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ABSTRACT

The City of Baltimore utilizes an automated information system centered on finance and personnel administration. This survey of the system as of summer 1975 describes 15 categories of operations systems serving approximately 50 purposes. Each system is described by department, bureau, and services. These include: Bureau of Management Information Systems; systems development; financial system; personnel; land; general; city hospitals; criminal justice; Department of Planning and Capital Improvement Projects; education; and Department of Public Works. A major need exists for control and management development. Projected demands of the future indicate that attention should be focused on disseminating information to a broader community, predicting the cost to automated information management of implementing proposed legislation, and facilitating coordination between manual and automated systems. A selected bibliography and a list of Baltimore information centers and services are attached. (Author/KP)

BALTIMORE'S AUTOMATED INFORMATION SYSTEMS INVENTORY

BY

W. T. DURR
ELAINE LOEBNER
JEFF COLEMAN

A Report to the Department of Planning

October, 1975

(Revised 14 June, 1977)

The preparation of this report was financed in part through a Comprehensive Planning Grant from the Department of Housing and Urban Development. Project CPA-MD-03-06-1017.

ABSTRACT

The City of Baltimore utilizes an automated information system centered on, but not exclusive to, finance and personnel administration. The information environment in Baltimore is dynamic in the sense that minor innovations are constantly introduced; it is static in the sense that major changes indicating growth and better utilization are called for but not anticipated by the City's leadership.

This survey is, in effect, a 'time capsule' which portrays Baltimore's automated information systems as of Summer 1975. Files of documentation are available at the Baltimore Region Institutional Studies Center (BRISC). Fifteen different categories of operations systems exist serving about fifty different purposes. The systems are described by department, bureau, and service.

A major need exists for control and management development. While administrative capacity to generate, organize, store, retrieve, and analyze data bases is adequate for present needs, projected demands in the near future indicate that much attention should be paid to disseminating information to a broader community; predicting the cost to automated information management of implementing proposed legislation; and to focusing on the degree to which coordination between manual and automated systems might be facilitated.

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SUMMARY

This report represents an overview of information systems presently operated by the City of Baltimore. The focus is mainly on automated information systems, for which a dozen people have key responsibilities in the City of Baltimore.

Two additional automated systems exist. However, as they are under State direction, they are beyond the scope of this report. They are the system operated by the Police Department and the system operated by the Metropolitan Transit Authority, under the State Department of Transportation.

As the inventory was being made, the information team became aware that some groups within City departments were experimenting with projects of their own. This pointed up a to-be-expected and healthy sign; namely, that the information community is dynamic and ever changing. Mr. Harold Tall, former Chief, Bureau of Management Information Systems, has pointed out some of the changes toward which information systems management is headed. This included more data base integration, more teleprocessing capabilities, and the modernization of currently computerized applications.

Baltimore has done its automated information systems development on its own. Unlike some of the USAC cities,[1] which receive millions of dollars for systems development, Baltimore has very effectively utilized its own resources. While not featuring the degree of integration present in some of the USAC cities, Baltimore does have a very efficient and well

1. The Urban Information Systems Inter-Agency Committee of HUD and other agencies.

directed information system that utilizes its over eleven hundred programs to guarantee an effective flow of information to those in positions of administrative responsibility.

Several steps are recommended to further improve Baltimore's information position:

1. a study of "Baltimore's information state" compared with other major United States cities
2. a study of Baltimore's projected information needs in light of recent reports on the handling of information (see Appendix A, Section II)
3. plans for development of an information center for Baltimore.

Our City has done much toward integrating its systems since Charles Benton, Director of the Department of Finance, decided in 1970 that an integrated financial system should be established. Whether in the system growth which followed that or in others like the criminal justice automated system, the results of long and skillful labor and planning are evident.

Nevertheless a major need exists for control and management development. While administrative capacity to generate, organize, store, retrieve, and analyze data bases is adequate for present needs, projected demands in the near future indicate that much attention should be paid to disseminating information to a broader community; predicting the cost to automated information management of implementing proposed legislation;

and to focusing on the degree to which coordination between manual and automated systems might be facilitated. Some of these measures can be met if the recommendations listed above are adopted.

The following pages in this report refer to several thousand pages of documentation which are on file and are available on request.

A word of thanks is in order for Dr. Elaine Loebner and Mr. Jeff Coleman who added many hours of labor to make this report possible.

W. T. Durr, Director
Baltimore Region Institutional
Studies Center (BRISC)
University of Baltimore
15 October, 1975
(Revised 14 June, 1977)

RESPONDENT:
Hal Tall
CHIEF, BUREAU OF MANAGEMENT INFORMATION SYSTEMS
401 MUNICIPAL BUILDING
PHONE: 396-3902
DATE: 8/13/75
TIME: 9:40 A.M. - 11:20 A.M.

It is city policy to maintain a centralized data processing hardware configuration. This system is located on the 4th floor of the Municipal Building. Exceptions to this policy are:

i) EDUCATION - separate hardware used for educational purposes and some administrative.

ii) POLICE - hardware deals with police needs exclusively.

iii) COMMUNITY COLLEGE OF BALTIMORE - system performs a teaching function.

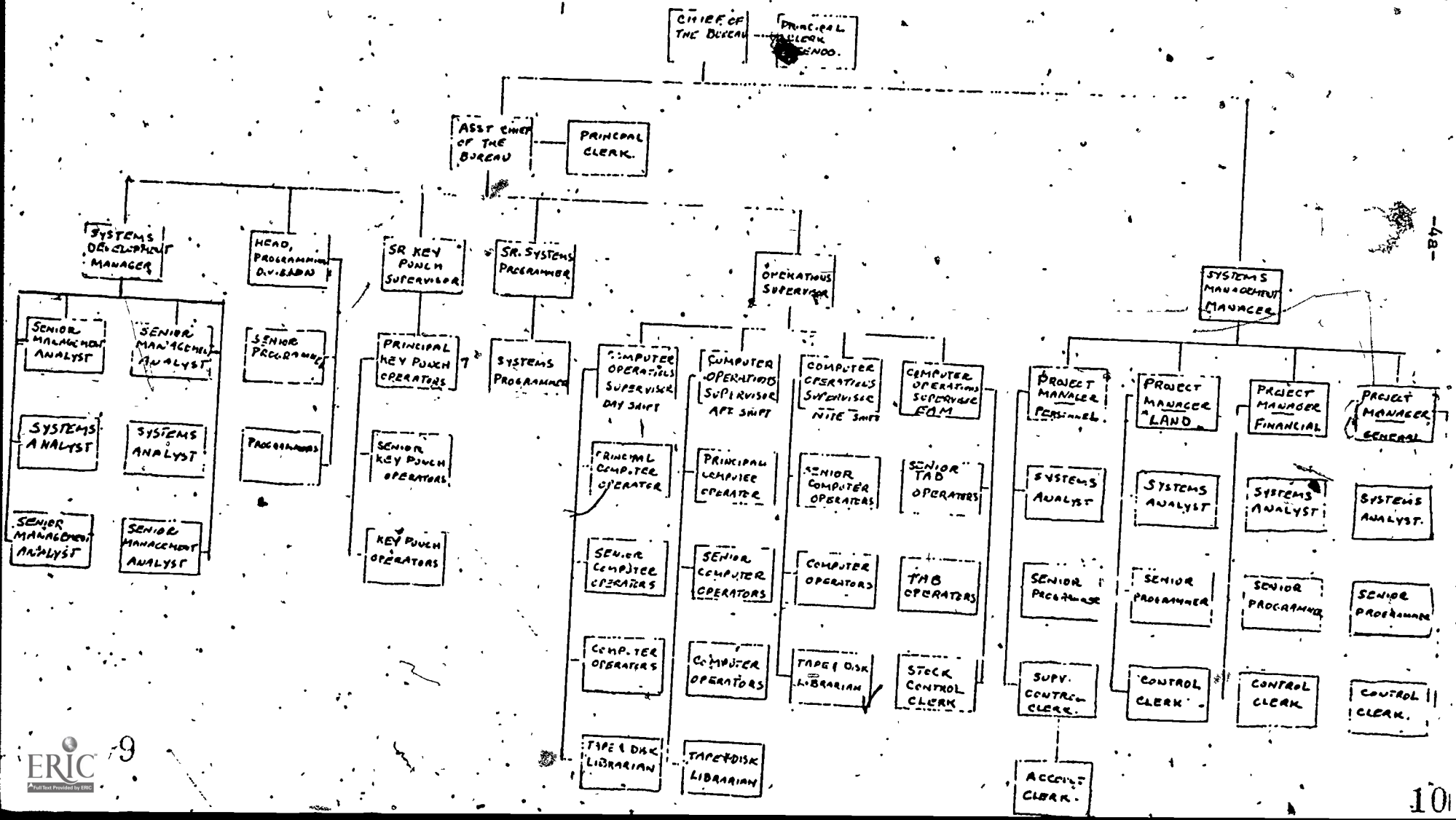
iv) PUBLIC WORKS - system performs an engineering function.

In general, the central system has the basic purpose of supplying financial, administrative, and informational services to all city agencies, even those with their own computers. A closed shop is usually maintained, with the exceptions of the Departments of Planning and of Health.

Attached is the most recent organizational chart for the Bureau of Management Information Systems. Listed below are the major principals and their titles:

H. TALL - CHIEF OF THE BUREAU
J. FUNK - ASSISTANT CHIEF OF THE BUREAU
R. CLEMSON - SYSTEMS DEVELOPMENT MANAGER
McCOWAN - HEAD, PROGRAMMING DIVISION
CHADDON - OPERATIONS SUPERVISOR
VACANT - SYSTEMS MANAGEMENT MANAGER
D. MEZZANOTTE - PROJECT MANAGER, PERSONNEL

BUREAU of MANAGEMENT INFORMATION SYSTEMS.



J. O'NEILL - PROJECT MANAGER, LAND

G. CONNOLLY - PROJECT MANAGER, FINANCIAL

D. LEGO - PROJECT MANAGER, GENERAL

The significant aspect to the organization of the Bureau lies in the separation of nearly all application systems into four categories, each maintained by a Project Manager. Each Project Manager has several individuals at his immediate disposal, as well as all the services of Systems Development, Programming, Keypunching, Systems Programming, and Operations. The four categories each refer to a single generic data base and are distinguished in the following way:

1) PERSONNEL - payroll, employee roster, skills inventory, labor budget predictions, etc.

2) LAND - assessments, zoning, water and sewer billing, taxation, etc.

3) FINANCIAL - cash receipts, cash disbursements, inventories, property and facilities management, etc.

4) GENERAL - capital improvement, manpower resources, voter registration roster, parking fines, food stamp program, etc.

Those systems which are in the process of implementation are placed directly in the hands of the Systems Development Manager. Included in this category is the financial system for Baltimore City Hospitals. A significant exception to the matrix organization of the Bureau is the Court Management and Criminal Justice System which will be transferred to the State next year and is therefore maintained separately under the supervision of John Stoltz.

THE COMPUTER SYSTEM

I. HARDWARE:

Baltimore City maintains under the auspices of the Bureau of Management Information Systems a central computer site consisting of three (3) IBM370/145's. These three systems have been assigned the designations: A, B, and C. The following table describes the basic components of the three systems:

	A	B	C
CPU TYPE:	IBM370/145	IBM370/145	IBM370/145
main memory:	512K	395K	256K
card reader:	Yes	Yes	Yes
#:	1	1	1
cpm:	1000	1000	1000
tape drives:	Yes	Yes	Yes
#:	7	7	4
density:	800 bpi all	800 bpi all	800 bpi all
# tracks:	9 all	9 six, 7 one	9 all
code:	EBCDIC all	EBCDIC all	EBCDIC all
line printer:	Yes	Yes	Yes
#:	2	2	1
lpm:	1100 both	1100 both	1100
disk storage:	Yes	Yes	Yes
#:	8	8	8
type:	IBM3330 all	Memorex 3330 Equivalent all	IBM 3330 all

Miscellaneous equipment is listed as follows:

i) Two (2) Four Phase Key-To-Disk clustered data entry systems

ii) One (1) paper tape interface to a punch unit for off-line data conversion

iii) One (1) Memorex COM system, including printer, copier, viewer, and cassette drive

iv) One (1) IBM System 7 processor for monitoring entrance to the computer room

v) A mixture of keypunches and verifiers

Remote terminal stations are located in those agencies whose computer usage requires it. These terminals may be classified in two areas: (i) inquiry/response or file update, and (ii) CRT or TTY. A list of these remote stations follows:

LOCATION	#	TYPE
Director of Finance	1	CRT, I/R
Bureau of the Budget	2	CRT, I/R
Bureau of Accounting Operations --Accounting Division	1	CRT, I/R
Bureau of Accounting Operations --Payroll Division	3	CRT, I/R
Department of Audits	1	CRT, I/R
Civil Service Commission	1	CRT, I/R
Department of Education	1	CRT, I/R
Department of Public Works	1	CRT, I/R (on order)
Chief, Bureau of MIS	1	CRT, I/R
Computer Room	2	CRT, I/R
Baltimore City Municipal Employees Credit Union	6	TTY, U
Baltimore City Court House	10	CRT, U
Baltimore City Jail	5	CRT, U
Public Defenders Office	1	CRT, I/R
Office of the State's Attorney	1	CRT, I/R

II. SOFTWARE:

All three computer systems operate under IBM DOS/VS operating system. A conversion to OS is in the planning stage. Several special system software packages are used by the city computer system:

FASTER) CICS) DL/1)	telecommunications support
GRASP	user resource accounting
RELOCATE	multiprocessing support

Virtually all application systems are designed and developed at the computer center. Exceptions are:

CREDIT UNION SYSTEM
MANPOWER RESOURCE SYSTEM
COURT MANAGEMENT SYSTEM
HOSPITAL CARE SUPPORT PACKAGE
REAL PROPERTY SYSTEM

Computer languages used include ANS COBOL, FORTRAN, RPG, and ALC. However, very little use is made of FORTRAN and RPG. A total of 1132 application programs currently exist on the three computers.

III. DATA RETENTION AND STORAGE:

Duplicates of the various data banks are usually kept across the street from the Municipal Building in the Post Office. The tempo of each system determines the back-up procedures for the associated data. Similarly, no general rule exists concerning data disposal. Each system is different.

IV. DATA PROTECTION:

Each individual data base is accessible by those city agencies for which it is pertinent. Very few of the remote terminal stations, however, have update capability. For those that do, transaction codes act as passwords into the system. This feature, along with the fact that there is no dial-up capability into the system (i.e. all current terminal stations are hard-wired), has not caused the Bureau any alarm with

respect to file security as yet. However, since many current systems are in the process of conversion from batch updating to on-line updating, the Bureau does recognize the eventual need for more data protection.

V. FUTURE TRENDS:

The Bureau of Management Information Systems sees future trends in various areas:

i) Modernization of currently computerized applications (e.g. use of OCR for water meter reading)

ii) Data base integration

iii) Expansion of teleprocessing capabilities, including more terminals in more agencies, as well as more file updating ability from remote sites

iv) More effective information systems to enhance the decision-making processes for the management of each city agency

RESPONDENT:
RON CLEMSON
HEAD OF SYSTEMS DEVELOPMENT
401 MUNICIPAL BUILDING
DATE: 9/29/75
TIME: 9:10 A.M. - 9:50 A.M.

The Head of Systems Development for the Central City System is in charge of those systems under development. These systems include:

A. Metered Water Billing
B. Summer Care Program
C. Housing Complaint Reporting
D. Central Equipment Inventory
E. Human Resource Program
F. Energy Conservation
G. City Retirement System

In addition, he oversees the following activity of an outside agency:

H. Municipal Employees Credit Union System.

All requests for the development of new computer programs are routed to him. Document A is the request form for this activity.

A. Metered Water Billing

Conversion to automatic meter readings onto cassette is underway. See discussion of respondent John O'Neill.

B. Summer Care Program

A new system is under development by an outside software agency to assist the Mayor's Office of Manpower Resources in its summer care program.

C. Housing Complaint Reporting

New systems are being generated to speed up the processing of housing code violation complaints from citizens, the press, and the media.

D. Central Equipment Inventory

This system is under development in order to complement the Supplies Inventory already in operation for the Bureau of Purchases. It will handle only office equipment.

E. Human Resource Program

New systems are underway to assist the Mayor's Office of Human Resources in its reimbursement program to the young and

aged, in its work release program, and in its religious program.

F. Energy Conservation

Underway is the development of new systems to assist the Department of Finance in its gas, water, and electricity consumption conservation program.

G. City Retirement System

This new system is under development as an enhancement to the City Payroll System.

H. Municipal Employees Credit Union System

The Municipal Employees Credit Union is a private non-profit organization. By interfacing with the City Payroll Data Base, an impressive on-line credit union system has been operational since 1971. An IBM Application Brief (Document B) describes the workings of this system.

Respondent: Gil Connolly

Data Base Manager, Financial

401 Municipal Building

Date: 8/21/75

Time: 1:30 p.m. - 3:00 p.m.

The Data Base Manager in charge of financial services maintains the following systems:

A) Integrated Financial System (IFS)

B) Central Garage Control System

C) Central Inventory Control System

A. Integrated Financial System

i) DESCRIPTION:

The general purpose of IFS is to provide comprehensive and accurate financial data to the various levels of municipal administration. All city agencies benefit from the system. Document A, an IBM Application Brief, summarizes the design criteria as well as the implementation procedures used in IFS. Certain specific objectives of the system may be listed:

1) Adherence to nationally accepted standards of governmental accounting
2) Provision of meaningful financial reports for management
3) Measurement of effectiveness by relating budgets to costs
4) Organization of expenditures by specific agency or activity
5) Provision of information necessary to prepare new budgets
6) Maintenance of expenditures on a daily basis including direct inquiry capability from visual display units.

Daily processing of transactions is divided into two areas: Disbursements and Non-Disbursements. Disbursements consists of the efforts necessary to the preparation of payments. Non-Disbursements consists of a variety of actions including cash receipts, new vendors, transfers, payroll distributions, and so on.

Monthly processing consists of closeout tasks necessary to produce a transaction history as well as agency and management reports.

Specific tasks performed by the system include the following:

1) Maintenance of a large and diverse data base (see DATA BASE)
2) Issuance, recording, and printing of daily vendor checks
3) Daily recording of all transactions against the budget
4) Editing and balancing of input in order to flag errors
5) Processing of purchase orders to insure availability of funds
6) Report generation of selectable file information for management
7) Maintenance of individual expenditure accounts
8) Remote inquiry through terminals

IFS may be classified as not only a computerization of the accounting process but as an information system as well.

ii) INPUT SOURCE

Input may enter IFS from a number of sources:

1) Purchase Order, from city agency (Document B)
2) Work Order, from city agency (Document C)
3) Contractor's Estimate, from city agency (Document D)
4) Department Order for Direct Payment, from city agency (Document E)
5) Stamp on Invoice, from Bureau of Accounting Operations (Document F)
6) Vendor Distribution Voucher, from Bureau of Accounting Operations (Document G)
7) Personal Distribution Voucher, from Bureau of Accounting Operations (Document H)

8) "Delivered From" keypunch chart, from Bureau of Accounting Operations (Document I)

9) "Human Expense" keypunch chart, from Bureau of Accounting Operations (Document J)

10) Aggregate Data from payroll system

11) Aggregate Data from central garage system

12) Aggregate Data from central inventory system

In addition, each city agency has a budget analyst who prepares budget data once a year in conjunction with the Bureau of the Budget and Management Research.

iii) OUTPUT DOCUMENTS.

Output documents are numerous. They include:

1) Vendor Checks, payment to vendor (daily)

2) General Ledger. to Bureau of Accounting Operations (monthly)

3) Bank Report, to Department of the Treasurer (monthly)

4) Capital Report, to Bureau of Accounting Operations (monthly)

5) Cost Billing Summary, to Bureau of Accounting Operations (monthly)

6) Level III Object- Sub-Object Activity Listings, to each city agency head (monthly)

[Level III refers to a complete transaction history in detail]

7) Level II Cumulative Statement, to each city bureau and department (monthly)

[Level II refers to a summarization of the Level III report] (Document K)

8) Level I Cumulative Statement, to top city management (monthly)

[Level I refers to a summarization of the Level II report] (Document L)

iv) DATA BASE

A number of individual direct access files are maintained by IFS. Each budgeted account has associated with it a 15 digit "Account Number" broken down by Fund (4 digits), Program (3), Account (3), Sub-Account (2), and Object (3). Thus, Level III monthly reports list activities broken down by all 15 digits, Level II by 11 digits, and Level I by 7 digits. This Account Number appears often in the file structure.

1) Budget Master, includes Account Number to 11 digits, description, current and prior appropriations and revisions, current and prior disbursements and encumbrances (Document M)
2) Cost File, includes Work Order Number, Account Number, estimated and accumulated cost, issue and completion dates (Document N)
3) Vendor File, includes Vendor Number, Vendor Address, current payments (Document O)
4) Encumbrance Data, includes Work Order Number, Account Number, Order Number, Vendor Number, Check Number, date (Document P)
5) Financial Transactions, includes Account Number, Transaction Number, Work Order Number, Check Number, Vendor Invoice Number, date (Document Q)
6) General Ledger, includes Account Number, Account Name, balances for each month of fiscal year (Document R).
7) "Little Budget," includes Account Number to all 15 digits, current and prior disbursements and encumbrances (Document S)
8) General Ledger Paragraph Titles, includes Account Number and associated description (Document T)
9) Titles, includes Account Number to 7 digits and associated broad description (Document T)

10) Human Expenses, includes Social Security Number, name, address, and payments (Document U)

11) Level III Transaction Tape, includes full Account Number, Work Order Number, Vendor, Check Number, Vendor Invoice Number, disbursement account, encumbrance amount, date (Document V)

v) TELEPROCESSING:

A number of IBM 2260 visual display units may access information on file on inquiry/response basis. These terminals are located in the Bureau of Accounting Operations as well as in the Director of Finance's Office.

B. Central Garage Control System

i) DESCRIPTION

The Central Garage Control system monitors the use and repair of Code 2 equipment owned by the City of Baltimore and leased to the various city agencies. The system has been functioning since 1971. The central garage is located at Hanover and Dickman Streets and is maintained by the Department of Public Works. The system interfaces with IFS and triggers all payments to be made for maintenance and repairs to equipment.

ii) INPUT SOURCE

A number of actions are keypunched for entry to the system:

1) New Vehicle or Equipment Purchased, from Bureau of Purchases (Document W)

2) Automotive Stores Requisition, from Bureau of Purchases (Document X)

3) Repair Shop Activity Form, from central garage (Document Y)

4) Change Form, from central garage (Document Z)

5) Monthly Vehicle Rental Record, from Bureau of General Services of Department of Public Works (Document AA)

6) Daily Disbursements of Gasoline and Oil, from Bureau of General Services of Department of Public Works (Document BB)

7) Employee's Daily Time Report, from Bureau of General Services of Department of Public Works (Document CC)

iii) OUTPUT DOCUMENTS

Three categories of reports are produced:

1) Billings by gas consumption, oil consumption, materials usage, rentals ~~(to be interfaced with IFS)~~

2) Monthly Usage Reports, to Department of Public Works

3) Exception Reports, including minimums and maximums for vehicle types, to Department of Public Works

iv) DATA BASE

Three separate files are maintained by the system:

1) Vehicle Master, includes vehicle number, bureau assignment, vehicle description, current month expenditures, current year expenditures, life-to-date expenditures (Document DD)

2) Repair Order Accumulations, includes repair cost and vehicle number (Document EE)

3) Work In Progress Master, includes repair order number, account number, and costs of current work (Document FF)

v) TELEPROCESSING:

None

C. Central Inventory Control System

i) DESCRIPTION:

The Central Inventory Control system monitors the use and purchase of all city warehouse supplies. The city agency benefitting from this system is the Bureau of Purchases of the Department of Finance. The system may be classified as automation in that new supplies are ordered automatically.

ii) INPUT SOURCE

The following documents originate from the Bureau of Purchases on a daily basis and supply input to the system:

1) Batch Control Card (Document JJ)
2) Purchase Order (Document KK)
3) Purchase Requisition (Document LL)
4) Delivery and Receipts Card (Document MM)
5) Warehouse Credit (Document NN)
6) Inventory Adjustment (Document OO)
7) Confirming Purchases (Document PP)
8) Warehouse Transfer (Document QQ)
9) Warehouse Requisition (Document RR)

iii) OUTPUT DOCUMENTS

Several reports are produced by the system concerning rate of use. All commodities are broken down by class for the purpose of these reports. In addition, the system determines when to purchase new items and produces an appropriate document to this effect.

iv) DATA BASE

Five individual files are maintained by the system:

1) Basic Inventory Master, includes stock number, stock description, unit price, lead time, balance on hand, usage summary (Document SS)

2) Purchase Commitment History, includes stock number, purchase requisition number, purchase order number, vendor number, quantity, unit cost, and delivery date of last six purchases of a given item (Document TT)

3) Open Purchase Commitment, includes stock number, purchase order number, vendor number, delivery due date, and quantity ordered for all currently unreceived items (Document UU)

4) Back Orders, includes stock number, work order number, and quantity of all currently back-ordered items (Document VV)

5) Delivery Point Master, includes name and address of all delivery points (Document WW)

v) TELEPROCESSING

none

RESPONDENT:
MICKY MEZZANOTTE
DATA BASE MANAGER, PERSONNEL
401 MUNICIPAL BUILDING
PHONE: 396-3903
DATE: 9/3/75
TIME: 1:30 P.M. - 2:15 P.M.

The data Base Manager in charge of Personnel Systems handles two broad categories:

A. Baltimore City Payroll System
B. Baltimore City Personnel System

These two categories have been integrated to access a common data base. Approximately 60% of all processing of personnel data can be considered a payroll application.

A. Baltimore City Payroll System

i) Description:

The Payroll System consists of a computerization of the wage payment system for all city employees. All city agencies benefit from the system. Certain features of the system may be highlighted as follows:

1) individual wage payments
2) retirement benefits
3) salary reserves
4) vacancy reporting
5) budget predictions
6) interface to credit union

ii) Input Source:

Information on file for each city employee enters the systems by means of an "entry ticket" completed by the individual at hiring time. Payroll changes enter the system in a batch mode from forms completed by the Payroll Division of the Bureau of Accounting Operations of the Department of Finance.

iii) Output Documents:

Products of the system include weekly payroll checks for the city labor force, biweekly payroll checks for city agency personnel, and monthly payroll checks for Department of Education personnel. as well as numerous status and summary reports to the Payroll Division and Budget Division.

iv) Data Base:

Two data files are maintained by the system:

1) Basic Payroll Master, includes employee name, social security number, department, location, job description, salary data, current regular and overtime hours, pension data, deduction data, exemption data, current credit union data (Document A)

2. Year-To-Date Payroll Master, includes employee name, social security number, address, marital status, sex, race, birth date, education, previous employment locations within city, year-to-date pension, vacation, sick, tax, credit union, and earnings data (Document B)

Both data files interface with the Baltimore City Municipal Employees Credit Union System which is discussed by respondent Ron Clemson.

v) Teleprocessing:

Three IBM 2260 video screens are located in the Payroll Division and two in the Budget Division. These terminals are used to inquire into the current status of the payroll. No file updates are performed from the remote locations.

B. Baltimore City Personnel System

i) Description:

The Personnel System consists of an information system providing vital management reports concerning all city employees. City agencies which benefit from the system are:

1) Civil Service Commission
2) Labor Commissioner's Office
3) Department of Finance, Bureau of the Budget and Management Research
4) Board of School Commissioners
5) Baltimore City Health Department
6) Equal Employment Opportunity Commission
7) Office of Manpower Resources

ii) Input Source:

Since a common data base with the Payroll System is utilized by the Personnel System, no separate input is required.

iii) Output Documents:

Products of the system include:

1) job title listings, to Civil Service
2) salary listings, to Civil Service

3) race listings, to Equal Employment Opportunity Commission (EEOC)
4) sex listings, to EEOC
5) agency listings, to Health Department, Board of School Commissioners, and Office of Manpower Resources
6) union listings, to Labor Commissioner
7) turnover analysis reports, to Labor Commissioner
8) budget predictions, to Bureau of the Budget and Management Research

iv) Date Base:

Identical to Payroll System

v) Teleprocessing:

One IBM 2260 video screen is located at the Civil Service Commission to inquire into the current status of all city personnel. No file updates are performed from the remote locations.

N.B. Future projects in this area includes the maintenance of a skills inventory of all city employees.

RESPONDENT: John O'Neill
Data Base Manager, Land

DATE: 8/15/75
TIME: 1:40 p.m. - 4:10 p.m.

The Data Base Manager in charge of Real Property handles the following systems:

A. Housing Inspection

B. Metered Water

C. Private Fire Protection

D. Elevator Inspection

E. Market Stall Space

F. Sewer and Steam Service

G. Real Property Assessment and Taxation

H. Tangible Personal Property Assessment and Taxation

I. Multiple Family Dwellings

J. Rodent Control

Many of these systems take advantage of the Real Property Master Data Base. Each piece of property in the city is specified by Ward, precinct, block, and lot number. This so called "Property Number" is the key to the Data Base. Associated with each lot is the following information:

i) owner

ii) address

iii) special paving data

iv) all current assessments (including land, improvements, exempt land, exempt improvements, water, sewer)

v) zoning data

vi) land use data

vii) old assessment total (including year)

viii) taxes due (broken down by state, city, water, sewer, paving, land, improvements)

ix) amounts paid and payment dates

Document EE provides a computer disk layout sheet for the Real Property Master Data Base. Every city lot has an entry on this file.

A. Housing Inspection

i) Description:

The Housing Inspection system benefits the following agencies:

1) Baltimore City Fire Department

2) Baltimore City Health Department

3) Department of Housing and Community Development

The system consists of a computerization of health, fire, and housing inspection violations.

ii) Input Source:

The principal source of information is the inspector's report (See Document FF). This report is filled out on site by hand and submitted for keypunching as input to the system.

iii) Output Documents:

The following documents are produced by the system:

1) Violation Notice, to owner (Document P)

2) Required Work Completion Notice, to owner (Document T)

3) Housing Violation Late Completion Notice, to owner (Document Q)

4) Housing Violation Final Notice, to owner (Document R)

5) Health Violation Final Notice, to owner (Document S)

iv) Data Base:

The Real Property Master Data Base is not used for this system. Several files have been specially created:

1) Building Master File - includes all city buildings, with "Property Number", address, owner, owner's address, agent, agent's address, building description, date of last inspection

2) Open Notice Master File - includes pertinent location, inspection, and chronological information concerning all pending violations

3) Inspector / Supervisor Master File - includes names and phone numbers of all inspectors and supervisors

4) Location Master File - includes addresses of all pending violations

5) Violation Master File - includes descriptions of individual violations

Document GG provides computer disk layout sheets for these various files.

v) Teleprocessing:

None

B. Metered Water

i) Description:

The Metered Water system benefits the following agencies:

1) Department of Finance, Bureau of Collections

2) Department of Public Works, Bureau of Consumer Services

The system consists of a computerization of the billing process.

ii) Input Source:

The principal source of information is the meter reading note books supplied by the Bureau of Consumer Services of the Department of Public Works. These books are filled out on site by hand and submitted for keypunching as input to the system every three months.

iii)Output Documents:

The following documents are produced by the system:

1) Metered Water Bill, to consumer (Document W)

2) Delinquent Notice, to consumer (Document X)

3) Metered Water Accounts Receivable Update Register, to Bureau of Collections (Document Y)

4) Record of Meter Readings, to Bureau of Consumer Services (Document V)

iv) Date Base:

The Real Property Master Data Base has been integrated to include metered water data. Both the amount owed as well as the amount paid are included on the file. Addresses for the mailing of bills are taken directly from this file also.

v) Teleprocessing:

None

N.B. A conversion is in process for the Metered Water System. New meters are being installed in homes which allow for automatic meter readings onto cassette. An Optical Character Reader (OCR) will transfer this information to the computer. However, due to the "black box" controversy, this system is up in the air.

C. Private Fire Protection

1) Description

The Private Fire Protection system benefits the following agencies:

1) Baltimore City Fire Department

2) Department of Finance, Bureau of Collections

The system consists of a computerization of the billing process for the annual inspections necessary for private fire protection.

ii) Input Source:

The principal source of information is the inspector's report from the Fire Department. Information from this report is submitted to keypunching for input to the system. (Document HH)

iii) Output Documents:

The following document is produced:

1) Private Fire Protection Service Ledger Stub, to owner and to Bureau of Collections (Document AA)

iv) Data Base:

The Real Property Master Data Base is used by this system for billing addresses only.

v) Teleprocessing:

None

D. Elevator Inspection

i) Description:

The Elevator Inspection System benefits the following agencies:

1) Department of Housing and Community Development

2) Department of Finance, Bureau of Collections

The system consists of a computerization of the billing process for the annual elevator inspection.

ii) Input Source:

The principal source of information is the inspector's report from the Department of Housing. Information from this report is submitted to keypunching for input to the system.

iii)Output Documents:

The following documents are produced:

1) Elevator Inspection Fees, to owner (Document BB)

2) Elevator License, to owner

iv) Data Base:

The Real Property Master Data Base is used by this system for addresses only.

v) Teleprocessing:

None

E. Market Stall Space

i) Description:

The Market Stall Space system benefits the following agencies:

1) Department of the Comptroller, Bureau of Markets and Comfort Stations

2) Department of Finance, Bureau of Collections

The system consists of a computerization of the billing and licensing necessary to conduct a market stall space.

ii) Input Source:

From a list kept by the Market Master a card deck is kept with Market name and Stall description information. An additional card deck is maintained describing the periodicity of each stall's licensing. (Document II)

iii)Output Documents:

The following documents are produced:

1) Market Stall Space License, to owner (Document CC)

2) Market Stall Space License Ledger Stub, to Bureau of Collections (Document DD)

iv) Data Base:

The Real Property Master Data Base is used by this system for addresses only.

v) Teleprocessing:

None

F. Sewer and Steam Service

i) Description:

The Sewer and Steam Service System benefits the following agencies:

1) Department of Public Works, Bureau of Consumer Services

2) Department of Finance, Bureau of Collections

The system consists of a computerization of the billing process for sewer and steam service.

ii) Input Source:

Consumption data is supplied by the Bureau of Consumer Services. This data is keypunched for input to the system.

iii) Output Documents:

The following document is produced:

1) Sewer Service Charge/Steam Condensate Ledger Stub, to Consumer and to Bureau of Collections (Document Z)

iv) Data Base:

A permanent billing file by account number has been set up for this system. Document JJ provides a computer disk layout sheet for this file. In addition, the Real Property Master Data Base is used for addresses.

v) Teleprocessing:

None

G. Real Property Assessment and Taxation

H. Tangible Personal Property Assessment and Taxation

i) Description:

The assessment of property and the collection of taxes thereof has become a State function as of July 1, 1975. The Assessment and Taxation System benefits the following agencies:

1) State Department of Assessments and Taxation
2) Department of Assessments, Baltimore City
3) Department of Finance, Bureau of Collections
4) Department of Housing and Community Development

The system consists of a computerization of the assessing, listing, and tax collecting of all real and personal property located in Baltimore City.

ii) Input Source:

Various sources of information feed into the system:

1) Affidavit of Property Transfers, from Courthouse (Document A)
2) Property Transfer, from Department of Finance (Document J)
3) Assessors Work Sheet, from Department of Assessments (Document B)
4) Office Building Statement, from owner (Document C)
5) Property Tax Credits for Homeowners, from owner (Document K) [Circuit Breaker]
6) Certificate of Eligibility, from owner (Document L) [Circuit Breaker]

iii) Output Documents:

The following documents are produced by the system:

1) Daily Assessment Change Report, to State Department of Assessments and Taxation (Document D)

2) Proposed New Assessment, to owner (Document E)

3) Final Assessment Notice, to owner (Document F)

4) Real Property Tax Bill, to owner (Document M)

5) Tangible Personal Property Tax Bill, to owner (Document N)

6) Overdue Tax Notice, to owner (Document O)

7) Annual Roll of Assessed Valuation of Real Estate, to Department of Assessments (Document H)

8) Annual Roll of Assessed Valuation of Tangible Personal Property, to Department of Assessments (Document I)

9) Assessment Book, to State Department of Assessments and Taxation (Document G)

iv) Data Base:

The previously discussed Real Property Master Data Base is the heart of this system

v) Telecommunications:

The Bureau of Collections has inquiry capability into the Real Property Master Data Base

I. Multiple Family Dwellings

i) Description:

The Multiple Family Dwelling system benefits the following agencies:

1) Department of Housing and Community Development

2) Department of Finance, Bureau of Collections

The system consists of a computerization of the process of billing for and issuance of a multiple family dwelling license.

ii) Input Source:

The principal source of information is the housing inspector's report (see Document FF). This report is filled out on site by hand and submitted for keypunching as input to the system.

iii) Output Documents:

The following documents are produced by the system:

1) Multiple Family Dwelling Ledger Stub, to owner and to Bureau of Collections

2) Multiple Family Dwelling License, to owner (Document U)

iv) Data Base:

The Real Property Master Data Base is <u>not</u> used for this system. A special file has been created which includes "Property Number", dwelling address, owner, owner's address, agent, agent's address, and fee paid. Document KK provides a computer disk layout sheet for this file.

v) Teleprocessing:

None

J. <u>Rodent Control</u>

Addresses are provided to the Department of Health's rodent control program from the Real Property Master Data Base.

RESPONDENT:
DENNIS LEGO
DATA BASE MANAGER, GENERAL
401 MUNICIPAL BUILDING
PHONE:
DATE: 8/25/75
TIME: 1:45 P.M. - 3:00 P.M.

The following major applications are maintained by the Project Manager of General Systems:

1) PARKING
2) ELECTIONS
3) FOOD STAMPS
4) MANPOWER DISTRIBUTION
5) CAPITAL PROJECTS
6) WEIGHTS AND MEASURES
7) DOG LICENSES

I. PARKING

i) DESCRIPTION:

This application consists of a computerization of the parking violation system. Agencies benefited by the process are:

A) Department of Finance, Bureau of Collections

B) Police Department

C) State Motor Vehicle Administration

D) District Court of Maryland

Only as of January 1 of this year has the parking violation system become the responsibility of the City. Approximately 170,000 transactions have entered the system this year to date.

ii) INPUT SOURCE:

Data may enter the system from three sources:

A) Parking Citation, from Police Department (Document A)

B) Payment, from Bureau of Collections (Document A)

C) Trial Request, from Bureau of Collections (Document A)

Daily updates to the data base are made by means of the Four Phase Key-to-Disk Data Entry Operators.

iii) DATA BASE:

Two separate data files are maintained by this system:

A) MASTER FILE (DOCUMENT B) (DISK)

The key to this file is the citation number. Each issuance of a violation creates a new entry. Alterations to this file take place when one of the following actions occurs:

1) payment

2) trial request

3) passage of due date

B) AUDIT FILE (DOCUMENT C) (DISK)

The key to this file is the citation book control number. Each issuance of a citation book to an officer creates a new entry.

iv) OUTPUT DOCUMENTS:

Depending upon the action taken, a citation may produce output on one or more of the following documents:

A) Notice to Stand Trial, to District Court of Maryland (Document D)

B) Late Notice, to individual (Document E)

C) Impounding Report, to Police Department (monthly)

D) Registration Revocation List, to State Motor Vehicle Administration (yearly) (tape)

E) Skip Report, to Police Department (This report lists those citations from each officer's book that were never issued.)

v) TELEPROCESSING:

The Bureau of Collections has access to the information on file on an inquiry/response basis only. No direct access by the State Motor Vehicle Administration currently exists.

II. ELECTIONS

i) DESCRIPTION:

This application consists of a computerization of the Voter Registration Roll. Agencies benefited by the process are:

A) Board of Supervisors of Elections

Approximately 386,000 entries exist as of the current date.

ii) INPUT SOURCE:

Data is updated on a weekly basis by means of the Four Phase Key-to-Disk Operation. Updates consist of edits, additions, or deletions and enter the system from two sources:

A) Transfer of Registration, from individual's Voter's Card (Document F)

B) Permanent Voter Registration, from Board of Supervisors of Elections (Document G)

iii) DATA BASE:

A single data file is maintained by this system:

A) Election Master File (Document H) (Tape)

All voters are kept on file along with their name, address, precinct, ward, party, sex, birth year, and nationality.

iv) OUTPUT DOCUMENTS:

A) Voter Registration Card, to individual (Document F)

B) Binder Documents by Precinct, to be used on election day

C) Various Listings (e.g. by age group, by councilmanic district, etc.), to Board of Supervisors of Elections upon request (These documents may be photographed and sold to those running for office.)

v) TELEPROCESSING:

None

III. FOOD STAMPS

i) DESCRIPTION:

This application consists of a computerized reconciliation of food stamp issuances versus redemptions. Agencies benefited by the process are:

A) Baltimore Department of Social Services

B) State Food Stamp Agency

Over 70,000 transactions are processed every month by this system.

ii) INPUT SOURCE:

Data may only enter the system in two ways:

A) Issuance Tape, from State (Document I)

B) Redeemed Food Stamp Cards, from redemption centers (Document J) (All Food stamps themselves are issued by the State)

The Food Stamp A.T.P. (Authorization to Purchase) Cards are read by an OCR data entry station.

iii) DATA BASE:

Two separate files are used in this system in order to reconcile issuances versus redemptions:

A) State Master Issue Tape (Document I)

(TAPE)

This tape is supplied on a monthly basis by the State as a record of Food Stamp issuances

B) Daily Redemption Tape (Document K)

(TAPE)

The key to this file is the A.T.P. number of a previously redeemed Food Stamp Book

iv) OUTPUT DOCUMENTS:

A variety of reports are sent to the State. These documents contain listings of Food Stamp users, Food Stamp redemption centers, number of Food Stamps redeemed by family, and a complete redemption register. None of these reports are used by the City.

v) TELEPROCESSING:

None

IV. MANPOWER DISTRIBUTION

The Manpower Distribution System is discussed later.

V. CAPITAL PROJECTS

The Capital Projects system is under development in conjunction with the Department of Planning. A discussion of this system can be found under respondent Ron Nelson.

IV. WEIGHTS AND MEASURES

i) DESCRIPTION:

The Weights and Measures system consists of a computerization of the service fees due for inspection of all weighing and measuring devices used in public trade within the City. The following agencies benefit from the system:

A) Department of Public Works, Bureau of Inspection

B) Department of Finance, Bureau of Collections

ii) INPUT SOURCE:

Data may enter the system from the report of the inspector. This information is keypunched.

iii) OUTPUT DOCUMENTS:

The following document is produced

A) Inspection Service Fee, to operator (Document L)

iv) DATA BASE:

A single Weights and Measures Master File is maintained. Document M is a computer tape layout sheet for this file. Included are an identification number, operator's name, company name, address, inspection dates, equipment description, and billing information.

v) TELEPROCESSING:

None

VII. DOG LICENSES

i) DESCRIPTION:

The Dog License system consists of a computerization of the licensing process. The following agencies benefit from the system:

A) Baltimore City Health Department

B) Department of Finance, Bureau of Collections

ii) INPUT SOURCE:

A Dog License request form (Document N) is completed by the dog owner and submitted with the fee to the Bureau of Collections. This information is keypunched.

iii) OUTPUT DOCUMENTS:

The Dog License (Document N) is produced by the system.

iv) DATA BASE:

A card oriented data file is maintained with the tag number, owner's home, and owner's address. Document O is a computer card layout sheet for this file.

v) TELEPROCESSING:

None

RESPONDENT: Richard Burt
Director of Finance, City Hospitals

Address: 4740 Eastern Avenue

Phone: 396-9067

Date : 8/14/75

Time: 1:10 p.m. - 1:40 p.m.

I. Software

As of July 1, 1975, financial services for Baltimore City Hospitals are supplied at the central city computer system by the IBM Hospital Care Support Package. General topics handled by the system include:

1) Patient Census
2) Hospital Revenue
3) Itemized Billing
4) Accounts Receivable
5) Statistics

Manuals may be provided by IBM as documentation. Previous to the implementation of this system, computerized accounts receivable were handled by the Shared Hospital Accounting System. This system had been based on a per diem patient billing scheme, since scraped by legislation.

II. Hardware

With the implementation of the new support package, the following hardware is being installed at City Hospital for communication with the central computer system:

Number	Item	Purpose
5	IBM 3270	Patient Registration Update and Inquiry/Response into Billing
1	IBM 3780 (planned)	Accounts/Receivable Batch Processing

III. Administration

Approximately 80 users of the Hospital Care Support Package are located at City Hospital including:

10 Statistics

18 Data Collection

37 Billing/Insurance

9 Accounting

4 Data Control

2 Supervision

N.B. No other use of the computer is made by City Hospitals (e.g. Medical Records).

RESPONDENT: John Stoltz
Systems Analyst, Criminal Justice

ADDRESS: 401 Municipal Building

PHONE: 396-3217

DATE: 9/23/75

TIME: 9:35 a.m. - 11:15 a.m.

The Systems Analyst for Criminal Justice has under his jurisdiction two major computer applications:

A. City Jail Inmate Control System

B. Court Case Scheduling System

The Court System has been operational in the city for the past three years; however, the Jail System has functioned only since January, 1975

A. CITY JAIL INMATE CONTROL SYSTEM

i) DESCRIPTION

The City Jail Inmate Control System consists of a progressive information system constructed to provide the following features:

1) Individual Inmate History
2) Inmate Location Inventory
3) Jail Operational Reporting
4) Jail Management Reporting
5) Interface to Court Case Scheduling System
6) Complete Remote Update and Inquiry Capability

These system features are described in more detail by Document A. The Jail System is an on-line system and operates 24 hours a day, 7 days a week. Agencies which benefit from the system are:

1) Baltimore City Jail

2) Police Department

3) The State Supreme Bench

4) District Court of Baltimore City

5) State's Attorney's Office of Baltimore City

6) Public Defender's Office of Baltimore City

Funding for this system originates from the Federal Law Enforcement Assistance Program (LEAA).

ii) INPUT SOURCE

Absolutely no input to the system is batch oriented. All updating is done on an on-line basis from terminals located at City Jail or by information supplied automatically by the Court System. Clerks at the City Jail provide up-to-date information concerning inmates such as:

1) criminal charges

2) bail data

3) arrest number

4) personal history

5) detainer information

6) writ information

7) institution information

8) medical history

9) visitor information

10) location

11) arresting officer

12) court hearing data

13) previous arrest history

14) psychological data

iii) OUTPUT DOCUMENTS

Reports produced on a periodic basis are summarized in Document C. These documents are used both by top management at City Jail as well as by operations supervisors.

iv) DATA BASE

A large series of data files are maintained by the system on an interactive basis. These files are explained in Document E and are broken down into three areas: case files, name files, and calendar files. All case files include court division and case number. Case files also include:

1) A Record, includes case name, complaint number, charge
2) B Record, includes bail type, bail date, bail judge, bail amount, arrest number
3) C Record, includes all previous charges and arrest numbers
4) D Record, includes race, sex, birth date, religion, education, occupation, program, section, cell number
5) E Record, includes results of 25 psychological tests
6) F Record, includes detainer information
7) G Record, includes writ information
8) H Record, includes institution information
9) I Record, includes medical information
10) J Record, includes name, identification number, arrest number, location, visitor information, commitment date
11) S Record, includes court hearing date, room number, time, disposition

All name files include name, court division, and case number. Name files also include :

1) J Record, identical to case file J Record
2) M Record, includes address

The calendar file includes:

1) S Record, identical to case file S Record

All files are backed-up on a daily basis.

v). TELEPROCESSING:

Seven video screens (GTE 7700's) are located at various critical positions in the Baltimore City Jail. Two dot matrix printers (IBM 1053's) are also located in the jail, and one IBM 2265 terminal is on order. Each terminal is programmed to allow for inquiry and updating of certain specific data only.

B. COURT CASE SCHEDULING SYSTEM

i) DESCRIPTION.

The Court Case Scheduling System consists of a progressive information system constructed to provide the following features:

1) Individual Case Inventory
2) Accounting of Involved Parties
3) Trial Scheduling
4) Court Operational Reporting
5) Court Management Reporting
6) Interface to City Jail Inmate Control System
7) Complete Remote Update and Inquiry Capability

These system features are described in more detail by Document B. The Court System is an on-line system and operates during working hours. All agencies which benefit from the Jail System also benefit from the Court System.

The original source of the system is the IBM Basic Court System.

ii) INPUT SOURCE

Absolutely no input to the system is batch oriented. All updating is done on an on-line basis from terminals located at the City Courthouse or by information supplied automatically by the Jail System.

Clerks at the Courthouse provide up-to-date information concerning court cases such as:

1) court division
2) case number
3) entitlement
4) bail forfeiture data
5) plea
6) verdict
7) sentence data
8) probation data
9) judge
10) docket information
11) persons involved in case (witness, etc.)
12) scheduling information
13) attorney
14) courtroom

iii) OUTPUT DOCUMENTS

Reports produced on a periodic basis are summarized in Document D. These documents are used by Attorneys, Judges, and Court Clerks. Notices are also produced which provide calendar information to persons involved with each case.

iv) DATA BASE

A large series of data files are maintained by the system on an interactive basis. These files are explained in Document F and are broken down into three areas: case files, name files, and calendar files. All case files include court dividion and case number. Case files also include:

1) A Record, includes entitlement, filing date, case type
2) B Record, includes bail forfeiture judge, bail satisfied amount, extension date

3) C Record, includes sentencing start date, probation start date

4) D Record, includes defendent race, sex, birth date, trial judge

5) F,G,H,I Records, includes all docket events and dates

6) J Record, includes names and connection of all persons involved

7) S Record, includes disposition, court hearing date, room number, time.

All name files include name, court division, and case number. Name files also include:

1) J Record, identical to case file J Record

2) L Record, includes address of all persons involved

The calendar file includes:

1) S Record, identical to case file S Record

All files are backed up on a daily basis.

v) TELEPROCESSING

Sixteen video screens (8 GTE 7700's, 8 IBM 2260's) as well as a dot matrix printer (IBM 1053) are located at key positions in the Baltimore City Courthouse. The Public Defender's Office and the State's Attorney's Office also have IBM 2260's. These terminals are programmed to lock out certain private individual information.

RESPONDENT: James W. Johns
Chief of Information Systems
Department of Planning
ADDRESS: INA Building, Basement
Fayette Street and Guilford Avenue
PHONE: 396-5176
DATE: 8/7/75 (Interview #1)
TIME: 1:00 p.m. - 2:15 p.m.
DATE: 12/19/75 (Interview #2)
TIME: 9:00 a.m. - 11:30 a.m.

In conjunction with the primary functions of the Department of Planning, the Chief of Information Systems supplies services not only to the other fifteen divisions of the Department but also to other City Departments. These services consist of information gathering and reporting projects, approved by the Director of Planning, dealing with various resources and needs of the City. Final products of these projects are usually in the form of either computer printouts or bound documents whose distribution is attended to by the requesting agency.

A great deal of program development takes place in completing each project undertaken by the staff. A number of procurred program packages, however, are used in the analysis of data:

SPSS	Statistical Programs for Social Sciences
BMD	Biomedical Statistical Programs
CROMP	Modified BMD
SYMAP	Graphics Support Package
ADMATCH	Address/Geographic Matching Package
UNIMATCH	Generalized Record Matching Package
PLAN YOUR	Report Generator

Over 300 output products are produced each year by the Information Systems staff. Major applications include:

A. Capital Improvement Program
B. Census Use
C. Economic Development
D. Education
E. Housing
F. Land Use
G. Law Enforcement
H. Manpower Resources
I. Medical Services
J. Neighborhood Design
K. Property Transactions
L. Social Services
M. Taxation
N. Transportation

A flat rate of $22,500 per year is paid to the Bureau of Management Information Systems for the use of the central city computer system located in the Municipal Building. The Department of Planning is one of the few "open-shop" users of this system. No telecommunications hardware is located in the Department of Planning. An additional $80,000 is budgeted for the staff, which consists of one systems analyst and one senior programmer, one keypunch operator, and one data entry clerk.

Due to its basic nature as a research organization, the Department of Planning does not discard any information it acquires. Backups are maintained on tape in virtually all instances.

A. CAPITAL IMPROVEMENT PROGRAM

The annual preparation of the city's six-year Capital Improvement Program (CIP) is a Charter requirement assigned the Department of Planning. The Information Systems Section maintains the data base for the CIP and the Capital Budget as a computer service to the CIP Section. For some 800 projects, multi-year information is retained on cost, source of funding, in addition to a project description and locational information.

From this project file and the scheduling information provided by the CIP Section, the CIP and Capital Budget are printed by computer for Planning Commission review, followed by Department of Finance review, Board of Estimates review, and as finally budgeted by the City Council. Each of these review steps involves revision of the program and budget utilizing computer processing.

The Project File, the basic component of this system, provides the starting point for the Mayor's CIP Status Reporting System which is described by Messrs. Nelson and Becker in the next section. Software and maintenance for this new sub-system is provided by the Information Systems Section.

B. CENSUS USE

Virtually all services provided by the Chief of Information Systems are based on the application of geographic data upon the needs and resources of the City. Three different geographic base files exist on the central computer system as descriptions of streets, intersections, addresses, and lots in machine readable form.

The first geographic base file is the Real Property Master Data Base. The key to this data bank is the ward/precinct/block/lot number organizational structure. A full treatment of the uses of this file is included under respondent John O'Neill. Included in the file is the following information for each lot in Baltimore City:

i) owner
ii) address
iii) special paving data
iv) all current assessments (exempt and taxable)
v) zoning data
vi) land use data
vii) old assessment total
viii) taxes due
ix) amounts paid and payment dates

An extract of this file is used by the Department of Planning. Included in this extract is:

i) ward, precinct (section), block, lot number
ii) land assessment, taxable
iii) land assessment, exempt
iv) improvement assessment, taxable
v) improvement assessment, exempt
vi) exemption status and class codes
vii) zoning code
viii) land use code
ix) lot size

Document A provides a computer layout for this file extract. Status and class codes for exempt property are listed in Document B. The Baltimore City Land Use Coding System is a means to define the existing predominant use of a parcel of land as well as the general secondary use. A complete explanation and listing of all land use codes is provided in Document C.

The United States Department of Commerce, through the Bureau of the Census, designates areas of statistically comparable population characteristics, economic status, and living conditions. These are census tracts. All three geographic base files used by the Department make use of these designations. The Real Property Master Data Base has been mapped to the census tract. (See Document D.) Each remaining file has been constructed initially from Census data.

The Regional Planning Council provides the Address Coding Guides for both Baltimore City and the metropolitan area. This second geographic base file has the census tract as its fundamental spatial unit. Each record has the following information:

i) street name
ii) address limits
iii) census tract (e.g. 4021.01)
iv) zip code
v) place code (e.g. Middle River)
vi) county
vii) election district code
viii) regional planning district
ix) transportation zone
x) state plane coordinates for the geographic center of the tract

A more complete explanation of these file items may be found in the Regional Planning Council Summary Address Coding Guide (Document E).

The third geographic base file used by the Department is labeled Dual Independent Map Encoding (DIME). The DIME file is a system for representing map features numerically for processing by computer. It is essentially a file of segment records where a typical segment is a portion of a street defined by intersecting streets or civil boundaries. "Dual Independent"

refers to the fact that each boundary segment in the network is described by specifying the nodes at the ends and the blocks to the right and left. Each record has all the information contained in the Address Coding Guide for both the left and right blocks in the segment, as well as:

i) enumeration district
ii) standard metropolitan statistical area (SMSA)
iii) latitude and longitude
iv) map miles coordinates
v) street type code

A complete layout of the DIME file structure may be located in Document F.

By mapping any one (or all three) of these geographic base files to other kinds of information, the Chief of Information Systems is able to maintain an effective mechanism for local government planning and decision making. In addition to uses yet to be discussed, some recent applications of Census Use have been:

i) Population Estimation
ii) Facilities Location and Utilization
iii) Map Production
iv) Social Indicators (e.g. geographic analysis of City Jail inmate addresses)
v) Civil Defense
vi) Environmental Planning
vii) Market Anaysis (e.g. determines potential sites for industrial establishments)

Document G is a report from the United States Department of Commerce concerning workshops conducted on Census use in the nation. Page 32 of this document portrays a flow chart of the general uses made by the City of Baltimore.

C. ECONOMIC DEVELOPMENT

A variety of reports and informational services are provided by the Department of Planning as "public use" data:

1. Concentration of Employment by Census Tract
2. Classification of Employment by Regional Planning District
3. Cost of Living Indices
4. List of Manufacturing Firms in the City by Classification and Employment Size
5. Census of Manufacturing
6. Census of Business
7. Construction Cost Index
8. Wholesale Cost Index
9. Employers and Employment by Census Tract

In addition to the three geographic base files, the State Manufacturing and Establishment File is utilized in obtaining information. The structure of the 1970 version of this file is laid out in Document H. The extracted file maintained by the Department of Planning is described by Document I.

D. EDUCATION

Several files maintained by the Board of Education are also used by the Department of Planning. General educational patterns are extracted from these data banks on:

1. Student and Teacher Mobility
2. Drop-out Rates
3. Desegregation Outlooks
4. School Capacity Projections
5. Other Research Topics

The essential technique used in extracting such information concerns the mapping of Census Tract geographic data to information gleaned from the Child Population Register (see discussion of the Department of Education). An example of the summary-type files produced by such a process may be found in Document J. A listing of grade codes, curricular codes, position codes for faculty members, department codes, certification codes for faculty members, entry codes, withdrawal codes, and race-sex codes may be found in Document K.

E. HOUSING

By utilizing the Real Property Master Data File, the Department of Planning is able to supply a number of reports:

1. Building Permit Information
2. Complete Housing Inventory, for HCD
3. Vacant Housing Inventory, for HCD
4. "District Planner", for community organizations

F. LAND USE

By correlating the Real Property Master Data File with the three geographic base files, the Department of Planning is able to provide numerous information listings. A special program, the Real Property Report Generator is used. Some reports are:

1. Land Use by Population Analysis
2. Land Use for Industrially Zoned Land
3. Assessment of Property by Zoning Classification

G. LAW ENFORCEMENT

Various extracts and consolidations are produced by the Department of Planning as an aid to law enforcement.

A juvenile delinquency extract file has been created from State records. Analysis of juvenile delinquency by Census Tract provides useful information. Document L depicts this file. The file description for the State Fixed Inmate Master File is provided as Document M.

An analysis of Police Reporting Districts versus Census Tract can aid in the deployment of officers. A special file has been created for this purpose and is displayed in Document N.

H. MANPOWER RESOURCES

The Mayor's Office of Manpower Resources benefits from services performed by the Department of Planning. Topics of assistance include:

1. Manpower Needs
2. Trends and Changes in Employment
3. Job Bank Statistics (See Document O.)
4. Office of Manpower Resources Annual Report
5. Baltimore Summer Corps (See Document P.)

I. MEDICAL SERVICES

Several services are provided from statistics kept by the State Health Department. The major service consists of providing a list of all persons eligible for Medical Assistance (See Document Q.) In addition, a variety of statistics are available on a city or zip code basis (e.g. projectable birth and death statistics). Also, a Physician Supply Model is in operation.

J. NEIGHBORHOOD DESIGN

Several listings are maintained by the Department as an aid to neighborhood design. First, a Community Association Dictionary containing organizational name, contact person, address, phone, and boundaries provides a means of keeping these organizations informed of pertinent information. Document R depicts the layout of this file as well as describes various organization categories.

Second, a listing of Day Care Centers in the City, including both public and private, is maintained. Finally, by summarizing Census Data, a file has been set up to contain the numbers of men, women, teen boys, teen girls, and children in various block groups throughout the City (See Document S.) Through analysis of such data a "Quantity of Land Use" report is issued.

K. PROPERTY TRANSACTIONS

A Sales Information System is maintained by the Department of Planning. Three categories of records are included in the data bank:

1. All property sales transactions in Baltimore City from 1/70 to present (Lusk Report)
2. 20% sample of property sales transactions in Baltimore City from 1960 and 1965
3. All property sales transactions in Baltimore County for 1971, 1974, 1975

Each of the above set of records contains the following information:

1. Geographical identifications (ward, section, block, lot, address, census tract)
2. Sales price
3. Ground rent
4. Date of sale
5. Down payment
6. Mortgage, amount and rate of term

7. FHA, VA, and various other programs used
8. Assessed value at time of sale
9. Sales/assessment ratio
10. Land use and zoning

Document T provides data layout schemes for various files associated with the new Sales Information System.

L. SOCIAL SERVICES

Examination of records on unemployment and public assistance from the State Department of Employment Security and the State Department of Employment and Social Services has led the Department of Planning to a number of reports. A detailed description of the Unemployment Insurance File (UI File) maintained by the State may be found as Document U. A description of both the Claimant History Master File and the Public Assistance Master File may be found as Document V.

Kinds of reports produced include breakdowns of unemployment and/or welfare by Census Tract, by race, by sex, by type of welfare, etc. beginning in 1972.

M. TAXATION

Various tax records are kept and maintained by the Department of Planning. Including tax information found on the Real Property Master File concerning tax exempt and non-exempt properties, Maryland tax returns are examined and summarized.

N. TRANSPORTATION

There are several ways in which the Department aids in Transportation planning. The Federally sponsored COMPUTER-RIDE program is being handled by the Department. By using the request form of Document W, a file has been created which will interact with the three geographic base files. This file is depicted in Document X. Carpools are then scheduled on an efficient basis. A listing of areas in the Baltimore Metropolitan Area and their corresponding zip code and Census Tract designation may be found in Document Y.

Other exercises carried out by the Chief of Information Systems include a report on commutation patterns by job category as well as numerous projects intended to aid in the plans for a new rapid transit system for the City of Baltimore.

Respondents:

Ron Nelson, CIP

George Becker, CIP

Department of Planning

222 E. Saratoga Street

8th Floor

Phone: 396-4343

Date: 9/19/75

Time: 2:15 p.m. - 3:15 p.m.

Currently under development by the Capital Improvement Program (CIP) Management Team is a formal computer-oriented system to insure more strict adherence of capital projects in the city to time and cost projections. The original source of the software is IBM PROJACS (Project Analysis and Control System).

Various documents are available to describe the implementation of this system:

Document A:

Implementation status report as of September 12, 1974.

Document B:

Implementation status report as of November 19, 1974.

Document C:

A copy of the Mayor's CIP Report depicting the project status of all Capital Projects. This report currently provides input to the computer system under development. Eventually, it will be produced by the computer system.

Document D:

A copy of the monthly Update of the Mayor's CIP Report. This report provides a listing of all those Capital Projects which have changed status in that month. Eventually, it too will be produced by the computer system.

Document E:

A preliminary copy of the implementation status report as of October, 1975.

Document F:

Some samples of the reports to be produced by the new computer-oriented CIP System.

Document G:

An explanation of a typical project information format from the Mayor's new CIP Report.

Document H:

An explanation of the status codes used in the new Mayor's CIP Report.

Document I:

An example of an imput sheet to the new CIP computer system. The information on this sheet provides milestones for a specific project.

Document J:

An example of an input sheet to the new CIP computer system. The information on this sheet allows for the addition or deletion of a project.

Document K:

The Monthly Project Progress Report for the new CIP computer system. These reports are provided by city agencies as input to the system.

Document L:

The layout sheet for keypunched data which will enter the system. Included are status indicators, location indicators, and expenditures.

Use of the central City Computer System is made by the development team. Other hardware is also used, including the NASA computer system.

Many final products of the system are still flexible and under review.

Respondents:

Bob Babcock
Staff Director, Educational Data Processing Center

Clyde Mohler
Systems Manager, Educational Data Processing Center

Department of Education

Phone: 396-6520

Date: 9/22/75

Time: 2:00 p.m. - 4:30 p.m.

The objectives and operational guidelines of the Educational Data Processing Center are specified in Document A. Approximately 180,000 pupils and 15,000 staff members are serviced by the Center. A set of 29 systems are maintained on the computer to this end.

Document B provides systems documentation for each of the 29 systems in conjunction with the file folders. Document C provides an analysis of each system through September 1, 1972.

A brief description of each system is in order:

1. ADULT EDUCATION

This system consists of an information system designed to provide the Executive Director of Adult and Continuing Education annual summaries of the staff and the students in the Adult and Community Education Program. A faculty and a student data base is maintained and includes information concerning the subject taught, personal data on teacher and student, and the size of the classes. (See Folder 1)

2. ANNUAL REQUIREMENTS AND PACKING LIST

This system consists of a computerization of the process of procurring school supplies and other requisitioned items for each individual school on an annual basis. (See Folder 2)

3. BUDGET

This system prepared budget requests for the next fiscal year to be submitted to the School Board. (See Folder 3)

4. BUILDING REPORT

This sytem prepares a yearly master building list by individual room, including room names, room purposes, room numbers, and dimensions. (See Folder 4)

5. CENTRAL ADMISSIONS

This system concerns the articulation between elementary and junior high schools and between junior and senior high schools.

6. CHILD POPULATION REGISTER (CPR)

This system maintains a complete listing of all pupils in the school system including address, birth date, race, sex, school number,

grade, curriculum data, and tuition status. A multitude of annual reports are extracted from this information including school population summaries by census tract, age-grade studies, tuition reports. Many agencies benefit from the CPR including the Mayor's Youth Council, the National Guard, Selective Service, and the Department of Health. (See Folder 6)

7. CITYWIDE TESTING

A program of standard city-wide intelligence testing has been set up and is maintained and corrected by this system.

8. COMPARABILITY

This system has been designed to ensure that all schools in the city provide comparable educational quality. (See Folder 8)

9. EXPENDITURES

This system balances current expenditures against budget appropriations. (See Folder 9)

10. PERSONNEL

This system maintains a complete register of all staff in the Department of Education. This data base is referred to as the PMR. (Personnel Master Register)

11. POSITION CONTROL

This system accesses the PMR File and generates a series of staff listings by job, position, salary, region, and department. Position Control provides the only interface to the city payroll. (See Folder 11)

12. PUBLIC LAW 874

This system insures that Federal Aid is supplied properly to Impacted Areas. (See Folder 12)

13. PUPIL ACCOUNTING AND ATTENDANCE

All class registers, roll sheets, student withdrawals, and grades are processed by this system. Teachers' attendance is also recorded. (See Folder 13)

14. PUPIL TRANSPORTATION

This system aids in bus scheduling for student travel to and from school. Included here is the PODEL (Preparation for Ordering Day Eligibility List) System.

15. REPAIR SHOP INVENTORY

Repair shop materials and labor costs are analyzed on a monthly basis by this system. (See Folder 15)

16. SPECIAL SERVICES

No longer functional

17. STAFFING PATTERNS

In conjunction with several questionnaires completed by all city staff members, a number of summary listings are produced by this system to display distributional patterns. (See Folder 17)

18. STUDENT SCHEDULING

Pupil's subjects and classrooms are scheduled by this system through student request sheets and a reconciliation of conflicts.. (See Folder 18)

19. WAREHOUSE INVENTORY

All transactions involving warehouse supplies are recorded and analyzed by this system. (See Folder 19)

20. CAFETERIA

This system maintains information concerning meals served at all school careterias. Attendance, expenditures, and receipts are recorded. Wherever special funds are available for lunches, the system generates a report. (See Folder 20)

21. 22. 25. VOCATIONAL-EDUCATION EQUIPMENT INVENTORY

The location and quantity of vocational furniture and eqiuipment is maintained by this system. (See Folder 21)

23. TRANSPORTATION EXPENSES

A student oriented transportation expense listing is maintained by this system for possible reimbursement with special funds.

24. MISCELLANEOUS TESTING

Various intelligence and judgment tests are corrected by this system. (See Folder 24)

26. FURNITURE AND EQUIPMENT

The location and quantity of office furniture and equipment is maintained by this system.

27. SPECIAL PROJECTS AND PROGRAMS

Various assistance programs for TITLE I (underpriviledged) city schools are handled by this system.

28. TB TESTING

A record of tuberculosis test results for staff members is maintained by this system. (See Folder 28)

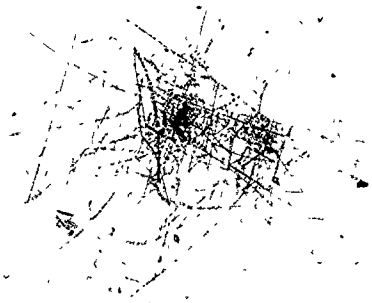
29. NON-SALARIED CONTROL

Weekly updates of non-salary expenditures are entered into this system in order to reconcile the budgeted monies.

The computer hardware configuration is described in Document D. The basic system is currently undergoing change in order to accommodate some new systems which are in the development stage.

These new systems are discussed in Documents E, F, and G. A complete modernization of the Educational Data Center Services has already been begun.

The budget for the current fiscal year for the EDP Center is $979,453.09. This figure represents .332% of the total Department of Education budget. The national average is about 1.5%.



RESPONDENT: John Moscato
Data Processing Programming Supervisor
Engineering Analysis Section of Technical Services
Department of Public Works
ADDRESS: 506 Municipal Building
PHONE:
DATE: 8/19/75
TIME: 9:00 A.M. - 11:00 A.M.

I. OVERVIEW

Technical Services is located within the Director's Office and is, therefore, hierarchically above and serviceable to the Department's five Bureaus:

A. Consumer Services

B. Engineering

C. General Services

D. Inspection

E. Utility Operations

Technical Services has a staff of ten, consisting of a supervisor, one secretary, two keypunch operators, one computer operator, four senior programmers and one programmer. The total budget for automated processing services is approximately $22,000 per month, $12,000 of which is for computer time.

DPW is one of a few Baltimore City agencies which rely heavily on automated records, but do not rely solely upon the City's computer system. Rather, DPW has an in-house Central Processing Unit (CPU) and its own peripheral equipment. Very few of DPW's automated data are products of the City system. The Department's financial records (payroll, etc.) are outputs of the Department of Finance. Similarly, consumers' water and sewer bills are produced by the Bureau of Collections of the Department of Finance (with non-automated input from DPW). These interfaces with

the City system, which comprise a very small percentage of the automated records kept by DPW, are the subject of another Report in this series and will not be repeated here (c.f. Report of interview with John O'Neill Data Management Analyst from the Bureau of Management Information Systems (MIS), Department of Finance). Similarly, a description of the City's computer system may be found in two other Reports (c.f. Reports of interview with John O'Neillcited above and interview with Harold Tall, Director of MIS).

The present Report, then, focuses exclusively on DPW--its own computer system and the data which pass through it. Throughout, references are made to several documents which accompany this Report.

II. HARDWARE

TABLE 1. DESCRIPTION OF DPW'S COMPUTER HARDWARE

Number	Item	Capacity	Location
1	IBM 370-125	256K	5th floor, Municipal Bldg.
1	IBM System 7	24K	Guilford Pumping Station (temporary)
1	Card reader	800 CPM	Municipal Bldg.
1	Card punch	100 CPM	Municipal Bldg.
2	Tape drive	9 track 1600 BPI EBCDIC format	Municipal Bldg.
1	Line printer	750 LPM	Municipal Bldg.
1	IBM 3767 teletype		Back River Sewage Treatment Plant
1	Offline Calcomp plotter		Municipal Bldg.
2	IBM 3330 disk	100 million bytes	Municipal Bldg.

III. SOFTWARE

DPW uses the DOS-BS operating system, but has no text editing system. The most frequently used language is Fortran G. Also used are Cobol F and Assembly Language (realease 31). Most of DPW's programs were developed

in-house. These are described in detail in Document A. However, three program packages are rented. Customer Information Control System (CISC) is used at the Back River teletype terminal. Also rented is an IBM SORT package. In addition, DPW uses Fortran compilers.

IV. COMPUTER USE SUMMARY

Table 2 indicates computer time and number of jobs, broken down by Bureau within DPW. While this information pertains only to July, 1975, it is typical for DPW. It is obvious that the Bureau of Engineering is the heaviest user of the computer.

TABLE 2. COMPUTER TIME AND NUMBER OF JOBS BY USER: MONTH OF JULY, 1975

User	Time (hrs.)	# jobs
Director's Office	2.167	1
Technical Services	0.678	5
Engineering	9.542	166
Engineering - Surveys	11.347	189
Engineering - Water	83.462	28
Engineering - Waste Water	0.552	22
Engineering - Highways	25.184	199
Utilities - Sanitation	3.590	13
Utilities - Water	0.633	51
Miscellaneous compiles, tests and system maintenance	126.121	370
TOTALS	263.272	1044

Table 3 is a breakout of the computer time in terms of percentage of time devoted to each application.

TABLE 3. PERCENT OF COMPUTER TIME SPENT ON VARIOUS DATA PROCESSING APPLICATIONS JULY, 1975

Application	% Time
Engineering Problem Solving	25
Contractor Payment Forms	25
Contract Estimate Processing	10
Water Distribution Study System	20
Reproduction Accounts Tabulation Reports	1
Consultant's Payment Reports	1
Building Construction Schedule of Charges	1
Project Information System	1
Footway Inspectors Reports	2
Land Acquisition Reporting System	2
Sanitation Weigh Station Data Processing	4
Water and Waste Water Management Information System	4
Miscellaneous jobs	4

Further details concerning computer use are contained in Document B.

V. APPLICATIONS

A. OVERVIEW

1. Storage Media - DPW uses disks, cards and tapes to store its automated data. Table 4 indicates the storage media for each of the most frequently processed applications.

TABLE 4. STORAGE MEDIA FOR VARIOUS DATA PROCESSING APPLICATIONS

Application	Storage Medium
Engineering Problem Solving	cards
Contractor Payment Forms	disk (active data)
	cards (inactive data)
	tape (backup data)
Contract Estimate Processing	cards
Water Distribution Study System	cards
Reproduction Accounts Tabulation Reports	cards
Consultant's Payment Reports	cards
Project Information System	disk
Footway Inspectors Reports	disk (active data)
	cards (inactive data)
	tape (backup data)
Land Acquisition Reporting System	cards (current data)
	tape (monthly data)
Sanitation Weigh Station Data Processing	cards (daily data)
	tape (monthly data)
Water and Waste Water Management Information System	disk

2. Data Retention and Storage - Data are generally kept for three years, after which they are destroyed. The usual practice is to store inactive data in a vault in the old Post Office Building, located across the street from the Municipal Building. When a vault is full to capacity, it is emptied and the data destroyed.

B. DESCRIPTIONS

For each data processing application, the following are highlighted: the origin and form of the input data, the process of entering the data into the computer, and the form and disposition of the output. Two points should be noted here. First, most of the "users", both as suppliers of input and receivers of output, are within DPW. Second, all of these jobs are on-going long-term projects with periodical products from the system. The exception to both of these points is "Engineering Problem Solving" data processing; therefore, it is presented last.

1. Contract Estimate Processing System

Contract estimating is done for the Bureau of Engineers of DPW. Before a contract is awarded, this system goes into effect, whereby the monetary amount of the contract is agreed upon and the contract is drawn up. During the process six reports are generated, representing the results of the successive stages of negotiations. First, is the "Engineers Estimate" which is based on input from the Bureau of Engineers or from consulting engineers. Second, a "Proposed Quantity Booklet" is sent to potential contractors for bidding. Each contractor then submits his bid by filling out this booklet and returning it to DPW (Document C is a sample page from this booklet). These bids constitute the input for the remaining

four reports. When each bid is submitted it is verified. This verification of bids is the third report. Fourth, there is a tabulation of all the bids which were submitted and, finally, an "Agreement Estimate" is generated. The latter consitutes the actual contract. Approximately ten to fifteen new contracts are awarded each month using this Contract Estimate Processing System.

2. Contractor Payment System

Contractor payments are also done for the Bureau of Engineers. In fact, this process is actually a continuation of the Estimating System outlined above.

Once a contract has been awarded, five groups of reports are issued. The first is the "Zero Estimate" which comes directly off of the "Agreement Estimate" or contract. Information is transferred by computer to a "Contractor's Current Estimate" form (Document D) which gives an item description and a detailed outline of the proposed progress completion data and payment schedules.

Secondly, there are Monthly Estimates based upon input from the Bureau of Inspectors within DPW. The inspectors check on the progress of the engineering contracts which have been issued and report monthly on the progress of the contract. This input from the inspectors is made directly on the "Contractor's Current Estimate" form. All progress is indicated by handwritten notes in a space provided (column 1) beside each proposed stage in the construction. The form is in this way continually updated and each month's input form is the previous month's output form. These inspector's reports go to Technical Services and then to the Bureau of Disbursements for payment to the contractors.

At the completion of a project, a summary report is issued via the computer. A "Final Estimate" is prepared based on the handwritten comments by the inspectors on the "Contractor's Current Estimate" form. This input is collected by the audit section of the Bureau of Inspectors. The "Final Estimate" usually includes a final tabulation of construction costs (Document E).

Monthly, a composite status report for all current construction is prepared by the computer. (Document F). The input for this is the monthly inspector's reports on the "Contractor's Current Estimate" form.

When the City pays a contractor, it must then go to the Federal or State officials to get the money for the payments. In requesting such funds, DPW prepares a "Contract Separated Account Payment" report (Documents G and H are samples of input form with handwritten entries and computer generated reports). DPW also produces a record of all payments to contractors (Documents I and J).

3. Water Distribution Study System

The Analyzer Section of the Water Division of DPW's Bureau of Engineering calculates the flow of water in the City's pipes and analyzes the effects on pumping and reservoirs. It also estimates changes to the system which would result from the introduction of a new pipe or reservoir. Such analyses are conducted through the use of two computer programs: Hardy Cross Water Pipe Analysis (described in Document A), and Water Distribution Balance System Analysis. The raw data are meter readings from pumping stations indicating the physical characteristics of the pipes and flow rates. Meters which are distributed throughout the City are monitored three or four times a week for different sections of the

City. At such times, about two readings are taken a day. The IBM System 7 at the Guilford Pumping Station is currently used to monitor the Stratford Pumping Station, but is expected to expand its monitoring to include the entire City. Technical Services writes the monitoring programs for the System 7.

4. Reproduction Accounts Tabulation Reports

DWP houses a printing operation in the basement of the Municipal Building. This is run by the Property Locations Section of the Bureau of Engineering. Daily, handwritten "job" slips are transferred to Technical Services, where data on type, amount and cost of each "job" are keypunched onto cards and entered into the IBM 370-125. A regularly generated product for the Property Locations Section is the monthly "Reproduction Accounts Tabulation Report" (Document K is sample report for the month of July, 1975).

5. Consultant's Payment Reports

The Bureau of Engineers employs consultants. With input from the Bureau, Technical Services prepares a computer printout summarizing the past month's payments to these consultants. Recently, payments to architects have been included in these reports (Document L is a sample report).

6. Building Construction Schedule of Charges

Public buildings are inspected periodically. For the Bureau of Inspections, Technical Services computes the costs of inspection services for each site and prepares a monthly "Schedule of Charges" (Document M).

7. Project Information System

Taking basic data from the Contract-Estimate Processing System and the Contractor Payment System, Technical Services'

computer generates four monthly summary reports for the Bureau of Engineering. The first is a summary of costs spent during the past month on all contracts being processed. It is a listing of each contract by the agency controlling it. The second report is a listing of the descriptive information on each contract. The basic data here are the title information given on the "Contractor's Current Estimate" form. For corss-referencing purposes an alphabetical listing of all projects and a listing by contract number are generated.

8. Footway Inspectors Reports

Footways, or sidewalks, are periodically inspected by the Bureau of Consumer Services. Each inspector notes violations and hand records them in his notebook. These notes are transferred to coding sheets then entered into the computer located in Technical Services. Separate coding sheets are used for permit and contract data (Document N) vs. property data (Document O). It may be noted that, as is the custom in most City agencies, an attempt is made to classify property data by ward, precinct, block and lot as well as address. (The sole exception to this custom at DPW is water meter readings, which are by address and meter reader's book and page numbers. c.f. discussion below of water meters.)

Once a month the computer outputs a summary of the inspectors' reports. This report generally runs about 400 pages (Document P is a sample).

9. Land Acquisition Reporting System

Technical Services prepares two monthly reports for the Highway Division of DPW's Bureau of Engineering. Each of these deals with the acquisition of properties for highway projects. At present,

these reports pertain only to large interstate highway projects. One is a Status Report, naming the properties to be acquired and progress to date in the acquisition of them. This progress is indicated by the "status" of the property, such as "option signed", "condemned", "vacant", or "demolished" (c.f. Documents Q and R). This Status Report is produced under two formats: by project, block and lot and then by address for cross-referencing purposes (Document S).

The second report generated for the Highways Division is a monthly Cost Report listing how much has been spent in acquiring the properties. The input for this Cost Report comes from the Highways Division in the form of handwritten pink charge slips. These are sent to Technical Services which transfers the information to punchcards and submits them to computer analysis. Computer output summaries of these charges are then sent to the Bureau of Disbursements. A master summary Cost Report is then prepared by Technical Services for the Bureau of Engineers' Highway Division. These data are listed by project, block and lot and then cross-referenced by address, as for the Status Report discussed above. (Document T is a sample output).

10. Sanitation Weigh Station Data Processing

Baltimore City has two Sanitation Weigh Stations located at the Monument Street Land Fill and at the Pyrolysis Plant. These stations are the responsibility of the Sanitation Division of DPW's Bureau of Utility Operations. Before depositing its solid waste cargo at one of these stations, each truck is weighed. The scales are tied into a card punching machine which automatically records

the gross weight (Document U is a sample punch card). At each location approximately 200 to 500 such cards are generated per day, six days a week.

These cards are edited through routines for errors and then fed into the computer where they are compared with master cards for each truck giving its tare weight. The output consists of three monthly reports for the Sanitation Division. The first is a record of each truck's activities during the month (Document V). Second, the activities are summarized by station (Document W). Third, these same data are organized by account (Document X).

11. Water and Waste Water Management Information System

a. Water- One of the responsibilities of DPW's Bureau of Utility Operations is to collect information at waterside about water distribution and treatment. This information is from telemeter readings at the City's three pumping stations. Strip charts indicating water pressure levels are hand transferred to forms which are then sent to Technical Services to be keypunched and fed into the computer. At present Technical Services provides monthly summary reports based on these data, but anticipates daily reports in the near future.

b. Waste Water- The information system for waste water is almost identical to that for water. Daily input by technicians is fed into the terminal at Back Water, which generates monthly summary reports.

c. Water Meters- One of the few instances of an interface between DPW and the City's computer system deals with water meters (c.f. Report on interview with John O'Neill. Working

out of the Bureau of Consumer Services, meter readers hand record water usage in a notebook. All meter readings are then transferred by hand to a large master book which goes directly to MIS for keypunching once every three months. (MIS then prepares consumer bills, as is described in the Report of John O'Neill's interview.)

There is a new meter-reading system, however, which exists along with the old one. Of the 250,000 meters throughout the City, approximately 60,000 are capable of being read by a cassett tape device. The reader carries a "suitcase" which he plugs into the meter to record the necessary information on cassette tape. This tape is direct input to DPW's computer system for calculating water use and consumer bills, thereby eliminating the necessity for using the City's computer system.

12. Miscellaneous Applications

a. Bridge Inventory Report- Occasionally the Highways Bridge Section of the Bureau of Engineering requests an inventory of the City's bridges. Until recently, the Bridge Section manually generated this report, which ran about ten pages per bridge. Now, Technical Services receives the relevant raw data from the Bridge Section, computerizes it, and generates the inventory (Document Y).

b. Bid Price History- In order to aid users such as the Highways Division and the Comptroller, Technical Services generates a Bid Price History (Document Z) which indicates what has been bid on what over a specified time period. The input for this Report are the tabulations of all bids

which are generated by Technical Services under the Contract Estimate Processing System (c.f. discussion above).

c. Highways Ground Rent Record- In acquiring property to be used for the construction of highways, often just the real estate is purchased, while the land is rented (ground rent). The Highway Division and the Bureau of Disbursements maintain a record of ground rents and payments. The Highways Ground Rent Record is prepared by Technical Services' computer according to three formats: by block and lot, street address and direct payment number (Documments AA, BB and CC).

d. Real Estate Tax Assessment Book- Every two years Technical Services receives input from the real property files (c.f. Report of interview with John O'Neill) and generates the Real Estate Tax Assessment Book for the Mayor's Office.

13. Engineering Problem Solving

As has already been mentioned, most of the users of DPW's computer system are located within the Department. Indeed, this has been the case with all but one of the data processing applications already described in this Report. However, Technical Services does have outside users. It has prepared and circulates a computer-output booklet which lists and describes computer programs which its staff has developed for general problem solving (Document A). [redacted]y potential user informally presents his problem to the staff at [redacted]hnical Services, which then attempts to solve the problem. In general, all requests are successfully filled within one half a day. The list of programs is continually updated and expanded to the extent that new problems require unique solutions.

FIGURE 1

OPERATIONAL SYSTEMS

System	Purpose	Basic Components
1. Program Development and Control	- Budget preparation	- Financial reports
2. Financial Administration	- Administration of the line-item budget	- Time reports - Payrolls - Invoices - Financial status reports
	- Administration of the capital budget	- Contruction plan and authorization - Funding schedule - Construction contracts - Construction reports - Project status reports
	- Assessment and tax billing and collection	- Field reports - Assessment rolls - Tax billing and collection process
	- General accounting system	- Revenue accounting - Expenditure accounting - Fixed asset accounting - Financial reporting system
3. Personnel Administration	- Determine personnel requirements - Evaluate performance - Maintain comprehensive records on each employee	- Performance evaluation system - Employee utilization system - Employee roster and vital information files
4. Equipment Management	- Plan vehicle assignment, use, and maintenance - Maintain comprehensive cost records - Maintain performance records	- Vehicle assignment and maintenance plan - Cost reporting process - Usage reporting process - Performance and analysis system
5. Purchase and Supply	- Ordering process - Receipt and storage - Maintain market data and statistics	- Requisition and acquisition process - Storage and inventory control system - Utilization and performance reports

Figure 1 - Operational Systems (continued)

System	Purpose	Basic Components
6. Property and Facilities Management	- Maintain cost data for use and upkeep - Develop utilization and assignment program	- Cost analysis and control system - Inventory control system
7. Complaint Processing (Services and Facilities)	- Aggregate complaints by function, location, and urgency - Route complaints to proper agencies - Follow-up, evaluate, and analyze work - Notify all parties of status and action	- Receipt, classification, and routing process - Scheduling, follow-up, and performance analysis system - Citizen and management notification system
8. Permit and License	- Process permit applications - Refer to legal provisions - Schedule and instruct inspectors - Report on inspections and action required - Maintain surveillance on inspection status - Approve applications and issue permits and licenses	- Uniform application process - Inspection scheduling and control system - Code reference and response procedures - Inspection certification and issuance process
9. Water and Sewer Billing	- Record consumption of water and prorate sewer usage - Bill customers - Enforce collections - Maintain accounts	- Meter reading, recording, and reporting process - Consumption calculations and billing process - Customer collection process - Enforcement notification and service curtailment process - Customer accounts and financial status reports
10. Water Operations and Distribution	- Monitor supplies and flows - Analyze system losses - Schedule system inspections (mains, valves, hydrants, meters) and analyze results	- Supply and flow monitoring system - Meter location, performance analysis, and testing system
11. Parking Analysis and Control	- Analyze use of meters and parking lots	- Parking violation monitoring system

Figure 1 - Operational Systems (continued)

System	Purpose	Basic Components
12. Code Enforcement	- Schedule inspections and reinspections - Refer to applicable legal provisions - Report on inspections and action required - Maintain surveillance of inspection status	- Inspection scheduling and control system - Code reference and response procedure - Property-owner compliance procedure - Code compliance certification procedure
13. Court and Jail Management	- Administration of jail - Maintain comprehensive records on inmates - Court operations and scheduling - Accounting of involved parties	- Inmate roster and vital information files - Jail usage reporting process - Court calendar system - Involved parties notification system
14. Education	- Determine annual requirements - Maintain comprehensive records on staff and students - Ensure city-wide comparable education - Schedule classes - Analyze staffing patterns - Provide special programs	- Requisition system - Child population register - Staff population register - Comparability system - Pupil attendance and scheduling system - Staff classification reports. - Special projects utilization system
15. Political	- Maintain voter roll	- Voter roll

Department	Program Development and Control	Financial Administration	Personnel Administration	Equipment Management	Purchase and Supply	Property and Facilities Management	Permit and License	Water and Sewer Billing	Water Operations & Distribution	Parking Analysis & Control	Code Enforcement	Court & Jail Management	Education	Political
Dept. of Finance	X	X	X	X	X	X		X		X				
Dept. of Assessments	X	X	X				X				X			
Civil Service	X	X	X											
Education	X	X	X	X	X	X							X	
Dept. of Fire	X	X	X				X				X			
Dept. of Health	X	X	X				X				X			
Dept. of Hospitals	X	X	X											
HCD	X	X	X				X					X		
Jail & Court	X	X	X											
Labor Commissioner	X	X	X											
Planning	X	X	X											
DPW	X	X	X				X	X	X					
Board of Elections	X	X	X											X

INFORMATION CENTERS AND SERVICES IN BALTIMORE

I. LIBRARIES AND INFORMATION CENTERS

Abell, A. S. Company - Sunpapers Library

Baltimore City Public Schools Professional Library

Baltimore Dept. of Legislative Reference Library

Baltimore Dept. of Planning Library

Baltimore Housing and Community Development Library

Baltimore News American Library

Enoch Pratt Free Library - Business, Science, Technology Dept.

" - General Reference Dept.

" - George Peabody Branch

" - Humanities Dept.

" - Maryland Dept.

" - Social Science and History Dept.

Home Builders Assoc. of Maryland Library

IBM Corporation - Federal Systems Division
Federal Systems Center Library

Johns Hopkins University - Milton S. Eisenhower Library

Johns Hopkins University - William H. Welch Medical Library

Library Company of the Baltimore Bar - Baltimore Bar Library

Maryland State Dept. of Planning Library

Maryland State Highway Administration Library

Maryland Historical Society Library

Regional Planning Council, Baltimore Library

U. S. Social Security Administration Library

University of Baltimore - Langsdale Library

University of Baltimore Law Library

University of Maryland Baltimore County Campus (U.M.B.C. Library)

University of Maryland, Baltimore City - Health Sciences Library

University of Maryland, Baltimore City - Law Library

II. INFORMATION SERVICES IN BALTIMORE

A. INFORMATION AND REFERRAL SERVICES

Baltimore City Department of Social Services

Citizens for Fair Housing

Community Service Information Office

Council of Organizations Serving the Deaf

Customer Service Division of Public Works "Hot Line"

Fellowship of Lights

Health and Welfare Council's Reference and Referral Service

Information and Referral Service on the Aged

Openings Network

Street Ministry Association

B. HOT LINES

(Information on hotlines is difficult to maintain as they are often transitory. The following are chiefly those listed in the Health and Welfare Council's directory of Community Services in Maryland 1972. The current 1975 edition is not out yet. It can be expected that this list is only a suggestion. Specific problems not noted can be reached through HWC's referral service.)

City Hospitals 24 Hour Intercity Emergency Clinic

Concerned

Fellowship of Lights

Hotline for Youth

I-Thou Switchboard

Keyhole

Maryland Poison Control Center

Northwest Hotline

Rape Crisis Hotline

C. AGENCIES OF BALTIMORE CITY OFFERING INFORMATION

Bureau of Consumer Services, Department of Public Works

Community Action Agency Neighborhood Centers

Consumer Protection Division of the States Attorney General's Office

Department of Legislative Reference

Health Department Health Information Program

Housing and Community Div. Neighborhood Offices, Information Services Div.

Mayor's Stations

Medical Assistance Program Information

Model Cities Agency

Multipurpose Centers

Municipal Telephone Exchange

Police Community Relations

Rumor Control Center

Social Services

D. OTHER

Drug Abuse Counseling Center

Social Security Information (Federal)

State Employment Service Information

U. S. Federal Information Center (Baltimore Office)

Veterans Benefits Inquiries (Federal)

APPENDIX A

SELECTED BIBLIOGRAPHY

I. Books

Diebold, John. Man and the Computer: Technology As An Agent of Social Change. New York: Frederick A. Praeger, 1969). Technological acceleration and the disparities created involving individuals, institutions and nations is discussed. A good bibliography and time scale depicting scientific and technological acceleration concludes the book.

Drucker, Peter F. The Age of Discontinuity. New York: Harper and Row, 1969. Part one deals with knowledge technologies and the last part describes the "knowledge society", dominated by institutions which produce and distribute ideas and information rather than goods and services. In between the author describes the dynamics present and the interface between technology, organization, and economics.

Greenberger, Martin, ed. Computers' Communications and the Public Interest. Baltimore: Johns Hopkins, 1970.

Kintner, Earl W. and Lahr, Jack L. An Intellectual Property Law Primer. New York: Macmillan, 1975.

Michael, Donald N. The Unprepared Society: Planning for a Precarious Future. New York: Basic Books, 1968. The author was a professor of psychology and director at the Center for Research on Utilization of Scientific Knowledge, Institute for Social Research, University of Michigan. His book is a good introduction to the "new futurism", dealing with the challange of technology, resistance to change and challanges for educators.

Miller, Arthur R. The Assault on Privacy. Ann Arbor: University of Michigan Press, 1971. Reflecting a broad background that includes sociological, political, and psychological awareness, Miller begins by defining the nature of the "Cybernetic Revolution", proceeds to explore the threats to privacy and concludes with suggestions for solutions. Bibliography is included.

Oettinger, Anthony G. Run, Computer, Run: The Mythology of Educational Innovation. Cambridge: Harvard, 1969. Contains a survey of technology's impact on education with particular emphasis on uses of the computer.

Wessel, Milton R. Freedom's Edge: The Computer Threat to Society. Reading, Mass.: Addison-Wesley, 1974. The main theme is that business, crime, government and indeed any other organized groups which use a computer can have a devastating effect on individual freedom. Wessel looks at Sweden's attempt to control the handling of data and offers some suggestions of his own.

Westin, Alan F. and Baker, Michael A. Databanks in a Free Society: Computers, Record-Keeping and Privacy. New York: Quadrangle, 1972. This book constitutes the Report of the Project on Computer Databanks of the Computer Science and Engineering Board of the National Academy of Sciences. The most substantive part of the book looks at governmental, commercial, and nonprofit organizational uses of the computer.

Wilensky, Harold L. Organizational Intelligence: Knowledge and Policy in Government and Industry. New York: Basic Books, 1967. Begun in the Center for Advanced Study in the Behavioral Sciences, this book explores the ways in which knowledge shapes policy.

II. Reports and Proceedings

The Management of Information and Knowledge, Panel on Science and Technology, 11th Meeting, Proceedings before the Committee on Science and Astronautics, U. S. House of Representatives; 91st Congress, January 27-29, 1970.

Interagency Coordination of Information, Hearings before the Subcommittee on Reorganization and International Organizations of the Committee on Government Operations, United States Senate, Eighty-Seventh Congress. (Federal Plans for Improvement in the Design, Management and Use of Scientific, Engineering and Other Information Systems, September 21, 1962.)

Recommendations for National Document Handling Systems in Science and Technology, Committee on Scientific and Technical Information, Federal Council for Science and Technology, Washington, D.C., Systems Development Corporation, Defense Documentation Center, November 1965. AD 624 560. NTIS AD 624 560

Scientific and Technical Communication - A Pressing National Problem and Recommendations for its Solution, Report of the Committee on Scientific and Technical Communication of the National Academy of Sciences - National Academy of Engineering, published by National Academy of Sciences.

Science, Government and Information - The Responsibilities of the Technical Community and the Government in the Transfer of Information, A Report of the President's Science Advisory Committee, The White House, January 10, 1963, Superintendent of Documents, U. S. Govt. Printing Office, Washington, D.C. (This is known as the "Weinberg Report").

Proceedings of the National Engineering Conference, Sponsored by the Office of Science and Technology, Executive Office of the President, in Cooperation with the Tripartite Committee, Distributed by the Engineers Joint Council, 345 East 47th Street, New York, New York 10017, 24-25 June 1969.

Information Technology - Some Critical Implications for Decision-Makers, The Conference Board, Inc., 845 Third Avenue, New York, New York 10022, Report No. 537, 1972.

Information Technology- Initiatives For Today - Decisions That Cannot Wait, The Conference Board, Inc., Formulated by George Kozmetsky and Timothy W. Ruefli, Report 577, 1972.

Information for a Changing Society - Some Policy Considerations, Organization for Economic Cooperation and Development, Paris 1971 (Piganiol Report), 2 Rue Adre Andre Pascal, 75775 Paris CEDEX 16, France (There is a Washington Distribution Office)

The Information Society: A Year 2000 Japanese National Goal- Computer White Paper, 1970 Edition, Japan Computer Usage Development Institute, Kasumigaseki Building, 3-2-5 Kasumigaseki, Chiyodaku, Tokyo, Japan.

Making Technical Information More Useful - The Management of a Vital National Resource, Report for the Federal Council for Science and Technology, 1800 G. Stree, N. W., Washington, DC. 20550. June 1972 (The Greenberger Report).

Knowledge Into Action: Improving the Nation's Use of the Social Sciences, Report of the Special Commission on the Social Sciences of the National Science Board, National Science Foundation, 1969.

Federal Plans for Improvement in the Design, Management, and Use of Scientific, Engineering and Other Information Systems, Hearings before the Subcommittee on Reorganization and International Organizations of the Committee on Government Operations, United States Senate, G.P.O., Washington, D.C. 1963.

Records, Computers and the Rights of Citizens. Cambridge, Mass.: M.I.T., 1973). This book deals with official concerns regarding safeguards in the use of personal data systems, statistically oriented research of administrative systems and the issues of the social security number and the concept of a standard universal identifier. The book concludes with appendices covering areas like census confidentiality, correctionetics, and a bibliography on record keeping and personal privacy.

Computer Utilization in Local Government. California University, prepared for the National Science Foundation, September, 1973, National Technical Information Services, (NTIS) PB-227 266.

Privacy, Security, Computers and the City: Guidelines for Municipal Information Systems, Long Island University, USAC Project, prepared for HUD, February, 1974, NTIS PB-232 456.

The Users and Uses of Scientific and Technical Information: Critical Research Needs, James E. Freeman and Albert H. Rubenstein, Denver Research, Inst., Colo. Nov. 1974 (NTIS) PB 237 941 OPS

Computers and Society: The Technological Setting, Willis H. Ware. Rand Corporation, Santa Monica, Calif., Oct. 1973 (NTIS) AD/D-002 189/9PS

Lasswell, Harold, "Policy Problems of a Data-Rich Civilization", International Federation for Documentation, 31st Meeting, and Congress, Proceedings of the 1965 Congress, Washington, DC, American Documentation Institute, Spartan Books, 1 65.

Armer, Paul. Social Implications of the Computer Utility, Rand Corporation, California, 1965.

"Urban and Regional Information Systems for Social Programs", Conference Proceedings, Urban Regional Information Systems Association, 1967.

Governing Urban Society: New Scientific Approaches, Monograph 7, in a series sponsored by the American Academy of Social and Political Science, and co-sponsored by Fels Institute of Local and State Government and the American Society for Public Administration, edited by Stephen B. Sweeney and James C. Charlesworth, Phila., May, 1967.

III. Articles

Armer, Paul. "Computer Technology and Surveillance", Computers and People, September, 1975.

Armer, Paul. "The Individual: His Privacy, Self Image, and Obsolescence", Computers and People, June, 1975.

Darby, Ralph C. "Information Analysis Centers as a Source for Information and Data", Special Libraries, 59, Feb., 1968.

Downs, Anthony. "A Realistic Look at the Final Payoffs from Urban Data Systems", Public Administration Review, Sept., 1967.

Katzman, Natan. "The Impact of Communication Technology: Promises and Prospects", Journal of Communication, Autumn, 1974.

Kraemer, K. L. "Information in Urban Systems", International Review of Administrative Sciences, Vol. XL, No. 2, 1974, Brussels, Belgium.

Larson, Signe. "Law, ASIS, and Information Technology", Bulletin of the American Society for Information Science, Vol. 1, No. 10, May, 1975.

Parker, Edwin B. and Dunn, Donald H. "Information Technology: Its Social Potential", Science, 176, 30 June, 1972.

Parker, Edwin B. "Networks for an Information Society", Bulletin of ASIS, Vol. 2, No. 1, June/July, 1975.

Pierce, John R. "Communication and Man's Life", Bulletin of ASIS, Vol. 2, No. 1, June/July, 1975.

Poole, Ithiel de Sola; McIntosh, Stuart; Grieffel, David. "On the Design of Computer-Based Information Systems", M.I.T. paper, Cambridge, Mass., 1968.

Robertson, Stephen E. "Explicit and Implicit Variables in Information Retrieval Systems", Journal of the American Society for Information Science, July/August, 1975, Vol. 26, No. 4.

Shubik, Martin. "Information, Rationality, and Free Choice in a Future Democratic Society", Daedalus, 96, Summer, 1967.

Taeuber, Richard D. "The Right to Privacy", Bulletin of ASIS, Vol. 1, No. 10, May, 1975.

"Urban Information Needs", Bulletin of ASIS, Vol. 1, No. 6, January, 1975.

Wright, J. Ward. "City Hall's Approaching Revolution in Service Delivery", Nation's Cities, January, 1972.

_____, "Evaluating and Developing an EDP System", Management Information Service, International City Management Association, June, 1973, Vol. 5, No. 6.

IV. Bibliographies

Witt, Barbara. Computers and Data Banks in Government: A Selective Bibliography, Council of Planning Librarians, P. O. Box 229, Monticello, Illinois 61856, Exchange Bibliography #487.