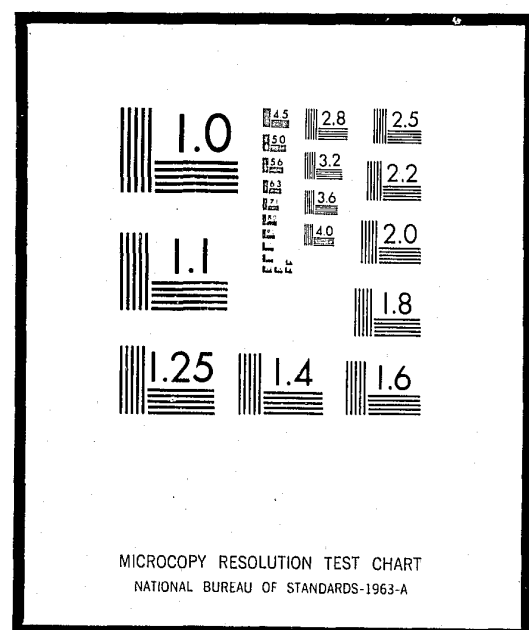


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LAW ENFORCEMENT ASSISTANCE ADMINISTRATION
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March 1973

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INTRODUCTION

Data processing enjoys a very important and widespread role in modern Swedish law enforcement. Since its introduction it has proven to be a natural and integrative force in all sectors of police work. The computer has been both a prerequisite to the implementation of a number of new routines, e.g. the administration of parking violations, and a powerful tool in the development of new law enforcement units such as the Records Division of the National Swedish Police Board.

Historically the first encounter with the possibility of computerised law enforcement dates back to 1963 when, as a result of a presentation held for a number of prominent state officials, an investigation was ordered to consider the possibility of automating the Central criminal records.

While members of the National Swedish Office of Organization and Management and the National Police Board carried on the afore mentioned investigation, another group including members of the Treasury Department prepared a proposal to the effect that, starting January 1965 a central data processing system was established for the control of police economic affairs.

The investigation about the possibility of automating the Central criminal records proved fruitful and for the fiscal year 1966/67 the Police Board requested a budget increase to allow for the procurement of a computer and a staff to program and operate the machine. The request was granted and during 1966 the first employees joined the newly formed organization. Today the division is comprised of 46 persons engaged in programming and operations.

Initially the aims of the system design were to:

1. Automate earlier manual routines
2. Develop new routines, e.g. payroll system, budget analysis system, personnel system etc.
3. Convert manual files to computerised data-banks including the development of routines for file maintenance
4. Develop an on-line nationwide system and
5. Develop a criminal histories system

The original aims were more than realized and today the systems in operation or under implementation fall into the following categories (the various systems are discussed in greater detail under "Routines"):

1. Administrative systems

Budget Analysis
 Personnel Travel Reports
 Payroll
 Personnel Information System
 Motor Vehicle Statistics
 Inventory Control

2. Police systems

Criminal Reports System
 Criminal Records System
 Fingerprint Analysis
 Wanted-Persons (on-line)
 Wanted and Stolen Motor Vehicles (on-line)
 Nationwide Alarm Distribution (on-line)
 Dispatching (on-line)
 Passport Control
 Traffic Violations System
 Systems connected to the judicial information system (JIS)

The first computer, a GE-415 including tape drives, disc drives and a Datanet-30, was installed in 1968 and during the period 1970-71 the original equipment was expanded to two GE-427, two Datanet-30, more tape- and disc-drives and 4 Bullrac (magnetic card memory) units. The installed equipment then comprised:

<u>Unit</u>	<u>Number</u>	<u>Capacity/unit</u>
GE-427	2	192 000 characters cycle time = 3.9 microseconds per 4 characters
Datanet-30	2	48 000 characters cycle time = 7 microseconds per 3 characters
Tape drives	13	80 000 characters per second
Disc drives (DS 16)	4	7.68 million characters Removable disc unit 97.5 milliseconds average access time
Disc drives (DS20)	2	23.6 million characters Fixed disc units 225 milliseconds average access time
Magnetic-Card Memory	4	340 million characters 500 milliseconds average access time
Printer	2	1 200 lines per minute
Card-reader	2	900 cards per minute
Card-Punch	1	100 cards per minute
Paper Tape Reader	1	500 characters per second

In addition to the on-site equipment approximately 40 visual-display units and some 370 telex units are installed for remote communication via the Datanet-30's.

The configuration changes made during the period 1970-71 had resulted in a maximally expanded system and early in 1971 it became apparent that a major system change would be required by late 1973. A group was formed representing the National Police Board and the National Office of Organization and Management to determine the required data processing power for the period 1974-1980. The group was directed to conduct an investigation which would lay the foundation for the purchase of a new, considerably more powerful system, to be installed and available for operation by the end of 1973.

The new system which will be installed in this year is a UNIVAC 1110 with the configuration below.

<u>Unit</u>	<u>Number</u>	<u>Capacity/unit</u>
UNIVAC 1110	1	2 x 2 96 k word read 320 nanosec/word write 520 -"- 262 k word 1.5 microsec/word
C/SP	2	98 k bytes read/write 630 ns/2 byte
Tape drives	18	192 k byte/sec 1600 BPI, 9 track
Disc drives 8440	24	119 million characters
Printer	2	840 - 2 000 LPM
Card Reader	2	1 000 cards/min
Card Punch	1	250 cards/min
Remote batch 1004, printer and reader	1	400 cards/min 400 LPM
Terminals DCT-500 KONCENTRATORS PDP 11/15	8	30 char/sec Paper tape 30 char/sec
"	2	20 k à 16 bits 900 ns
"	6	16 k à 16 bits 900 ns

In addition to the on-site equipment 290 visual-display units with 175 printing units and about 400 telex units will have communication to the computer. However this equipment will be installed gradually and the above mentioned figures will not be reached until 1975.

In parallel with the investigations concerning the use of EDP for exclusive police matters the Justice Department called for an inquiry into the possibility of co-ordinating the data processing requirements of the police, criminal courts, and correctional authorities due to the close contact between these agencies. Since 1967 a committee with representatives from the Ministries of Justice and Finance, the National Police Board, the Chief Public Prosecutor, the Courts, the National Correctional Administration, the Central Bureau of Statistics and the National Swedish Office of Organization and Management has worked with this problem. The committee rather soon specified different routines within the judicial area where a change over to EDP would be of great use to the authorities involved. The committee also decided that the change-over should take place gradually and the following stages are now in operation or under implementation.

1. Co-ordination of the Central Criminal and Police Registers
2. Criminal Records System
3. Technical Co-ordination of Different Crime Registers
4. Crime Rate Prediction and Analysis
5. Budget Analysis
6. Computerised Documentation of the Law
7. Immigration Control
8. Passport Control
9. Criminal Rehabilitation

Of the above systems those which are on operation or under implementation at the Police Board will be described more in detail under "Routines".

ROUTINES

The following is a short description of the primary production routines, administrative, police and those judicial systems which directly relate to police work.

ADMINISTRATIVE ROUTINES

Economic Routines

Budget Control

For the fiscal year 1971/72 the police budget was approximately 1 500 million kronor. The bookkeeping routines relating to the control of this budget are run at the central computer site and have been in production since 1965.

Limitations in the use of this budget require careful control. In order that the budget will be strictly followed, an intricate system of some 100 000 accounts has been established.

Approximately one million transactions are handled yearly. In addition to the bookkeeping of the different accounts, the system automatically prints the necessary documents for accounts payable and logs transactions on magnetic tape for communication with the travel expense and salaries systems.

Personnel Travel Expenses

During the fiscal year 1970/71 this routine controlled approximately 150 000 travel expense reports amounting to 25 million kronor. From this routine transactions are produced to the Budget Control routine for bookkeeping on respective account and in case it also prints payingout forms.

Instructor Salaries

This system handles the registering, payroll, and bookkeeping of salaries paid to instructors at the police school. It also produces annual statistics of costs for every course etc.

Personnel Information System

Information relating to 17 000 employees of the National Police is stored on a magnetic tape register. For each person some ninety items are recorded. It is mainly used to print out reports in different orders depending on the actual purpose for which the information is to be used.

Statistical Routines

Motor Vehicle

This routine controls the administration of some 3 000 motor vehicles. Each vehicle is registered with information pertaining to model, color, license-number, service, spare parts, fuel consumption, etc. Quarterly 150 000 punched cards are input to the system. Once a year an account of the total costs per district and per model is produced.

Motor Vehicle Insurance Costs

The system registers motor vehicles involved in accidents including costs incurred.

Service Routines

Office Inventory Control

The routine was put into production during 1970/71 and has the primary function of controlling the large inventory of office machinery and is also a preparation for a complete inventory control system.

Police Organizations

The system provides the various police organizations and their members with publications via an automatic addressing schema.

LAW ENFORCEMENT ROUTINES

Routines directly related to crime investigation.

Crime Reporting

The primary use of the routine is to produce statistical information and to prepare input to other routines for the generation of crime information.

Since 1968, when the routine was implemented, approximately 500 000 crime reports per annum have been registered. The two primary files which the routine operates on are the method index file and the crime file. The first mentioned contains approximately 400 000 registrations which have been made since the start whereas the crime file contains all crime reports.

Crime Investigation

The file, mentioned above, includes information pertaining to modus operandi, place of crime, description of suspect (s), etc. This information is periodically processed for report generation. Reports may also be ordered.

The following reports may be generated:

- Listing of used identification papers
- Listing of check, bank, and postal accounts which have been tampered with
- Listing of names and titles used
- Listing of certain crime types translated from the stored information into clear text. The crime types listed are:
 - a. burglary of banks, safes, etc.
 - b. stolen weapons
 - c. burglary of private homes
 - d. burglary of shops where stolen goods are classified as tobacco, precious metals (gold) etc.
 - e. crimes committed in connection with the transportation of goods
 - f. all sorts of crimes against old people
- Listing of crimes in which a suspect person and/or motor vehicle have been registered. This listing is also prepared in clear text from the stored information.

On-line search routines

In June 1972 the Method index file was made available on-line.

The file is stored on a disc pack at a service bureau and is worked upon by means of a general information retrieval system - ATS (Administrative Terminal System). Originally ATS is an IBM text management system but has through slight modifications been adapted for retrieval purposes.

Through a typewriter terminal at the Records Division it is now possible to search a material comprising of about 400 000 criminal reports covering the period after the 1st Jan. 1968.

Compilations are now very easily made on the basis of any element stored,

e.g. modus operandi, traces from the scene of the crime, stolen property etc.

Descriptions and Characteristics Routine

This routine implemented in 1970-71 is used when searching for descriptions and/or special characteristics such as tatoos and physical defects of criminals. As of 1972 the register contains 60 000 persons i.e. the known active criminals in the country.

From 1st February 1973 also the person description file is accessible in a similar way as the method index file.

This new method has through its rapidity greatly improved the services rendered by the Records Division.

Fingerprint Routine

This routine, in operation for about 3 years, is used when fingerprints found at the scene of a crime are to be analysed. It is also used for identification of suspect criminals. That part of the system is an on-line routine but only the Records Division of the Police Board has access to it.

Suspect Persons

This was the first routine to be implemented and it has been operational since 1967. The register contains suspected persons and the crimes for which they are suspected. The routine produces the following informations:

- annual statistics
- input to routine as to solved crimes
- reports concerning criminals operating in a number of police districts so that steps may be taken to co-ordinate the investigations

This routine will be a part of the Judicial Information System during 1973.

On-Line Routines

Wanted Motor-Vehicles

The system has been operational since 1969 and provides access to the 370 telex units throughout the whole country and 40 visual display units placed in the Stockholm, Malmö and Gothenburg police districts, and at the Records Division at the Police Board.

Aside from allowing on-line updating the system is capable of producing summary reports in batch-mode.

Wanted Persons

The system has been operational since 1970 and provides on-line and batch capabilities in the same way as the Wanted Motor Vehicles system. The search-keys into this system are:

- person number (10 characters)
- Date of birth+birthno. (9 characters)
- date of birth (6 characters)
- surname
- surname plus approximate age (the search is made \pm 5 years of the given age)

- time number (a unique number for each person in the register which is set when updating occurs)

Alarm Distribution

The system has been operational since 1968 and allows for the automatic dialing and sending of messages to all 370 police telex units. The possible distribution types are:

- distribution of messages to all telex units
- distribution of messages to all operation centres
- distribution of messages to all units within a zone covering one or more townships
- distribution of messages to all central units within a zone covering one or more townships

The routine is initiated 3-4 times daily with messages varying up to 1 000 characters in length. A nationwide distribution (370 units) takes, with the present equipment, 20-60 minutes.

Operations Centre System (Dispatching)

This on-line system is installed at the Police Operations Centre in Stockholm and allows for the registering and monitoring of occurrences involving radiocar deployment.

When an incident is reported to a central control operator he can via a visual display unit, ascertain the availability of radiocars.

Generally there are five operators at the operations centre, each operating two display units connected to the Datanet-30 system.

Upon receiving a report the operator will enter on the IM display the district reporting, location of incident, nature of incident, and reporting person. This information is stored on a disc unit. Should dispatching of a radiocar be necessary the operator may use the other display, statusdisplay, to find an available unit.

The status-display contains a line for each district in Stockholm. Each district contains four categories of radiocars. When an available radiocar is dispatched the operator reports its patrol number for storage in the system marking as active. During the entire process, the time of each activity is stored in the system. Upon completion of the mission a code is entered on the IM-display.

The following information is stored and is used for producing statistics:

Daily journal:

- listing of all IM-display entries in chronological order and chronological order per district

Monthly journal:

- total number of IM entries sorted, per incident and action taken, and number of IM entries per incident type
- total number of radiocar dispatches sorted, per incident and time of day and per number of arrests per incident type
- total number of IM entries sorted, per incident and district and number of dispatches per district per incident type
- total time per IM Report of incident to mission completion and median time for all IM entries

- total time per IM (report of incident to dispatching) and media time for all IM entries
- total time per IM (dispatch to mission completion) and median time for all IM entries
- total time per IM (dispatch to arrival on scene) and median time for all IM entries
- total time per IM (arrival on scene to mission completion) and median time for all IM entries

All of the above are sorted per incident type.

A monthly journal is prepared also for other police districts, IM entries being supplied via punched cards.

Miscellaneous Police Routines

Passport Routine

This routine has been in production since 1968. The register contains information pertaining to:

- persons owning passport
- renewed passports
- stolen passports
- lost passports
- void passports
- expired passports
- found passports

A list is prepared monthly of expired, stolen, and closed-lost passports. This list is distributed to all customs officials and police departments. The routine will be developed to include:

- automatic printing of passports
- automatic control of issue
- on-line passport register

Parking Violations

Since 1968 parking violations have been processed by computer. Annually some 850 000 are processed.

Fines

This system has been operational since 1967. Annually 200 000 fines are booked. As in the payment of parking violations fines are collected via the postal system.

JUDICIAL INFORMATION SYSTEM (JIS)

This information system consists of several routines, all in some way connected to each other. The central part of it is the PBR, the Criminal Records File. It is a random file organized with IDS (a technique for storing data in associated chains) and containing about 350 000 persons with a total of some 600 million characters. Initially the data base has been built up from historical information about convicted and suspected criminals. It is now updated with data from principally three big indata routines which yearly give about 130 000 sentences from the courts, 60 000 orders of summary punishments from the public prosecutors and 160 000 suspect sheets from the police and the public prosecutors. The PBR is also updated with information received from Interpol and foreign

police agencies as well as information from the Correctional Board, the Internment Board and the Youth Prison Board.

The system delivers information of different kinds to the authorities involved in the criminal procedure.

Reminders in case of exceeded handling periods and messages for co-ordination of contemporary investigations are sent to the police and the public prosecutors. This information is delivered as "data post", i.e. the message is printed inside the envelope and thus ready for mailing.

The courts get receipts for sentences delivered when these have entered the EDP system.

The primary purpose of the system is to produce certificates of previous convictions (extracts from the Criminal Register and extracts from the Central Police Registers).

These extracts are to be distributed by mail to a wide range of authorities. The extract is produced when an application has entered the system. Negative extracts (the person in question is not recorded) and short extracts are printed as data post. Long extracts are printed on paper of this size and arranged for window-envelopes.

The total number of extracts expected from the Central Police Registers are 610 000 per year.

- 500 000 extracts are issued for the police and the public prosecution
- 90 000 are issued for the County-Administrations, the National Police Board and the Immigration Board.
- 5 000 extracts are produced for various authorities after special permission has been granted
- 10 000 extracts are issued for private persons for their own use
- 5 000 extracts are issued to foreign police and prosecution authorities

The total number of expected extracts from the Criminal Register are 150 000 per year.

- 105 000 criminal register extracts go to the public prosecution
- 13 500 to the National Police Board
- 25 000 extracts are produced for the courts
- 5 000 extracts are issued for the Criminal Registers of foreign countries
- some extracts are produced for scientific purposes
- a minor number of extracts are issued for the County Administrations and private persons

A considerable number of extracts are produced for pure control purposes.

Cards are printed for the manual indexes at the Police Board. These are the name index, the personal number index (with punched cards holding in microfilm all documents concerning the person) and the nickname index.

Lists of unpaid fines are delivered to the County Administrations.

Basic data are delivered to the Central Bureau of Statistics for their monthly statistics concerning crime rates and the yearly statistics concerning solved crimes.

The system also supplies various authorities with machine produced

messages of different kinds. Among these receivers are the Driving Licence Registers, the Board of Excise and the Customs Department.

The recorded persons will be retrievable by

- personal number
- date of birth
- surname and
- a combination of date of birth and surname

To enable name searching there has been developed a method for conversion of a name into a phonetic code.

The JIS will very much facilitate the communication between the authorities involved in the criminal procedure. The mailing of extracts will as soon as possible be replaced by on-line distribution and thus the system will be still more efficient.

FUTURE DEVELOPMENTS

Although much has been accomplished in the area of computerised law enforcement many large projects remain to be implemented in the coming years.

A great deal of future effort will be applied in improving the present crime investigation systems and in introducing new registers which are now not computerised. The goal is to have all registers on-line to all police districts.

To effectively use the information stored in police registers the police often requires access to information stored in the registers of other governmental agencies, e.g. register of the National Correction Agency, Central Motor Vehicle and License register, etc. Communication with these external registers will occur primarily via the computer system of the National Police Board. It is expected that by 1975 approximately 150 000 on-line transactions per day will be processed and half that number will be fed to external systems.

In addition to the enhanced communications possibilities which will be gained in 1973 with the installation of a new computer system, the personnel administrative system of the National Police Board, will be integrated with similar systems used by other agencies so that one personnel system will be in effect for all state agencies. Furthermore it is estimated that development in economic routines in connection with programmed budgeting will be of great consequence.

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