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LONG BEACH PUBLIC SAFETY INFORMATION SYSTEM

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The USAC Program, supported by multi-agency funding, initiated two classes of effort: One, a long range program directed at total municipal information systems, and a second directed toward functional systems as illustrated in Figure 1.

During July, 1969, the Department of Housing & Urban Development, acting on behalf of USAC, initiated a nation-wide procurement action inviting 250 cities to compete for two classes of contracts. Under one class, two contracts were to be awarded for long range programs in total municipal information systems. Charlotte, North Carolina, and Wichita Falls, Texas, were selected to undertake those projects. The second class of contracts was directed at four specific municipal functions; Public Safety, Physical and Economic Development, Public Finance, and Human Resources. One development contract was awarded for each functional system. The cities selected for these projects were:

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|-----------------------------------|------------------------|
| • Public Safety | Long Beach, California |
| • Physical & Economic Development | Reading, Pennsylvania |
| • Public Finance | Dayton, Ohio |
| • Human Resources Development | St. Paul, Minnesota |

INTRODUCTION

In recent years there has been a dramatic increase in the challenge of city management. A growing crime rate, mass civil disorders, problems with the ecology, urban transportation and the like provide great tests of management skill for today's municipal executive. Information about people and the urban environment is a critical requirement for effective municipal management. Recent technological innovations in the computer sciences offer a means for greatly improving the processing of information through the municipal structure and provide the availability of that information to city management. It is both vital and natural that computer based information systems be implemented to serve on-going operating activities and provide management with data for the analysis and control of municipal functions.

However, the development of a comprehensive municipal information system is a costly and complex task. An independent effort by a municipality to research, develop, and implement a system would require substantial technological resources, together with a large appropriation of local tax dollars to fund the project. Furthermore, individual projects across the nation would lead to great duplication of effort, use of resources and cost.

It was with these facts in mind that the major Federal agencies concerned with urban programs established a coordinated research effort to develop municipal information systems.

The Urban Information Systems Inter-Agency Committee (USAC) Program was established on September 10, 1968, by the Secretary of the Department of Housing and Urban Development. Sponsoring the program were representatives from 9 Federal agencies, currently 10 with the addition of the National Science Foundation:

- Department of Housing & Urban Development
- Department of Justice
- Department of Transportation
- Department of Labor
- Department of Commerce
- Department of Health, Education & Welfare
- Bureau of the Budget

PUBLIC SAFETY SYSTEM

A consortium of the City of Long Beach, Mauchly-Wood Systems Corporation (now known as the Systems Development Division, Digital Resources Corporation) and the Institute for Police Studies, California State University at Long Beach, was formed to develop the USAC Public Safety System.

Public safety is that function of municipal government concerned with the protection of human life and property. Activities associated with public safety are conducted principally by the police department, fire department and civil defense units. However, public safety as a municipal function cuts across the organizational lines of all city departments and is a responsibility carried out at many levels of city management.

The Public Safety System under development in Long Beach, California, is intended to support the on-going operational activities and decision-making requirements of the city's police, fire, civil defense and licensing/code enforcement functions. In addition,

MUNICIPAL INFORMATION SYSTEM

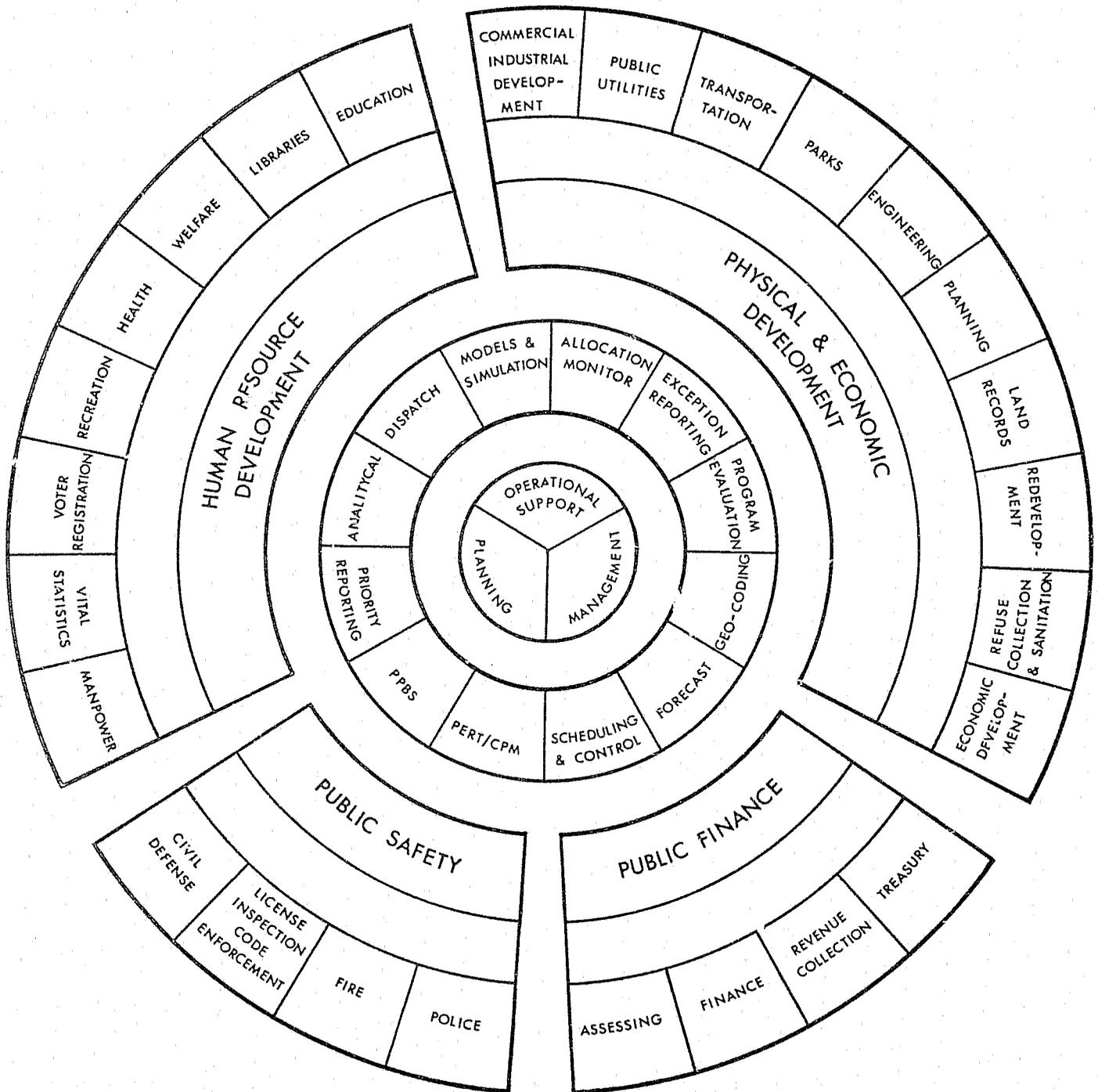


Figure 1

tion, the system is also intended to accept data from outside the municipal structure (regional, state, and federal) that have a direct bearing on the internal data requirements. In turn, information accumulated from city operations could be made available to other government bodies and jurisdictions.

LONG BEACH STORY

Located in Southern California, the City of Long Beach is at the southern-most end of Los Angeles County and is contiguous with the Orange County border. Situated on San Pedro Bay, with the Port of Long Beach harbor complex, it is the second largest city in the County and fifth largest in the state.

Covering approximately 50 square miles, with a population of 385,000 and a transient population of 500,000, the City is included in the Greater Los Angeles Basin Area and is part of the Los Angeles-Long Beach Standard Metropolitan Statistical Area (SMSA).

The City has had a Council-Manager plan of local government since 1921. Its Police Department, with 670 sworn and 180 civilian personnel, operates out of a modern 6 story Public Safety Building that also houses the Fire Department Administrative Headquarters. Its Fire Department, with 457 uniform and 9 civilian personnel, operates 18 fire stations, 3 boat stations and 1 aircraft crash rescue station throughout the City. The Department of Emergency Preparedness, with 4 civilian personnel, operates from the subterranean Emergency Operations Center located at the Municipal Airport. The City's Data Processing Division, responsible for all computer operations, is providing the necessary hardware and support for the System.

Due to this Symposium's emphasis on criminal justice information systems development, this paper will not cover the concurrent activities in the Fire Department and the Department of Emergency Preparedness.

The Police Department, headed by a Chief of Police, is organized into three bureaus. An Assistant Chief and two Deputy Chiefs each command one of the Bureaus (Administrative Operations, Field Operations and Investigation Operations).

The Department maintains its own jail and crime lab. It utilizes modern techniques which include the 4-40 plan for field operations deployment, operation of its own helicopters (3) and it is a contributor to and user of the computerized

Regional Automated Want/Warrant System (AWWS).

ANALYSIS

The first task of the Long Beach Project was identified as Systems Analysis. The objective of this task was to identify and document current information processes within the Police Department. The findings obtained in the analysis facilitate the identification of activities which can be assisted by improvements to the system. It will also provide the detailed data from which to derive a system design that will satisfy the operational and management needs.

Methodology employed to gather information involved the use of some new innovative analysis techniques. Information on current processes was gathered during more than 250 interviews with personnel performing the various activities and documented in more than 2000 work flow diagrams. Some 1088 separate forms and 1048 separate files were identified and their contents reviewed. These findings were subsequently consolidated, through automated techniques known as Meta Data, to reflect overall departmental operations and data dependencies. The use of this automated technique also facilitated the identification of all data elements appearing on forms now in use as well as the locations that collect and maintain redundant information.

Using the cost data developed in the Meta Data reports, it was possible to identify the comparative costs associated with processing particular forms. Based on the relative figures, the ten most costly forms processed by the Police Department were identified as:

1. Crime Report
2. Field (Crime) Report
3. Vehicle Accident Report
4. Parking Citation Notice to Appear
5. Report of Arrest
6. Teletypes (in and out)
7. Radio Log
8. Additional Information Report
9. Alpha File Index Card
10. Report of property

More than 50% of the total forms processing cost is attributable to these ten forms. They produce approximately 750 other reports or summaries and more than 650 files are created to store the information. This indicated that the major information processing problems are fairly well isolated and the amount of file duplication, of file decentralization, indicated a need for rapid and

repetitive access to the same basic information by various details and individuals.

The analysis findings identified that there is also duplication in the review and decision making processes. As a result of this, the analysis of information requirements and needs was performed in conjunction with the data element analysis. Primary prerequisite for eliminating much of this duplicated effort is to provide an efficient and rapid access to centralized files. Such a solution could also provide increased information to field units which is not presently available on a timely basis.

Additionally, the relationship of the police function to other municipal operations and to other governmental agencies was also examined to identify all external interfaces that would impact the system design.

With the analysis complete and the needs identified the second task of the Project was undertaken, developing the concept.

CONCEPTUALIZATION

The primary objective of the Conceptualization Task was to develop a plan which would consider all major information elements, describe how these elements would bind various system components together and provide for an incremental and orderly implementation of components that comprise the integrated subsystem.

When considering police information requirements, they can be grouped into three broad categories: operational, supportive and environmental. The operational category includes the traditional police-citizen contact reporting where crimes, citations, field interviews, etc. are recorded for subsequent use in the prevention, suppression and investigation of crime and traffic problems. It is this category of information that is being used to develop the police components. The supportive category includes those reporting tasks not directly related to the crime or traffic problems, but whose purposes support a city-wide system such as personnel record keeping, financing, inventory and stock control, etc. The supportive informational needs are not directly addressed in this system since the primary focus is on operational needs. Environmental Information, also not addressed, is concerned with data about the community served. It is anticipated that the latter two categories of information will become available as the city implements other subsystems in the future.

The methodology employed was designed to realize maximum benefit from state-of-the-art tech-

nology, personal experience of the project staff, experts in the field of public safety, and the analysis findings. Extensive interaction between the project team and city operating personnel served to insure development of concepts which are truly responsive to departmental requirements.

Surprisingly, the different inputs resulted in basically the same ideal system. As a result of these inputs, the concept centered around eight major components, which were identified as:

1. In-Custody
2. Case Reporting
3. Traffic Reporting
4. Investigation Support
5. Calls for Service
6. Want/Warrants
7. Vehicles and Licenses
8. Stolen Property

Through these eight components, virtually every source of operational information that is documented within the Police Department was covered.

The conceptualized components incorporate both horizontal (within the city) and vertical (within the county, state or nation) linking mechanisms via the system data bases. Careful consideration has been directed toward the interrelations and data dependencies of police functions with other municipal agencies such as the City Prosecutor and Traffic Engineer. In addition, appropriate regional, state and federal systems were included in the design because of their effect on normal operating requirements of the Long Beach system. In the State of California and in the County of Los Angeles, in which Long Beach is located, the need for Want/Warrants, Vehicles/Licenses and Stolen Property Components was not necessary, as those are all currently being done either by the State or the County. Therefore, the first five components are those toward which the Long Beach project directed its efforts.

The computer selected for the System was IBM's 370/145 (512K and virtual memory feature) and its software package, IMS. Major improvements in data acquisition such as on-line data entry, via CRT, directly to the on-line system will be possible through the use of data base management technology and the IMS Package. With this capability, data will be captured at the time the report or information first reaches the station thereby providing an operationally oriented, centralized data base.

The CRT (Sanders 622) and teletypewriter terminals (IBM2740), using a flexible inquiry capability rather than a structured inquiry format, will access the data base and provide for hard copy

printout. The use of remote terminals in this manner is expected to improve dramatically the timeliness and accessibility of report information, in any form, for those units that have a need for the data.

Data security and confidentiality will be provided by way of data base administration, software techniques and increased security measures adopted by the Data Processing Division.

An important characteristic of the Public Safety System will be its adaptability to changing needs.

SYSTEMS DESIGN

At the completion and acceptance of the Conceptualization Plan, priorities for implementation of the various components were assigned by police management and the design task for the first component began.

System design details the component and applications required to implement the envisioned system. During this task, the information system elements required, whether manual or automated, are specified in detail and the relationships between components, data bases and applications firmly established. The Conceptualized Plan provided the guidance required to define all components which will interface and to identify program modules which could be applied to more than one component.

DEVELOPMENT & IMPLEMENTATION

Detailed functional specifications were then written to guide the programming staff in generating the computer software.

As the programs became operational and the necessary hardware was installed, tested and accepted, the first component, Investigative Support, was brought on-line to serve the Long Beach Police Department.

Each succeeding component will be developed in a similar manner, i.e., the detail design, development of the software and implementation with the existing on-line system. The following descriptions outline the basic concepts behind the development of each component.

INVESTIGATION SUPPORT COMPONENT

The purpose of this component is to provide a broad and readily accessible base of information to aid police investigators in linking suspects to crime occurrences. It will be used to assist in the process of identifying possible suspects by allowing the information base to be searched relative to specific

criteria and then displaying all information in the base which matches the criteria specified.

The information base upon which the system can act will contain data derived from Field Interview Cards (F.I.'s), Moving Traffic Violation Citations, and Pawn Shop Tickets. The F.I.'s are used to record the fact that a contact was made between the Police and an individual or group. Interview information is not collected for all contacts between officers and citizens but is intended primarily to document suspicious occurrences for which no criminal violations can be identified. Citations are written to document the fact that a violation of the law has occurred. The information recorded can, however, also be utilized to identify the location of an individual or vehicle at some particular time. Pawn tickets are utilized to provide information about persons who have pawned articles as well as information about the article. This information is used to aid in the recovery of stolen articles as well as providing a broader source of people oriented data which could assist in matching crimes with suspects.

The data will be entered into the system by an on-line CRT terminal located in our statistical section. Inquiry to the system will be made available to the investigators by an on-line CRT terminal and a hard copy keyboard device. Thus, it is envisioned that the officers of the investigative bureaus will be inquiring into the system as opposed to having operators perform that function for them.

This system was designed to allow inquiries to be made through a form of language identified as keyword. It simply means that every element of information in the data base can be searched by a keyword and there are approximately 42 different areas for searching. The advantages of a keyword language is that it can be used on either a hard copy or CRT device and it allows for ease of expandibility when new components or new information is added to the system. The investigator will prepare his keywords prior to making the inquiry and establish the parameters with which he is concerned. These parameters can be in several relationships which allows the investigator to search a broader base. An example would be the investigator's searching between certain dates or to search in an "and" or "or" relationship. The investigator will be able to tailor his inquiries into the system to meet his needs.

This component, which is the first of the System to be implemented, is now operating on-line and is available to investigative personnel.

CASE REPORTING COMPONENT

One of the major information documents utilized by a police department is the "Crime" or case report which records incidents of criminal and non-criminal acts as reported to the police. This document triggers the police response and sets into motion those processes designed to control the situation. Patrol units must be promptly alerted to the problem and may be required to intensify coverage in the area. Knowledge of prior criminal occurrences in the same area is of vital importance in assessing the extent of the problem and in the allocating of resources in an effort to apprehend the suspect or at least reduce further instances of crime. Investigative efforts must be initiated at once to gather all information pertinent to the case and if not already in custody, the suspect must be identified and apprehended.

To provide this level of service required, in addition to the patrol and investigative staff, a sizable civilian force operating in the background to type, duplicate, distribute, index, keypunch, file, log, retrieve, tally or report on the volumes of information is necessary to support the patrol and investigative functions.

The Case Reporting Component is intended to serve as a readily accessible repository of pertinent case report information that will automatically provide this support, and more, in a timely fashion. As the reports reach the station and are reviewed and approved by supervisory personnel, select data will be entered, via CRT terminals, directly to the on-line system. With the report information now resident in a computerized file, it can be manipulated so as to provide instant utilization of the data that is now manually processed.

The System will provide daily reports for each patrol watch that summarizes select crime occurrences and groups them by car district to pinpoint crime activity and optimize available patrol time. Weekly and monthly reports of the same type will also provide data beneficial for deployment planning. Management type reports for patrol will provide for such diverse information as crime statistics for local and state reporting requirements to personnel report writing activity for the month.

Investigative units will have the capability to manipulate vast amounts of crime report information in a rapid manner as an aid in correlating similar crimes for purposes of suspect identification, developing a strategy for apprehension or for "clearing" crimes. They will also have the capability to retrieve or update case report information to satisfy public inquiry and management reporting.

In conjunction with the Investigative Support Component, the System, which will include a local stolen property file to enhance the State's identifiable stolen property file, will automatically compare input pawned property items with stolen items in file. The capability also exists for the investigator to search the pawned property file for previously reported stolen items.

Clerical personnel will be able to retrieve summary report information instantly, via CRT and an automated index feature, and to expedite file searches in response to departmental and public inquiries.

The implementation of this component is expected to increase the effectiveness of the patrol forces, investigative personnel and clerical staff by rapid retrieval, increased utilization of data and the reduction of redundant processing of case report information.

Further enhancements will be possible with the addition of a message switching capability to the System via a regional source or local procurement.

The detailed design phase of this component has been completed, functional specifications have been documented and the programming staff is at present developing the software.

IN-CUSTODY COMPONENT

The arrest and subsequent booking of an individual is the beginning of a series of paper generating processes that impact virtually every major unit in the police department and also dilutes the available patrol force for that period of time necessary to complete the booking and report writing process.

Another important consideration is the rapid, position identification of the arrestee in order to determine accurately if the subject is wanted elsewhere under the same name or an alias, prior to his release on bail or own recognizance. This same type of information, in the form of a "Rap" sheet, is a necessary ingredient to the investigator handling the arrest followup; a District Attorney in establishing bail in a felony case as well as to a Judge once a guilty verdict has been entered. Another requirement is to make this arrest information, as well as any court disposition, available as soon as possible so that inquiring family members and friends can be informed as to the charge, bail, court date, etc. There is still another use for this information that is slowly declining primarily because of a time factor. That is the "Record Check" by field units via police radio. Many consider this type of information to be extremely beneficial because it provides yet another dimen-

sion that better equips the field officer to evaluate the situation at hand and, based upon that evaluation, to take whatever action is deemed necessary.

This component, currently in the detail design stage, is concerned with the initial booking process and the subsequent activity associated with that process. The System will collect and store primary booking data, entered via a CRT terminal at the booking location, at the time of booking. At the conclusion of the data entry, the System will assign a booking number and print a multipage, multi use arrest and booking document at the booking location. This multipage set will include such documents as the Arrest Report, Prisoners' Property Receipts, Booking and Identification Sheet, Jail Custody Card, etc., thereby relieving the officers or clerical personnel of the need to initiate these documents manually. In the case of some pages (arrest, etc.) there would be additional information added to the document after the booking process was completed.

Records personnel would then update the computer record with the arrestee's local and/or state criminal identification number and on the first time through the system, a summary of the arrestee's prior arrest history. The system would then, automatically, make a check through the regional warrant system, the Los Angeles Police Department's Automated Want/Warrant System (AWWS) as well as an automatic update to another regional system, the Los Angeles Sheriff Department's Automated Jail Information System (AJIS).

Each day prior to court, the system will print out the court list for the jailer, the bailiff and the investigators. Included in the investigators' printout will be a "rap" sheet type summary of the arrestee's prior arrest history as it appears in the system. For certain select crimes (burglary, robbery, etc.) the investigator may update the record with M.O. and trademark codes particular to the arrestee. These become part of the permanent record and may be useful when searching the known-offender file for specific M.O. or trademark characteristics in an effort to identify an unknown suspect.

At the conclusion of the arrestee's case (released, sentence served, etc.) the system will print-out a brief summary of the record and all transactions for filing in the arrestee's package. The bulk of the data will then be purged and an index of the arrest and disposition will be appended to the arrestee's permanent system record. This permanent system record is then available for on-line record checks. It is anticipated that a records check

and a want/warrant check will be made simultaneously, and automatically in a matter of seconds at the request of the inquiring officer.

Inquiry terminals will also be installed at the Records Section and the Public Information Counter as the system will act as an automated index with response summaries designed to satisfy the informational needs at these locales.

TRAFFIC REPORTING COMPONENT

Another important area of concern for the police administrator, as well as the City Traffic Engineer, is traffic safety. In this regard, two basic police documents, the traffic citation and the traffic accident report(s), serve as the source document in developing an effective traffic safety program. Historically, traffic accident is correlated to the traffic enforcement effort (citations) on a monthly basis. From this correlation a plan is designed to bring the enforcement effort in line with the accident problem. It also serves as an indication of an individual officer's efforts in the enforcement phase.

These same documents are also an important source of vehicle information useful to the detective investigator as well as the accident followup investigator. However, the normal indexing and filing of the documents do not lend themselves to any type of search except by violator's or driver's name or perhaps the day involved. As a result, they are seldom searched except in extreme situations that warrant the time involved. And as with the other documents already covered, these are repeatedly indexed, listed, summarized, tallied, logged, etc.

The Traffic Reporting Component will process select data from the traffic citation and the traffic accident report and will provide an automatic capability designed to produce a variety of citation/accident correlation reports. These reports, formatted for car plan and/or motorcycle beats, will provide supervisory personnel as well as field personnel with sufficient data to monitor effectively and influence the traffic accident/enforcement picture in any given area of the city. Other management reports, e.g., monthly officer activity, monthly accident totals, etc., would be provided as a by-product.

In conjunction with other components, data from these traffic-related reports will be available for on-line search by investigative personnel. For this reason, citation data is now being captured under the Investigative Support Component.

CALLS FOR SERVICE COMPONENT

The Calls for Service Component includes those information processes which support the dispatching of police units in response to request from the public, officer initiated activity and officer request for information to support operational needs. All the processes within this component are directly or indirectly triggered by requirements for police service. The processes identified in this component involve extensive man/machine interaction. The concept, at the present time, will add CRT terminals within the dispatch center for transmission of information to the computer.

The Calls for Service Component will function in the following manner with regards to the request from the public for service. The citizen will call the police department emergency number and ask for a police unit for service needs. The service desk officer would receive the call and, at the time of talking to the citizen, input through a CRT the address and the type of call that is being requested. While still talking to the citizen on the phone the service desk officer will receive verification of the address if it is within the City. Once he has verified this and made any corrections if necessary, he then forwards the information to the dispatcher. The dispatcher will receive the information after it has passed through the computer, which will additionally tell the dispatcher the appropriate unit to send, if the unit in that beat or surrounding beats are in service, and any incident history pertaining to that address. This incident history considers previous dispatches, arrest and other related police activity which can be important for operational needs.

The officer initiated service will allow the officer in the field to call the dispatcher and advise the dispatch operator of the type of activity he is involved in. The dispatcher will be able to input into the system the unit number, the activity, verify address, and receive incident history information which he can then relay back to the officer in the field. Additionally the dispatcher will be able to inquire into the system with regards to arrest history, want and warrant information, Department of Motor Vehicle registration, stolen vehicles, and many other informational services which might be of importance to the field officer.

Through this type of informational system the dispatcher and the supervising officers will be able to monitor the activities for security and supervision of field personnel.

MANPOWER RESOURCE ALLOCATION

Manpower resource allocation actually encompasses information from all of the various components combined. This gives us information about the time the officer is spending in the field with regards to calls for service, officer initiated activities, field interview cards, traffic citations and accidents, arrests, and crime reports.

A true manpower resource allocation system is based on total time spent by the officer in the field with relation to all activities he must perform, thus actual crime vs. patrol time correlations become meaningful. With this information readily available, the management staff of the department will have increased capability to determine effective deployment most beneficial to the department and the city.

CONCLUSIONS

The impact of implementing a public safety information system on a police department can only be speculated and projected upon as this total systems approach has not been implemented in a municipal police agency anywhere in the country.

The present operational procedures of the police department will have to be modified to utilize fully the capacity of this system. Some of these modifications have been mentioned in the various component descriptions. Others, while not as a result of automation, came about because the initial detailed analysis provided an overall view of the Department's operations heretofore not possible. And because Long Beach police officers will be living with computers and CRT's for many years to come, the officer training program will include computer applications and terminal operations.

This system should be beneficial in creating a team approach towards solving crime. Currently, police agencies across the country have over specialized to the level of expertise. As a result many officers in the various divisions never consult or consider the problems of the field officers and vice versa. Many times information that is maintained by one officer is not readily known or available to another officer. Through this system we can create a team approach, even to the point of developing a generalist/specialist approach of operations, dependent upon the wishes of the department. This can be done because the information will be gathered one time at its source for ready and rapid accessibility. Thus, ease of data manipulation based on the need of the individual will be one of the keynotes of this system.

An additional benefit to the criminal justice field and municipalities across the country is concept transferability. It is felt that total transfer of a system is not practical nor possible. However, the basic concept, analytical methods, documentation and some programming techniques can be utilized elsewhere thus reducing the cost for development and implementation of a police system. Another major benefit of the concept is that it can serve as a master plan for action, which can be developed and funded on an incremental basis. Additionally, although currently designed for a municipality, the System is expandable for multiple users. Thus, it could serve a regional application.

We are developing a prototype system. Our concepts are based on detailed knowledge gained from a thorough analysis, interpreted by personnel with extensive backgrounds in law enforcement and the

computer sciences and concurred in by police and computer science experts in the academic community.

The experiences to date indicate that our concepts are sound. However, the on-going development of this system requires attention to detail and a close working relationship between designers, users and computer shop personnel. We are continually on the alert for problem areas so that they may be mutually and expeditiously resolved. We anticipate some changes. There is no easy road.

The Long Beach Project Staff has taken the position that a total system requires total understanding.

We look forward to bringing you up to date at the next symposium. Meanwhile, should you visit the City of Long Beach, we would be happy to arrange a demonstration for you.



END