LAW ENFORCEMENT INFORMATION NEEDS IN MASSACHUSETTS

A Report By:

The Governor's Committee on

Law Enforcement and Administration of Justice

June 18, 1968

PUBLICATION OF THIS DOCUMENT APPROVED BY ALFRED C. HOLLAND, STATE PURCHASING AGENT

2M 6-68-947675 ESTIMATED COST PER COPY $.26

The Committee

Hon. Elliot L. Richardson, Chairman
Attorney General

Hon. William T. Buckley
District Attorney

Hon. George G. Burke
District Attorney

Hon. John P.S. Burke
District Attorney

Hon. Garrett H. Byrne
District Attorney

Dr. John D. Coughlan
Director, Division of Youth Service

Joseph J. Derro
Chief of Police, Winchester

Hon. Edmund Dinis
District Attorney

Hon. John J. Droney
District Attorney

Hon. John A. Gavin
Commissioner of Corrections

Hon. Oscar Grife
District Attorney

Lieutenant Edmund W. Hussey
President Mass. Police Association

Hon. Leo L. Laughlin
Commissioner of Public Safety

Hon. Joseph S. McCormack
Chairman, Parole Board

James H. Ottaway, Jr.
Publisher, New Bedford Standard Times

Hon. Edmund L. McNamara
Police Commissioner
City of Boston

Captain Paul J. Russell
Boston Police Department

Hon. Matthew J. Ryan, Jr.
District Attorney

Hon. C. Eliot Sands
Commissioner of Probation

James Vorenberg
Professor of Law, Harvard Law School

J. Merritt Wenzel
Chief of Police, Wakefield

Hon. John R. Wheatley
District Attorney

Hon. Howard Whitmore, Jr.
Commissioner, Metropolitan
District Commission

T H E S T A F F

Sheldon Krantz
Executive Director

Research Analysts:
Michael L. Altman
Gertrude T. Cuthbert
Brian Justin Hoel

Administrative Assistant:
Katrina S. Veeder

Consultants:
Arnold R. Rosenfeld,
Deputy Assistant Attorney General
Dr. Richard L. de Neufville
Assistant Professor, M.I.T.

Secretarial:
Evelyn L. Stern
Kathleen Marini

I. INTRODUCTION

The rapid exchange of information is critical to the efficient operation of the criminal justice system. A man wanted for murder in Boston may be stopped for speeding in Springfield. Unless the Springfield police know he is wanted in Boston, the suspect will be on his way in minutes. Or the police may see a suspicious person leaving a dark building at night. Knowing that he has a long history of breaking and entering at night could be very important.

The President's Crime Commission said in its 1967 report:

> "The importance of having complete and timely information about crimes and offenders available at the right place and the right time has been demonstrated throughout this report. With timely information, a police officer could know that he should hold an arrested shoplifter for having committed armed robbery elsewhere. With a more detailed background on how certain kinds of offenders respond to correctional treatment, a judge could more intelligently sentence a second offender. With better projections of next year's workload, a State budget office would know whether and where to budget for additional parole officers . . . .
>
> Criminal justice could benefit dramatically from computer-based information systems, and development of a network designed specifically for its operations could start immediately . . . .
>
> An integrated national information system is needed to serve the combined needs at the National, State, regional and metropolitan or county levels of the police, courts, and correction agencies, and of the public and the research community. Each of these agencies has information needed by others; an information system provides a means for collecting it, analyzing it, and disseminating it to those who need it. Each can be kept in close communication with the others, and information transferred by voice, by teletype, or computer to computer.
>
> Since law enforcement is primarily a local and State function, the overall program must be geared to the circumstances and requirements of local and State agencies; and, wherever practical, the files should be located at these levels."

The records to which the various criminal justice agencies of the Commonwealth need access now consist primarily of 12,000,000 court records; 4,750,000 probation records; 3,200,000 state police records; and 20,000 Department of Correction records. In addition, there are 6,100,000 driver license, vehicle registration, and accident records in the Registry of Motor Vehicles which are of great value to law enforcement agencies. The number of records at the county, city, and town levels is not known. (However, according to the FBI's Uniform Crime Reports, some 90,000 Part I Crimes are reported to the police in the Commonwealth every year plus an estimated minimum of 1,200,000 Part II Crimes.)

Today, it can take a policeman as much as 2½ hours to get information about a particular car or wanted person. In fact, warrant information is often missing. Statistical information can take up to five years to be published when it is published at all. And many types of information are not available under any conditions, no matter how badly needed.

The solution to these problems lies in the more rapid gathering, processing, and dissemination of the masses of data to which law enforcement must have access. The best way of effecting a solution is through the use of computers.

The Governor's Committee on Law Enforcement and Administration of Justice has been given the statutory mandate "to study on a continuing basis the problems and needs of law enforcement and the administration of justice at the state, county, and local levels; to encourage the dissemination of information among state, county and local officials within the system of criminal justice;" and "to encourage the development of effective coordination among the law enforcement agencies of the Commonwealth and those of other states . . ." (Chapter 798 of the Acts of 1967)

The Committee has found, however, that full and effective achievement of this task would be impossible without computers.

The purpose of this report, then, is to examine the potential benefit of computers to the law enforcement and criminal justice agencies of the Commonwealth. It will: 1) analyze information systems in use and being developed elsewhere; 2) examine recent developments in Massachusetts; and 3) outline the prospects and possibilities for the future.

A survey recently completed by the Governor's Committee shows that state law enforcement agencies in 35 states already have either operational or planned computerized information systems, while police departments in 46 of the 53 cities of over 250,000 population have operational or planned systems. In addition, the Governor's Committee has found a number of state correctional systems, court systems, regional or county law enforcement systems, and police department systems in cities under 250,000.

By comparison Massachusetts is not keeping pace with the most recent technological advances. First, the Commonwealth has an antiquated and overloaded law enforcement communications system. Second, information in the files of the courts, the Office of the Commissioner of Probation, the Department of Correction, and the Department of Public Safety is, for the most part, manually processed. Some key punching equipment is available but is used for only a limited amount of the information. Only the Registry of Motor Vehicles has a computer. This machine is not, however, equipped with random access. It cannot reply to a question immediately in "real time" but must wait until there is time to search its entire files. For practical purposes, the equipment at the Registry cannot be used for meaningful record searches.

However, a first step toward the implementation of an effective information system was taken in March of 1968 when Attorney General Elliot L. Richardson, Commissioner of Administration Anthony P. DeFalco, and the heads of the various state criminal justice agencies agreed to proceed with the development of a statewide computerized law enforcement information and communication system--the Commonwealth of Massachusetts Law Enforcement Agencies Project (LEAP). As this report will indicate, this is a promising start for Massachusetts. The efforts that must be taken to build upon this important beginning to improve the capacity of the criminal justice system to respond quickly to criminal conduct will now be described.

II. NATIONAL SURVEY OF ACTIVITIES

Perhaps the most important finding of the survey made by the Governor's Committee is that the integrated national information system called for by the President's Crime Commission is rapidly being developed or planned.

At the national level the Federal Bureau of Investigation has already established the National Crime Information Center, a computerized law enforcement information and communication system which eventually is expected to tie together the major law enforcement agencies in all 50 states. In fact, over 35 law enforcement agencies in more than 25 states are already linked to NCIC along with several federal agencies and the Royal Canadian Mounted Police.

At the state level, the two major information systems under development are those of New York and California. New York began development of the New York State Identification and Intelligence System (NYSIIS) in May, 1963, while California began work on its Criminal Justice Information System three years later. The New York State Police already have an operational real time message switching and stolen automobile inquiry system which is used also for one or two management functions. It appears, however, that this system will be replaced by NYSIIS at some time in the future. NYSIIS itself is the most sweeping system yet proposed by any state. This system is expected to include real time inquiry files on criminal history, fingerprints, fraudulent checks, personal appearance, names, warrant and wanted notifications, organized crime intelligence, stolen motor vehicles, social history, modus operandi, missing persons, permits and jobs, stolen property, property marks, handwriting, and voice prints. Scanners are being developed to read both license plates and fingerprints. Further, the system is expected to have pattern analysis capabilities and will be capable of being used for scientific and criminological research. This system, however, is costly, and although more than $10,000,000 has been spent on its establishment in the past two years, only one portion--the facsimile transmission system--was operational as of June first of this year.

California is taking a quite different approach. Unlike New York, it is not entering areas that are still in the experimental stage such as fingerprint and license plate scanners and voice prints. Further, its system is being built on top of already operational systems. The Bureau of Criminal Identification and Investigation of the California Department of Justice has an operational computer file of stolen property and wanted persons. The California Highway Patrol has a real time message

switching and stolen automobile inquiry system (AUTOSTATIS) along with a separate administrative system. The California Department of Motor Vehicles is half way through a two-year project to put its vehicle registration, operator's license, and driver history files into a computer system. The Youth and Adult Corrections Agency is using a computer for inmate histories, demographic information, records of movements and official actions, and correctional decisions information. The Alameda County Police Information Network (PIN) is an operational immediate inquiry warrant file which serves the nine countries surrounding San Francisco Bay. PIN is already interfaced with the Highway Patrol stolen automobile file. San Francisco itself is installing a computer for operational and management information. In Los Angeles, the Los Angeles City Police Department and the Los Angeles Superior Court are participating in the development of a county-wide command and control communications system and court management system. The police department computer is already being used for direct inquiries on wanted persons and warrants and for some management operations. Later, the county computer will take over these functions along with the arrest and booking system of the Los Angeles Sheriff. In the meantime, plans are underway already to tie this system into the Highway Patrol and Alameda County systems. Finally, the San Diego Police Department is developing an operations and management information system which will interface also with the state system--the computer is already installed.

It is on these operational systems that the California Criminal Justice Information System is being built at a cost of $770,000 for the first 2½ years of which $350,000 has been provided by the Office of Law Enforcement Assistance, United States Department of Justice--OLEA. The first step was the development of a central computer system for message switching to tie together the Department of Justice, the Highway Patrol, the Department of Motor Vehicles, Alameda County, and Los Angeles County. As of April 1, 1968, this message switching system was in the final checkout stage before becoming operational. The California Criminal Justice Information System itself will include inquiry files on firearms registration, stolen property, modus operandi, fingerprints, warrants, criminal history, and various identification records. Included also will be court, probation, correctional, parole, and narcotics records, and an index to files in the Statewide Federated Information System which is being developed to tie together all noncriminal justice agencies in the state.

One purpose of the Governor's Committee survey of existing systems was to determine the exact state of the art in this field: what types of functions are actually being performed by the various systems throughout the country; what functions are still in the development stage; and which are merely theory. In addition, the Governor's Committee has made a thorough study of the scientific, technical, and legal literature on the subject.

On the basis of these surveys and reviews, the Committee has developed a detailed picture of those functions which a complete law enforcement information and communications system could perform. These could include:

Communications: The computer can be used as a message switching unit to direct radio, teletype, or telephone traffic to its proper destination directly and without delay; to keep a record of message transactions; and to call back if a machine is not receiving. It is possible to design such systems so that they can also transmit such graphic information as photographs, fingerprints, criminal histories, maps, charts, or handwritten documents. This is already being done by NYSIIS, the Los Angeles Police Department, and the Chicago Police Department. Philadelphia is considering such a facsimile system. In the development stage are mobile terminals which would allow the police officer to query the computer from his patrol car. In several cases, different computer systems communicate directly with each other automatically.

Record Searching (Direct Inquiry Files): Direct inquiry files can give policemen in the files immediate information concerning any person, property, or automobile with which he comes into contact. In fact, a computer can provide this information not only much quicker than a person, but usually at less cost. For instance, the largest computers are now reported to be able to process some 3,000,000 machine instructions (many of which make up a question) per second at a cost of approximately 15 cents. The direct inquiry files could include lists of all wanted or missing persons plus persons who have a criminal record, are suspects, or are for some other reason "known to the police." Such persons could be identified and retrieved from the file by their names, aliases, address, social security number, physical description, modus operandi, fingerprints, or, in the future, possibly their handwriting or "voice prints." Persons in these files could be cross-indexed also by their drivers' license, motor vehicle registration, or motor vehicle identification number.

Other inquiry files could include data on stolen vehicles, stolen license plates, stolen automobile parts, stolen or missing firearms, and other stolen, lost, or recovered property. Included in the vehicle file could be information on impounded, repossessed, or towed vehicles, vehicles wanted in connection with a crime, or vehicles of known criminals. The firearms file could include data on weapons recovered in unsolved crimes and wanted guns used in crimes.

Closely associated with the firearms file could be a firearms identification file. Such a file, which is being developed by research firms in New York, would include physical characteristics of bullets recovered from the scenes of crimes and all test bullets fired from suspect weapons.

Finally, there could be inquiry files for motor vehicle registration; driver licenses, firearms registration; firearms permits; property marks; laundry marks, pawn shop records; fraudulent documents; places, telephones, persons, and vehicles related to organized crime; plus a criminal complaint or field report file. The criminal complaint file could start with the initial complaint to the police and include essential information from the report of the investigating officer covering the type, place, and location of the incident, the modus operandi, and information about the suspect, including his apprehension, arrest, and the disposition of his case. Computerized criminal complaint files, for instance, are under development in Los Angeles, Chicago, and St. Louis.

Management Information: Because of the computer's ability to process paper work with incredible speed, almost flawless accuracy, and low cost, it can be used to centralize routine clerical efforts and to reduce duplication, not only for the police, but for the entire criminal justice system. The computer can process uniform statistics on agency operations and workloads, providing a basis for estimating personnel needs and for optimum allocation of men and financial resources. Agency by agency this could include:

1. Police -- production of statistical reports on demands for service and responses, crime occurrence, crimes cleared and arrests, traffic accidents and citations, parking violations, patrol workload and performance, personnel, inventory and maintenance, and budget matters. Included also could be the administrative control and scheduling of arrestees.

2. Prosecutors -- control and scheduling of personnel, equipment, and cases and production of statistical reports.

3. Courts -- processing of court management records; tracking of defendants awaiting trial, witnesses, police officers, and defense and prosecuting attorneys in terms of the cases and pleadings in which they are involved; scheduling of preliminary hearings, pretrial conferences, and trials; assignment of judges, courtrooms, jurors, and assigned counsel; monitoring the status of cases; location of relevant documents; preparation of court orders and notices; and production of presentence reports based upon criminal history, correction, and probation files contained in the system. Provided the courts have an adequate number of judges, experience in several federal and state courts indicates that such a system will do more to reduce court congestion than any other program now devised.

4. Correction -- processing of offenders into the system; diagnosing needs of offenders for specific degrees and kinds of treatment and control; implementing case decisions; and monitoring results.

Command and Control: This function would use sophisticated analytic techniques to determine crime patterns within a metropolitan area and, on the basis of these patterns and available manpower, to determine the placement of police patrols on an hourly, daily, seasonal, or emergency basis. The President's Crime Commission pointed out that the faster police arrive at the scene of a crime, the greater the chance of arresting the offender. The computer is by far the most cost effective means of reducing the response time of the police. Normally built into such a system would be locator files to show the exact location of hospitals and ambulances; fire stations, police and fire call boxes; burglar and other alarms (which could be tied directly to the computer); and any given street or address. At the same time, tracking devices are being developed which will enable the computer to know the exact location of all patrol cars at all times. In an emergency or in response to a complaint or an alarm, the computer would be able to alert automatically the nearest available car to the scene of the emergency or crime and if that car did not respond, to alert another car. Experience has shown that even without tracking devices, systems of this nature can lead to a significant improvement in police performance.

Criminal and Legal Investigations: The direct inquiry files already referred to would be invaluable in the investigation of crime. It appears that the probability of solving crimes would be greatly increased if the police had the ability to check out a greater number of leads in the course of an investigation. For instance, officers would be able to retrieve

and correlate information on: 1) the modus operandi and physical appearance of the criminal, 2) possible suspects, 3) the presence of such suspects near the scene of the crime, 4) similar crimes committed in the same location, 5) the existence of similar patterns between this and other crimes, and 6) the arrest for other reasons of any person near the scene of the crime or having a similar modus operandi or physical appearance. At the level of organized crime, these direct inquiry files would make it possible to analyze the patterns of organized crime, including business ownership or control, place and person relationships, telephone calls, and movement of persons or vehicles.

But the computer's use is not limited to the direct inquiry files. In one case, an Internal Revenue Service computer was used to analyze evidence on bookmaking in New York City gathered over a period of several years by federal agents. In another, the processing of thousands of applications was checked to determine whether certain persons were receiving preferential treatment.

In addition, the computer can be used by prosecutors and the courts for statute and case law searches and for analysis of judicial decisions.

Research and Planning: Material in the direct inquiry files can also be invaluable in planning and research. As noted by the President's Crime Commission, the computer could be used to analyze the criminal history files to find how best to interrupt a developing criminal career and to achieve a better understanding of how to control crime. For the correctional system, the computer can analyze complete case records in order to evaluate the effectiveness of different programs. This would help the courts also since it would enable a judge to base his sentence on statistical estimates of the effects of different kinds of treatment on different kinds of offenders in addition to any information he might have on the defendant's own reaction to prior correctional actions.

It might be possible also to apply computer simulation techniques to various law enforcement problems. Such techniques are already being used to improve a police communication system; to analyze the effectiveness of license plate scanners; to predict the success of various probation and correctional approaches and to aid in administering probation; to reduce court congestion; and to simulate police operations under normal and emergency conditions.

Despite the great interest in information and communications systems, however, only a small number are actually operational, and these are limited in their functions. Most computer systems now in operation are limited to management operations, primarily to production of statistics, reports, and budget information, according to the survey taken by the Governor's Committee. Seven states and 27 cities have such systems. Real time direct inquiry comes next, with eight states, two counties, and seven cities operational. Message switching systems are operational in seven states, two counties, and two cities. Command and control, however, is operational only in St. Louis, although Detroit, Philadelphia, and Washington, D. C., have run partial or experimental programs; and Chicago has a very elaborate and efficient manual system.

III. STATUS OF ACTIVITIES IN MASSACHUSETTS

The Commonwealth is now in the early stages of developing a statewide computerized law enforcement information and communication system--the Commonwealth of Massachusetts Law Enforcement Agencies Project (LEAP).

Although the various criminal justice agencies of the state have been talking about such a system since 1959, LEAP itself did not begin to get underway until February of 1967 when Attorney General Richardson and Commissioner of Administration DeFalco set up an informal law enforcement coordinating committee. This committee was made up initially of representatives from the Department of the Attorney General, the Executive Office for Administration and Finance, Department of Public Safety, Office of the Commissioner of Probation, Registry of Motor Vehicles, and Dr. Richard de Neufville, associate director, Urban Systems Laboratory, Massachusetts Institute of Technology, who, in his private capacity, had been hired as a consultant to the Attorney General and Commissioner of Administration.

This group held several meetings in 1967 leading to the hiring of General Electric Information Management Operation (IMO) as a consulting firm to make a study of these agencies and to prepare a proposal for a law enforcement information system. By March, 1968, when IMO made its first report, the coordinating committee had been expanded to include also the Parole Board, Department of Correction, the Superior Court, and the Governor's Committee on Law Enforcement and Administration of Justice. The Governor's Committee represents all proposed users of the law enforcement information system except the Registry of Motor Vehicles.

A three-year Law Enforcement Agencies Project was proposed by IMO to include a communications (message switching) system and direct inquiry files on wanted persons, Criminal Information Bureau records, drivers licence records, vehicle registration, stolen vehicles, other licenses, suspended licenses, probation records, missing persons, parole records, correction records, court case schedules, and mental health records.

Communications: From a functional viewpoint, improved communications is the first priority need of state law enforcement agencies. At present, the State Police operate an overcrowded and outdated radio and teletype system linking most

police departments throughout the state. This system serves also as the basis for Civil Defense communications. Although the radio system should be restricted to base to mobile traffic, it carries a large volume of base to base traffic because of administrative restrictions on the use of telephone lines. The system is limited also by the unavailability of radio frequencies. (The radio system presently uses a single frequency for both transmitting and receiving.) The State Police teletype system uses low speed one-direction lines and manual (torn tape) switching. An all-points bulletin can tie up all the lines so that no messages can be received for as much as an hour. This system services 83 municipal police departments, 31 state police locations, the Department of Public Works, the Office of the Commissioner of Probation, the Armed Forces Police, and the Registry of Motor Vehicles which also has its own teletype system.

Studies of the State Police and Registry communications systems have been underway by the New England Telephone Company since November, 1967, and are almost completed. It is expected that the company will recommend significant changes in two of the systems--telephone and teletype.

These studies have been closely coordinated with the work of IMO, and the telephone company's recommendations will be included in the communications phase of LEAP. The studies will not cover existing problems of the radio system (except the reduction of base to base traffic). The State Police, therefore, is working with Two-Way Radio Engineers, Inc. of Boston to improve the system. In addition, the Commissioner of Administration is expected to request federal funds for a major study of the radio system.

In the meantime, the State Police and the Boston Police Department have asked that the communications phase of LEAP be modified to include a temporary stolen automobile index. Stolen automobiles presently account for 78 percent of all communications traffic. However, direct inquiry files on stolen automobiles will be in the last group of files to be developed in the record searching phase of LEAP. Therefore, the State Police feel a temporary index is essential. In addition, the State Police want a facsimile system to transmit photographs, fingerprints, and criminal histories. Such a system would use the improved telephone lines being proposed by the telephone company.

Record Searching (Direct Inquiry Files): The Department of Public Safety presently has a number of manual files on stolen automobiles, firearms registration and permits, fingerprints, and records of the Criminal Information Bureau, the Massachusetts Bureau of Identification, and other Department agencies. These comprise an estimated 3,200,000 records, many of which are difficult to reach. However, some steps have been taken to sort these records. During the June 21, 1967, meeting of the informal law enforcement coordinating committee, it was decided the Bureau of Identification of the Department of Public Safety would place in the computer at the Registry of Motor Vehicles some 1,200,000 index cards containing fingerprint classifications, names, and identification numbers. About the same time, at the request of the New York State Police, a terminal to the New York State Police computer was installed at the Department of Public Safety. This has enabled the Department of Public Safety to put its entire stolen vehicle file onto the New York computer and to gain through this computer access to the National Crime Information Center. More recently, the State Police signed a contract with the FBI for a direct terminal to NCIC to be installed this month.

Other criminal justice files include an estimated 12,000,000 court records; 4,750,000 probation records; and 20,000 Department of Correction records. In addition, there are 6,100,000 driver license, vehicle registration, and accident records in the Registry of Motor Vehicles which are of great value to law enforcement agencies.

The Registry is the only one of these agencies which has a computer system. It was developed in 1962 by Anthony DeFalco, then data processing coordinator for the Executive Office for Administration and Finance, to process vehicle registrations, driver's licenses and excise tax notifications. The contract for this system was given to General Electric after competitive bidding. A GE 225 computer was installed in 1963 and upgraded to a GE 415 in 1965. Since that time, GE has proposed several times that this system be expanded to provide real time information for law enforcement. One such report submitted in January, 1964, suggested that the computer be used to provide the police with information on stolen vehicles and suspended driver's licenses along with other information.

In September of 1965, an expanded proposal was presented to Administration and Finance to integrate files of

the Registry, Department of Public Safety, Office of the Commissioner of Probation, Department of Correction, Parole Board, and Department of the Attorney General. As a preliminary step in this direction, GE did a separate study of the problem of converting probation records to a computer.

Shortly after this time, Lockheed Missiles & Space Company submitted to the Commissioner of Administration its proposal for an Information System Plan for the Commonwealth. This proposal, which was submitted on June 30, 1966, would have encompassed all state departments. Initially, however, there would have been a separate "Public Safety and Criminal Intelligence Automatic Data Processing Service Center" to serve Registry, Correction, Courts, Probation, Public Safety, Metropolitan District Commission Police, Attorney General, Division of Registration, and Youth Service Division. The Registry computer again would have served as the basis for this system.

As presently envisioned, LEAP would ultimately perform these functions for the state criminal justice agencies. It will include all of the inquiry files discussed plus several others. The Department of Public Safety, meantime, would continue its present link to the New York State Police computer and its planned link with NCIC.

Independent of LEAP, the State Police Firearms Identification Bureau and the Barnstable Bureau of Criminal Investigation have been working on two computer research programs. If successful, both would be expected to produce data files which would be included in the information system. The Firearms Identification Bureau applied on February 13, 1967, for an OLEA grant to develop an automated weapons identification system using an electro-mechanical scanner to compare the surface profiles of test bullets. Although the request has not yet been approved, federal funds for this project may be available in the future.

In the meantime, Louis Cataldo, director of the Barnstable County Bureau of Criminal Investigation, has been working closely with a Cambridge, Massachusetts, research and development firm on the development of a computerized fingerprint scanner. For this work to continue, however, state and/or federal funding would be necessary.

At the local level, information systems are being developed in Boston, Springfield, and the South Shore. (A

check of major cities has disclosed that there are no plans underway in Worcester, Cambridge, New Bedford, or Fall River.) Boston is already tied by terminal to NCIC. In addition, an IBM 360/30 computer had been ordered to be used for management information and direct inquiry files for stolen cars, plates, and parts; selected stolen property; firearms identification; missing persons; and eventually warrants and wanted persons. The Boston Police Department expects to make its information system available to all members of the Greater Boston Police Council (a metropolitan police coordinating council) including Cambridge. Initially, this will consist of services comparable to those offered by NCIC.

The Springfield Police Department is presently using the city's IBM 360/20 for processing its records on stolen vehicles and plates and outstanding warrants. This machine, however, is not equipped for real time inquiry.

Finally, the Braintree, Milton, Quincy, and Weymouth Police Departments are considering the establishment of a South Metropol District which would provide a central statistical services bureau for the four departments. The South Shore National Bank has offered to train police officers from the four departments in programing and systems analysis and to furnish the departments time on its Burroughs 3500 computer, which is expected to be installed by late 1969. The computer would be used for real time criminal history files, statistics, and payroll. In the meantime, the South Metropol District will also be invited to participate in the Greater Boston System.

It is anticipated that all of these local systems would want to tie into the state system when it is completed and to share information.

At the regional level, the New England State Police Compact (NESPAC) has four times submitted proposals to OLEA for a New England Criminal Intelligence System. The first three applications were turned down for technical reasons. However, OLEA insists it is very much interested in the project and is willing to pay 100 percent of the cost if the fourth application meets OLEA specifications. In the meantime, LINK Information Sciences is doing some basic data gathering for the proposed system at a token price of $3,000. The functions of the NESPAC system as now proposed would be very similar to those of the Massachusetts LEAP system. At this point, however, the relationship between the NESPAC system and the systems of the six New England states has not yet been determined.

Management Information: LEAP, as presently envisioned, will not perform initially any management function nor will it be a central records and statistical unit. Management information and a central records center, however, is definitely needed by the criminal justice agencies of the Commonwealth. In fact, the major concern at the many meetings held by representatives of these agencies between 1959 and 1966 was the tremendous amount of duplication and disagreement in statistical information produced by the various agencies.

An Attorney General's Committee on Crime and Correctional Statistics noted such duplication in its October 27, 1964, report:

1. The Department of Correction, the Office of the Commissioner of Probation, the Chief Justice of the District Court, and the Executive Secretary to the Justices of the Supreme Judicial Court each produce duplicating statistical reports on the courts. At the same time, the Department of Correction arrest reports are duplicated by incomplete records at the Department of Public Safety and the Office of the Commissioner of Probation.

2. Because of lack of coordination and different bases of reporting, published data does not always agree in all particulars.

3. Some essential data is missing.

4. Extraordinary delay exists in the publication of data.

5. Because of the above, efforts to consolidate factual data and to evaluate current and past experience are hampered, and badly needed coordinated research is a virtual impossibility.

In 1964, that Committee recommended:

1. Establishment of a central computerized information center to which all law enforcement, court, and correctional agencies would be required by law to report.

2. Standardized classification of offense and arrest forms in line with FBI Uniform Crime Reports.

3. Report of arrests by name and minimum identification of offenders as they occur.

4. Requirement of "jail card" reports on all jail commitments and releases as they occur.

5. Publication of a single annual report on crime and delinquency in Massachusetts along with quarterly or monthly bulletins of arrest statistics and offenses known to police.

6. Provision of identification data for law enforcement from computer files.

In the meantime, Chief Justice G. Joseph Tauro of the Massachusetts Superior Court has been urging for several years that the civil operations of the Suffolk County Superior Court be computerized. Preliminary work has been undertaken by the Institute of Legal Studies of Boston University Law School, by Price, Waterhouse & Company, and by International Business Machines, which on June 21, 1967, proposed a judicial information system to produce necessary documents and reports; keep track of attorney conflicts; schedule trials; indicate the status of cases; and allow analysis of court congestion. IBM suggested that this system later be expanded to serve all superior courts, both civil and criminal sessions; the district and probate courts; the Attorney General; district attorneys; sheriffs; grand juries; and probation officers.

Because of the present serious congestion in the Suffolk Superior Court, the Commonwealth should consider moving ahead on such a judicial system concurrent with LEAP. Otherwise, it would be at least three years before LEAP would be of any benefit to the courts.

Command and Control: The only command and control system under consideration in the Commonwealth is that which was proposed for the Boston Police Department in September, 1967, by Arthur D. Little, Inc. under a grant from the Office of Law Enforcement Assistance. Arthur D. Little is presently working with the Department on implementation of this proposal under an additional federal grant.

Criminal and Legal Investigation: The direct inquiry files, which will be provided by LEAP, will be invaluable in the investigation of crimes. For maximum effectiveness, every person arrested or questioned by the police should be checked against the wanted person, missing person, and criminal history files of the computer so that: 1) a wanted man is not prematurely released, and 2) the investigating officer

will know a suspect's past history. In the same way, the license number of cars stopped by the police should be checked against the lists of stolen automobiles and automobiles used in a crime. At the same time, the name of the owner would be matched against the wanted, missing, and criminal history files.

From an ideal point of view, it seems desirable at this time that the computer should have also a criminal complaint file which would include a report of every crime along with the follow-up report of investigating officers, the arrest of persons connected with the crime, and the disposition of their cases.

It has been proposed also that the Attorney General use a computer for statute and case research. Such a system would be of significant value not only to the Attorney General, but also the District Attorneys, the courts, the legislature, and the Criminal Law Revision Commission which will be appointed by the Governor's Committee. The system could include all acts and resolves of the Commonwealth; regulations of all state agencies; bills and other matters before the General Court; decisions of the Supreme Judicial Court; opinions of the Attorney General; and municipal by-laws and regulations.

The Special Joint Committee on Electronic Data Processing of the General Court is presently developing a computer system for the legislature which will perform many of these functions. This computer could be interfaced with the LEAP computer for the benefit of all criminal justice agencies. The statutes of the Commonwealth have already been placed on computer tape, at the request of the Home Rule Commission, and so would be available immediately.

Research and Planning: Many of the criminal justice agencies in Massachusetts are committed to engaging in research directed toward prevention of crime and better rehabilitation of offenders. LEAP can, if it proves desirable, provide the detailed criminal history files needed for crime prevention work, but it will not provide the correctional material needed for research into the effectiveness of correctional institutional programs. This would require standardized information describing the institutional program followed by each inmate as well as information describing in detail the post-institutional adjustment of each ex-inmate.

IV. PROSPECTS AND POSSIBILITIES

In the development of any computer system there are three major tasks that must be performed:

Systems Analysis: A description of existing procedures within the concerned agencies, to indicate areas of potential improvement, and to determine what the real needs are for improving the present systems or developing new ones.

General System Design: The development of the best possible relationship between personnel, equipment, methods and services to provide the end product required.

Equipment Selection: In effect, a continuation of the general system design. Because of the great variety of data processing equipment available and the almost infinite ways in which personnel, equipment, methods, and services can be interrelated, the system design often determines which equipment should be used. The system design, for instance, often determines the type of instruction (called programs of "software") to which the computer will have to be able to respond.

It is important for the Commonwealth to realize that the design of the operating procedures and computer programs for a given project such as LEAP is both expensive and time-consuming. The technology and knowledge necessary to do the job are available in a variety of forms. But the programming required to establish a specific information system involves a great deal of new work over a period of several years. The best approach is to do the work in stages. In other words, the design of each major function should be completed, tested, and made operational before the next major function is added on.

The rewards of careful planning and implementation, however, are great. The computer can perform tasks thousands of times faster than a manual system and can do things which would be impossible without the computer. And although the cost to develop and operate a computer system is substantial, the cost of a manual system is normally equally great, if not greater.

Only rough estimates of the cost of the components of a law enforcement information system can be presented at this stage, and even these depend on further definition of the parts. In a general way, however, it is reasonable to expect that the Commonwealth might be able to develop a fairly comprehensive law enforcement information system in three years for a total initial cost of about $4,000,000 with annual operating expenses of about $2,000,000 thereafter.

By comparison, the three agencies most directly effected by LEAP--the Department of Public Safety, Registry of Motor Vehicles, and Office of the Commissioner of Probation, are presently paying an estimated $2,000,000 a year on data processing and support.

These cost estimates for LEAP are not intended to suggest that by spending these or similar amounts, the expenditure being spent currently will be completely eliminated. These comparisons do show, however, that the expenditures called for by Project LEAP are reasonable in that they are about equal the estimated current expenses and in that they hold the possibility of substantial improvement in effectiveness. Further, Federal support can be expected for a significant portion of the development costs.

In order to obtain the information system necessary for the effective use of law enforcement resources, the Commonwealth should thus be prepared to support a serious level of system design and implementation for several years.

A. System Design and Equipment Selection

Specifying the best physical characteristics for a computer is far more complex than for most other pieces of equipment the Commonwealth might choose to acquire. This is because, except at a general level, there is no common agreement on what the functions of a computer should be.

Definite tradeoffs exist between the computer as a physical object--the hardware--and the brainpower that makes it operate--the software. In general, the issue that a buyer such as the Commonwealth must face is whether to put more into hardware or software. In practical terms, this translates into a choice between higher annual rental costs or a more costly development effort.

The choice between hardware and software is made even more difficult because different computer companies do not offer the same range of alternatives. Any precise definition of the desired capabilities for an information system, which is needed in order to make an intelligent selection of the equipment, to a great extent also defines the vendor of hardware. If, as may happen, the potential vendor defines the information system, the company places itself in a situation of potential conflict of interest. One way to avoid the difficulty is to hire consultants who do not sell equipment and yet have enough experience with the operation of information systems to provide competent services to the Commonwealth. Such concerns are rare. An alternative to this approach is to write a hardware exclusion clause into the software contract. This is a widespread practice throughout the United

States and is required in many federally financed projects. Another alternative is to require competitive bidding separately on both software and hardware. A danger in this practice is that a hardware company would be in a position to design specifications favoring its equipment, if it won the software contract.

B. Development of Personnel

An adequate supply of properly trained programmers and analysts are required for the effective operation of an information system. When a computer center is staffed by people who are not sufficiently expert, the machines operate poorly and the expensive programs deteriorate rapidly. It is foolhardy to decrease costs by cutting personnel expenses.

The complexity of modern computer systems has inevitably lengthened the time required to select, train, and recruit the kind of personnel required. Manpower is now one of the long lead time items of computer systems development. Action now, both toward the provision of sufficient positions at competitive rates and toward training of current employees, is necessary if the Commonwealth wishes to have a law enforcement information system operational in the near future.

Recruitment of qualified computer personnel will not be easy, however, for the Commonwealth. Ever higher wages in industry make it difficult to attract or retain people in the civil service. The rapid technological progress in data processing is also quickly making previous experience obsolete and indicates that many personnel now working for the Commonwealth in related fields may well require special training before they could cope with a comprehensive information system.

C. Privacy and Secrecy

One of the primary considerations in the development of a computerized information system for law enforcement is protection of the privacy of those persons whose names are contained in the files of the system. The President's Crime Commission recommended that access to arrest and disposition records be limited to criminal justice agencies and that access to ancillary information, such as education, employment, and probation reports, be further restricted and limited to court or corrections officers only.

For the same reason, the Federal Bureau of Investigation and the International Association of Chiefs of Police declared recently that the controls governing access to police computerized information must remain in the hands of law enforcement agencies.

The American Civil Liberties Union has recognized the great value of such systems. At the same time, however, it proposes the following:

1. Information content should be restricted to matters of record;

2. Dissemination should be restricted to criminal justice agencies;

3. Improper disclosure should be penalized;

4. Individuals should be provided access to their records and means for correction them.

Many of these recommendations require administrative action. However, a number of technical security methods can be built into the system. These can include:

* Assignment of an identification code number to each user and each terminal. To obtain access to information in the file, the user would have to type the correct codes on his terminal. The codes and verification procedures can be set up in such a way that a user could gain access to the system only from his own terminal and would be able then to obtain only that information authorized for his agency. Further, the codes could be changed as often as necessary to prevent current codes from falling into the wrong hands.

* Placement of terminal equipment in secure locations to prevent access by unauthorized users.

* Protection of stored files by "locking" them whenever unauthorized persons have access to the system such as during computer maintenance. Dummy files could be used for maintenance and program checking.

* Encodement of transmitted information to minimize the danger from tapping of the lines.

The President's Crime Commission added:

> The dangers can be minimized only by insuring that the controlling organization is reliable and that the information recorded in this system is the minimum necessary. Research is needed to determine which information is useful in making correctional or investigative decisions, and the information collected and retained should be restricted to that material. The organization selected to manage and control the file must have the confidence of all agencies contributing information. The group will have to work closely with reporting

agencies to assure that correct, uniform, and complete information is reported. They will be responsible for restricting the information to those authorized to receive it. In addition, some mechanism will be needed to handle the inevitable flow of requests for access to the file for purposes not anticipated when it is first established.

As a check on the users and manager of the file, all inquiries should be kept in a permanent record and that record audited regularly to verify the validity and handling of the inquiries. Unauthorized disclosure should be subject to serious penalty.

The audit should be by a different agency than the one operating the system. This group could also monitor the computer programs to insure that there are no unauthorized modes of access. They could also try by various means to penetrate the system as a running check on its security. These provisions are similar to those used to protect military information.

The President's Crime Commission concluded that such a system would actually offer the individual greater protection than would manual files since it would insure that arrest records include court disposition, thereby presenting a fairer picture to the police and judges, and since access to certain criminal records could be restricted after a specified period of good conduct.

D. Jurisdictional Conflicts

Unless sufficient coordination is arranged beforehand, the introduction of computers almost inevitably creates administrative difficulties. These are, in effect, tokens of the success with which an information system can integrate and coordinate efforts and consequently also shift responsibilities between agencies and political subdivisions. Fortunately, the Commonwealth has already given the Department of Public Safety statutory control over the state law enforcement teletype system. No such provision has been made, however, for a central records bureau. As already noted, incomplete, conflicting, and overlapping criminal justice records are now kept by at least seven different state agencies. Local police departments and courts are required by law to make separate kinds of reports to almost all of them. It seems desirable to plan for the integration of all of these records in the LEAP system.

However, before this can be done three questions must be answered. They are:

--which information is to be placed on the computer and in what priority?

--which agencies are to have access to the computer and to which information?

--which types of forms and codes are to be used for the information to be kept?

At present, these issues are being resolved by the informal law enforcement coordinating committee. This group, chaired by the Attorney General and the Commissioner of Administration, has been operating since April, 1967, and has already achieved joint coordination, notably between the Registry of Motor Vehicles and the Department of Public Safety.

This committee should be given permanent status as a policy board or its function should be taken over by the Governor's Committee on Law Enforcement and Administration of Justice. The Governor's Committee already has the statutory authority to study the problems and needs of the criminal justice system and to encourage the dissemination of information and the development of effective coordination betweeen the various agencies within this system. Further, it is expected that federal funds will be available to the Governor's Committee under the National Law Enforcement Assistance Act to develop a comprehensive state plan for the criminal justice system of the Commonwealth. Such a plan could include the development and expansion of LEAP.

In addition to money for planning, the National Law Enforcement Assistance Act would also be the most likely source of federal funds to assist in the development of LEAP. Under this act, the requirement to obtain funds for law enforcement projects in the science and technology field are expected to be as follows:

1. The project will have to conform to the comprehensive criminal justice plan which will be required to be produced by the Governor's Committee.

2. There will have to be a project director who will participate in the preparation of specifications, requests for bids, and contracts. This director would have to be subject to the review of the state planning agency--that is the Governor's Committee.

3. There should be a technical advisory panel to assist the project director on specifications, bids, and contracts and to evaluate the progress of the project.

4. There should be competitive bids on both software and hardware.

5. A hardware exclusion clause is not essential but should be considered in any contract with a systems consultant.

V. RECOMMENDATIONS

A. Development and Administration

It is essential in the development of an information system such as LEAP that the activities of all participating agencies be coordinated and that there be a formal procedure for planning and setting policy. Development and administration of LEAP, therefore should be subject to the policy guidance of a board composed of representatives of the users of and contributors to LEAP.

The Governor's Committee therefore recommends:

A permanent Policy Board should be appointed to coordinate, plan, and set policy for the Law Enforcement Agencies Project and any additional projects undertaken to expand the proposed information system.

Equally important in the development of an information system is the appointment of a project director. Not only is this in keeping with sound management principles, but it will undoubtedly be necessary to meet federal funding requirements. The project director should be responsible to the Policy Board during the research and development stages of LEAP. At such time as LEAP is operational, he could be reassigned to the agency chosen to operate the project.

The Governor's Committee therefore recommends:

A project director responsible to the permanent Policy Board should be appointed to manage each phase of the Law Enforcement Agencies Project and any additional projects undertaken to expand the system.

Of major importance to the success of any planning effort in the field of law enforcement science and technology is the appointment of a technically competent advisory panel. This is true not only for the comprehensive state plan which will be developed by the Governor's Committee, but also for LEAP. For instance, it can be expected that the federal government prior to providing funds for any part of this project would insist on a technical advisory panel to evaluate specifications, bids, contracts, and the development of the system. The Governor's Committee expects shortly to appoint an advisory subcommittee on science and technology to assist it in its planning effort. This committee could serve also as the technical advisory panel to LEAP. Regardless of who develops LEAP, a technical advisors panel should be appointed.

The Governor's Committee therefore recommends:

A technical advisory panel should be appointed to provide technical assistance to the Permanent Policy Board.

To avoid delay in the implementation of LEAP due to the inavailability of qualified personnel, the Governor's Committee further recommends:

1. The qualifications and pay schedule for the civil service positions of computer systems analyst and junior and senior programmers should be examined to insure they are high enough to attract the caliber of personnel required for this project.
2. Opportunities should be made available to selected key individuals from the participating criminal justice agencies to attend

the various computer schools run by industry to receive intensive training in systems analysis and programming.

Further to ensure the security and complete confidentiality of the files, the Governor's Committee recommends:

All personnel involved in the development and operation of LEAP should have a background investigation by the State Police and/or the Federal Bureau of Investigation.

To ensure that Massachusetts is not prevented from obtaining federal funds for this project, the Commonwealth should call for competitive bids for both software and hardware on all phases of the project for which contracts have not already been signed. Not only will this satisfy federal requirements, but it will ensure also that the Commonwealth gets the best possible system to meet the needs of the criminal justice system.

The Governor's Committee therefore recommends:

Competitive bidding should be required for both software and hardware on all phases of LEAP and related projects.

B. Communications

The major need of the Commonwealth at the moment is an adequate law enforcement communication system. To achieve this, it is essential that major improvements be made in the teletype, telephone, and radio systems of the Department of Public Safety. The Commonwealth must move ahead, therefore, as soon as possible to implement the communications phase of LEAP, including the proposals of the New England Telephone Company relating to telephone and teletype lines and the proposed facsimile system. At the same time, because of the high volume of communications relating to stolen automobiles, the communication system should include a temporary index of stolen automobiles.

The Governor's Committee therefore recommends:

Funds should be made available immediately to implement the communications phase of LEAP.

This recommendation will greatly alleviate the problems of the State Police radio network. It will not, however, solve the frequency problems of the network nor will it enable all emergency units to communicate with each other during riots, natural disasters, or enemy attack.

The Governor's Committee therefore recommends:

Funds should be made available for a detailed study of the State Police radio network.

C. Record Searching (Direct Inquiry Files)

Criminal justice agencies of the Commonwealth need to obtain quickly complete information on wanted persons, suspects, or defendants in a court case. Many of them need to know also whether an automobile has been stolen or used in a crime. The value of such information has already been spelled out in detail. Implementation of the record searching phases of LEAP will greatly speed up the apprehension of offenders and may even be a major deterrent to the commission of many other crimes.

The Governor's Committee therefore recommends:

Funds should be made available immediately to implement the record searching phases of LEAP.

D. Management Information

LEAP will not initially concern itself with management information. However, the Commonwealth needs a central records bureau to which all law enforcement, court, and correction agencies would be required by law to report and which would produce a single statistical report for all criminal justice agencies. Initially, these reports might be produced efficiently with electric accounting machines. In the future, LEAP could be expanded not only to take over this work, but also to control many of the activities of the criminal justice system. What is needed is long-range planning by the Permanent Policy Board to determine those steps which should be taken after the present three year Law Enforcement Agencies Project is completed.

The Governor's Committee recommends:

A Central Criminal Justice Information Center should be established as part of the administrative unit which is chosen to operate LEAP, to which all law

enforcement, court, and correction agencies would be required by law to report under suitable safeguards.

The planning activities mentioned above would include application of the computer system to all activities of the criminal justice system including the courts. Preliminary surveys of the civil division of the Suffolk County Superior Court have already been completed.

This court is unique in the Commonwealth. First, it is the location of the administrative headquarters for the entire Superior Court system. Second it has the heaviest case load and longest backlog of any court in the Commonwealth. This congestion includes not only cases arising in Suffolk County but also a number of cases originating in other counties. A computer system for Suffolk County Superior Court could serve not only to reduce its congestion, but also could serve as an ideal pilot project for the rest of the Superior Court system. The Governor's Committee feels therefore that development of a system to serve this court should be undertaken concurrently with LEAP. Such a court project requires entirely different programs than does LEAP so there would be no duplication of effort. Should it be desired later, the court system could, after it is operational, be incorporated into an expanded LEAP system which could serve all the courts.

The Governor's Committee therefore recommends:

Funds should be made available immediately for an independant system for the courts as proposed by Chief Justice G. Joseph Tauro of the Massachusetts Superior Court.

E. Command and Control

It is not anticipated at this time that command and control will be a function of the state law enforcement computer system. The value of command and control systems lies in their ability to mobilize and allocate resources within a metropolitan area such as the Greater Boston area. The Boston Police Department is already developing such a command and control system.

It might be possible for the Boston Police Department and the Greater Boston Police Council to develop this system in such a way that in the event of major riots and disturbances the system could control the resources of the entire metropolitan area within the limits of existing mutual aid agreements. This computer might also be used to process management records for the suburban police departments. In any case, it is essential that these local systems be compatible with the state system if they are to be able to communicate with each other and share information.

The Governor's Committee therefore recommends:

1. Funds should be made available for regional meetings of county and local law enforcement officials so that they can determine their information and communication needs and coordinate their activities with the state system.

2. Permanent regional committees representing all regional criminal justice agencies should be formed to implement any recommendations made at the regional meetings.

These regional committees should report directly to the Permanent Policy Board. The Board should determine also the extent to which the system should be expanded to provide for criminal and legal investigation and for research and planning, including the development of a firearms identification system and fingerprint scanner.

END