



Development of A Computer Based Criminal Monitoring System: A Case Study of Enugu State Police Command

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Abstract

We describe the development of a computer based criminal monitoring software for use by the law enforcement agencies in Nigeria with the Enugu State Police Command as case study. A preliminary investigation / analysis of the currently existing system at the State Police Command was initially carried out, with a view to discovering its strength and inherent weaknesses. The specification of the user requirements was a follow up on the revelation of the inherent problems, which resulted from the analysis of the system. It was, basically, based on these requirements that this criminal monitoring system was designed.

Keywords: Criminal monitoring, input forms, fields and sizes.

1.0 Introduction

The Nigerian Police Force is the nation's law enforcement agency. The fight against crime and its perpetrators by the police is much more complex than just capturing burglars and thieves. The police officers must work on all criminal cases carefully and will have to document these cases, obtain information about persons and other objects and analyze the results of their search (Juger - Tas and Marshal, 1999; Mummet consulting .de, 2003).

The development of a data base system provide crime statistics, for example, to the law enforcement agencies, with past and present crime trends in the society; this may help them to forecast the likely future crime wave pattern which will help assist in combating crimes. Crime statistics have the potential to provide administrators, educators and researchers in the public and private sectors of our economy with the appropriate data to study, educate and where necessary, modify existing social programmes in addition to instituting new ones that will help in crime reduction. Law enforcement administrators need to know the volume, extent, trend and nature of the crime problems in addition to the basic characteristics of known offenders. This information is necessary for intelligent planning (Knight, Simpson and Morey, 2002; Knight *et al.*, 2006). The law enforcement agencies may also need this data base system for

advising their various communities on the current crime levels (Hinderlang, Hirschi and Weis, 1981; Huizinga and Elliot, 1986). Also, the law courts and correctional institutions may need this information for effective prosecution of offenders.

This paper presents a practical way of combating the nation's most common local crime problems by developing a computer based database system. A computer-based criminal monitoring system is a system that is built to detect the criminal activities of the criminally minded section of the citizenry. It consists of a set of programs that manipulate encoded knowledge – base to solve problems in specialized domains that normally require human expertise. The fundamental objective in this paper is to design a reliable criminal information management system that will aid crime prevention, detection and the prosecution of cases in law courts. Specifically, it will:

- Provide information that is more complete, true and verifiable.
- Improve the functioning of the crime justice process, with the most significant improvements likely to be in the areas of criminal investigations, police booking, pre-trial release and bail decisions and pre-sentence investigation reports.
- Help prosecutors and judges better balance the need to protect the public from harm by

defendants who are out of jail. It will help to minimize the detention of defendants on charges for which they have not been tried under due process of law.

- Provide comprehensive database of criminals.

Interactions with the staff of Enugu State Police Command revealed that the command operates a manual system of data collection and storage. As such different departments keep manually stored files for each individual crime they handle. Consequently, information gathered and/or stored cannot be very reliable since in such scenarios information stored could easily be manipulated due to a number of reasons including that:

- i. Such information is manually processed and as such is prone to human errors.
- ii. It is very important to consider the timing of the whole process right from the data collection stage to processing the resulting action and/or reaction; and being just a part of the sequence, this cannot be effectively and rapidly achieved through manual information management system.
- iii. Manually processed information systems do not give room for appropriateness of information. Any of the documents might get lost probably when the files are being carried about. It may not be very detailed but rather may just contain a short summary of the whole information. This does not give room for effective control, planning and decision-making.
- iv. Systems that need frequent information updating are not easily enhanced with manual information management systems.
- v. A manually operating system is not centralized nor interconnected but a centralized computer based system can serve the needs of even an entire country, using server and sub servers to connect to individual computers (Intel.com /ad/bea, 2003).
- vi. Information retrieval is likely to be much faster using a computer based database system.
- vii. The police officer holding a case can work on that case at home or in the office more leisurely using a computer based criminal

monitoring system.

In this paper, we focus primarily on the computerization of data at the Criminal Investigation Department of the Nigeria Police, with the Enugu State Command as its case study. It is designed to incorporate a database which includes a detainee's names; scanned picture, signature, and biometrics such as his/her finger prints, etc. The primary information used in this design was obtained from interviews carried out with staffers of the police command and by visiting several relevant websites.

2.0 Literature Review

Several definitions of crime exist in the literature. According to Hornby (2000) crime is an offence for which there is severe punishment by law. Blackstone (1995) describes crime as the violation of the public rights and duties by an act that the whole community considers as a severe wrongdoing. On the other hand Williams (1998) defines a crime as act that is capable of being followed by a criminal proceeding having only one type of outcome: punishment, while Husbury (1957) defines crime as an unlawful act or default which is an offence against the public and renders the person guilty of the act and liable to legal punishment. An act is criminal because it consists of wrongdoing, which directly and seriously threatens the security or well being of society and because it is not safe to leave it redressed only by compensation of the party injured.

Crime can be classified into three broad categories: crime against person, crime against property and crime of violence (or crime against local acts). A criminal history record describes any arrests and subsequent dispositional measures taken, attributable to an individual (Ojp.usdoj.gov/bjs/crs., 2008). A complete, accurate and accessible record enables the government to:

- Immediately identify individuals with prior criminal records in any state of the federation (Gottfredson and Taylor, 1986).
- Check backgrounds of persons responsible for crimes.
- Identify individuals who have a history of domestic violence or stalking.
- Make informal decisions relating to pretrial release and detention of offenders, prose-

cution of carrier criminals and appropriate correctional confinement.

- Conduct background checks to protect public safety and national security (Ojp.usdoj.gov/bjs/crs.,2008).

Criminal records are maintained by each Police Command's headquarters/station in a central repository.

2.1 Utilization of Criminal Records

Criminal history records describe an arrest and all the subsequent actions concerning such criminal event. An accurate, timely and complete criminal history record will enable state to readily identify persons who are criminals, enable the criminal justice agencies to make decisions on pre-trial release, career criminal's charging, determine sentencing and correctional assignments. This will assist law enforcement agents in criminal investigations and decision and are required for background checks for national security, employment, licensing and making related economic decisions as required under relevant legislations (Ojp.usdoj.gov/bjs/nchicrs, 2008).

Complete record availability requires that data from all components of the criminal justice system, including the law enforcement agencies, courts and correctional institutions like the prisons be integrated and linked.

2.2 Review of the State of Crime Monitoring and Tracking Efforts in Nigeria and Globally

Globally, criminal case and inmate tracking solution systems allow government agencies to coordinate and manage the information for criminal case records as well as track records associated with an inmate. The following partners offer criminal case and inmate tracking solutions based on the Microsoft technology: Abbey Group Consultants, AGC (Abbey group. com, 2008; Advanced technology systems, Inc. (ATS) atswa.com,2008 and Auto Mon Corporation, 2008).

The state of crime monitoring and tracking in Nigeria is still at its rudimentary stages; there is no full

computerization. Yet the Nigerian Police needs mission critical and data intensive applications for operative, administrative, statistical and management information tasks. Therefore, connecting all individual Police force commands to a central database to reduce cost overheads operational inefficiencies and delays in the fight against crime is paramount. Hence, connecting to a central repository and accessing data files and criminal records from the entire operational areas without the need for manual process is a worthwhile assignment (Whitten, Bentley and Ditman, 1988).

The infrastructural implementation has to be easily available to authorized persons. Policy rules have to define which criminal documents may or may not be shared with other state Police commands. Finally, the whole system must be protected against unauthorized access through implementation of powerful security features.

2.3 System Investigation and Analysis

i. System Investigation

During system investigation the current methods used by a client prior to computerization were examined. This will enable the software developer understand the various units/subunits in the organization and understand problem areas and visualize functional solutions to be developed for each problem. The Enugu State Police Command currently uses manual system to handle its data storage and retrieval using big notebooks. Here, handheld separate files are kept for each criminal case reported and statements made by both the complainants and the suspects are in loose sheets of paper, which could be misplaced or lost in storage. This is not only cumbersome but also space-consuming. Files could also be lost or damaged by rodents, cockroaches, etc.

ii. The Organizations in Enugu State Police Command

The existing departments in the Enugu State Police Command have three levels. The State, Divisional and Substation/Local area levels (see Figure 1).

2.4 File and Records

The Enugu State Police Command maintains files and records on crime and the associated criminals

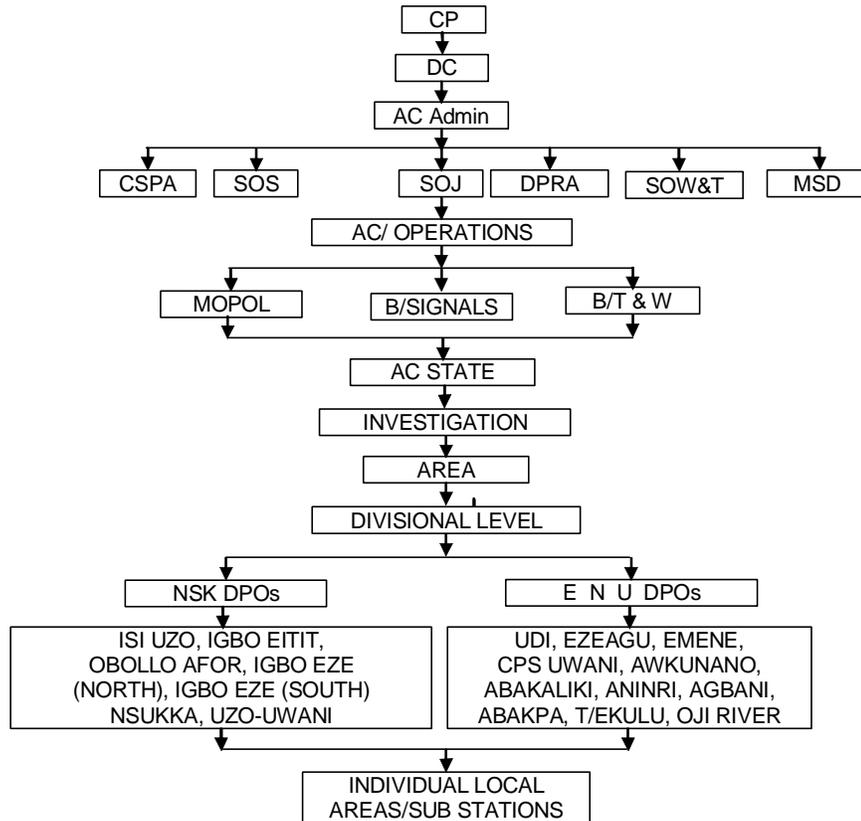


Figure 1: Organogram of the Enugu State Police Command and Legend

and complainant using big notebooks and forms enclosed in office flat files. These records and files are discussed below on a suspect / complainant and internal record basis.

a. Suspect / Complainant Section

i. Complainant File

This is used to record statements made by both the complainant and the suspect on their arrival at the police station. These statements are collected by the police officers stationed at the counter. Each record in this file contains his/her names, nationality, age, residential address, complaint lodged and signature.

ii. Suspect’s Personal Data Form

This file is used to record the personal data of the suspect after making his/her statements to the police. After the statements have been collected from the suspect by the police officer on duty at the counter, the personal data of the suspect are collected using a big notebook. Each entry in the book contains the followings: surname, middle name, first name, age,

Keys

CP	Commissioner of Police
DC	Deputy Commissioner of Police
AC/Admin	Assistant Commissioner of Police (Admin)
CSPA	Chief Superintendent of Police
SOS	Staff Officer Senior
SOJ	Staff Officer Junior
PPRA	Police Public Relations Officer
SOW&T	Staff Officer, Welfare and Training
MSD	Management Staff Department
AC/Operations	Ass. Commissioner of Police (Operations)
MOPOL	Mobile Police Officers
NSK	Nsukka Zone
ENU	Enugu Zone
DPO	Divisional Police Officer

nationality, complexion, tribe, local government area of origin, town, date of birth and state of origin. A passport sized photograph of the suspect is also embossed on the form at the top right corner.

iii. Attribute File

This file is used to record the offence identification and the bio data of the suspect. The file is maintained in a big notebook and is left with the Investigating Police Officer (IPO) in charge of that particular case.

Each record in the file contains the offence ID card and the bio data of the suspect, including his/her skin colour, eye colour, any facial mark(s), special attribute(s), height (in meters) weight (in kilogram), any disabilities and language(s) spoken.

b. Internal Record Section

The crime register files, duty information file and the IPO data file are used to maintain the internal records of the Enugu State Police Command.

i. Crime Register File

This is used to maintain crime data and includes the station number, court name, criminal investigation department references, name of the accused, the crime description, date the case was reported to police and the name of the IPO in charge of the case.

ii. Duty Information File

This file is used to maintain the duty information records of the IPO in charge of that particular case. It is maintained in a big book and entries are made by the individual IPO in charge of the case. Each entry in the notebook contains the following: the names of the IPO in charge of the case, the serial number, type of crime, division of IPO, department of IPO, the date the investigation started and the signature of the relevant IPO.

c. IPO Personal Data File

This file is used to maintain the personal data records of the IPO. It is maintained in a big notebook and entries are made to it by the IPO in charge of the particular case. Each entry in the book contains the curriculum vitae of the IPO and includes his/her surname, first name, middle name, age, nationality, SS number, date employed, present rank, division, section and salary grade level.

2.5 Processing

The processing system at the Enugu Police Command presently is manually done. Details of this manual processing are discussed on a form-by-form basis.

a. Processing of Complaint form

The Police Officer(s) at the counter collects daily skeletal complaint statements written by hand or typewritten and submitted by complainants. These are separately filled and stored for reference later. Weekly/monthly records of complaints are produced to show the crime trends for that particular period.

b. Processing of Personal Data Forms

The IPO collects individual personal data forms from the accused daily after he/she has made his/her statement. This is also manually collected and stored in a file for each accused person. Reference is usually made to such files if the accused person reappears with a similar case in a later time.

c. Processing of Attributes Form

The attributes form, which contains the accused person's bio-data is collected normally from him/her by the investigating police officer and stored in the accused personal file. This is referred to whenever the accused reappears in a later date for another related case.

d. Processing of Crime Form

The crime form depends on the crime committed by the suspects and is recorded by the investigating police officer manually. This is also filed and is used to charge the suspect to court. This form is referred to again if the suspect reappears in a later date for a similar case. Such data are usually very useful in delivering judgment in the court.

e. Processing of Duty Information Form

This Form details the particulars of the IPO on duty and who is in charge of that particular case. It will also include the date he/she started his/her investigation of the case. The form is filled by the IPO together with other forms already created for the suspect. The duty information form is important in the court during the trial period.

f. Processing of Monitoring Data Form

The monitoring data form has to do with the particu-

lars of both the informant and the suspects. The IPO takes the record from the informant and files it.

2.6 Problems Inherent in the Current System

Analysis of the current system revealed the following problems and inadequacies:

- i. Poor documentation of records: Rodents, cockroaches, etc could destroy files and records leading to loss of information.
- ii. Due to poor documentation of records, it is sometimes very difficult to reference and access stored information about a criminal.
- iii. Reports are generated late.
- iv. Some reports generated are inaccurate because of errors introduced during processing. Any decisions taken based on these reports may also be inaccurate.

3.0 System Design

Data analysis of the software was made on the information gathered. The various inputs were initially organized into forms prior to analysis. These include the personal data form, attributes form, crime form, court attendance form, criminal identification form, and investigating police officer personal data form.

3.1 Input Forms

The forms filled at the Enugu State Police Command could take the following format:

i. Personal Data Forms

The personal module of this project was structured to take care of personal records entered in the text box. Figure 2 illustrates the form that contains this design. Other forms are similarly designed like the personal data form as shown in Figure 2.

ii. Attribute Form

This contains the offence ID, face marks, skin color, language(s) spoken, tribal marks, special attributes, weight (in kilogram), height (in meter), disability, etc.

iii. Crime form

This contains the offence module, structured to take care of the offence record and entered in a textbox. Items in the textbox include offence ID, offence, date

arrested, time, place arrested, killed?, officer(s), IPO, property value, lost/damaged property, division, state, LGA.

iv. Court Attendance Form

This module was structured to take care of the court record of the case entered in the textbox. The items in the textbox include select criminal ID number, court name, case number, judge, magistrate, case status, date, jail term, and courts' address, close.

v. Criminal Identification Number Module

This module was structured to take care of the criminal records and entered in the textbox. It contains select criminal's ID number, surname, first name, finger print, age, offence, and state, LGA, close.

vi. Monitoring Form Module

This module was structured to take care of the monitoring data. It contains the following: informer's surname, informer's middle name, informer's first name, suspect's surname, suspect's middle name, suspect's first name, date complaint was lodged, informer's phone number(s), address of suspect, OK, close.

Figure 2: Personal Data Form

3.2 Fields and Sizes

A table is a collection of related records. It will be pertinent, therefore, that in designing these tables for the database the various fields which are required

to make up the records in each table are specifically designed and analyzed. They include:

- i. Complaint table, which automates the physical police, counters. It is a table that captures information about crime cases lodged at the station either by a complainant, witness or case under investigation. It stores the IPOs findings as well as daily progression of a crime case. It contains: (i) field name: station number, diary entry, crime type, investigation startup date, name of IPO, cross reference, details of complaint lodged, name of accused, minute sheet, daily report, assign to, date investigation ended. They are integer, text or alpha-numeric.
- ii. Crime register stores all the criminal cases reported at the police station. Both tried and yet to be tried criminal cases are stored in this table. Final entries concerning a criminal case under investigation is made on this table. This stores data about the position of a criminal case at court. It contains the station number entry, court-table service number, CID reference, name of accused, crime description, name of complainant, name of IPO, date case was reported, value of property destroyed, value of property recovered, result of trial/inquiry, date sentenced, date acquitted. Field type is integer or text.
- iii. Crime details tables, stores personal data about the criminals. This table can be queried using the enteric; first name, surname, finger print. It contains the following field name: Surname, first name, middle name, age, nationality, complexion, photograph, left hand finger print, right hand print, left thumb finger print, middle finger print, fore-finger print, little finger print, ring finger print, state.
- iv. Investigating Police Officer's Table, shows all the personal data of each IPO and contains:

Field names: surname, first name, middle name, age, date of birth, nationality, state, LGA, serial secret number, date of appointment, rank, division, section, salary grade level.

Field Type: text, integer or alpha-numeric.

- v. Monitoring table, which stores data about the informant and their information. It contains:

Field name: informers surname, informers first name, informers middle name, suspect's surname, suspect's first name, suspect's middle name, complaint lodged, date, time, informer's phone number(s), action to be taken, address of suspect.

Field Type: text, number.

The main menus of the system design are shown in Figure 3. All the six subsystems of this software were designed to take care of the modules that make up these subsystems. Each of the six subsystems contains the following:

- The file maintenance subsystem contains the following modules: data entry, close, pass words and exit as shown in Figure 4. The other 5 subsystems are similar in design with that of the file maintenance subsystem.
- Edit subsystem containing delete criminal records, view records for update and amend offences.
- Enquiries/Query database takes care of the enquiries entered in the textbox containing all zones / states in the zone, zonal criminal records, criminals, courts, first name, surname, town and LGA.
- Report subsystem contains the report module which taken care of the report entered in the textbox. The high module contains criminal personal report, crime reports and exit.

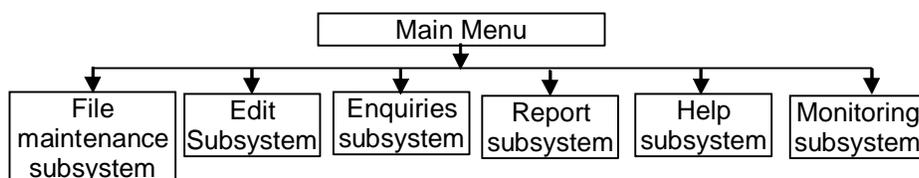


Figure 3: Main Menu Structure

- Help subsystem module takes care of the record entered in the textbox and contains about the software and user's guide.
- Monitoring subsystem; this module contains tracking, informant and phone link and crime trend.

File Maintenance	
1.	Data Entry
2.	Password
3.	Close
4.	Exit

Figure 4: File maintenance subsystem

3.2 Database Implementation

This is the construction of the new system and delivery of same into production i.e. day to day operation. It addresses data, processes, interfaces and geography, primarily from the system builder's perspective. We have considered a method of using the visual data manager to create the data for use with visual basic, since it provides us with an interactive way of creating and modifying the databases, with the following information duly provided for each table considered. The names, type structure and the indices defined.

3.3 Programme Structure

A well structured program takes for easy understanding of program and therefore saves time during the development stages. Details of the subsystems are discussed here.

The file maintenance subsystem comprises of three modules namely new, close and exit. The new modules is used to input data for a new criminal, close enables one to lock all information about a particular criminal while the exit module enables us to quit out of the file maintenance subsystem.

Also, the edit subsystem enables us to edit the records of a particular criminal including deleting/ updating/viewing the criminal records for update or amending offences. Enquiries subsystem enables us to enquire about all zones/states in the zone/zonal criminal records/criminals or courts. Also the report subsystem enables us to generate report about a

particular criminal or crime, while the help subsystem grids us about the software and also how the users shall use it.

4.0 Summary and Conclusion

The Nigerian Police Force is involved in different aspect of crime prevention including the arrest of criminals, investigating different criminal inadequacies keeping of records of criminals, reporting different criminal inadequacies to the ministry of Internal Affairs and maintaining law and order in the country. This paper is an attempt to develop a software that can be used to computerize the criminal monitoring system for the Enugu State Police Command. It is designed to provide accurate and timely and also detailed information about crime and criminals to the state command, and serves the following purposes. To maintain and update criminal detective, to keep records of judicial proceedings and actions against each criminal and replace the existing manual system of recording data in the state command.

Experience has shown that database addition to any information or document storage would bring about more efficiency, easy of retrieval, greater accuracy and security to that information. There is also the added insurance against the fear of data losses.

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