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An Approach to a Kalamazoo Metropolitan Data Bank and Information System

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AN APPROACH TO A KALAMAZOO METROPOLITAN DATA BANK AND INFORMATION SYSTEM

by

Alan Benjamin Le Coff

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Degree of Master of Arts

Western Michigan University
Kalamazoo, Michigan
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While I am solely responsible for this thesis, and the conceptions contained herein, there are many individuals who have contributed to its preparation.

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Lastly, there are no words to express my genuine gratitude towards my family for their encouragement and enthusiasm during my educational career.

Alan Benjamin Le Coff
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CHAPTER I

INTRODUCTION AND STATEMENT OF THE PROBLEM

The purpose of this study is to examine the feasibility and design of an urban information system for the greater Kalamazoo metropolitan area. This will be accomplished through a study of the history of the urban information systems which are now available to us.

This study is meaningful when we observe urban information systems and how they serve to integrate the processes of municipal administrations and enable municipal governments to improve their internal operations and actions. The fragmentation of American local governments and the crises faced by those who manage urban institutions have brought about recognition that the specialization of governmental functions introduces problems to successful municipal government action. There is a need to design, build, and develop a unity among service delivery systems. An urban information system addresses these problems and deals with the inadequacies of local municipal governments.

State and local governments today are charged with the responsibility of managing and operating complex environments. The importance of having the right kind of information for the formulation of decisions became a necessity for city management. Gradually a structural framework for an urban information system emerged, expressed in terms of central files, data manipulation capabilities,
and system programs. The importance of a computer-oriented informa-
tion system became apparent in the decade of the sixties. An
urban information system includes the establishment of a data pool
or bank. A wide range of data relating to persons and property is
included and made available for a wide variety of decision-making.
Thus, an urban information system is a massive data retrieval file,
updated by operating agencies, continuously on call to its users,
supplying them on a routine basis with the information they re-
quired.

The data center is another concept important to this study.
Many individual collections of research data exist in a variety of
private and institutional settings. But, it is impossible to gain
knowledge of the collections that exist outside an organized data
center. The decade of the sixties was one of broad-based research
in the urban information systems field. This research was concen-
trated on the data maintained in organized centers. As a result of
this research, several different approaches to information systems
development emerged. Each demanded different computer capabilities,
focused on different problems of municipal governance, and repre-
ented different concepts of an urban information system.

In designing an information system for Kalamazoo, Michigan,
major benefits for the city can be anticipated. The urban informa-
tion system of Kalamazoo would be aimed at developing workable solu-
tions among its municipal government operations. The outcome of a
fully integrated municipal information system for Kalamazoo is to
facilitate better citizen services and improve municipal management
of the internal operations of Kalamazoo's local government.

The analysis of urban information systems shows the need to study data bases. Data bases are many things. Individual items of data are, for practical purposes, the smallest units of informational material. Organized collections of such units of information constitute data bases. The size of a data base may be relatively small or the data base may represent the census of a given population with thousands of inhabitants.

Data bases vary in the number of records in their file and the number of variables in each record. Also, data bases vary in their initial reason for existence. It is obvious that the origin and current disposition of many collections of data are known only to a very few individuals. On the other hand, there are many collections of data that are widely known, such as the U.S. Census.

Systems technology is the application of data bases to the solution of urban problems. As early as 1955, there existed a concentrated effort to apply systems technology, the utilization of technology, and the integration of data to the solution of urban problems. During this time, and up until the early sixties, there were several attempts within the Federal, state, local, and private sectors to apply systems technology to the solution of urban social problems.

Our first task in Chapter II of this study is to examine the types of activities sponsored and conducted by both public and private sectors involved in research in the application of systems technology to the solution of urban social problems.
Our second task in Chapter II will be to present the various views and perspectives on urban information systems development. The approaches that we will be concerned with are the (1) housekeeping, (2) databank, (3) model-building, and (4) integrated systems approach.

The conclusion of Chapter II will focus on the Urban Information Systems Inter-Agency Committee's (USAC) approach toward urban information systems research and development. The USAC approach was based upon updated concepts of urban information systems, computer technology, and the application of the "systems" or "integrated" approach to municipal information systems. The "systems" approach of the USAC program involved the development and explicit presentation of the essential features of an integrated municipal information system.

The Integrated Municipal Information System (IMIS) approach builds interrelationships among service delivery systems, and formalizes the record-keeping process among municipal functions. This interrelationship and formalization can help to deal with problems common to several agencies within a municipality, as well as to the entire community. For these reasons, we have adopted the IMIS model of urban information systems for the greater Kalamazoo metropolitan area, and will discuss the IMIS application in the latter portion of Chapter II.

In Chapter III we will be concerned with the application of the IMIS approach toward urban information systems for Kalamazoo. The IMIS approach will be applied to the development of a data bank for
the greater Kalamazoo metropolitan area. In December of 1972, representatives from Western Michigan University, Kalamazoo Public Schools, Greater Kalamazoo United Way, City and County of Kalamazoo, and the Implementation Commission met to discuss steps and procedures to be taken in the development of a data bank for Kalamazoo. The efforts of these representatives culminated in the establishment of the Kalamazoo Data Bank Development Committee. This committee assisted the direction of the Kalamazoo Metropolitan Data Bank and Information System (KMDBIS) by drawing up specific objectives. In Chapter III we will concern ourselves with five of these specific objectives:

1. Define community problems and goals, and assess the need for a central data collection system.
2. Define the geographic and organizational scope of the proposed KMDBIS.
3. Determine the concentration of information.
4. List current information available and the form in which it is maintained.
5. Determine procedures for information integration and data base development.

We are given an understanding of the concepts of an Integrated Municipal Information System (IMIS) in Chapter II, and the application of the IMIS model to Kalamazoo in Chapter III. In Chapter IV, we concern ourselves with five major issues. First, there is a section on the factors for the successful completion of the IMIS project for Kalamazoo. Successful completion of an IMIS project depends upon many technical and nontechnical factors. However, experience has demonstrated that certain factors appear to be more
critical than others. Assuming that Kalamazoo can secure the necessary technical capability in electronic data processing, successful completion of the IMIS project rests upon the support, participation, and involvement by operating department administrators and other participants. These factors will be treated in their entirety.

A second section deals with possible benefits from the Kalamazoo Metropolitan Data Bank and Information System (KMDBIS). We will approach the question of benefits from two perspectives: better citizen services and internal administrative improvements. A third section will deal with disadvantages of the application of the IMIS model to Kalamazoo. The fourth section of Chapter IV will deal with conclusions and further research.
CHAPTER II

REVIEW OF LITERATURE

A. Introduction

As early as 1955, there existed a concentrated effort to apply systems technology and the integration of data to the solutions to urban problems. During this time, and up until the early sixties, there were several attempts at the Federal, state, local, and private levels to apply systems technology to the solutions of social problems. But, for the most part, there was little cooperation among Federal, state, local, or private sectors. Consequently, programs often paralleled or duplicated each other. By the late sixties, broad-based research in the application of systems technology to the solution to urban problems flourished due largely to the cooperation finally achieved among Federal, state, and private sectors. As a result, various approaches to information systems emerged. Each required different computer capabilities, focused on different problems of urban governance, concerned different groups, and represented different conceptions of an urban information system.

Each approach contributed to the conceptual and technical foundation that led to the establishment of the Federal Urban Systems Inter-Agency (USAC) program. The USAC program, from its origin in 1970, represented the first cooperative, concentrated
effort on the part of Federal, state, local, and private sectors.

B. Federal Support

As the United States enters the mid-seventies, we are faced with complexity and changing trends of urban life and social and community problems. Our communities are struggling to exist amid unrelenting change, much of which has resulted from our technological advancements. These changes and problems have given rise to the issue of utilization of technology and to the need for cooperation among community leaders. There is a move to utilize resources, coordinate our manpower, and combine our computer technologies in finding solutions to urban problems (Bellush and Hausknecht, 1967; Boulding, 1966; Chartrand, 1971).

The potentials of systems technology, systems analysis, and computer technology to deal with community problems is considered of great importance. Frederick W. Taylor, "the father of scientific management," introduced a new philosophy and approach to management. He sought to place management in the role of controller of the operations, organizer of the work force, and planner of activities. Taylor and Frank and Lillian Gilbreth were the first to undertake time studies (Barnes, 1955). Their efforts emphasized the importance of creating an organizational element dedicated to operational analysis.

Companies such as Du Pont, Westinghouse, and General Motors started to view the corporate line and staff functions as interrelated elements of the whole. With profit as a motive and
corporate performance as a basis for evaluation, management decision-makers invented prediction and review mechanisms such as economic graphs, statistical charts, trend lines, general studies, and quantitative intra-systems analysis.

In the years just prior to World War II, scientists concerned themselves with the development of systems technology as it applied to military operations. In this setting, the Rand Corporation came into existence in 1946 (cf. Smith, 1966). Its scientists and technologists studied problems of defense, arms control, and other strategic military areas. While the private sector was concentrating on systems technology as it applied to military operations, the Federal government was being exposed to systems technology in a different light. Consequently, the Federal Planning-Programming-Budgeting System (PPBS) came into existence. According to Hatry and Cotton (1967:15), the PPBS, focusing on problems and resources, featured four distinctive characteristics:

1. It focused on identifying the fundamental objectives of the Government and then relating all activities to these (regardless of organizational placement);

2. Future year implications are explicitly identified;

3. All pertinent costs are considered; and

4. Systematic analysis of alternatives is performed. This is the crux of PPBS. It involves (a) identification of Governmental objectives, (b) explicit, systematic identification of alternative ways of carrying out the objectives, (c) estimation of the total cost implications of each alternative, and (d) estimation of the expected results of each alternative.

After the PPBS had been instituted, the decision was made by President Lyndon B. Johnson to implement PPBS in operation in all
major executive agencies and organizations.

Within the United States Senate (Chartrand, 1971), there was a strong determination to move with the times, utilizing available resources in geographically defined areas. The Senate established the Special Subcommittee on the Utilization of Scientific Manpower during the Eighty-ninth Congress. Gaylord Nelson, United States Senator, as chairperson, tried to explore two significant areas. First, new skills, experience, and expertise to design, operate, implement, and test and evaluate new "systems" were examined. Secondly, an evaluation of already existing technological systems in the area of domestic problems was undertaken.

Extensive questionnaire studies were conducted in state and local governments to explore the use of automatic data processing (ADP) and systems analysis. In the hearings that followed, 20 governors and mayors cited the utilization of systems technology in their respective states and cities.¹

This extensive effort, at the Federal level, in determining the extent, limitations, and utilization of systems technology as applied to social and community problems produced some very significant findings. We present the following lengthy statement because of its thoroughness and quality:

1. The essential elements and interacting components of social and community problems must be monitored by some responsible public institution.

¹Questionnaires were sent to the 50 states, 22 large cities, and selected regional development groups to survey the extent to which systems analysis and automatic data processing (ADP) were being employed.
2. A comprehensive survey of activities featuring the use of systems tools and techniques must be conducted, and the results formatted and disseminated so that there is widespread cognizance of their nature and implications.

3. The state of the art of operations research, systems analysis, automatic data processing, and related techniques and equipment is swiftly advancing and must be reviewed regularly in the light of established programs and projected needs.

4. Information exchange mechanisms need to be developed. These should be capable of providing, both on a regular and ad hoc basis, salient narrative and statistical data on project findings, technical proposals placed before Federal and State agencies, literature citations, and equipment software development and applications.

5. A master plan, under joint Federal-State sponsorship, for the orientation and education of key personnel regarding the potential of systems technology should be prepared. Participants in the training would include selected Federal Government personnel, State and local officials, and private sector representatives involved in urban planning and program performance.

6. A special evaluative capability at the Federal level to prepare, on a continuing basis, cost-benefit comparisons for proposed technological change is required. This would allow planners to be apprised in advance of the implications of their budgetary and program recommendations.

7. The Congress should consider authorizing and directing Federal departments and agencies to develop systems analysis and ADP capabilities specifically tailored to the requirements of the State and localities.\(^2\)

---

\(^2\)ADP refers to Automatic Data Processing. The 1966 survey, conducted by the Senate Special Subcommittee on the Utilization of Scientific Manpower, indicated a requirement for continuing examination of the application of systems analysis and Automatic Data Processing (ADP) to social and community problems and concerns.
8. The Congress should determine the usefulness of a formal requirement that State and local governments utilize systems technology in implementing various programs - i.e., housing, highways, pollution control - where Federal funds are involved.

9. The Congress should explore the advantages and disadvantages of granting tax incentives for the electronics and communications industries and "think" groups who develop systems methodologies for the needs of State and local governments.

10. Federal agencies should make available to the States and municipalities their expertise and findings regarding systems technology and its applications to social and community problems, either by deliberate dissemination procedures or through a policy of active cooperation (Chartrand, 1971:7).

3The Federal government ultimately funded an information system project through the Federal Department of Housing and Urban Development as part of the program of the Federal Urban Systems Inter-Agency Committee (USAC). This led the way for the USAC studies, which were conducted by Systems Development Corporation. This concentrated effort was the most significant endeavor in systems technology since the Rand Corporation's strategic planning consultation with the Defense Department of the United States.

4For the most part, Federal expertise has been applied to the problems of defense and space. In his 1963 Economic Report, President John F. Kennedy stated that: "...in the course of meeting specific challenges so brilliantly, we have paid a price by sharply limiting the scarce scientific and engineering resources available to the civilian sector of the economy."

5A movement to regionalize States, as well as the entire nation, has been felt across the country. This movement, more notibly implemented in the state of Michigan, has been rejected to some degree by county and commission boards who "cry" that power would be liquidated and transferred from the community people to regional sectors. This creates a specific problem since regional planning, in the long run, will dictate and allocate manpower and resources. In making application for such resources and manpower, applicants would be in competition with entire regions if they did not belong to their respective region. Ultimately, funds and resources would be allocated only to regional members.
It has been shown that the Federal government is aware of, and has taken steps to improve the availability and use of information in the management and operations of the full range of public programs (Touche, Ross, Baily, and Smart, 1967). Federal activity in this area, however, has been complimented by other efforts. Along with regional and municipal systems and national networks, university and industrial researchers have been collaborating with state and Federal agencies in cumulating all factual and interpretive data. The focus of these projects has been in transportation, environmental pollution, water resource planning, housing and urban renewal, health services, and education. As these projects are initiated at the various levels of government, the need for communication among elements within state and region becomes increasingly important.

In addition to the exploratory and evaluative efforts of the Federal government, to determine the benefits and uses in applying systems technology to social and community problems, there is also the private sector, and its concentrated effort in systems technology.

C. The Private Sector in Systems Technology

In 1968, the New York State Business Advisory Committee on Management Improvement examined several methods for utilizing systems analysis technology to develop comprehensive solutions to New York State's problems. The Committee investigated the possibility of developing a systems approach to state government. The State of New York solicited help from technicians of the private sector of the community to work with state personnel in evaluating particular
management operations within specific state agencies. The New York
venture between municipal and private research agencies set a pre­
cedent in joint effort between private and public sectors for dis­
cussing and implementing the systems approach to the solution of
state and community problems. The committee examined the systems
approach to attack problems which:

1. Involve broad social, economic, or technological changes;

2. Require integrated activities with other states or levels
   of government;

3. Demand the skills of an interdisciplinary team; and

4. Lend themselves to possible solution through the use
   of scientific management techniques (New York State
   Business Advisory Committee on Management Improvement,
   1968:5-6).

The literature on state and local activities reflecting the use
of systems technology is fragmented. Of the National repositories,
the National Technical Information Service (NTIS), U.S. Department
of Commerce, Springfield, Virginia, provides the most up-to-date
reports in systems tools and techniques. These reports stress the
relationship among data banks and model construction, systems develop­
ment, resources available, and the maintenance of these systems.

A meeting of community leaders and technological experts (1967),
which addressed the involvement of technology with urban problems,
was sponsored by the National Academy of Engineering and the National
Academy of Sciences. This symposium resulted in the preparation of
a report entitled, "Science, Engineering, and the City," and in­
cluded contributions on the subjects of urban planning and urban
research and development. During the course of the meeting,
Dr. Donald F. Hornig, Director of the Office of Science and Technology, National Academy of Science, strongly underscored the responsibility of the scientist in the realm of society and community problems:

We in the scientific community have tended to ignore the magnitude of the urban development task. Responsibility for urban investments and operations are decentralized - tens of thousands of institutions are involved - and each tends to define its own urban mission in parochial terms. The situation has made it difficult to describe adequately major problems in their totality in such areas as housing, education, and transportation and to design workable programs for the implementation of promising solutions (National Academy of Science, and the National Academy of Engineering, 1967:61).

In a recent study of New Haven, Connecticut, the importance of information to the urban manager for decision-making was expressed in terms of five "problem areas": comprehensiveness, accessibility, reliability, timeliness, and utilization (International Business Machine Corporation, Advanced Systems Development Division, 1967:2). IBM teamed up with the City of New Haven, Connecticut to determine the needs of the management leadership of the city. A basic structure of an urban management information system was developed.

The importance of a computer-oriented information system has been studied by the General Electric Company in the State of New Hampshire. The study, the results of which were eventually implemented, included a thorough systems analysis of state agencies, departments, units, and commissions (Internal Automation Operation, General Electric Corporation, 1966:12). A central computer offers access on selected information integrated from requisition, fiscal accounting, payroll, treasury, and retirement.
In the State of Alaska, Lockheed conducted a five-year implementa-
tion plan on the Alaska Information System. The system inte-
grates major systems of administration, employment security, revenue,
health and welfare, criminal justice, highway safety, education,
highway, fish and game, courts, legislation, natural resources, and
development into a file interface, which ultimately serves the pur-
pose of management control and planning (Touche, Ross, Bailey, &
Smart, 1967:3).

In 1967, the States of Washington and Wisconsin adopted a five-
year plan which employed private firms to undertake an Automatic
Data Processing (ADP) planning project. These studies developed a
conceptual framework for the long range evolution of ADP systems.
Five important objectives were identified:

1. Promotion of an effective use of ADP in order to econo-
mically provide service to State citizens.

2. Recognition of the vesting, legal or otherwise, of citi-
zen service program responsibility at the agency level.

3. Recognition of the present heterogeneous development of
ADP utilization.

4. Provision for a natural guided evolution from independent
ADP systems to a functioning coordinated statewide system.

5. Provision for an implementation plan that is not
dependent on the passage of complex legislation or
major realignment of State government organization
and responsibilities (Touche, Ross, Bailey, & Smart,
1967:3).

In this study, a conceptual framework for the long-range use of
ADP systems was developed which could serve the State government
components, and improve information handling systems in the com-
puterization of relatively routine functions.
General Bernard A. Schriever, conference chairperson on a forum entitled, "The Urban Challenge: The Management and Institutional Response," identified four major steps which could be taken in order to position the nation to better overcome urban problems:

1. Creation of a national commission;
2. Creation of a regional planning authority for each urban area;
3. Creation of city system management offices; and

D. Approaches to Information Systems

1. Introduction

The decade of the sixties was one of broad-based research and experimentation in the urban information systems field. As a result, several different approaches to information systems development emerged. Each demanded different computer capabilities, focused on different problems of municipal governance, and represented different concepts of an urban information system. There are four approaches to information systems development that affected the USAC research and development program. Each contributed importantly to the conceptual and technical foundation that underlines the USAC program. The approaches that warrant discussion are the

6Note that most of these steps have been implemented, if not at the Federal level, at the state or regional level.
(1) housekeeping, (2) databank, (3) model-building, and (4) integrated systems approaches (Kraemer, 1972a).

2. The housekeeping approach

In the housekeeping approach, data from routine operational tasks that had been processed by hand came to be processed by automatic data handling equipment. The operational tasks which the housekeeping approach dealt with varied from accounting-type activities to direct support of operations and to planning and management. The conversion process from manual to automatic handling was seen as a mechanical problem and focused on sorting, counting, and simple arithmetic operations (Dial, 1971).

The housekeeping application was focused solely on the internal operations of government; thus, it did not consider data maintained by community and social agencies within the private sector of the community. The scope of the housekeeping approach was broadened. This led the way for different concepts, ultimately the databank approach.

3. The databank approach

The databank approach advocates asserted that urban government needed data about both the environment they served and about internal operations. They argued that much data collected as a result of day-to-day administration could be utilized for planning and management, as well as for operations (Kelly, 1970; Krauss, 1970).

Some systems that reflect the databank approach, such as the
land-planning oriented, Tulsa-based Metropolitan Data Center Project, and the Pittsburg Community Renewal Program (CRP), were developed or proposed for a single governmental function. Others were developed for general use: the Alexandria, Virginia Databank and the Los Angeles Automated Planning and Operational File (APOF). Still others were created for use by public and private agencies: the Portland Metropolitan Databank and the Cincinnati Urban Data Center.

The literature has revealed that experience with urban data banks has been disappointing (Kraemer, 1972b; City of Reading, Pennsylvania, 1970; Glassman, 1972). An implicit assumption of this concept, which differs from the housekeeping approach, was that a core data base existed which was common to the needs of various levels and functions of urban government. Experience with urban data banks has shown, as in the case of the Pittsburg Community Renewal Program (CPR), that a core data base which was common to the needs of various levels and functions of urban government did not exist (Dial, 1971:4). Thus, the most important potential outcome of the databank approach, longitudinal data analysis and research, was not met. Because of rapid change in community characteristics, the utility of a static data base was short-lived.

4. The model-building approach

The model-building approach developed in response to specific environmental problems in a given community, such as land use, transportation, and housing and urban renewal. These problem-solving efforts required the processing and analysis of large
amounts of data and their organization into manageable form. In essence, the model-building approach was more an application of data utilization than an information system.

The major draw-back of the model-building approach is in its promotion of the single purpose and one-time use of models. These models were developed by the efforts of one agency within a given government, and have been useless to other agencies. As a result, the benefits of a model have been overshadowed by the tremendous cost of initial data collection, processing, and analysis.

Generally, the models developed have been unrelated to political and managerial decision-making. They have been built for specialists, and with the specialists' rationale. Few have been aimed at improving decision-making, internal operations, or workings of local government and agencies.

It seemed that the time was appropriate to bring together the various approaches in the development of urban information systems and to search for a synthesis going beyond the previous experiments. There have been a few attempts at such an approach: the IBM-New Haven project is the most outstanding. Thus, the systems approach grew out of the many approaches in urban information systems.

5. The systems approach

While much work remained to be conducted on each of the foregoing approaches to an urban information system, it became clear that work needed to be initiated toward building the linkages to create a broader information system. The systems approach is an attempt to
view the processes of government and the use of information for
decision-making within those processes. They systems approach views
the utility of information technology in its potential contribution
to improving the operational information and decision processes in
urban governments. To achieve that potential, information is viewed
first as part of governmental operating processes and secondarily as
data to be handled.

Improvements of information and decision processes require im­
provements in several related dimensions of the governmental system.
A systems approach to urban information system development required
simultaneous improvements aimed at: (1) integrating information,
(2) realigning organizational structure, (3) developing personnel,
(4) expanding the knowledge of information systems, and (5) altering
the social environment in which information systems are built (Dial,
1971:6).

The systems approach led the way to the USAC research and
development program.

6. The USAC studies

The USAC program has been an effort to sponsor research into,
and the development of, transferable, operationally based, municipal
information systems. The effort was initiated in 1968, when the
Federal Urban Information Systems Inter-Agency Committee (USAC) was

What is meant by transferable and operationally based is the
notion that systems developed in one municipality can be transferred
to other municipalities.
founded. The body is chaired by the Department of Housing and Urban Development, and includes members from the Department of Health, Education, and Welfare, and the Departments of Commerce, Justice, Labor, and Transportation. The Office of Management and Budget, the Office of Economic Opportunity, the Defense Civil Preparedness Agency, and the National Science Foundation are also members of the committee.

Early in 1970, six cities were selected to receive Federal assistance in performing research and development tasks directed at the municipal information system effort. Each city was the prime contractor for its project, and was assisted by a computer system firm and a university as sub-contractors.

The six cities, each with their respective type of municipal information system, as contracted by USAC were:

Charlotte, North Carolina: A comprehensive municipal system, including all local-area information resources, and serving all municipal department.

Wichita Falls, Texas: A comprehensive municipal information system, including all local-area information resources, and serving all municipal departments.

Dayton, Ohio: A municipal information subsystem, covering the public finance sector of municipal government (treasury, assessment, accounting, and disbursing, etc.).

Long Beach, California: A municipal information subsystem, covering the public safety sector of municipal government (police, fire, civil defense, emergency services, etc.).

Reading, Pennsylvania: A municipal information subsystem, covering the physical and economic development sector of municipal government (engineering, parks, transportation, municipal code inspection, economic development, redevelopment, planning, etc.).
St. Paul, Minnesota: A municipal information subsystem, covering the human resource development sector of municipal government (health, mental health, welfare, education, vital statistics, etc.).

The objectives originally stated by USAC underscore very strongly the intent, purpose, and utility of the KMDBIS:

The primary objective of this program, therefore, is to create a capability for combining greatly increased human material, and financial resources together with the most recent level of technological development of computer-based information system. The purpose is to stimulate the development of urban information systems by several orders of magnitude over the past (Hemmens, 1973:2).

Therefore, information systems designed for municipalities present the need to test the following hypotheses that will confront the KMDBIS, as well as the USAC projects.8

1. Information systems will reduce the costs of municipal operations, the growth rate in municipal employment, and the clerical work in municipal jobs.

2. Information systems will improve the reporting in municipal operations by providing more accurate and more timely reports, with less effort.

3. Information systems will improve municipal services.

4. Information systems will make municipal government more responsive to citizens needs and provide more services.

5. Information systems will improve decision-making, by providing more timely and more accurate information by stimulating more interaction among decision-makers, and by providing better projections of the impact of decision.

8An evaluation of impact, though fully needed and justified, is not the purpose of this thesis; rather, the intent of this thesis is the application of a model and the development of vital data bases. Once the feasibility, design, and development study of the KMDBIS is put into effect, a more rigorous evaluation and analysis of selected hypotheses can take place.
6. Information systems can provide indicators of the performance of government and of the quality of urban life.\(^9\)

The USAC guidelines outlined nine major phases of contract activity. They are: (1) administration and organization, (2) orientation and training, (3) monitoring and evaluation (assessment of the impact of the system and other research projects), (4) systems evaluation (ongoing assessment of the major tasks), (5) systems analysis, (6) systems conceptualization, (7) systems design, (8) systems development, and (9) systems implementation. The assessment of the USAC projects cannot be completed until they are fully operational and functioning routinely. It is in the implementation and dissemination stages that the USAC studies bring to light the significance of information data systems for municipalities.

E. Defining Social Problems and Goals

One of the major reasons for the development of information systems has been the critical need for information by municipalities. Decision-makers in Federal government, social service agencies, and local government must have comprehensive, timely, and accurate information on the status of a given situation and possible alternatives in improving it. Information systems are mechanisms to provide the

\(^9\)A more rigorous test of these hypotheses is needed. Before indicators of the performance of government and of the quality of urban life are developed and determined, a technical and qualitative evaluation of the information system and its design specifications must be studied.
necessary information upon which decision-makers can base their decisions.

State and local governments are charged with the responsibility of managing and operating complex environments. The problems facing public leadership include population mobility, an increased demand for services, and the need to define areas of responsibility and priority for regional, state, county, and local governments. Existing and proposed means of operating these governmental entities are constantly under study. Municipal management reforms are also under study in order to create an orderly process of government capable of accomplishing priority public objectives.

There are many ways to define community problems and goals. Manis (forthcoming) has specified four perspectives in defining social problems. They are: (1) public conceptions, (2) the view of appropriate professionals, (3) sociological knowledge, and (4) the norms and values of science.

Public conceptions are a basic source of definition of social problems. They often are exposed through public opinion polls which indicate opinions and attitudes of a group or society. Polls are widely used to provide data on public attitudes, beliefs, expectations, and behavior. The responses are achieved by means of interviews with small but carefully selected samples of individuals. Though public opinion polls can describe opinion at the time of the interview, they have limited value in predicting opinion or behavior.

The views of appropriate community professionals are what experts in a given field see as the reflections of the problems and goals of
the community. Their professional training, experience, and orientation can provide the needed perspective in defining social problems. The expert's interpretation of social problems is a way of defining problems.

Sociologists gather empirical data and develop systematic theories about social problems. Using a variety of research techniques and methodologies, the sociologist develops findings and generalizations from his research. From these findings, sociological knowledge is developed to test and refine sociological theory. The sociologist's definition of social problems may differ from both the public conception and community professional views. The data available to the sociologist and the over-arching perspectives of the sociologist are often not shown to others.

Manis notes that the fourth method of defining social problems is the value perspective of science (Manis, forthcoming). This perspective takes into account science as an institution, with distinctive norms and values of the search for knowledge, empirical testing, the provisional standing of accepted viewpoints, dissent and new interpretations, and dissemination of knowledge.

The design and development of an urban information system can be based on any of the four perspectives of defining social problems. But, the advantages of defining and identifying social problems by the views of appropriate community professionals are worth noting. Community professionals are in a particular situation, in that they are in a position of leadership. The community professional's role as a leader is treated carefully in their relationship to the...
resources necessary to insure the continued functioning of city departments. The community professional is thus in a unique position, as he is charged with the responsibility of managing and operating a dynamic and complex environment. For these reasons, it becomes apparent that the views of community professionals in defining social problems serves as a basis for organizing data for a metropolitan information system.

Key community and municipal leaders in the position to implement better government are one source of defining community problems and goals. Efforts made by these leaders can give tremendous incentive and serve as a vehicle for the development and implementation of the KMDBIS.

F. Right of Privacy

The right of privacy is an issue that develops when the data in information systems and the users are thought to be in conflict with the legal and ethical rights of citizens. Exactly where the rights of the citizen begins in resisting government or agency knowledge of his activities remains a question. The fact that both these rights and the need for data for community purposes exist simultaneously poses the issue.

In recent years, there has been an increase in the establishment of data banks and information systems in Federal, state, and local governments for administration, law enforcement, education, and health care services; in business and industry for management, planning, and research; and in universities for social research.
Concurrently, there has been an increase in the techniques for observing, assessing, collecting, and controlling information about people (cf. Chartrand, 1971; Dawson, 1966). With this increase and with the additional use of these information systems, the question of the right of privacy becomes a salient issue for discussion.

The question of the right of privacy is reflected in technical considerations which provide access controls and security for information stored and processed in information systems. There are many techniques for providing privacy protection to information maintained in data systems. Among these techniques are privacy transformations which include encryption and distortion which are used to distort the stored records to hide the original information (Anderson, 1972; Girsdansky, 1972; and Srinvasan, 1972). Privacy transformations are very useful for providing data protection beyond the more conventional access control techniques, such as passwords.

There has been a serious effort to find solutions to the privacy, confidentiality, and security problems related to personal information maintained in information systems. The Federal government has spent considerable time and money on the question of providing confidentiality to personal information in information systems through possible statutory and regulatory guidelines.

Among the most recent Federal efforts in the area of records, computers, and the right of privacy for citizens has been a study conducted under the direction of Health, Education, and Welfare Secretary Casper W. Weinberger and past Attorney General Elliot L. Richardson (Weinberger, 1973). The report calls for two sets of
safeguard requirements; one for administrative automated personal data systems and the other for automated personal data systems used for statistical reporting and research. This Federal report urges laws for data banks and information systems to protect the privacy of citizens. It reflects a great deal of legislative activity in the U.S. Congress and in State Legislatures. Aspects such as the privacy of citizens and its impact on Federal legislative activity continues to be of great importance in developing specific and uniform guidelines for information systems.

There are many problems in regard to information systems and the right of privacy. The problems of potential violations of citizens' rights through information systems remains in the focus of political, societal, and technical concerns. The solutions to these problems will involve legislative, as well as technical means. The proper balance between limiting access to information for the protection of privacy on one hand, and allowing freedom of information to fulfill the needs of society on the other hand, raises ethical, legal, and technical considerations.

G. Conclusions and Implications

Several approaches to information systems development emerged in the sixties, as we have noted earlier in this chapter. Each demanded different computer capabilities, focused on different problems, and represented different conceptions of an urban information system. The foregoing conditions and events led several governmental agencies to perceive the need for a new method to deal with
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urban information systems research and development. Consequently, the Federal government launched the USAC approach to municipal information systems.

The USAC approach was based upon updated concepts of urban information systems, computer technology, and an application of the "systems" or "integrated" approach to municipal information systems. Basically, the systems approach is a comprehensive analysis of municipal processes. Kraemer (1971:9) expresses the "systems" idea as follows:

Systems are made of sets of components that work together for the overall objectives of the whole. The systems approach is a way of thinking about these total systems and their components. It is an effort to consider a system in its entire context, with all of its ramifications, with all of its exterior connections, and with full cognizance of its place in its context.

The "systems" or "integrated" approach of the USAC program involved the development of a comprehensive, integrated municipal system. It attempts to encompass all activities of local government.\(^\text{10}\) The major goal of the USAC program was to demonstrate the essential features of an integrated approach to municipal use of computers.

\(^{10}\)Charlotte, North Carolina and Wichita Falls, Texas were the only two cities out of the six that were contracted to develop total comprehensive information systems, including all local-area information resources, and serving all municipal departments. In addition to the six USAC city projects, there were four additional USAC management support contracts signed. They were designed to afford consultation and other services to the USAC staff.
1. The Integrated Municipal Information System (IMIS) approach

More specifically, the USAC program proposes an Integrated Municipal Information System (IMIS) as a model of an urban information system. It is helpful at this time to explain the concepts by explaining each term of the acronym, IMIS.

a. Integrated

"Integrated" means that an information system is treated as a whole (Kraemer, 1972b:33). Each part of an information system is rationalized to each other part to maximize its relevance and efficiency. Integration includes not only the idea that essential processes occur toward the achievement of an overall objective of combining data, but also the idea that the activity occurs for its own functional purpose.

b. Municipal

"Municipal" means the geographically defined area of local government responsible for providing services.\(^1\)

c. Information

"Information" as used in the context of IMIS is significant and affects many of the characteristics of the USAC approach to IMIS.

\(^1\)The principles and concepts of IMIS appear to be equally applicable to the development of information systems for other jurisdictions. The term municipal refers to that unit of government which is closest to the source of comprehensive flows of data.
Information is gathered by members of the municipality, and their computer systems process data which are drawn from the collected information. These data, when put to use by members of the municipality, become for them, information. Therefore, the term "information" must be recognized as a term which includes the data in performing municipal functions, and that combination of man and machine interaction which raises the level of meaning and understanding.

d. System

The word "system" in the context of IMIS becomes a perspective in terms of which municipal data are examined and described. The term "system" also implies that a "system" has inputs, that it reacts to these inputs with internal process, and that these processes yield outputs. This perspective has as its focus data in a set of relationships: "its generation sources, its flow in a time stream, its utility in the provision of municipal services, its significance in analytic assessments of community problems and needs, its method of storage and retrieval, and its use in reporting conditions and actions to private individuals and institutions and to other public organizations" (Kraemer, 1972b:35).

The present fragmentation of American local governments results partly from the charters of many municipalities. These charters were designed originally to insulate local functions such as schools, libraries, police, and public utilities. As a result, each function was provided with their own administration, and their own budget.
Extreme specialization of government services and functions have resulted in isolation among these functions. Consequently, the task of mounting a unified approach to specific community problems has been difficult. Some municipal agencies and organizations have chosen independent rather than cooperative approaches. With this type of an attack on community problems, conflict has arisen over who should have prime responsibility for programs and services.

The foregoing conditions have led to differences in the ways services are dispensed, and has also resulted in impaired effectiveness of municipal record-keeping systems. The IMIS approach can build interrelationships among service delivery systems, and formalize the record-keeping process among municipal functions. This interrelationship and formalization can lead the way in dealing with problems common to several agencies within a municipality, as well as to the entire community. For these reasons, we will adopt the IMIS model to urban information systems for the greater Kalamazoo area.

2. **IMIS application**

The Request for Proposal announcing the USAC project was met with overwhelming response from over 250 municipalities. The contract awards marked the commitment of Federal funds ($12,000,000 over three years) to research and development of the USAC-IMIS approach to urban information systems (cf. Appendix A).

The USAC approach to municipal information systems is based on the following nine concepts:
1. Use of integrated data processing systems for interrelating municipal processes.

2. Fundamental analysis of municipal operations and their data processing components as a precondition to the use of computers.

3. Use of a systems approach.


5. Explanation of the full range of computer technology.

6. Perception of the municipality as a basic building block for intergovernmental information systems.

7. Design of operations-based information systems.

8. Design of data processing systems for transfer from one municipality to another.

9. Design of information systems for incremental installation within an overall plan.

These basic concepts of the USAC approach are now being tested in the six projects currently underway. It will probably take several years before they are fully examined. It is also apparent that the USAC project had a substantial amount of time, money, and assistance from the Federal government in developing the IMIS model.

3. **Approach to IMIS**

Given an understanding of urban information systems and IMIS, a question arises: "How does one go about constructing IMIS?" There are three approaches to developing IMIS: in-house, with city developing its own resources; out-of-house, through city reliance on and purchase of outside organizational services; and a combination of in-house development and use of outside resources (Kraemer, 1972b: 46).
Our approach to IMIS will vary from traditional methods since we are concerned with determining the potential for developing an urban information system for Kalamazoo. Our first task will be to identify existing data base in Kalamazoo. A data base consists of all data which a system is designed to receive, store, and process. Because of variety of the functions of a community, there are several data bases. The examination and analysis of these data bases is the subject of the next chapter.
A. Introduction and General IMIS Considerations

The four basic elements of IMIS are people, equipment, procedures, and data base. The people involved in IMIS are those who operate and manage the IMIS system, and are often specialists in systems analysis, electrical data processing (EDP), and programming.

Computer equipment is conventionally referred to as "hardware" and programs as "software." Both hardware and software are essential to IMIS development and operation.

Procedures formalize the way in which IMIS interrelates the data processing activity with all units and departments of the municipal administration. Those who implement these procedures must be sensitive to local perceptions of priorities in order to make decisions on the bases of community needs. An essential element for IMIS development is the existence of an automated data base. An automated data base consists of all the data which the system is designed to receive, store, process, and disseminate, and which can be retrieved as the need arises. In its static form, a data base represents a data bank. Since the IMIS data base is constantly changing, the term data bank is inappropriate. On-going municipal operations, functions, and activities cause the generation of a constant flow of changes in the data base.
When the operations of municipality are updated, the resulting data base is termed an automated data base. Although there is agreement that an automated data base is an essential element in IMIS, there is disagreement in the definition and dimension of an automated data base.

The IMIS approach to urban information systems relies on the existence of one automated data base for an entire municipality. The research conducted by USAC officials indicates that the proposal cities (those requesting IMIS Federal support) had little or no experience with formal data access control boards or plans (Dial, 1971:41). Municipal governments had little experience in gathering their data into a central data base. Inherent in municipal charters is the existence of insulated, functioning departments and units within municipality. Consequently, not one data base, but several data bases function and exist in municipal government. In the research, it was also noted that 47% of the cities have had no experience with modern techniques for improving their respective EDP data base.12

Although a primary objective of the USAC approach is to create a comprehensive municipal information system, serving all municipal departments, the approach neglects to recognize data sources outside municipal jurisdiction (Hemmens, 1973:2). Consequently, such data

12 EDP refers to electronic data processing. EDP should not be mistaken with ADP, which applies to automatic data processing. EDP is essential to the computer technology and information integration of IMIS.
sources as social service agencies and health care facilities are not included. Moreover, such data as education and law enforcement are often separated from municipal data; thus, the appearance of a comprehensive data bank does not exist under municipal government jurisdiction.

B. History of the KMDBIS

Through a grant from the Advance Science Education Program of the National Science Foundation (GZ 2298), a seminar to develop procedures for studying major social problems through the use of the "urban community as laboratory" was established. Drs. Manis and Wagenfeld, Department of Sociology, Western Michigan University, directed the seminar for the 1972 academic year. Since then, the seminar has been offered every fall semester.

During the 1972 academic year, seminar participants consisting of project staff, key community professionals, enrolled sociology graduate students, and invited guests, dealt with topical areas which appeared pertinent to the Kalamazoo locale. The data bank and information system concept for Kalamazoo was discussed and the precedent was established to further research and explore the data bank project.

The members of the seminar endorsed the establishment of such an undertaking and welcomed the preliminary ground work for a data bank committee.\textsuperscript{13}

\textsuperscript{13}I was a member of the data bank committee from January, 1973 to the present. I was also enrolled in the Urban Community as Laboratory seminar during the 1973 winter and fall semesters.
In December of 1972, representatives from Western Michigan University, Kalamazoo Public Schools, Greater Kalamazoo United Way, City and County of Kalamazoo, and the Implementation Commission met to discuss steps and procedures to be taken in the development of a data bank for the Kalamazoo area (cf. Appendix C).

Following is a list of steps that were drawn up by the Data Bank Development Committee which has assisted the direction of the Kalamazoo Metropolitan Data Bank and Information System (KMDBIS):

1. Define community problems and goals we should be working on.
2. Define the geographic and organizational scope to be covered.
3. List current information available and the form in which it is maintained.
4. Determine information needed to facilitate working toward community goals.
5. Determine information gaps.
6. Establish procedures to fill significant information gaps.
7. Determine what part of the current information and new information should be integrated and how to accomplish the integration (City of Kalamazoo, Michigan, 1973).

Correspondence was established with outside specialists in systems technology. The Rand Corporation, Systems Development Corporation, and various Federal agencies, academic project staff, and data bank systems were contacted. The response to the communications varied, but for the most part, offered valuable advice in the planning, implementation, and construction of the KMDBIS.

During the course of the meetings, the participants were
requested to answer specific questions in the use, needs, and expectations of the proposed data bank. Extensive field work was initiated to realize the specific objectives set forth by the Data Bank Development Committee. Several steps were taken to supplement the data collected by the Data Bank Development Committee.

In collecting additional information, we conducted interviews with city and county administrators, private and public community social service representatives, and various academic department administrators. The interviews were conducted to meet the following five objectives:

1. To appraise the potential assistance a given agency could render the KMDBIS.
2. To determine the seriousness and extent of social problems in Kalamazoo, and their effect on the particular agency.
3. To develop a priority listing of the social problems affecting Kalamazoo.
4. To ascertain the amount and composition of data that the respective agency holds.
5. To determine the degree of data integration to facilitate data base development.

C. Kalamazoo Implementation of IMIS

Kalamazoo has several data bases rather than one. In order to establish a truly comprehensive, integrated data base, all information sources must be included. Accordingly, our approach to IMIS development rests on the element of data base, an attempt to include all data sources in the community. One of the tasks in the establishment of the KMDBIS will be to identify our data sources.
The following objectives, drawn from previous objectives of the Data Bank Development Committee and the interviews conducted will be met to identify data bases in the Kalamazoo community:

1. Define community problems and goals, and assess the need for a central data collection system.
2. Define the geographic and organizational scope of the proposed KMDBIS.
3. Determine the concentration of information.
4. List current information available and the form in which it is maintained.
5. Determine procedures for information integration and data base development.

In essence, our task is to identify information and information sources in Kalamazoo, and then proceed to integrate the information into data bases. The degree of integration rests upon the availability of information. Therefore, we will indicate procedures to achieve information integration for data base development, although currently insufficient information may exist for complete development.

1. **Defining community problems and goals and assessing the need for a central data collection system**

   Community professionals of Kalamazoo will be in the position to operate and direct the operations of the KMDBIS. These professionals will also be in the position to implement the findings from the KMDBIS in directing urban policies for the Kalamazoo community.

   A major source of information on social problems is local government. The importance of having the right kind of information for the formulation of decisions becomes a point of focus for city
management. Community professionals have the ability and opportunity to utilize this information in order to create an orderly process of government capable of accomplishing priority public objectives. Moreover, community professionals also have the political power to establish an urban information system. Responsible leadership in state and city government can take steps to substantially improve the role of information in the management and operation of the full range of public programs. With efforts being made to improve information handling systems, community professionals will use an urban information system with an orientation to problem-oriented activities of the community. Also, community professionals are constantly involved with public opinions and academic knowledge, utilizing their suggestions and criticisms. For these reasons, we have taken the perspective of the community professional in defining social problems and goals, to which we will achieve a central data collection system for Kalamazoo.

Upon request, the participating organizations drew up what they felt to be significant areas of concern for the use of organized data. The consensus was that the data bank and information system needed to be utilized in the operations, decision-making, and planning by city and county officials, assessment of human resource needs in the community, program development, and evaluation of United Way agencies, and for problem-oriented urban research by academicians.
a. Goals of the City of Kalamazoo, Michigan

A City Manager's committee composed of the Assistant City Manager, Chief of Police, and the Directors of Finance, Purchases, Public Works, Community Relations, and City Planning assisted in determining the following objective and policies of the city government.

The basic objective of government in the City of Kalamazoo is as follows:

To provide effective, efficient, and responsive government to all citizens through a city administration geared to meet those needs.

To accomplish this objective, the following policies were suggested:

1. Apply accepted and successful business techniques to the task of running government.
   a. Provide strong administrators in every leadership position.
   b. Provide an organization that is effective, yet not cumbersome.
   c. Provide accurate, up-to-date and enforceable codes and ordinances.
   d. Provide the financial resources required to support programs, such as new, broad, non-property based revenues for the City of Kalamazoo.
   e. Insure that financial resources are judiciously and effectively utilized.
   f. Provide an ongoing program of publicity of the positive achievements of city employees and city programs.

2. Encourage, through direct contact, the stimulation of private development within the City.
a. Provide ordinances that stimulate rather than discourage excellence in design, and thereby, encourages good development in the City.

b. Provide incentives for business wishing to expand or locate in the City.

c. Continue to encourage the remodeling and rehabilitation of existing businesses.

3. Involve the citizen effectively in the governmental process.

a. Provide methods and research for determining effective means of citizen participation.

b. Provide programs geared to informing the citizen of governmental programs.

c. Provide programs geared to enhancing pride in the city as a place to live, work, and play.

d. Determine methods for sampling public opinion on key issues facing the City administration.

4. Encourage and participate directly in efforts to reduce the necessity for government whenever possible.

a. Endorse governmental consolidation efforts in Kalamazoo County.

b. Negotiate inter-governmental compacts on a county or metropolitan basis if such action can be shown to reduce costs, improve services, achieve equitable tax distribution, and assure long-range coordination of interlocking administrative functions and capital improvement programs.

5. Eliminate environmental damage of all kinds and taking positive steps to enhance our environment.

a. Provide an adequate and safe water supply and distribution.

b. Provide adequate and safe wastewater collection treatment and disposal.

c. Provide adequate storm drainage and facilities to enhance the ground water supply.
d. Provide adequate solid waste collection and disposal and reuse of landfill sites.

e. Eliminate environmental damage and visual pollution by the enactment of strong ordinances dealing with tree removal, overhead utility lines, signs, architectural controls, etc.

f. Encourage and support programs that will reduce or eliminate environmental damage caused by air pollution, water pollution, sedimentation and erosion, destruction of ecological systems and areas, etc.

g. Encourage effective and appropriate land use patterns. This should include making optimum use of existing public facilities.

h. Encourage the use of mass-transit to lessen air pollution caused by private automobiles.

6. Encourage and work toward the provision of safe and decent housing for all economic levels.

a. Provide strong public leadership to stimulate new housing and the upgrading of existing housing for all economic levels.

b. Provide incentives for keeping housing in a safe, decent, and attractive condition such as property tax reform.

c. Provide necessary public improvement and facilities required to enhance residential areas as living environments.

d. Provide strong governmental leadership in stabilizing residential neighborhoods and protecting property values.

e. Provide strong and effective enforcement of existing codes designed to keep housing units in a safe and decent condition.

f. Provide for continual updating of applicable codes and ordinances related to housing.

g. Provide and/or stimulate educational opportunities pertaining to the care and maintenance of housing in Kalamazoo.
7. Provide human resources programs designed to assist low income families.
   a. Recruit personnel on a paid basis and volunteer basis to assist in solving human problems at their source.
   b. Provide the stimulus of the employment of low income persons and disadvantaged persons in the Greater Kalamazoo Area including local government.
   c. Stimulate better race-ethnic relations.

8. Provide leisure time activities for all segments of the community geared to specific age groups.

9. Provide an environment which allows and encourages men to satisfy his spiritual and self-fulfillment needs, whatever they might be.

10. Create a safe community.
    a. Explore methods for eliminating the need for law enforcement activities.
    b. Revamp the justice system with the emphasis upon preventative measures and minimize the time delays in the adjudication process.
    c. Provide, operate, and maintain safe pedestrian and vehicular facilities (City Manager's Ad Hoc Committee, 1972).

The goals outlined by the City of Kalamazoo covers a wide range of objectives. Our task here is to examine how these "policies" can be applied for purposes of guiding the development of the KMDBIS.

Such policies as, "encouraging and working toward the provision of safe and decent housing for all economic levels" (6.) and "providing human resources programs design to assist low income families" (7.) seem to be appropriate for the purpose of the KMDBIS. Other policies, such as "encouraging, through direct contact, the stimulation of private development within the City" (2.) and "eliminating environmental damage of all kinds and taking positive steps to enhance
our environment" (5.) seem to be policies not easily addressed through the KMDBIS.

In transferring these policies into guidelines for the KMDBIS, we must recognize the information maintained by the City of Kalamazoo. These policies desired by the City and their consequent impact on the development of the KMDBIS are contingent on the availability of information on these salient areas of interest.

There are many goals that are outlined by Kalamazoo municipal officials that are not inherently reachable by the KMDBIS. Such a goal as "apply accepted and successful business techniques to the task of running government" (1.) calls for the interface between the public and private sectors of Kalamazoo. This is not an objective of the KMDBIS. Rather, the KMDBIS will serve as a structural framework in serving both the public and private sectors.

Often data needed to achieve various community goals are not available. This is the case in Kalamazoo. Various goals outlined by city and community professionals can not be met for reasons of inadequate or non-existing data. While some goals desired by community professionals may be reached with the utilization of data provided by the establishment of the data bases, these goals cannot be achieved until the implementation and orderly operation of the KMDBIS.

This list of information currently available by the City of Kalamazoo and the form in which it is available will benefit the implementation of these policies into guidelines for the development of the KMDBIS. By denoting information and determining the
useability of this information, the successful implementation of the policies of the City can be achieved. The treatment of the issue of information will be dealt with in the succeeding pages of this Chapter.

b. Possible Greater Kalamazoo United Way (GKUW) uses of a central data collection system

A central data collection system might assist the Greater Kalamazoo United Way (GKUW) in performing its role in: problems formulation, program development, and evaluation. Problem formulation involves the collection, interpretation, and documentation of the comprehensive information needed to accurately define and identify human care needs, analyze and order them. To accomplish this, we need access to current social statistics, surveys, and other information available.

Program development involves the development of a package of services to address the problem elements. To accomplish this, we must catalogue existing services and resources operating in the Kalamazoo community, and update information on agency caseloads and requirements. This information must then be related to population needs data to develop a package of services for a given population.

Evaluation involves measuring the effectiveness of a service package and the extent to which agency project goals and program services parallel the needs of those they serve. This process of evaluation might be facilitated were there a system for analyzing the agency client population. Furthermore, the effectiveness or
lack of effectiveness of the service would influence the priority ranking of the service package.

c. The role of the researcher and the research plan

The KMDBIS is a proposed joint venture among the City, County, community, and the academic institutions in the Kalamazoo area. The primary objectives of the data bank and information system, as set forth by the participants, are met by academic research directed at perceived community problems and goals.

Upon implementation of the IMIS model for the KMDBIS, municipal government and community and social agencies would benefit by the research initiated and conducted by academic institutions. The research would be directed at community problems and goals, as perceived by community professionals representing key municipal and community departments and agencies.

The KMDBIS will incorporate the recommendations indicated in the previous research of municipal developments of information systems. It will also take particular notice of community problems and goals as perceived and proposed by municipal and community professionals. The primary objective in the initiation of the KMDBIS is to provide an integrated base for social, community, and municipal information systems from which a broad spectrum of participating organizations could be utilized for three purposes. The three purposes are: 1) better policy analysis and decision making, 2) community program initiation, development, and evaluation, and 3) academic research directed to community problems and goals.
The role of the researcher in the KMDBIS is two-fold. First, the researcher requires fieldwork to gain knowledge in solving community problems. Through the KMDBIS, the researcher has the opportunity to enter this field of study. Second, the researcher, in applying his knowledge and research abilities, fulfills the objective of the KMDBIS, solving community problems (cf. Appendix B).

The primary objective of the KMDBIS encompasses the following specific objectives of the researcher:

1. To provide coordinated information to improve routine administrative decisions of county government, municipality, and private social service agencies.

2. To provide an integrated data base to improve policy analysis and decision-making of county government, municipality, and private social service agencies.

3. To identify the needs of the community on the basis of information gathered by various agencies.

4. To identify deficiencies, lack of coordination, and overlapping of social services between various agencies and local government.

5. To assist in program initiation and development.

6. To develop instruments to assess and evaluate effectiveness of program services of a community.

7. To conduct evaluation of social programs.

8. To create a capability for combining greatly increased data and information from various sources together with the most recent level of technological development of computer-based information.

9. To utilize the potential of systems technology for understanding and solving social community problems and services.

10. To insure that information systems developed are operationally based.
11. To provide a broader approach in research dealing with social and community problems.

12. To test payoffs of the project.

13. To develop a viable cooperative management system to operate the Kalamazoo Metropolitan Data Bank and Information System.

14. To disseminate information to sponsoring organizations.

15. To minimize drawbacks of data banks through the following procedures:
   a. Rather than attempt a comprehensive core data base, data bases will be defined on a functional basis and a unified data base will be established.
   b. Cost of the participation will be kept to a minimum through the use of data already collected and acquiring new data through routine data collection sources. After the initial costs, maintenance costs should be considerably lower due to standardization and coordination of efforts.
   c. A time sharing system with on line communication makes it practical and feasible to update data at regular intervals.
   d. Data will be selectively stored on the basis of priority assigned to them. The criteria will be utility of data, research applications, and the extent of need of repeated retrieval.
   e. Data requested for a specific purpose will be maintained for a specific time period and unused data will be removed from an active file.

16. To maintain confidentiality and protection of individuals - conformity to Federal, state, and local statutes will be met (Sonnad, 1974:22-26).

2. Defining the geographical and organizational scope of the proposed KMDBIS

The geographic and organizational scope of an IMIS model covers the broad range of services under the control of municipal
jurisdiction. IMIS guidelines indicate that "jurisdiction" means city, county, or region services under the control of some form of municipal government. The IMIS definition of "jurisdiction" is affected by the notion of one automated data base covering all municipal services.

Our approach in defining the scope of the proposed KMDBIS differs from the IMIS definition, for it recognizes the existence of several data bases under municipal control. The KMDBIS also attempts to cover services provided by agencies outside the jurisdiction of municipality. In our attempt to develop a fully integrated system, we must include services provided by agencies not necessarily under municipal jurisdiction.

The dimension and geographic scope of the proposed KMDBIS incorporates county, municipal, social service, and academic institutions within the Greater Kalamazoo Metropolitan community. Other institutions, agencies, and organizations have been invited to participate in this joint venture. Upon their response, the scope of the proposed KMDBIS could very well change.

3. The concentration of information

There are many municipal departments and community agencies that maintain information suitable for the KMDBIS. Some of those sources fall under the control of municipal jurisdiction, others do not.

a. Information sources under municipal jurisdiction

There are many departments within the City of Kalamazoo
government that maintain information applicable for the KMDBIS. Of these departments, there are four that maintain extensive information most likely to be included in data bank development. They are: The Departments of Buildings, Planning, Assessors, and Police.14

There are significant amounts of information in these four areas of operation of interest to municipal leaders, social service agencies, and the university. It is to our advantage to use this information since it is computerized and it is possible to collate the information into a data bank system. This information, once organized, would allow administrators and policy-makers to evaluate and allocate the manpower and resources which are available.

b. Information sources outside municipal jurisdiction

There are two general information sources that are outside municipal jurisdiction: social services and the Kalamazoo Public Schools.

Information by social service agencies is maintained under the auspices of the Greater Kalamazoo United Way (GKUW). This information is centered around service profiles of programs, demographic data on clientele, personnel performance, and program development.

The Kalamazoo Public Schools maintain data on students, teachers, personnel, and administration.

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14Although the Police Department's information falls under the jurisdiction of the City of Kalamazoo, the Police Department is separated from municipal government. The Police Department, as well as the City government of Kalamazoo, have their own budgets and administrations.
4. Current information available and the form in which it is available\(^{15}\)

The following is a specification of information available within the participating organizations for the formulation of the KMDBIS. There are two categories of the information.

The first category includes information under the jurisdiction of municipal control. Similar to the IMIS definition of "information," this category deals with information under the auspices of the City of Kalamazoo. This information is maintained by several departments within the Kalamazoo City government. The departments have not achieved, in totality, an overall level of information maintenance and coordination sophistication. Consequently, the information is organized around areas of general responsibility, information available, and method of identification. The information is organized by the functions of the various departments. This method of indexing indicates the presence of not one data base under municipal control, as suggested by the IMIS model, but several.

The second category includes information that exists outside the jurisdiction of municipal government. Although differing from the IMIS definition of "information," we have included information provided by services outside municipal jurisdiction to meet our objective of a fully integrated system. The information included in this category is maintained by the Kalamazoo Public Schools,

\(^{15}\)This information was collected in the field by interviews, participant observation, and from secondary sources.
a. Information under the jurisdiction of municipal control

Proponent: City of Kalamazoo

ASSESSOR'S OFFICE

Areas of general responsibility concerning information:

- Property assessment information
- Property line maps

Current applications which are complete and running:

Property file:
- Tax bills
- Tax rolls
- Special assessments rolls
- Delinquent tax rolls
- Delinquent tax bills
- Tax sales notices
- Assessment roll
- Tax history cards
- Property reassessment and statistics
- Veterans and senior citizens state reports
- Special assessment bills
- Personal property statements
- Notice of assessed value
- Sales ratio evaluation
- Tax cash accounting

Computerized information available:

Property file:

Includes location of the property, property owners name and address, property description, assessed valuation, property classification and with the related file include zoning information and city area. Consists of approximately 27,000 accounts.
Tax receivable file:

Consists of one record for each property indicating current outstanding balances and tax due. Only for 1972 to this point.

Data currently kept or updated by departments:

Deed holder
Mailing address
Legal description
School district
Classification
City economic area
Zoning
Land value
Building value
Assessed value
Assessed value of prior year
Code indicating vacant or improved
Code indicating exempted for blind
Senior citizen or veteran

Methods used to identify property:

S.B.C. number and address

Composite of information requested for master property file:

Existing land use
Zoning
  Conforming
  Nonconforming
Owners vs. renter occupied structure
Family composition
  Age
  Size
  Income
Size of structure
Number of floors
Square feet for each occupant
Type of construction
  Roof construction
  Roof openings
  Fire walls
  Fire doors
  Area separation walls
Means of ingress - location
Means of egress - location
Location of internal fire protection controls
Location of standpipe connection
Utility control location
Type of heating system
Type of air conditioning system
Gross and net floor area
Telephone entrance line location
Location of elevators
Location of elevator operating source
Approximate age of structure
Number of Dwelling Units
Number and type of rooms within dwelling unit
Number of employees
Number of occupants
Phone number
Number of vacancies
Changes to a structure such as additions, alterations, repairs, and demolition
Parking spaces, commercial and residential
Violations requiring corrective action
Building Code
Fire Prevention Code
Action, if any taken to correct
Owner of record-deed holder
Property address
Mailing address
Legal description
School district
City economic area
Land value
Assessed value
Assessed value of prior years
Property exempted for the blind, senior citizens, or veterans
Assessor's map number
Lot characteristics
Frontage
Area
Yard dimensions
Existing easements
Topography and soil characteristics
Street type
Utility record
Lot served with sewers
Lot served with water and size of main
Lot served with gas
Lot served with electricity
Fire hydrant location
Date of last fire inspection
Past fire frequency
Civil defense structure information
Amount of shelter stock
Shelter capacity
Shelter protection factor
Shelter capabilities - water pipes, sewer pipes, etc.

AUDITING DEPARTMENT

Areas of general responsibility concerning information:

Accounting, bookkeeping, and budget control
City employees retirement board

Current applications which are complete and running:

Payroll
   Sick and vacation report
   Checks
   Journals
   Hospital insurance deduction list
   Credit Union deduction list
   Life insurance deduction list
   Bond deduction and balance record
   Annual report to actuary
   Annual earnings statements
   Quarterly State Social Security report
   Labor distribution report
   Employee list and mailing labels

Accounting
   Voucher checks
   Applying charges to budget codes for:
      Accounts Payable
      Inventories
      Payrolls
      Journals
   Budget worksheet

Computerized information available:

Payroll file
   General data related to all employees, including name and address, pay rates, and related data from the generation of payrolls, sequenced by employee numbers within departments. Approximately 2,000 accounts.

Budget file
   Contains appropriations and expenditures for budget codes by month and year-to-date.
Information available:

Accounting
  Receivables
  Payables
  Fixed assets
  Inventories
    Location
    Costing
Auditing
  Budgetary controls
  Year-to-date
  Monthly statements
  Prepaid travel

BUILDING DEPARTMENT

Areas of general responsibility concerning information:

Housing code inspections
  Building permits and code inspections (electrical, plumbing)
  Zoning compliance inspections
  Weight and measure inspections
  City market

Data currently kept or updated by departments:

  Building permits
  Zoning board applications and determinations
  Decisions reached by other Boards of Appeals
  Corrective notices
  Housing violations letters, postings, correspondence, etc.
  Pertinent correspondence

Methods used to identify property:

  Address

CITY CLERKS OFFICE

Areas of general responsibility concerning information:

  Birth certificates and records
  Bonds and contracts filed with City
  City Commission minutes and records
  Death records
  Deeds (City owned property)
  Election and voter information
  Licenses and permits filed with City
  Ordinances of City (official records)
  Petitions for sewer construction, street paving, water service, etc.
Current applications which are complete and running:

City Clerk
Voter registration file
Election procedure and master lists
Precinct realignment
Identification cards
Mailing labels
Jury selection
City election tally
Voters continuation forms

Computerized information available:

Voters registration master file
Consists of voter record for each registered voter, including name and address, birthdate, sex, and last year eligible to vote. Approximately 100,000, including entire County.

Vendor file
Consists of name and address for each vendor to whom the City pays bills, and including the dollar amount purchased from them in the current year.

Information available:

Purchasing
Vendor file
Notice to department upon receipt of goods
Matching purchase orders and invoices
Purchase orders for supplies via inventory

Data re:
Births
Deaths
Marriages
Assumed Names
Permits
Voter registration
Jury selection

Register of deeds
Title data
Property files
Certifications
Sale information

Equalization
Sale information from deeds
Assessments
Assessments rolls
Corporation property values
CIVIL DEFENSE

Data currently kept or updated by departments:

- Civil defense shelter data
  - Floor plan
  - Water availability
  - Sewer capacity
  - Protection factor
  - Shelter stock

Methods used to identify property:

- Address

CO-OPERATIVE EXTENSION

- 1700-2000 mailings monthly

DISTRICT COURT

Areas of general responsibility concerning information:

- Civil suits
- Driver's licenses
- Evictions
- Probation
- Warrants

FIRE DEPARTMENT

Areas of general responsibility concerning information:

- Fire hazard inspections
- Number and location of fires

Data currently kept or updated by departments:

- Fire inspection data
  - Address
  - Type of structure
  - General description
  - Occupied by
  - Occupied as
  - Name and address of owner
  - Name and address of executive official
  - Number of exits
  - Type of heating equipment
  - Type of electrical wiring
  - Special hazards
  - Fire protection equipment
Methods used to identify property:

Address

HEALTH

Information available:

Disease reporting data
Drug-related information
Sanitation data
Economic data of citizens

PARKS AND RECREATION

Areas of general responsibility concerning information:

Cemeteries, maintenance and operation
Creek and river cleaning
Disease and insect control
Golf courses
Swimming pool
Youth and senior citizens recreation programs
Tree care (along streets)

PERSONNEL DEPARTMENT

Areas of general responsibility concerning information:

Employment and salary information for city jobs

Information available:

Payroll
Deductions
Taxes
Fringes
Personnel
Employee time sheets
Vacation data
Sick leave data

PLANNING DEPARTMENT

Areas of general responsibility concerning information:

Land use maps, plans
Zoning
Subdivisions
Population and housing information
General city growth patterns
Capital improvements plans

Current applications which are complete and running:

Planning
Land use statistics
Capital improvement program

Computerized information available:

Planning statistical file
Consists of a deck of cards in which parcels are measured within the block by acres, and land use code. Approximately 8,000 records.

DIME file
Consists of data which should be usable as a geographic base for identifying properties.

Data currently kept or updated by departments:

Vacant land
Acreage by zoning district
Re-zoning
Special uses
Existing land use
Subdivision

Methods used to identify property:

Centroid

Information available:

Planning
Geo-coding of:
Housing data
Economic data
Census data
Special studies
Zoning data
Transportation data
Street name inventory

POLICE DEPARTMENT

Areas of general responsibility concerning information:

Records of all violation of City ordinances and State statutes, traffic, criminal, civil, etc.
Firearms registration

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Current applications which are complete and running:

Parking tickets
  Unpaid list
  Paid list
  Collection statistics
  Badge statistics
Police
  Monthly statistics on moving violations, offenses, and accidents
  Selective Enforcement Bulletin

Computerized information available:

Parking tickets master file
  Contains data on unpaid parking tickets by date issued, ticket numbers, violation numbers
Police statistical file
  Includes a record for all moving violations, offense reports initiated by Police Department including such data as type of the offense, time of the offense, and location. These data have been saved on one file for each year since 1970.

Methods used to identify property:

Address

Information Available:

Law enforcement
  Criminal statistics and data
  Vehicular data
  Manpower utilization
Moving violations
  Ticket number
  Date issued
  Day
  Month
  Year
  Day of week
  Time
    Hour, A.M.-P.M.
  Residence
  Age
  Race
  Sex
  Type of vehicle
Location
  Street and block number
  Direction
Violation

Uniform crime classification

Detail

Shift

District

Determination

Status

Badge number

Type of accident

Division

Special details

Circuit court

Month

Year

Disposition

Lower court

Month

Day of month

Year

Disposition

Judge

Month arrested

Accidents

Accident serial number

Time

Month

Year

Day

Hour, A.M.-P.M.

Location

Amount damage

Street on

Direction

Street at

Street classification

District

Shift

No. h. & r.

Type of accident

Type of vehicle

Drivers

Residence

License

Age

Sex

Severity

Weather

Light

Locality
Road
  Construction
  Surface
  Character
  Defects
Speed
Directional analysis
Road type
Pedestrian action
Violations indicated
Drinking indicated
Drinking accident
Violation control
Conditions
  Physical
  Vision
  Highway
  Vehicle
  Traffic control
Investigation
Disposition
Badge number
Division reporting
Fatal and injury accidents
Accident serial number
Time
  Month
  Year
  Day
  Hour, A.M.-P.M.
Location
  Amount damage
  Street on
  Direction
  Street at
  Street classification
  District
  Shift
  Mo. h & r
  Year
  H. r. class
Type of accident
Type of vehicle
Person
  Sex
  Age
  Location
  Severity
Directional analysis
Road type
Pedestrian action

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<td>Special details</td>
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PUBLIC WORKS DEPARTMENT

Areas of general responsibility concerning information:

Street construction and pavement
Leaf collection
Sewer construction and maintenance
Snow and ice removal
Engineering plans for city projects
Base maps of city
Topographic maps
Aerial photos
Sewage treatment works

Current applications which are complete and running:

Vehicular master file
  File maintenance and lists only
Vehicle operations costs
  Public works
  Water
Vehicle revenues
  Public works
  Water

Computerized information available:

Public works cost account master file
  Similar data to Water Department cost master file related to Public Works Department and Sewage Treatment Plant. Approximately 11,000 accounts.
Vehicle master file
  Contains approximately 1,200 records with related information for each vehicle on the file, by vehicle number within a department including such data as cost, year purchased, description, serial number, and where applied includes the depreciated rates, and revenue generated, and cost of operations spent.
1970 highway needs study file
  Contains code descriptions of street sections in the City, identifying types of street conditions at the time study was initiated. Coded by project number only.

TRAFFIC ENGINEER'S OFFICE

Areas of general responsibility concerning information:

Traffic volume counts
Public parking systems
Current applications which are complete and running:

Parking
  Parking survey statistics
  Parking revenue study

Methods used to identify property:

Address

TREASURER'S OFFICE

Areas of general responsibility concerning information:
  Payments to the City of Kalamazoo - property tax, water bill, sewer assessments, etc.

Information available:

Treasurer
  Tax statements
  Tax rolls
  Delinquent rolls
  Tax sale notices
  Funds for investments
  Return on investments
  Receipting of funds
  Account balances

WATER DEPARTMENT

Areas of general responsibility concerning information:
  Water supply and distribution data

Current applications which are complete and running:

Water and sewer billing
  Statistics
  Cash receipts
  Accounts receivable
  Past due notices
  Cost and project accounting

Inventories
  Update and distribution of charges
  Water
  City yards
  Small stores
  Traffic engineering
  Asphalt
  Transportation

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Computerized information available:

Water and sewer billing file
Contains related data to all water and sewer customers using one account for each meter installation. Includes meter location address, mailing address of customer, eight quarters of consumption history, deposit information, water-meter installation data, account balances. Approximately 27,000 accounts.

Water Department cost master file
Income and expense data related to all accounts used by the Water Department of labor and material spent and some overhead charges. Approximately 500 accounts.

Inventory file
Consists of approximately 6,000 part numbers used by six different inventory locations in the City, containing part number description, price, last three purchases by price, vendor, and date.

Proponent: City of Portage

Current applications which are running and complete:

Property file
Tax rolls
Tax bills
Payroll and labor distribution
Water billing
Voters registration file

Computerized information available:

City of Portage files
Described in the same general contents as those of Kalamazoo for the following files:
Property files
Voters registration
Water billings
Payroll

b. Information outside the jurisdiction of municipal control

Proponent: Kalamazoo Public Schools

DATA:                FORM:

Student data base (K-12)  Computer-based

Name
Number
Street address

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Phone
Sex
Ethnic code
Birth date
Building, room, grade, counselor
Father/male guardian
Mother/female guardian
Census tract and block

Personnel data (all salaried personnel): Computer-based

Name
Social Security number
Address
Phone
Sex
Ethnic code
Starting date
Major/minor codes
Degree
Salary
Account number
Extra pays
Location
Miscellaneous (varying information as related to different groups)

Metropolitan Achievement Test scores Computer-based
(Pre-post 1972-73; grades 1-9)

Chapter III (1971-72/1972-73; Pre-post reading and math) Computer-based

Title I (1972-73; Pre-post reading and math) Computer-based

Teacher evaluation (K-12) 1972-73 Computer-based

Administrator ratings (1972-73) Computer-based

Gates-Maginitie reading scores Computer-based
(grades 10-12) 1972-73

Special education testing (Metropolitan) Computer-based
1972-73

Counselor ratings (1972-73) Computer-based

Pre-school program data (1972-73) Pre-post Computer-based
Secondary reading study data (1972-73) Pre-post

Proponent: W. E. Upjohn Institute

DATA:

Business Conditions in Kalamazoo16
(From 1958, quarterly editions)

Census data reports in all four categories

Wage survey

Data compiled from Bureau of Old Age and survival insurance

Data compiled from Consumer Buying Power

Weekly earning of M.E.S.C.17

FORM:

Documents

Documents

Confidential

Documents

Documents

Documents

Proponent: W. E. Upjohn Institute/Kalamazoo County Citizen Committee on Community Services

DATA:

Introduction

The Kalamazoo Economy

Costs and Economics of Scale

Economics of Scale for Local Government
Economic Impact of a Consolidated Kalamazoo Urban Area
Ranking of Urban Government Services in Terms of Local Versus Areawide Operations

16 Data compiled from this publication is obtained from Michigan Employment Security Commission, Federal Reserve Bank of Chicago, Kalamazoo Division of Consumers Power Company, Michigan Department of Treasury, and Kalamazoo Area Metropolitan Council.


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Comparative Costs of Local and Metropolitan Fire Protection, Waste Disposal and Water Supply, and Some Associated Problems
Report on Fire Protection in Kalamazoo County
Kalamazoo-Portage Negotiations for Sewage Disposal

The Revenue System

The Potential Revenues from an Income Tax and User Charges in the City of Kalamazoo Site Value Taxation Reform of the Property Tax System Variable Tax Rates (forthcoming)

1985

The Problem of Determining a Capital Budget for Kalamazoo County Forecast of Expenditure for the City and County of Kalamazoo in 1985

Proponent: Dr. Raymond E. Zelder, Economics Department, Western Michigan University

DATA:
Segregation patterns
Statistics on income, rents, housing value - based on census tracts

FORM:
IBM cards
IBM cards

Proponent: Dr. Myron Ross, Economic Department, Western Michigan University

DATA:
Voting Behavior on Kalamazoo Airport
Two Studies on Housing Conditions
Economics of Western Michigan University
Property Tax
Flood Control
Prices, Segregation, Racial Harmony

FORM:
Documents
Documents
Documents
Documents
Documents
Documents

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Proponent: Dr. Helenan S. Lewis and Dr. Chester B. Roger, Political Science Department, Western Michigan University

DATA:

1969 City of Kalamazoo Commission election
1972 study on County Senate election
Vote splitting
1960 voting by president

FORM:

Key-punched cards
Key-punched cards
Key-punched cards
Key-punched cards

Proponent: Mr. Marvin Drunker, Political Science Department, Western Michigan University

DATA:

Voting Patterns and Attitudes of Kalamazoo County

FORM:

Key-punched cards

Proponent: Dr. Peter G. Renstrom, Political Science Department, Western Michigan University

DATA:

Jury Study

FORM:

Key-punched cards

Proponent: Dr. Chester B. Rogers, Political Science Department, Western Michigan University

DATA:

Attitudes on Teachers in the Kalamazoo School System

FORM:

Key-punched cards

Proponent: School of Social Work, Western Michigan University

DATA:

1969 Study of AFUL Food Stamp Participants (N=180)
1969 Study of Job Satisfaction of Public Welfare Social Workers (N=46)
1970 Study of Edison Neighborhood, Kalamazoo, Michigan (N=300)

FORM:

Key-punched cards
Key-punched cards
Key-punched cards

and magnetic tape
and magnetic tape
and magnetic tape

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1972 Study of Interpersonal Empathy
(N=36 married couples)

1971 Survey of Racial and other
Attitudes of Kalamazoo Central High
School (N=525)

1972 Survey of Undergraduate Social
Work Students - Student Educational
Plan Survey (N=307)

1973 Student Career Plans Inventory
(N=175)

1971 Kent County Community Life
Survey of Mental Health Needs

1972 Survey of Social Work Manpower
Needs in Southwestern Michigan
(N=83 organizations)

1973 Follow-up study of Social Work
Graduates of W.M.U. Graduate Program
(N=75)

Proponent: Western Michigan University

DATA:

Inter-University Consortium for
Political Research

Proponent: Computer Center, Western Michigan University

DATA:

Full set of 1970 public use samples,
raw data form, all identification
removed, (population and housing)

Summary tapes of census data on
Michigan and parts of Indiana and Ohio

1/1000 samples of the Michigan Census
data

The nearly 100 tapes on the Census data held at the Computer
Center are divided into block, region, and city.
1/10,000 samples of the Michigan Census data

Proponent: Archives, Waldo Library, Western Michigan University

DATA: University records
FORM: Documents

- Finances
- Growth
- Publications
- Departmental minutes

Upjohn information

Proponent: Regional History Collection, Waldo Library, Western Michigan University

DATA: Records of twelve southwestern Michigan counties
FORM: Documents

Proponent: Center for Sociological Research, Western Michigan University

DATA: Aggregated statistics for 82 countries
FORM: Magnetic tape

- Several studies on social services, business conditions, transportation, government, health, education, welfare, and population.

Proponent: Kalamazoo Municipal Finance Study Committee

DATA: Five studies
FORM: Documents

5. Information integration and data base developments

As we have noted earlier, there are many information sources maintaining potential data bases. These data bases are both under or outside municipal jurisdiction. For these reasons, our data base
developments will be designated as municipal or non-municipal developments. Following are procedures of information integration in designing our data bases.

a. Municipal data base developments

The following information integration would be desirable from the City's standpoint if Kalamazoo is to proceed with an integrated information system.

1. The Buildings Department

The Buildings Department of Kalamazoo keeps a large amount of recorded information, none of which is maintained in a computerized data base. This information would be useful in planning, city growth, capital investment, and code violations. The information consists of data of the past ten years and would be useful in establishing trends as the City has evolved in the last decade. This information, if computerized, would supplement the W. E. Upjohn Institute Quarterly Reports of Business Conditions in Kalamazoo County. While these reports indicate the Kalamazoo economy, employment situation, and indicators on the local business, in relation to the national trend of economy, they supplement and would be supplemented by information which is contained by the Kalamazoo Buildings Department.

The information maintained by the Buildings Department includes viable statistics on three areas of Kalamazoo growth: 1) building permits, which include the address, nature of permit, and amount of

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money involved. New construction and repairs information is also included; 2) housing code inspections and violations, which include the address, nature of complaint, the final disposition of the complaint and what type of action taken; and 3) wrecking permits, which include the address, type of structure demolished, and reason for demolition action.

The advantages of computerizing these three categories into a data base would allow City administration to evaluate the effectiveness of their inspection program and concentration of inspection procedures; while creating a more efficient assignment of personnel and method of operation.

Information about the City's structural conditions would prove valuable in determining and status of the City's physical plant, and provide additional indicators of economic development.

2. The Planning Department

The Planning Department presently has a computerized land use data base at the block level. However, this data base established in 1966 is outdated, and does not contain records by address or zoning information. A geographic base file format is needed, and would prove valuable if integrated with the 1970 census which contains socioeconomic information.

The DIME (Dual Independent Map Encoding) file is a computer format for a geographic base file. Its use seems feasible if integrated with the present Planning Department land use file, and with the 1970 census data maintained by Western Michigan University.
Computer Center. The DIME file, which was designed by the U.S. Bureau of Census, sorts information by geographic area. The implementation of the DIME file will enable us to conduct computer mappings of census and local data. The following description provides a preliminary look at the potential uses for a DIME geographic base file.

Computer mapping using a DIME file can be accomplished through coordinate readings provided by the Census Bureau. By computer mapping, such information as owner-occupied housing, adjusted hours spent by visiting nurses, and density of preschool children, can be identified by geographic blocks.

The use of a DIME file in the analysis and census and local data as it relates to local areas can be achieved. Such area codes as traffic zones, planning districts, school districts, police districts, and poverty and health regions, can be identified with the DIME file. The codes and DIME file combined would result in a more detailed analysis of the information.

The DIME file can be used to geographically order data by street intersections. Such data as traffic and accidents at intersections can be compared to information on total traffic flow and distribution of traffic signals and signs, pedestrian density, and crosswalks. By implementing a DIME file, transportation studies, allocation of resources to facilities, adjacency analysis, monitoring of programs by geographic areas, area sampling, geographic grouping of census summary tape data, spatial comparisons, and even market analysis, can be conducted.
The DIME file for Kalamazoo County is in a preliminary stage. The file was originally coded in the summer of 1970. The Department of Planning has completed the first phase of correction of the file under the direction of the Census Bureau's C.U.E. (Correction-Update-Extension) program. Phase two of the C.U.E. program is near completion, giving the Planning Department enough of the file such that trial runs can be made in sorting the data by census tract, block, and address range.

3. The Assessors Department

The Assessors Department has a considerable amount of information pertaining to property assessments in computer form. Little, if any, change would be necessary in the present file to make it compatible with the DIME file.

4. The Police Department

The Police Department has information on the full range of law enforcement activities of Kalamazoo. In order to take full advantage of the DIME file, it may be necessary to create summaries of police activity and crime trends.

These four areas of concentration are applicable to the KMDBIS. At present, these four areas of operation have significant amounts of information in computer form. In employing several interrelating systems, such as the DIME file, the information would allow City administrators, policy-makers, and academicians access to highly sophisticated information for policy governance and research.
b. Data base developments outside municipal jurisdiction

There appear to be two areas of information integration that are outside the control of municipal government. The two areas of information integration are the social service of Kalamazoo and the Kalamazoo Public Schools.

1. The Greater Kalamazoo United Way

The implementation of an integrated data base of social service information has been indicated by the Greater Kalamazoo United Way (GKUW) as an important task. However, the extent and sophistication of information maintenance and collection sophistication of our social service data is seriously deficient. Consequently, we are concerned with the ways in which a data base might assist the social service agencies of Kalamazoo, and the means by which such a data base might be developed.

The information provided by the social service of Kalamazoo varies. The field of services cover housing, hospital care, adult detention and treatment, nursing home care, protective services for children, financial assistance, dental care, sheltering of aged and children, juvenile detention, day care, rehabilitation, legal counseling, vocational assistance, foster family care, recreation facilities and programs, adoption, educational programs, and disaster relief, among others. Although each social service agency maintains a full profile of its services, little, if any, coordination has been directed in the collection of information. Consequently, we
suggest two specific steps to be taken in order for integration of information into a data base to be accomplished: evaluation and coordination.

**Evaluation:** In evaluation, summaries of service profiles, arranged in groups of related fields of services, must be accomplished. Through the development of these profiles, we can then group these services as they meet their population needs. By grouping the services, we can then determine the quality of the service, rather than evaluating an individual agency.

**Coordination:** The design of "service packages" must be accomplished in Kalamazoo. A service package is simply a grouping of agencies providing similar services to a given population. Community resources are centered around community needs. Consequently, the Kalamazoo County's community service agencies have developed, some formally and others informally, through the concern of citizens for others and their perceived needs. Yet, a substantial portion of our community needs are inadequately met, while for some portion, community services are duplicated. It is now important to note that an integrated data base of the Kalamazoo community social services must be preceded by an evaluation of programs and services, a computation of similar programs into service packages, and a "judgment" on the importance and adequacy of the service packages. Finally, these judgmental rankings can be combined to arrive at a priority listing of service packages. These procedures will, in turn, formulate our integrated data base.
The Kalamazoo Public Schools (KPS) have maintained data on students, teachers, personnel, and administrators. Moreover, the U.S. Census Bureau has demographic data that could interrelate with the school data. For all practical purposes, the educational data base exists. Maintained, by the KPS, this data base provides viable information to the KPS administration. Since fundamental questions in the areas of privacy, confidentiality, secrecy, still exist, the KPS have maintained the functions of their data base under their own authority.

A profile of the Kalamazoo Public Schools has been suggested to serve both KPS administrators and researchers. The profile would be a systematic collection, coordination, and integration of existing educational data into a unified data base for the purpose of longitudinal and secondary analysis. The profile would provide perimeters for many dimensions which would give researchers and public school officials information necessary to determine background information on the characteristics of the Kalamazoo school system, its personnel, and the City of Kalamazoo. The profile would be concerned with information about the nature of the community which the school system serves. Information about the student membership in public and non-public schools, as well as U.S. Census data on some demographic variables would be included.
D. Summary

Successful completion of our data base developments relies heavily on political cooperation of our information sources. We have established the fact that information sources, and their integration process, operate within and outside municipal jurisdiction. Within municipal government, there appears to be several operations going on at the same time.

The fragmentation of Federal, state, and private approaches to information system development has been overcome by the USAC-IMIS approach. But, as we consider the USAC-IMIS model, we note the need for cooperation among information sources within and outside municipal jurisdiction. The political and administrative cooperation needed for successful development of any information system must be explored.

In the next chapter we will be concerned with those features that are necessary for the successful implementation of the KMDBIS. The advantages and disadvantages of our approach will also be dealt with.
CHAPTER IV

DISCUSSION AND SUMMARY

A. Introduction: Factors for Success

There are many factors affecting success of the USAC-IMIS projects. Experience has demonstrated that municipal participation and involvement, computer feasibility, political support, and teamwork appear to be the most critical factors in successful completion of an IMIS project (Kraemer, 1972a). The proposed KMDBIS, following other IMIS projects, rests upon support, participation, and involvement in the project by a variety of institutions and agencies. Success of the KMDBIS also requires the cooperative working together of specialists and municipal administrators. Successful completion rests upon securing the necessary technical capability in electronic data processing.

1. Municipal participation and involvement

Academicians and public and private sector administrators are aware of problems affecting their community. While academicians are concerned with the problems affecting the community, and are engaged in research to understand and resolve these problems, their efforts do not usually have the impact which is intended. There are many reasons for this, such as the lack of applied-grounded research, along with the high level of sophistication and abstraction that
persists within academic research.

The vehicle for successful operation of the KMDBIS is the joint policy-making among municipal agencies and community organizations. The urban problems of Kalamazoo cut across organizational boundaries, and these problems cannot be successfully handled in isolation. A coordinated effort among various academic institutions, municipal agencies, and community organizations, as proposed by the KMDBIS, develops into a cooperative model. This cooperative model would then be able to deal with problems that cut across organizational boundaries (cf. Appendix C).

The organization of KMDBIS coordinates efforts of different participating organizations. The objective is to be sensitive to each organization in their own perception of priorities. But more importantly, when dealing with problems cutting across organizational boundaries, the KMDBIS will act as a liaison among the organizations in acting upon these problems in a unified and coordinated fashion.

Community administrators must deal directly with problems of the community, and consequently, are faced with decisions on a day-to-day basis. On the other hand, academicians can provide personnel, technical training, and have access to facilities that can very often produce the data and information that community administrators need in order to deal with these day-to-day decisions.

The KMDBIS project has representatives from the City and County of Kalamazoo, the Greater Kalamazoo United Way (GKUW), Kalamazoo
College, and Western Michigan University. The KMDBIS departs from other IMIS projects, in that not only municipal participation and involvement is entertained, but participation and involvement outside municipal jurisdiction is approached (cf. Appendix C).

Probably the most significant factor for the success of KMDBIS will be the degree of cooperation developed between the university and community organizations. In bridging the gap between the higher education institutions of Kalamazoo and community organizations, unique information of vital importance will be generated. While community organizations gain technical experience and access to the facilities of institutions of higher education, academicians will gain a field for applied research.

2. Computer feasibility

The IMIS model relies heavily on the technological capabilities of the computer. Three information handling capabilities of the computer are factors in determining computer feasibility of an IMIS project. These three capabilities are: processing, analysis, and control.

19 By no means is the membership of the proposed KMDBIS bound to the participants mentioned above. When appropriate, other organizations will be invited into the membership of the KMDBIS.

20 On October 8, 1973, a letter of agreement among the members mentioned above was signed. This agreement was a mandate from the participating organizations for the implementation of the study of the proposed KMDBIS. The agreement also served as an understanding between the participants in working toward the design and development of the proposed KMDBIS.
Processing refers to the collection, organization, management, and dissemination of data and the retrieval of information from the resulting organized collections. Analysis refers to the investigation of possible relationships in the data, and might include statistical analysis, hypothesis testing, model-building, and simulation. Control refers to the process of sensing and monitoring in supporting operational activities.

During the spring and summer of 1973, representatives of the proposed KMDBIS held a series of meetings to determine computer feasibility. One of the major objectives set forth in these meetings was to determine whether the KMDBIS can secure the necessary technical capabilities in electronic data processing (EDP) among the various computer facilities represented.

It was learned from these meetings that the computer facilities maintain their own hardware systems, and that each system in turn has its own core size, mass storage, and software programming. With the variety of computer facilities, the question of data storing and sharing became evident. During the course of the meetings, computer representatives from the City of Kalamazoo and Western Michigan University considered computer feasibility between their respective computer facilities.

Computer experts from the City and University discussed the feasibility of data storing and sharing. It was suggested that the

21Core size and mass storage are two concepts considered in defining hardware configuration.
data to be studied and analyzed by the KMDBIS could be transferred on tape by the City through the courtesy of other computer centers within the City. The tape would then be forwarded to the University PDP-10 computer system. Similar arrangement, such as the one suggested by the City of Kalamazoo and Western Michigan University, can be made by determining computer capability within each computer facility.

Once this is determined, a time-sharing system could be implemented in serving each organization. The time-sharing system would serve as a means of access to the information held in the KMDBIS.

A time-sharing system would allow various organizations to use a central computer system at the same time, without having to wait. Personnel can have direct access to the computer system by using remote teletype terminals, strategically placed within participating organizations.

It is apparent that the general capabilities of computer hardware and software and the presence of time-sharing across organizational boundaries provides an adequate technological setting for successful completion of the KMDBIS.

B. Anticipated Benefits of the KMDBIS

The insight into the establishment of a municipal data system has very often bypassed the final benefits of computerized integrated information (Down, 1967). The determination of the final benefits of computerized data systems have, unfortunately, often been overshadowed by the technological improvements and advances made.
in the information that is maintained in such systems. On the other hand, one must recognize the conditions by which computerized data systems flourished. The amount of data available, and the accessibility of data for data integration, has led the way for urban information systems.

The assumption made by the Federal government in financially supporting the USAC-IMIS projects is that this integrated approach will provide benefits. This section is designed, therefore, to provide a discussion of the benefits that can be expected from the Kalamazoo Metropolitan Data Bank and Information System (KMDBIS).

The discussion which follows has two perspectives. The first section deals with the types of benefits to be expected from the proposed KMDBIS, in terms of better citizen services. The second section deals with benefits, in terms of improvements in the internal operations of municipal government.  

1. Better citizen services

The implementation of the IMIS model is most often justified in terms of savings or improved municipal operations (Dial, 1971;  

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22 The best known and most cited benefit from IMIS systems is cost savings. There are two basic types of cost savings: cost displacement savings and cost avoidance savings. However, we have not prepared ourselves to test cost-benefit analysis of the KMDBIS. To perform a cost-benefit analysis of the KMDBIS would have necessitated concentration on other aspects of IMIS development, and consequently, drawn our attention from the issues that have been dealt with in this thesis. A cost-benefit analysis constitutes a highly empirical study in and of itself. Therefore, we have only noted this type of benefit in this form of note.
Glassman, 1972). However, the ultimate goal and justification for the IMIS model is improved services to citizens. The improvements in the quality of services to citizens are valuable and can be demonstrated.

a. Decrease in the overall time of planning-action-evaluation cycles

To the extent that municipal operations are automated, they provide 1) information about conditions in the community for which action is required, and 2) information for evaluation of alternative action responses. What this means is that city government and community agencies can develop and mount new programs or modify existing ones in a faster cycle because data generation for program planning and evaluation is no longer a critical problem. It is an inherent property of the IMIS model to generate data for program planning and evaluation.

What is now faced by municipal government and community agencies is the task of interpreting this information generated by the IMIS, and then implementing the interpretations into policy. The Planning-Programming-Budgeting System (PPBS) provides the ability to identify objectives of programs, estimates total cost implicit in each objective, and utilizes information (Hatry and Cotton, 1967:15). The PPBS seems appropriate for those concerned with utilizing the benefits of IMIS development in planning policy on a long-range basis.

Within Kalamazoo, there has been an effort to implement a PPBS division within the organizations interested in utilizing the data.
provided by the KMDBIS. The Greater Kalamazoo United Way (GKUW), which is responsible for allocations of funds to social services throughout the Kalamazoo County, is in the process of designing a PPBS within its administration to manage its allocation responsibility.

The Office of City Planning of Kalamazoo, under the direction of Mr. Bruce Brown, has instituted an Advance Planning Division. The primary responsibility of this division is long-range planning (Brown, 1972). Although they do not refer to this division as a PPBS, they are in effect assuring long-range policy planning by putting into perspective the goals and objectives of city government.

It is instrumental that once information is filtered into the KMDBIS, and then disseminated, that procedures be taken to realize the fullest potential of the information. If the KMDBIS is going to be implemented, there must be some way to move from information to decision. The PPBS provides the means by which information is transmitted into the decision process for long-range planning and development.

In some cases, the KMDBIS cannot provide information because data are not collected in the first place. This is the case with our social service data in Kalamazoo. What we propose here are a few procedures to reach the stage where the KMDBIS can provide pertinent information in the area of social services. First, the administrators and policy-makers of our social services must improve their methods of obtaining pertinent data about their clientele, personnel, and operations. To do this would mean a period of
orientation and training for social service personnel in data collection techniques and research. Second, we advise an indexing of services maintained by the agencies. Once activities and services are identified, we can proceed to integrate services provided to the community with information collected. This method of integration would give an assessment of the types of social services offered in Kalamazoo, and the focus would be on service, rather than agency. This method is advisable because many services are offered by more than one agency, and one agency may offer more than one particular service.

An attempt has been made to coordinate social services in the Kalamazoo community. The "Green Book" (Kalamazoo County Community Needs and Resource Survey Committee, 1969), was an attempt to survey the fields of services of Kalamazoo, and then index service programs offered. No effort was made to appraise or evaluate individual agencies. The study attempted to: 1) agree upon a list of fields of services; 2) rate the fields as to relative importance to the community and as to adequacy of service development; and 3) agree upon a probable long-range financing pattern for each service field. The study fell short, in some respects, for one major reason, the social service agencies had not collected or maintained information pertinent to the study. Consequently, no assessment of programs or fields of service could be made.

Although an honest attempt was made to provide information to all agencies, the committee had to contact nearly a hundred local agencies to gain financial and service information. Even though the
agencies were cooperative, it was soon learned that vital information important to the study did not exist. Thus, two problems appeared immediately: the nonexistence of a viable information network that would provide information on program efficiency, and the nonexistence of information to assess the quality of social service programs.

An attempt by the Western Michigan University School of Social Work (1973), under the direction of Professors Burian and Flynn, was undertaken to develop a Human Resource Regional Information System (HSRIS) (Burian and Flynn, 1973). Within the study, pertinent aspects for the design of an HSRIS for Kalamazoo was reached. The report concluded that the outcome of an HSRIS depends on the decision-makers of Kalamazoo. In summation, the study noted that the successfulness of an information network housing longitudinal data on social services rests mainly on the responsiveness of those in a position to develop one.

Although this study is not meant to either complement or supplement the HSRIS, it does advocate the same degree of cooperation and collaboration between municipality and academia in the collection and maintenance of social service data for longitudinal research and evaluation.

Consequently, the advantage of mounting new programs on a faster cycle has its impact for the citizen. The maintenance of data from social services agencies will, inevitably, provide practitioners, community professionals, and researchers with information of programs and services. This can, with planning and evaluation, better citizen services and improve public programs.
b. Attention of municipal and community employees to important matters

When the performance of routine tasks is assigned to an IMIS model, employees may have time to devote to the more complex and generally more important problems of the community. The IMIS may also bring to attention these more complex and more important problems of the community to key representatives from municipal and community departments. Thus, personnel of municipal government and community agencies can devote their time to problems that confront the community, and those problems that are recognized by the community. The IMIS cannot force such change, but does create conditions that foster it.

c. Provision of information previously unavailable

Much information requested by city government and community organizations cannot be provided simply because it is too difficult and expensive to retrieve from manual records. It is possible, with an integrated computerized system based in municipal and community operations, like the IMIS model, to provide information on specific instances for public groups at little or no extra cost.

d. Identification of community problems

In many instances, community problems are thought to be self-identifiable. That is to say, it is generally possible to determine that problems in communities exist and are recognizable. However, as community problems are studied, it becomes clear that these
"problems" are symptoms of more fundamental types of problems facing the community. These more fundamental problems facing the community cannot be identified by mere casual discussion.

In the long run, the greatest benefit from the improved urban data obtained from data systems such as the IMIS will probably arise from better knowledge of underlying causal relationships in the urban environment. For example, in the case of law enforcement, it may well be that transportation problems, lighting problems, and the absence of recreation facilities, just to name a few, all contribute to an environment in which crime increases are inevitable. Each community faced with such problems requires an increase of information about these relevant variables. But developing and testing theories about causal relationships requires an enormous stockpile of data about how each factor varies under a diversity of conditions. Hence, better knowledge of causal relationships may not become available until urban systems are installed and working.

In reality, the maintenance of an IMIS has repercussions in the actual policies that affect the community at large. An IMIS could improve data underlying community policies; which in turn affect program evaluation and implementation and the allocation and distribution of funds.

An IMIS could very well assist social service and municipal agencies in performing their role in program evaluation. Measuring the effectiveness of a service provided by an agency, and the extent to which an agency's goals parallel the needs of the community, rely heavily on the sophistication and degree to which the data is
maintained, collected, and analyzed.

Although these data are fragmented, the maintenance of a community data system, such as an IMIS, would provide information that would aid in measuring the effectiveness of the operations of a given service. Program development and implementation can be accomplished by analyzing data on existing programs and updating information on agency operations, clientele, and service. Moreover, an IMIS often maintains data on community attitudes toward programs. These data on community attitudes are usually maintained in time series of responses to questions on important community issues concerning agency responsiveness toward community needs.

According to Webber (1965), because of the uncertainties connected with the technical benefits from data systems, such as the huge on-going burden of updating information, power decisions loom large in the minds of those who must decide whether such systems are feasible. Nevertheless, one of the advantages of an IMIS is the ability to analyse the masses of data in order to supplement decisions on the allocation and distribution of funds. Such distribution affects not only the status of a given program or service, but the well-being of the entire population.

After analysis of data concerning program service, activity, and participation, and analysis of time series of public response to questions on public needs, hopefully, community goals would be met by allocating and distributing proper amounts of funds to agencies.
2. Internal administration improvements

Other benefits derived from an IMIS are the improvements in the internal administration of municipal and community organizations. Such improvements relate to technical improvement in information handling and the availability of information for decision-making.

a. Technical improvements in information handling

One characteristic that is common to almost all departmental operations in the City of Kalamazoo's government is the increasing paperwork and record-keeping obligations. Because of the expanding problem of record-keeping, the likelihood of duplication of operations and error in record-keeping is increased.

The introduction of the IMIS model to Kalamazoo would generally increase accuracy of records, reduce duplication of data collection and record-keeping activity, and provide the access to stored data. These improvements are essential to improve service delivery and the decision-making process throughout Kalamazoo. Consequently, the implementation of the KMDBIS would increase Kalamazoo's ability to manage its complex urban environment.

b. The availability of information for decision-making

Probably the most significant benefit of urban data banks is the improvements in the effectiveness of the decision-making process. The use of data systems may increase the effectiveness of actions and change the power positions of people involved. These two
outcomes constitute the most noticeable contribution of data systems. According to Downs (1967:204-210), the improvements in the effectiveness of decision-making will ultimately affect the distribution of the benefits of decision-making. Consequently, data systems cause power shifts in urban decision-making. Obviously, data systems provide more information to decision makers; whether this information would improve the decision-making process still remains an empirical question.

One can hardly argue that data systems will soon have profound impact upon government and private program organization and decision-making. The revolutionary changes in the technical procedures of data systems, along with the increased knowledge obtained in data analysis and dissemination, will undoubtedly change the ways by which policy is administered.

Although we rely on the technical advances and improvements implemented in data systems, we must not forget that data systems are maintained by and serve people of the community. Above and beyond technical training and orientation for those who administer and are in contact with such systems, we must take into account the decision-making capabilities which arise from these systems. Preparation must be taken to utilize these capabilities and its impact on the community.

Another type of administrative advantage results from greater reliance on the KMDBIS for performance of the information for decision-making. To take a specific area, the Police Department of the City of Kalamazoo can use the KMDBIS to determine its police patrol
routing. All reported violations and requests for services are automated and summarized daily. From data contained in these reports, analyses can then be run through the KMDBIS, and new patrol routes can be developed. This data can then be reviewed and determination can be made as to the assignments of the City of Kalamazoo Police force by geographic area. Consequently, the effectiveness of the Police force is thus enhanced.

The ability of the KMDBIS to provide the City Departments of Kalamazoo with comprehensive and current data would improve the operations of city government. Specific Departments, such as the Buildings Department and the Public Works Department, can provide quick and accurate information to the public through the high-speed information-retrieval capabilities of the KMDBIS. The KMDBIS would also allow managers of these Departments to be more knowledgeable about the functions they perform and about the people and physical resources they serve. This ability to provide comprehensive data would ultimately improve the operations of the City of Kalamazoo by providing better services, encouraging rational decision-making, and providing a means to optimize departmental resources, manpower, money, equipment, and personnel.

Two other areas that would benefit from the proposed KMDBIS would be financial control and planning. The KMDBIS would be beneficial in the financial control functions in preparing the City of Kalamazoo's budget. Data manipulation capabilities, trend projections, and access to resource data would increase the management's ability to analyze service needs and to make rational decisions.
The Planning Department of the City of Kalamazoo would also benefit from the proposed KMDBIS. Most importantly, the KMDBIS would provide the Department of Planning with much of the data needed for rational planning, that is currently unavailable. Statistics that would be maintained by the KMDBIS on people, land, buildings, and transportation would add to the Department's knowledge of the City's past and present status, and increase their ability to plan for the City's future.

C. Disadvantages of an IMIS Project for Kalamazoo

Along with the advantages of implementing an IMIS for Kalamazoo, there are disadvantages that must be considered. Computers and information systems may not be for every municipality. Consequently, we must ask ourselves, "Is an IMIS project feasible for Kalamazoo?"

The limitations, if they do exist, are not technological in nature. It is a matter of the City's willingness to commit resources, accept change in the traditional ways of operating, and provide leadership and political support.

Implementing and operating an IMIS project is costly. Kraemer (1972b) indicates that an IMIS project costs a city about one percent of its annual operating budget. This is not necessarily a disadvantage, but it is a factor that must be considered.

A second factor that must be considered is that of under-utilization. Hyman (1972) contends that the vast amounts of data that have been collected and accumulated in various data systems have not been widely used. One can hardly disagree with Hyman, and he presents
the most severe disadvantage to the IMIS project for Kalamazoo.

There would be some severe drawbacks if the KMDBIS would not be used to its potential. Increased capital costs in hardware, demands for skilled technicians and personnel, and incipient changes in the metropolitan environment that demand continuous data gathering, are but a few of the requirements that would be placed on the KMDBIS. If the system is not used to its full potential, then these requirements become extremely expensive.

Given the investment required, it seems reasonable to expect that Kalamazoo must plan for their IMIS project on a long-range basis. Kalamazoo must implement its IMIS model with substantial systems planning. For experience has demonstrated that without planning, municipalities develop information systems with little possibility for future integration and little room for expansion. Such developments are unnecessary and unjustifiable economically.

An IMIS project cannot be developed all at once. The way in which Kalamazoo can prepare for its IMIS project is through systems planning. Planning is necessary because the complexity and cost of information systems are too great to permit haphazard development.

D. Conclusions and Further Research

It should be apparent at this point that the design and development of the proposed Kalamazoo Metropolitan Data Bank and Information System (KMDBIS) is dependent on the participation and involvement of various agencies and organizations of Kalamazoo. Without this involvement, the KMDBIS will never be fully implemented. A fully
developed KMDBIS will provide timely information to a variety of users. This information will be applied in the decision-making processes that will affect municipal and private action in Kalamazoo for years to come. The KMDBIS could have a profound effect upon municipal and private operations and provide better citizen services for the community.

It would be presumptuous at this point in time to claim that all of the advantages anticipated from the proposed KMDBIS will be realized. However, there is evidence that many of the anticipated benefits will be realized. Past research on information systems strongly supports the promise of major benefits.

A fully developed KMDBIS has the potential of serving as a guide in providing information for community decision-makers and policy formation. Completion of the proposed KMDBIS will no doubt raise salient issues for discussion, and provide researchers, community leaders, and practitioners with vital data and information. Of these issues that will be raised, research will be stimulated. Three issues of importance and concern come to mind. They are: 1) design of a community survey of citizen conception of social problems, and public and private agency performance in meeting community needs, 2) the development of social indicators, and 3) the development of a social report in reporting the quality of life in the community.

A community survey is necessary to gather attitudinal and objective data on a variety of community policies, community problems, goals, and objectives, and community needs. Data gathered and maintained by a data bank system could provide the necessary
valuable information to conduct such a community survey.

In the long run, one of the technical payoffs of a data bank system will come from a better knowledge of causal relationships in the urban environment. The developers of social indicators will utilize this knowledge in developing theories about causal relationships. But developing of theories and testing them out in order to develop viable indicators requires an enormous stockpile of longitudinal data. Therefore, the development of indicators may not be available for some time.

The establishment of a social report rests upon appropriate social indicators that have been designed, tested, and developed. Once indicators are tested and refined, the major component of a social report is the recommendation of community goals and objectives. Consequently, a social report relies on the assessment of community goals and objectives, along with refining social indicators on social trends.

The Kalamazoo Metropolitan Data Bank and Information System (KMDBIS) will better citizen services for the Kalamazoo community, along with assisting community agencies and local government in managing their administrations. The KMDBIS will also make it possible for further research to be conducted. The implementation of the KMDBIS will provide practitioners, researchers, community professionals, and administrators with research opportunities not yet available.
APPENDICES
APPENDIX A

POSSIBLE GRANT SUPPORT AND FUNDING AGENCIES FOR
THE KALAMAZOO METROPOLITAN DATA BANK AND INFORMATION SYSTEM

The agencies included in this listing are those agencies that may possibly contribute funds to the KMDBIS. The agencies included may contribute in the following ways:

1. Contribute to the initial feasibility stage.
2. Contribute to a specific function of the KMDBIS.
3. Become a permanent sponsor.

Each agency is noted with its official name, legal basis (which usually indicates federal funding), and an address.

This selective listing is divided into sixteen categories.

A. General
B. Libraries
C. Social Sciences - General
D. Communications
E. Education
F. History and Area Studies
G. Law and Public Administration
H. Psychology and Mental Health
I. Social Welfare
J. Sociology and Anthropology
K. Sciences - General
L. Engineering and Allied Sciences
M. Handicapped
N. Health and Medical Sciences - General
O. Health and Medical Sciences - Education and Training
P. Health and Medical Sciences - Research
A. GENERAL

SAMUEL S. FELS FUND
Samuel S. Fels Fund
2 Penn Center Plaza
Philadelphia, Pennsylvania 19103

MAX C. FLEISCHMANN FOUNDATION
Max C. Fleischmann Foundation
P.O. Box 1871
Reno, Nevada 89505

FORD FOUNDATION
Ford Foundation
320 East 43rd Street
New York, New York 10017

INLAND STEEL-RYERSON FOUNDATION, INC.
Inland Steel-Ryerson Foundation, Inc.
30 West Monroe Street
Chicago, Illinois 60603

W. K. KELLOGG FOUNDATION
W. K. Kellogg Foundation
400 North Avenue
Battle Creek, Michigan 49016

LEVER BROTHERS COMPANY FOUNDATION, INC.
Lever Brothers Company Foundation, Inc.
390 Park Avenue
New York, New York 10022

THE CHARLES STEWART MOTT FOUNDATION
The Charles Stewart Mott Foundation
500 Mott Foundation Building
Flint, Michigan 48502

ALFRED P. SLOAN FOUNDATION
Alfred P. Sloan Foundation
630 Fifth Avenue
New York, New York 10020

W. CLEMENT & JESSIE V. STONE FOUNDATION
W. Clement & Jessie V. Stone Foundation
Suite 2720
Prudential Plaza
Chicago, Illinois 60601
UNITED STATES STEEL FOUNDATION, INC.
Vice President and Executive Director
United States Steel Foundation, Inc.
600 Grant Street
Pittsburg, Pennsylvania 15230

THE WEATHERHEAD FOUNDATION
The Weatherhead Foundation
420 Lexington Avenue
New York, New York 10007

B. LIBRARIES

COUNCIL ON LIBRARY RESOURCES
Council on Library Resources
One Dupont Circle, Suite 620
Washington, D.C. 20036

NATIONAL INSTITUTES OF HEALTH
The Public Health Service Act as amended; the
Medical Library Assistance Act of 1965, Public
Law 89-291, as amended and extended by the
Medical Library Assistance Extension Act of 1970,
Public Law 91-212.
Research, Training, and Publications
Division Extramural Programs
National Library of Medicine
Bethesda, Maryland 20014

OFFICE OF EDUCATION
Title II, Part A of the Higher Education Act
of 1965, Public Law 89-329, as amended.
Division of Library Programs
Bureau of Libraries and Educational Technology
Office of Education
Washington, D.C. 20202

OFFICE OF EDUCATION
Title II, Part B of the Higher Education Act
of 1965, Public Law 89-329, as amended.
Bureau of Libraries and Educational Technology
Library and Information Science
Research Program
Office of Education
Washington, D.C. 20202

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OFFICE OF EDUCATION
The Library Services and Construction Act, Public Law 91-600, as amended.
Division of Library Programs
Bureau of Libraries and Educational Technology
U.S. Office of Education
Washington, D.C. 20202
OR
Appropriate Office of Education regional office.

PUBLIC HEALTH SERVICE
Division of Physician and Health Professions Education
Bureau of Health Manpower Education
National Institutes of Health
Bethesda, Maryland 20014

PUBLIC HEALTH SERVICE
Chief, Resource Division
Extramural Programs
National Library of Medicine
8600 Rockville Pike
Bethesda, Maryland 20014

C. SOCIAL SCIENCES - GENERAL

DEPARTMENT OF LABOR
Director
Office of Research and Development
Manpower Administration
Department of Labor
Washington, D.C. 20210

GRACO FOUNDATION
Graco Foundation
1110 Cargill Building
Minneapolis, Minnesota 55402

NATIONAL SCIENCE FOUNDATION
The National Science Foundation Act of 1950, Public Law 81-507, as amended.
Division of Social Systems and Resources
National Science Foundation
Washington, D.C. 20550
RESOURCES FOR THE FUTURE, INC.
Secretary-Treasurer
Resources for the Future, Inc.
1755 Massachusetts Avenue, N.W.
Washington, D.C. 20036

RUSSELL SAGE FOUNDATION
Russell Sage Foundation
230 Park Avenue
New York, New York 10017

SOCIETY FOR THE PSYCHOLOGICAL STUDY OF SOCIAL ISSUES
Dr. Robert J. Kleiner
Department of Sociology
Temple University
Philadelphia, Pennsylvania 19122

D. COMMUNICATIONS

FOUNDATION FOR PUBLIC RELATIONS RESEARCH AND EDUCATION, INC.
Dr. Frederick H. Teahan, Secretary
Foundation for Public Relations Research and Education, Inc.
845 Third Avenue
New York, New York 10022

THE JOHN AND MARY R. MARKLE FOUNDATION
Lloyd N. Morrisett, President
The John and Mary R. Markle Foundation
50 Rockefeller Plaza, Suite 940
New York, New York 10020

E. EDUCATION

ABBOTT LABORATORIES FUND
Treasurer
Abbott Laboratories Fund
1400 Sheridan Road
North Chicago, Illinois 60064

CARNEGIE CORPORATION OF NEW YORK
Carnegie Corporation of New York
437 Madison Avenue
New York, New York 10022

THE DANFORTH FOUNDATION
The Danforth Foundation
222 South Central Avenue
St. Louis, Missouri 63105

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OFFICE OF EDUCATION
Title IV of the Elementary and Secondary Education Act of 1965, Public Law 89-10, as amended.
National Center for Educational Research and Development
Office of Education
Washington, D.C. 20202

OLIN FOUNDATION, INC.
Secretary-Treasurer
Olin Foundation, Inc.
33 North Dearborn Street
Chicago, Illinois 60602

F. HISTORY AND AREA STUDIES

NATIONAL HISTORICAL PUBLICATIONS COMMISSION
Public Law 90-620.
Executive Director
National Historical Publications Commission
National Archives Building, Room 100
Washington, D.C. 20408

G. LAW AND PUBLIC ADMINISTRATION

DEPARTMENT OF JUSTICE
LEAA Regional Office
OR
State Law Enforcement Planning Agencies
OR
Law Enforcement Assistance Administration
Department of Justice
Washington, D.C. 20530

H. PSYCHOLOGY AND MENTAL HEALTH

MAURICE FALK MEDICAL FUND
President
Maurice Falk Medical Fund
3317 Grant Building
Pittsburg, Pennsylvania 15219

THE GRANT FOUNDATION, INC.
The Grant Foundation, Inc.
130 East 59th Street
New York, New York 10022

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I. SOCIAL WELFARE

DEPARTMENT OF COMMERCE
Title III, Section 301, (b) of the Public Works and Economic Development Act of 1965, Public Law 89-136, as amended.
Economic Development Administration
Department of Commerce
Washington, D.C. 20230

DEPARTMENT OF COMMERCE
Title III, Section 301 (c) of the Public Works and Economic Development Act of 1965, Public Law 89-136, as amended.
Director, Office of Economic Research
Economic Development Administration
Department of Commerce
Washington, D.C. 20230

DEPARTMENT OF COMMERCE
Title III, Section 301 (a) of the Public Works and Economic Development Act of 1965, Public Law 89-136, as amended.
Director
Office of Technical Assistance
Economic Development Administration
Department of Commerce
Washington, D.C. 20230

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Section 703 of the Housing and Urban Development Act of 1965, Public Law 89-117, as amended.
Appropriate Area Office
Department of Housing and Urban Development
OR
Office of Community Development
Department of Housing and Urban Development
Washington, D.C. 20410
J. SOCIOLOGY AND ANTHROPOLOGY

THE POPULATION COUNCIL
Demographic Division
The Population Council
245 Park Avenue
New York, New York 10017

THE POPULATION COUNCIL
Technical Assistance Division
The Population Council
245 Park Avenue
New York, New York 10017

K. SCIENCES - GENERAL

DEPARTMENT OF DEFENSE
Public Law 85-934, as amended.
Director
Advanced Research Projects Agency
1400 Wilson Boulevard
Arlington, Virginia 22209

DEPARTMENT OF DEFENSE
Air Force Office of Scientific Research (SRGC)
1400 Wilson Boulevard
Arlington, Virginia 22209

DEPARTMENT OF DEFENSE
Public Law 79-588, as amended, and Public Law 85-934, as amended.
Office of Naval Research
Ballston Tower No. 1
800 North Quincy Street
Arlington, Virginia 22217

DEPARTMENT OF DEFENSE
Public Law 85-934, as amended.
Chief Research and Development Army Research Office
Department of the Army
Washington, D.C. 20301
L. ENGINEERING AND ALLIED SCIENCES

DEPARTMENT OF TRANSPORTATION
Section 11 of the Urban Mass Transportation Act of 1964, as amended.
C. C. Villarreal, Administrator
Urban Mass Transportation
400 7th Street, S.W.
Washington, D.C. 20590

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
Administrator
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

NATIONAL SAFETY COUNCIL
Thomas W. Planek, Ph.D.
Research Director
National Safety Council
425 North Michigan Avenue
Chicago, Illinois 60611
NATIONAL SAFETY COUNCIL
Gerald J. Driessen, Ph.D.
Metropolitan Life Award
Research Department
National Safety Council
425 North Michigan Avenue
Chicago, Illinois 60611

NATIONAL SCIENCE FOUNDATION
The National Science Foundation Act of 1950, Public Law 81-507, as amended.
Division of Advanced Technology Applications
National Science Foundation
Washington, D.C. 20550

M. HANDICAPPED

SOCIAL AND REHABILITATION SERVICE
Section 4 of the Vocational Rehabilitation Act, Public Law 83-565, as amended.
Rehabilitation Services Administration
Social and Rehabilitation Service
Washington, D.C. 20211

N. HEALTH AND MEDICAL SCIENCES - GENERAL

HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION
Public Health Service Act, as amended, Sections 301 and 304;
Dr. Paul J. Sanazaro, Director
National Center for Health Services Research Development
Health Services and Mental Health Administration
5600 Fishers Lane
Rockville, Maryland 20852

THE ROBERT WOOD JOHNSON FOUNDATION
Secretary
The Robert Wood John Foundation
142 Livingston Avenue
New Brunswick, New Jersey 08902
NATIONAL INSTITUTE OF HEALTH
Research Training, and Publications Division
Extramural Programs
National Library of Science
8600 Rockville Pike
Bethesda, Maryland 20014

PUBLIC HEALTH SERVICE
Section 314 (b) of the Public Health Service Act, Public Law 78-410, as amended (commonly known as the Comprehensive Health Planning and Public Health Services Amendments of 1966).
Director, Comprehensive Health Planning Service
Health Services and Mental Health Administration
5600 Fishers Lane
Rockville, Maryland 20852

O. HEALTH AND MEDICAL SCIENCES - EDUCATION AND TRAINING

HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION
Public Health Services Act, as amended, Sections 301 and 304; Public Law 78-410 and Public Law 90-174; 42 U.S.C. 241 and 242b.
Director, Dr. Paul J. Sanazaro
National Center for Health Services Research and Development
Health Services and Mental Health Administration
5600 Fishers Lane
Rockville, Maryland 20852

P. HEALTH AND MEDICAL SCIENCES - RESEARCH

MATERNAL AND CHILD HEALTH
Title V, Part 5, Section 512 of the Social Security Act, Public Law 90-248, as amended.
Research Division
Maternal and Child Health Services
Health Services and Mental Health Administration
5600 Fishers Lane
Rockville, Maryland 20852
APPENDIX B

PRELIMINARY RESEARCH PROPOSAL SUBMITTED TO THE NATIONAL SCIENCE FOUNDATION: FEASIBILITY, DESIGN, AND DEVELOPMENT STUDY FOR THE ESTABLISHMENT OF THE KALAMAZOO METROPOLITAN DATA BANK AND INFORMATION SYSTEM

Abstract

The proposed Kalamazoo Metropolitan Data Bank and Information System is a project intended to utilize the technology at our disposal in arriving at a better understanding, prevention, and resolution of social problems in the Kalamazoo community. The data bank and information system project is a cooperative venture among academic institutions, municipal and county governments, and community social service agencies in the Kalamazoo Metropolitan area. The purpose of this project is to conduct a feasibility, design, and development study of a Kalamazoo Metropolitan Data Bank and Information System (KMDBIS). Sponsoring organizations in this cooperative venture are the City of Kalamazoo, Kalamazoo County, Greater Kalamazoo United Way, Kalamazoo College, and Western Michigan University. The data bank and information system is to be utilized in the operations, decision-making, and planning by city and county officials, assessment of human resource needs in the community, program development and evaluation of community social service agencies, and for need and problem oriented urban research by academic institutions. The establishment of a data bank will ensure a continuous feedback between practitioners and researchers.

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This project is an outgrowth of the "Urban Community as Laboratory" seminar at Western Michigan University, in which key community officials, social agency representatives, and academic faculty members strongly supported and endorsed the idea because of the feasibility, utility, and importance of such a project to the community.

Data gathered by municipal and local government administrative agencies, community service agencies, and academic institutions will be integrated. Computer facilities, administrative experience, and research expertise of these organizations will be coordinated toward organizing and maintaining a data bank and information system. A Data Bank and Information System Committee made up of representatives from the sponsoring organizations will establish policies and guidelines for the management of the data bank and information system, decide on the feasibility of the project, and will be responsible for evaluation of the project. Western Michigan University will be in charge of the day-to-day administration. All the sponsoring agencies have agreed to mutually cooperate in this project and have signed an agreement which provides general guidelines for the proposed project. Other interested agencies in this region will be invited to participate in this project. The operation of this project will cover a two-year period.

Criticisms and shortcomings or drawbacks of other data banks and information systems have been carefully noted and steps are suggested in this project to avoid similar problems.
APPENDIX C

LETTER OF AGREEMENT AMONG MEMBERS OF THE DATA BANK AND INFORMATION SYSTEM COMMITTEE TO ASSIST AND SUPPORT WESTERN MICHIGAN UNIVERSITY IN A DATA BANK AND INFORMATION SYSTEM FEASIBILITY, DESIGN, AND DEVELOPMENT STUDY

Introduction

During the past ten months, representatives from the City of Kalamazoo, the Greater Kalamazoo United Way, Kalamazoo College, Kalamazoo County, and Western Michigan University, have been meeting to explore the development of a data bank and information system for the metropolitan Kalamazoo area.

Through dialogue, the members have come to understand the following:

1. Information is readily available for a data bank and information system; however, the extent of its utility, versatility, and comprehensiveness needs further exploration.

2. Several existing computer systems would be considered for use; it must be determined the extent to which they are sufficient to meet the demands placed upon them for data utilization, coordination, and evaluation.

3. Ultimately, the cost of sustaining a data bank and information system would become the responsibility of the metropolitan community; therefore, request for long range commitment must be preceded by a cost analysis.

4. The usefulness of a data bank and information system must be measured against alternative approaches for meeting the same objectives.

5. Western Michigan University is interested in conducting a study to determine the feasibility of developing a data bank and information system for the Greater Kalamazoo area.

Consequently, Western Michigan University has been encouraged to apply for funds and administer the implementation of a feasibility, design, and development study. Upon their request, an advisory committee is being formed from among the original participating organizations which can be expanded during the study period.
at the discretion of the membership.

**Membership agreement**

As a participating member on the committee, our organization agrees to advise on the implementation of the study, and to facilitate its conduct by coordinating efforts within our own organization and by lending our name and cooperation in its support.

We understand that each participating organization has one vote in committee deliberations and agree to expand the membership, where appropriate, to include other public and private non-profit organizations within the metropolitan Kalamazoo area.

ORGANIZATION________________________

DATE_______________________________

AUTHORIZATION_______________________

Name       Title
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