. An agency faced with a demand for a variety of services, and providing those services at a variety of locations and times, can be said to deal with a demand distribution or pattern. A distributed or patterned demand requires in turn a patterned allocation of agency personnel and other resources. Frequent checks may be required to ensure that resource allocation patterns are suitably aligned with current demand patterns.

One of the most complex problems arising in resource allocation is that faced by the police department that patrols, for 168 hours or 21 shifts per week, a city, or town, or larger region, composed of many different neighborhoods or local areas. Here the demand pattern is the geographical distribution by time of day and week of crime complaints and requests for assistance.

CONCEPTS AND DATA INVOLVED

The principal activities of the Management Control process and the kinds of data for each are:

Generating Statistics Defining Actual Operations

- Actual workload
- Actual resource utilization
- Schedule actually achieved

Planning Operations

- Model of case flows in Criminal Justice System
- Workload projections, including both backlog and new cases; caseload output from previous stage of Criminal Justice System
- Planning model for agency operation, and associated ratios and factors
- Planned resource allocation
- Planned schedule with milestones
- Planned outputs and other results

Identifying deviations

Introduces no new concepts or types of data, except for defining what size deviations are considered important

Gauging Efficiency

- Efficiency and effectiveness ratios and parameters
- Standards and norms

Comparing allocation and demand patterns

- Breakdown of demand by pattern variables (e.g., type of service, geographical location, time of day)
- Similar breakdown of personnel allocations

APPLICATION TO SPECIFIC AGENCIES

Management Control processes and associated concepts and data have been discussed in terms of a generic criminal justice agency.

Table V-I identifies the key variables characterizing agency workload, agency activity, personnel resources utilized, and selected measures of the results obtained for specific agencies. Table V-I does not explicitly cover the variables associated with allocation and demand patterns; these variables are discussed more fully in Appendix VI.

Table V-I

Key Variables Relating to Management Control

AGENCY	UNIT OF WORKLOAD	SOURCE OF WORKLOAD	DIRECT RESULT OF AGENCY ACTIVITY	UNIT OF PERSONNEL RESOURCES UTILIZED	PARAMETERS DEFINING LEVEL OF ACTIVITY	PARAMETERS RELATED TO TIME "EFFICIENCY"	CONCEPT OF "QUALITY" OF RESULT
LOCAL POLICE And STATE POLICE	Persons, property, region to be protected	Threat of crime or disorder	Police presence	Patrol officer	Miles patrolled, intensity of coverage		Crime deterrance Crime discovery
	Incident to be handled	Request for service; Accident; Traffic Violation, or Other Crime	Service Rendered, accident analyzed and documented; Suspect identified, property recovered	Patrol Officer	Incidents handled	Time to respond, Time to clear	Services successfully rendered
	Crime or accident to be investigated			Detectives or Traffic Officer	Investigations, Complexity		
	Suspects to be apprehended	Observation, investigation, information reported	Arrest; transfer to jurisdiction of the court	Apprehending and Booking Officers	Persons arrested		Arrest; closed by arrest; stolen property recovered
	Permits, etc., to be issued	Applicant	Permit issued Permit denied	Clerk	Permits processed Investigations		Dangers to public order prevented or contained
	Court cases requiring police testimony	Arrests	Testimony on the crime	Patrol, traffic or detective officer	Cases prepared complexity, appearances as witness, continuances		Successful conviction
CIRCUIT COURT	Case to be tried	Arrest	Not guilty and released; guilty and sentenced	Judge Prosecutor, Clerk, Witness, etc. Public defender	Cases, court events, trials, complexity	Delay to trial and sentence	Re judicial considerations: cases completed with full regard for the law
SUPERIOR COURT	Case to be tried	Bindover from circuit court or Bench warrant	Not guilty and released Guilty, sentenced	Judge, Prosecutor, Clerk, Witness, etc. Public defender	Cases, court events, trials, complexity	Delay to trial and sentence	Re prosecution: successful conviction

Table V-I Continued

PROBATION	Presentence Investigation	Guilty finding; verdict plea subject to more than 1 year prison	History and background of guilty defendant	Investigation (Probation Officer)	Contacts Offender	Time to complete report	History & background showing all pertinent facts
	Probationer	Guilty finding; verdict plea subject to more than 1 year prison	Release from control and supervision	Probation Officer	Offender, visits, Contacts		Successful conversion to viable citizen
CORRECTIONS - FACILITIES	Prisoner	Defendant awaiting trial and not released on bail or P.R. Convicted Offender	Status determined by trial Release from control and supervision	Guard, Service Staff, Education and Training Staff etc.	Prisoners, Units of Education and Training, Units of other activities		Protection of society; rehabilitation of prisoner to enable successful release
CORRECTIONS - PAROLE	Parolee	Persons released from Institutions to parole	Release from control and supervision	Parole Officer	Offender, Visits Contacts		Successful re-entry into community as viable citizen
MOTOR VEHICLE	Registered Vehicle, Titled Vehicle, Licensed Operator	New applicant; Renewals	Registration/Title/License issued, denied	Clerk Inspector	Application, Renewals, Investigations		Traffic dangers prevented, dangerous drivers removed
	Traffic Violation	Documented Traffic Accident; guilty result in traffic violation trial	Documented driver history	Clerk	Violation processed		Dangerous drivers identified
	Vehicle Inspected	Department Policy	Pass or Fail test	Inspector	Vehicles inspected, items checked		Dangerous vehicles removed

APPENDIX VI

STRATEGIC PLANNING

THE NATURE OF STRATEGIC PLANNING

Section 3.2.3 discussed the Strategic Planning process and identified some typical examples of Strategic Planning activities. There were:

- Projecting future demand for agency services (e.g., arrests leading to court cases)
- Studying probable effects of major shifts in agency programs and emphasis (e.g., more rehabilitation for correctional inmates)
- Gauging long range outcomes of agency work (e.g., rates of recidivism)
- Studying different doctrines for resource allocation to meet possible future demand patterns (e.g., crime patterns vs. police deployment)

Strategic planning can be undertaken at the single agency level and at the level of the entire Criminal Justice system. Because of the operational interrelations among different criminal justice agencies (e.g., police, courts, correctional institutions), many strategic planning studies for a single agency necessarily involve data from one or more other agencies. For example, studies of workload projections for the circuit court should include a look at the probable arrest rates generated by the police. This means that there must be consistency among agencies as to the way certain kinds of data are collected and structured -- especially data on people, crimes, and case-related events. Other strategic planning activities take place using information directly available to the agency from its own data gathering, or from external, noncriminal justice services.

Some questions of a strategic nature are difficult to address unless the entire Criminal Justice system is considered. Thus, in

order to study long-range outcomes of an agency's work, one may wish to focus on recidivism. But this is really a function of the CJ system as a whole; to study the contribution of a few CJ variables (i.e., one agency's activities), one must be able to control all other significant CJ variables. Studies at the CJ system level are important in providing better insight to each of the agencies. Taking action on the results of such studies may be difficult, however, since there is no single executive with authority over the entire system.

TYPES OF DATA INVOLVED

Externally dependent information and internally generated information are the two principal types needed for strategic planning. That data partly or largely derived from outside the operations of the CJ agencies is externally dependent, including data on the CJ environment (political, social, economic, etc.) and statements of CJ goals, policies, and general targets. Table VI-I of this appendix provides examples of both types of externally dependent data.

Information obtained directly from basic operations, but often modified and amplified by assembly of data across agencies, summarization, or other processing is internally generated, and includes such data as:

- The types of data discussed under Management Control (workload, resources, activities, results, deviations, performance indices, and measures of results), but collected over longer periods. This information was covered in some detail in Appendix V, particularly in Table V-I of that appendix.

Table VI-I

Characterization of Externally Dependent Information

CRIMINAL JUSTICE (CJ) ENVIRONMENT

- Impact of crime problem on the citizen
- Public attitudes toward CJ agencies and employees
- Public attitudes toward "law and order", relations between crimes and social problems, and "victimless" crimes
- Public interest in "removing the causes of crime"
- Thrusts of legislative interest
- Priority and funding competition between CJ and social services (health, welfare, etc.)
- Availability of Federal, State, and/or Local funds for CJ purposes
- Perception of relative roles played by different levels of government in CJ

CRIMINAL JUSTICE (CJ) GOALS, POLICIES, GENERAL TARGETS

- Relative CJ emphasis on deterrence, apprehension, judicial processes, punishment, rehabilitation and supervision
- Relative CJ emphasis on type of crime (e.g., violent), location of crime (e.g., core cities), or type of offender (e.g., multi-arrest offender)
- Specific quantitative targets for such indicies as crime rate, arrest rate, and conviction rate, or for such time factors as delay between arrest and sentence.
- Qualitative targets such as greater consistency in sentencing and more meaningful prison work programs.

- Long term longitudinal assemblies of data on selected cases.

In utilizing internally and externally generated information, the agencies frequently make use of certain constructs or models derived from this information. Two such models that should be mentioned are:

- A model of case flows throughout the CJ system. An example of this is shown in Figure II-2 of Appendix II.
- Models of individual agency operations linking workload, activity, and resource utilization.

By using projected workload in a model based on known relationships, estimates of resource requirements and performance can be predicted. The same model can be modified, based on external information, to produce more sophisticated estimates of the same quantities.

TWO EXAMPLES OF STRATEGIC PLANNING STUDIES

Two examples have been chosen to illustrate the nature of strategic planning studies. The first concerns a study of long-range offender outcomes (recidivism) utilizing data on selected cases. Here the attempt is to determine what type of processing in the CJ system is most likely to produce a low rate of recidivism. This would involve the study of a selected group of offenders -- for example, those felony offenders released from prison during a one year period 10 years ago. Criminal history data for these offenders covering processing in the CJ system for their original offense and all subsequent arrests would be required. Preferably, the study would also take into account such factors as the age, sex, and race of the offender and other relevent socio-economic background information.

The other example is a study of the effectiveness of different approaches to resource allocation in relation to projections of future demand for agency operations. This type of study can be conducted either from a long-range, strategic planning point of view, or a short-range management control point of view. Studying the effects of possible long-range trends in demand, including the effect of external factors, would be classified as strategic planning. Reviewing the relation between current demand and current resource allocation patterns as an aid in preparing short-term operating plans would be classified as management control. To study the patrol function of the local police would involve determining patrol strength and response time for each area by time of day in accordance with various proposed approaches to patrol deployment. The future demand for patrol activity would also be projected for each area by time of day based on what is to be protected, the expected magnitude of the criminal threat, and requests for service. By comparing patrol strength and response time with the elements of demand, a measure of patrol effectiveness is determined and changes in effectiveness for different patrol deployment approaches can be studied.

APPENDIX VII

SIZING OF LOCAL/REGIONAL DATA HANDLING ELEMENTS

Providing the basis for a quantitative discussion of the Local/Regional System Segment means translating police operations activity volumes into data handling capacity requirements. Time constraints prevented this from being done for this study; only the methodology appropriate to making such calculations is presented here.

Figure VII-1 shows the general approach to calculating local/regional data handling workloads. Inputs for the calculation would be based on the CJ activity volumes given in Table II-I of Appendix II, supplementary data on record sizes obtained from a detailed design study, data on specific police departments, and Connecticut data on transaction volumes and file usage or comparable data from other states.

These inputs would be used to compute state-wide aggregates for key file sizes used in the Local/Regional System Segments and to estimate frequencies of query/response and data input/output transactions. These state-wide aggregates would be combined with suitable prorating factors to estimate the workloads for individual local or regional systems, as a function of the size of the population base being served. The prorating factors could be determined from population distributions, data on police department size given in Appendix I, and statistics on the relative incidence of crime in urban and non-urban areas of the state.

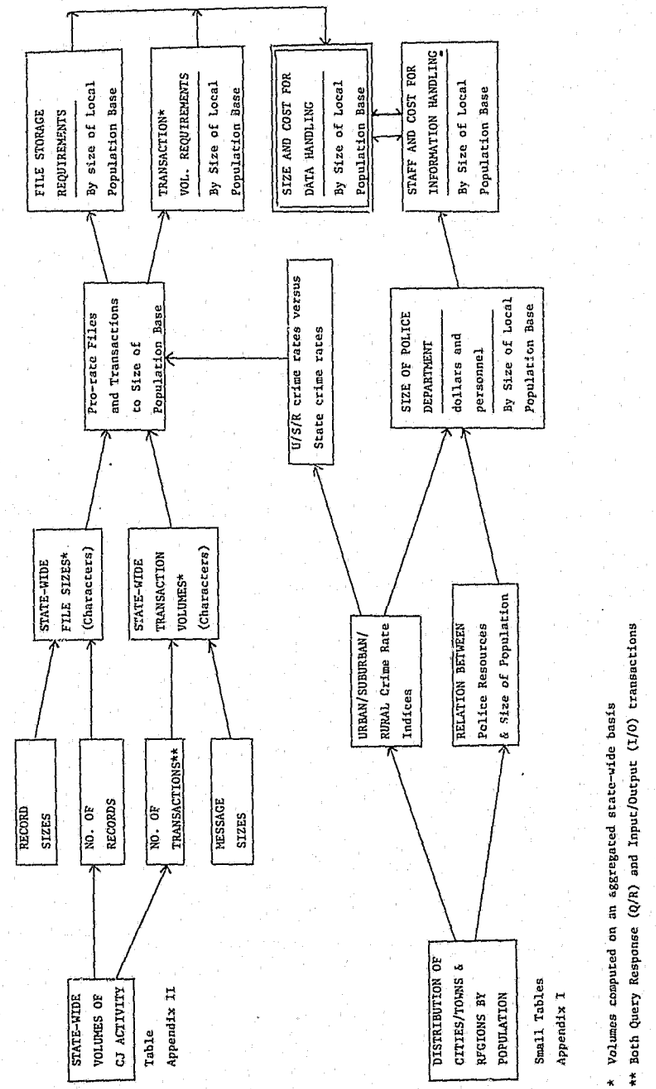


Figure VII-1. Procedure for Sizing Local/Regional Data Handling in Report

APPENDIX VIII

MANPOWER AND COST ESTIMATES

This appendix provides manpower and cost estimates for the Local/Regional Segment mechanization approaches discussed in Section 4.6.1. Calculations are made for each approach as applied to three population bases: 50,000 people, 137,000 people, and 400,000 people. (The implications of these calculations are covered in Section 4.6.3.) The main mechanization approaches are:

- Manual-terminal
- Batch-terminal, with dedicated computer
- Batch-terminal, with shared computer
- On-line, with dedicated computer

A discussion of microform techniques and powered files concludes this Appendix.

MECHANIZATION APPROACHES

Equipment Configurations

The total equipment configurations assumed for each population base are:

- Manual-terminal - CJIS terminal(s) and calculators only.
- Batch-terminal, with dedicated computer - CJIS terminal(s), data preparation device(s), computer (configuration A, B, or C and alternatives A(pc), A(min), B(min) and C(lc).
- Batch-terminal, with shared computer - CJIS terminal(s), data preparation device(s), computer (configuration B, C, or D).
- On-Line - CJIS terminal (with 50,000 population only), dedicated computer (configuration E, F, or G and alternatives E(min), F(lc), G(lc).

The referenced computer configuration (designated A, A(pc), A(min), B, B(min), etc.) are characterized in Table VIII-I, where major elements and capabilities are summarized, typical manufacturers

Table VIII-I

Computer Configurations Including Punched Card (EAM) Installations

BATCH MODE COMPUTERS AND PUNCHED CARD SYSTEMS

DESIG-NATION	TYPE OF SYSTEM	MEMORY AND DISK CAPACITIES[1] EXAMPLES OF SYSTEMS	TYPICAL[2] ANNUAL LEASE COST
A	DISK, CARD, PRINTER	16K byte memory, 5M byte disk[3] B 1700, H 50-58, IBM Sys. 3, NCR Cent. 50	$24K
A(min)	MINICOMPUTER - DISK, 2 MAG. TAPE, PRINTER (5)	16K byte memory, 512K byte disk DATA GEN. NOVA, DEC PDP-11	$14K
A(pc)	MINIMAL PUNCHED CARD SYSTEM (4)	(Keypunch, verifier, card counting sorter)	$6K
B	DISK, CARD, PRINTER	32K byte memory, 5M byte disk B2500, H 200 - 120, IBM 370/115	$48K
B(min)	MINICOMPUTER - DISK, 4 MG. TAPE, PRINTER (5)	32K byte memory, 1M byte disk DATA GEN. NOVA, DEC PDP -11	$25K
C	DISK, CARD, 4 MAG. TAPE, PRINTER (6)	64K byte memory, 20M byte disk B 2500, H 2040, IBM 370/125, NCR Century 101	$100K
C (1c)	DISK, CARD, PRINTER (Faster version of B)	48K byte memory, 5M byte disk B 2500, H 200 - 120, IBM 370/115	$60K
D	DISK, CARD, 6 MAG. TAPE, PRINTER (6)	132K byte memory, 100M byte disk B 2500, H 2040, IBM 370/125	$140K

ON-LINE MODE COMPUTERS

DESIG-NATION	TYPE OF SYSTEM	MEMORY AND DISK CAPACITIES (1) EXAMPLES OF SYSTEMS	TYPICAL (2) ANNUAL LEASE COST Central Equipment	Terminals (7)	Total
E	DISK, CARD, 2 MAG. TAPE, PRINTER 2 LOCAL TERMINALS (6)	64K byte memory, 70M byte disk B 2500, IBM 370/115	$84K	$4.8K	$89K
E (min)	MINICOMPUTER - SAME EQUIPMENT AS E (5)	32K byte memory, 2M byte disk DATA GEN. NOVA, DEC PDP - 11	$25K	$4.8K	$30K
F	DISK, CARD, 4 MAG. TAPE, PRINTER 4 LOCAL TERMINALS (6)	96K byte memory, 200M byte disk B 2500, IBM 370/125	$160K	$9.6K	$170K
F (1c)	DISK, CARD, PRINTER 4 LOCAL TERMINALS	32K byte memory, 8M byte disk NCR Century 101	$60K	$9.6K	$70K
G	DISK, CARD, 4 MAG. TAPE, PRINTER 4 LOCAL & 12 REMOTE TERMINALS (6)	132K byte memory, 400M byte disk B 3500, IBM 370/135	$250K	$52.8K	$300K
G (1c)	DISK, CARD, PRINTER 4 LOCAL & 12 REMOTE TERMINALS	96K byte memory, 200M byte disk B 3500, IBM 370/135	$150K	$52.8K	$200K

(1) Capacities are only approximate, and vary some between system examples.
(2) Prices are only approximate, and vary some between system examples.
(3) A byte may be 6 bits or 8 bits (generally 8).
(4) A larger punched card system, with tabulator, reproducer, and collator plus A (pc), would lease for $12K to $18K.
(5) Compact, non-compatible tape units
(6) High Speed, compatible tape units
(7) Local terminals are priced at $2.4K per year; remote terminals, with data sets, at $3.6K per year.

and models are identified, and typical annual lease costs are given.

For most sizes or types of computer configuration two alternatives are shown, including a standard business machines configuration believed to be fully capable for the application and workload, and a second configuration (lower cost standard configuration, suffix (1c), or minicomputer, suffix (min)), believed marginally adequate for the job. Although the cost for the second configuration is significantly lower, there are some drawbacks that must be carefully evaluated. First, restrictions in memory size and perhaps instruction repertoire may increase programming cost relative to that for larger computer system. Second, especially for minicomputers, service and support may not be fully available in some localities, especially out of normal working hours; peripherals may be slower so that total operating time per week may be somewhat greater.

Annual lease costs for the computers listed in Table VIII-I vary from $14,000 for a small batch minicomputer to $300,000 for a large on-line system with many terminals. There is also a punched card system listed in Table VIII-I (Configuration A(pc)), with an annual lease price of $6,000. A more complete punched card system would lease for $12,000 to $18,000 per year.

Other costs include an annual lease cost of $2,400 for a CJIS terminal, and a cost of $1,800 for a data preparation device (e.g., keypunch plus verifier).

One-Time Costs

For each mechanization option or alternative in Table VIII-I, one-time costs are characterized in terms of systems analysis,

development of programming/procedures, and training, test, and pilot operation. It is assumed that an analysis is made of police data handling requirements, and that a new system (manual or computerized) is developed and installed. Manpower requirements for each of these activities are estimated and priced at $12,000 per man year, with overhead (OH) and materials figured at 40% of labor cost. For the manual option, the purchase cost of $300 for calculators is also estimated.* The total one-time cost is then calculated as the sum of labor cost, OH and materials cost, and (where applicible) calculator purchase cost. The one-time cost per capita can then be obtained.

The one-time manpower and cost calculations described above are shown in Tables VIII-II through VIII-V for each of the four mechanization approaches and the three population bases. The estimated one-time costs vary from $21,000 to $272,000, and the per capita costs, from $0.18 to $1.82.

It must be stressed that the manpower and cost estimates are only approximate: variations of ±40% could easily occur, depending upon the initial state of data handling in the police department(s) involved, and the approach to development and implementation of the new system. In the extreme case, where a currently operating system is directly copied and installed, one-time costs could be quite low.

Annual Operating Costs

Annual operating costs and manpower requirements have also been estimated for each mechanization option and each population base.

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* CJIS terminals and computers are assumed to be leased, not purchased; cost of leasing terminals and computers during programming, test, and pilot operation is assumed to be included in the OH and materials cost.

Table VIII-II

Costing of Manual-Terminal Mechanization Option

CATEGORY	50K Pop. 160 Police Pers.	137K Pop. 438 Police Pers.	400K Pop. 1280 Police Pers.	COMMENTS
EQUIPMENTS USED				
CJIS Terminals	1	2	8	Leased
Calculators et al	3	6	24	Purchased
Data Preparation Devices				
Computer: Central Equipment				
Local Terminals				
Remote Terminals				
ONE-TIME COSTS				
Man Years				
System Analysis	0.6	0.6	1.8	
Programming/Procedures	0.3	0.3	0.6	
Training, Test, Pilot	0.3	0.5	1.8	
Total Man Years	1.2	1.4	4.2	
Total Labor Cost	$14.4K	$16.8K	$50.4K	at $12K per MY
Mat. & OH Cost	5.7	6.7	20.2	at 40% of labor cost
Equipment Purch. Cost	3 0.9	6 1.8	24 7.2	calculators et al
Total One-Time Cost	$21K	$25K	$78K	
Cost Per Capita	$0.42	$0.18	$0.20	
OPERATING EXPENSE				
Equipment Maintenance or Lease				
CJIS Terminals	1 $2.4K	2 $4.8K	8 $19.2K	Leased
Data Preparation Devices				
Computer: Dedicated				
Computer: Shared				
Total Equipment Cost	$2K	$5K	$19K	
Manpower				
General Clerical	8	22	64	5% of Police Personnel
Computer: Data Preparation				See Appendix I, Table I-I
Other Direct Support				
Total Personnel	8	22	64	
Total Labor Cost	$80K	$220K	$640K	$10K per man year
Mat. & OH Cost	$32K	$88K	$256K	40% of Labor
Total Operational Expense	$114K	$313K	$915K	
Per Capita	$2.28	$2.28	$2.29	

Table VIII-III

Costing of Deciated Batch-Terminal Mechanization Option

CATEGORY	50K Pop. 160 Police Per.	137K Pop. 438 Police Pers.	400K Pop. 1280 Police Pers.	COMMENTS
EQUIPMENT USED				
CJIS Terminals	1	2	8	Lease
Calculators et al				
Data Preparation Devices	1	2	4	Lease
Computer: Central Equipment	Configuration A, A (pc), A (min)	Configuration B, B (min)	Configuration C, C (min)	Lease
Local Terminals				
Remote Terminals				
ONE-TIME COSTS				
Man-Years				
System Analysis	0.9	0.9	2.7	
Programming/Procedure	1.8	1.8	3.6	
Training, Test, Pilot	0.4	0.6	2.4	
Total Man Years	3.1	3.3	8.7	
Total Labor Cost	$37.2K	$39.6K	$104.4K	
Mat. & OH Cost	$14.9K	$15.8K	$41.8K	
Equipment Purch. Cost	---	---	---	
Total One-Time Cost	$52K	$55K	$146K	
Cost Per Capita	$1.04	$0.40	$0.37	
OPERATING EXPENSE				
Equipment Maintenance or Lease				
CJIS Terminals	1 $2.4K	2 $4.8K	8 $19.2K	Lease
Data Preparation Devices	1 1.8	2 3.6	4 7.2	Lease
Computer: Dedicated	24	48	100	Lease Configs.
Computer: Shared	---	---	---	A,B,C.
Total Equipment Cost	$28K	$56K	$126K	
Manpower				
General Clerical	6½	19	55	
Computer: Data Prep.	½	1½	3½	
Other Direct	1	1	2	
Support	1	2	3	
Total Personnel	9	23½	63½	
Total Labor Cost	$90K	$235K	$635K	
Mat. & OH Cost	$36K	$94K	$254i	
Total Operational Expense	$154K	$385K	$1015K	
Per Capita	$3.08	$2.81	$2.54	
Alternatives for Operational Expense				
Computer Configuration	A(pc) A(min)	B(min)	C(lc)	
Computer Lease Cost	$6K $14K	$25K	$60K	
Total Operational Expense	$136K $144K	$362K	$975K	
Per Capita	$2.72 $2.88	$2.64	$2.44	

Table VIII-IV

Costing of Shared Batch-Terminal Mechanization Option

CATEGORY	50K Pop. 160 Police Pers.	137K Pop. 438 Police Pers.	400K Pop. 1280 Police Pers.	COMMENTS
EQUIPMENTS USED				
CJIS Terminals	1	2	8	Lease-Police Dept.
Calculators et al				
Data Preparation Devices	3	5	10	Lease-Data Center
Computer: Central Equipment	Configuration B	Configuration C	Configuration D	Lease-Data Center
Local Terminals				
Remote Terminals				
ONE-TIME COSTS				
Man Years				
System Analysis	0.9	0.9	2.7	
Programming/Procedures	1.8	1.8	3.6	
Training, Test, Pilot	0.3	0.3	1.2	
Total Man Years	3.0	3.0	7.5	
Total Labor Cost	$36.0K	$36.0K	$90.0K	
Mat. & OH Cost	$14.4K	$14.4K	$36.0K	
Equipment Purchase Cost	---	---	---	
Total One-Time Cost	$50K	$50K	$126K	
Cost Per Capita	$1.00	$0.36	$0.32	
OPERATING EXPENSE				
Equipment Maintenance or Lease				
CJIS Terminals	1 $2.4K	2 $4.8K	8 $19.2K	Dedicated
Data Preparation Devices	3 5.4	5 9.0	10 18.0	Shared*
Computer: Dedicated				
Computer: Shared	48	100	140	Shared*
Total Equipment Cost	$16K	$32K	$59K	Cost to Police
Manpower Police D.P.	½	½	2	Dedicated
General Clerical	6½	19	55	Dedicated
Computer: Data Prep.	2½	4	8	Shared*
Other Direct	1	1	3	Shared*
Support	2	3	5	Shared*
Total Personnel	1.4 + 7	2 + 19½	4 + 57	Charged to Police
Total Labor Cost	$84K	$215K	$610K	Cost to Police
Mat. & OH Cost	$34K	$86K	$244K	Cost to Police
Total Operational Expense	$134K	$333K	$913K	Cost to Police
Per Capita Cost	$2.68	$2.43	$2.28	

* Police Pay ½ of Shared Expenses

Table VIII-V

Costing of On-Line Mechanization Option

CATEGORY	50K Pop. 160 Police Pers.	137K Pop. 438 Police Pers.	400 K Pop. 1280 Police Pers.	COMMENTS
EQUIPMENT USED				
CJIS Terminals	1			Lease
Calculators et al	--			
Data Preparation Devices	--			
Computer: Central Equipment	Configuration E E (min)	Configuration F, F (lc)	Configuration G, G (lc)	Lease
Local Terminals	2	4	4	Lease
Remote Terminals			12	Lease
ONE-TIME COSTS				
Man Years				
System Analysis	1.5	1.8	4.8	
Programming/Procedures	3.0	3.6	7.2	
Training/Test/Pilot	0.9	1.2	4.2	
Total Man Years	5.4	6.6	16.2	
Total Labor Cost	$64.8K	79.2	194.4	
Nat. & OH Cost	25.9	31.7	77.8	
Equipment Purchase Cost	---	---	---	
Total One-Time Cost	$91K	$111K	$272K	
Cost Per Capita	$1.82	$0.80	$0.68	
OPERATING EXPENSE				
Equipment Maintenance or Lease				
CJIS Terminals	1 $2.4K			Lease
Data Preparation Devices	--			
Computer: Dedicated	89	170	300	Lease Configurations E, F, G
Computer: Shared				
Total Equipment Cost	$91K	$170K	$300K	
Manpower				
General Clerical	6	17½	51	
Computer: Data Prep.	1	2	5	
Other Direct	2	2	3	
Support	2	3	4	
Total Personnel	11	24½	63	
Total Labor Cost	$110K	$254K	$630K	
Nat. & OH Cost	$44K	$98K	$252K	
Total Operational Expense	$245K	$513K	$1182K	
Per Capita	$4.90	$3.74	$2.96	
Alternatives for Operational Expense				
Computer Configuration	E (min)	F (lc)	G (lc)	
Computer Lease Cost	$30K	$70K	$200K	
Total Operational Expense	$186K	$413K	$1082K	
Per Capita	3.72	3.01	2.71	

These calculations are given in Tables VIII-II through VIII-V. Annual lease costs of equipment are shown, with computer lease costs taken from Table VIII-I.

Operating manpower requirements are estimated for general clerical work and for computer operation. The latter category, divided into data preparation, other direct, and support labor, is priced at $10,000 per man year. A 40% surcharge is computed for overhead and materials.

Total annual operating expense is obtained by adding equipment lease cost and labor cost. Per capita annual operating expense is also calculated. In the shared batch computer-terminal option, it is assumed that police pay 25% of shared expenses; other arrangements are, of course, possible.

Tables VIII-II through VIII-V show that total annual operating expenses vary from $114,000 to $1,182,000, while per capita expenses vary from $2.28 to $4.90.

The annual operating expenses shown in the tables, like the one-time costs, are only approximate. Variations of ±20% from the indicated figures could easily occur in practice.

MICROFORM AND POWERED FILE TECHNIQUES

So far in this appendix we have considered only mechanization using digital data processing devices such as calculators, terminals, data preparation devices, and computers. Other data handling equipments, such as microform devices and powered files (discussed in Section 4.6) can be used effectively by local police departments. The cost of simple installations of microform and powered file equipments are covered below.

The simplest kind of microform system using roll film or film cartridges would require a camera and a viewer-printer. Either a

simple rotary camera or a simple viewer-printer could be purchased for $2000 to $3000. (Typical vendors would be Bell & Howell, Kodak and 3M.) Since the camera is lightly utilized in most applications, a single camera could suffice, even for the 400,000 population base. Multiple viewer-printers could be required, either for one large police department, or for regional aggregates of departments. The configuration and prices listed in the table below would represent minimal costs of installing microfilm systems. Much more elaborate systems are available, and might be used to advantage in some situations. For a minimal microfilm system, purchase prices at $2500 per unit would be:

- 50,000 population, 1 camera, 1 viewer-reader, $5,000
- 137,000 population, 1 camera, 2 viewer-readers, $7,500
- 400,000 population, 1 camera, 8 viewer-readers, $22,500

Costs associated with annual operation of the microfilm equipment would be very small, compared to the operating costs required for the options discussed earlier.

Powered file equipment, as furnished by Diebold or Remington-Rand, might cost between $5,000 and $13,000, and could store up to 200,000 to 300,000 cards or documents. Purchase prices for powered file systems for each population base, assuming $8,000 per unit, are:

- 50,000 population 1 unit $8,000
- 137,000 population 2 units $16,000
- 400,000 population 8 units $64,000

Annual operating costs of such equipment would be negligible.

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