# CRIMINAL INFORMATION SYSTEM

(CASE STUDY OF NIGERIA POLICE FORCE)

BY

## YUSUF ABUBAKAR
PGD/MCS/2006/1202

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
FEDERAL MINISTRY OF TECHNOLOGY, MINNA

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# DECLARATION

I, Yusuf Abubakar, of the Department of Mathematics and Computer Science, School of Science and Science Education, Federal University of Minna, do hereby declare that this research work was done by me and that it is my research efforts. It has not been presented before in any form to any organization or institution for the purpose of award of Post Graduate Diploma. All sources of information have been duly acknowledged.


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Yusuf Abubakar                                                              Date

# CERTIFICATION

I hereby certify that this thesis entitled "Criminal Information System (a case study of Nigerian Police Force)" was carried out by Yusuf Abubakar, PGD/MCS/2006/1202 and meets the standard deemed acceptable by the Department of Mathematics And Computer Science, School of Science and Science Education, Federal University Of Technology, Minna.

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      Supervisor                                          Date
Mallam Mohammed Jiya

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Dr. N. I. Akinwande                                       Date

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External Examiner's Signature                           Date

# DEDICATION

I dedicate this work to God Almighty, for his mercy, benevolence, grace, protection, sustainance and inspiration; and also to my entire family members, particularly my wife for her undying love and support, mother and children.

# ACKNOWLEDGEMENT

Gratitude to Almighty Allah for sparing my life and seeing me through this endavour

I remain appreciative of the numerous and countless contribution of my supervisor, Mal. Mohammed Jiya.

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My sincere gratitude and appreciation to my parents Alhaji and Hajjia Yusuf Aminu, my wife, brothers and sisters who have stood by me, supporting me morally and psychologically.

Finally, I thank Almighty God for his mercy, love and protection.

# <u>ABSTRACT</u>

This project work seeks to provide a digital alternative to the old paper format of storing information regarding criminal history, it also seeks to provide basis for further research that would help the police exchange valuable criminal information with other security agencies. Essentially, it captures data in form pictures: front view, side view as well as other bio-data about criminals.

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# CHAPTER ONE

## 1.0 INTRODUCTION

In furtherance of obtaining a platform that holds and secures criminal records for the use of the Police, Justice Dispensation apparatus and other relevant security agencies; there arose the need for a criminal information system. Essentially, the system would allow for ease of input of data, retrieval and storage on suitable media.

As population of a people grows larger and more mobile; and the level and spread of crime becomes overbearing, it becomes increasingly necessary for law enforcement departments to utilize sophisticated technology to fight crime. If analysts are able to predict the time and place of hot spots, or high crime areas, law enforcement personnel can be better prepared to either reduce the intensity of the hot spot or be able to more quickly mobilize officers to handle the increased crime rate.

Basically, the application would register arrests, frequency of arrests, convictions as well as categorize crime into different types such as theft, burglary, carjacking, assault, and vandalism, drug trafficking and property etc. In addition, the application would indicate the number of court dispositions for offenders, be it felony, manslaughter, murder and/or traffic offences.

Nevertheless, valuable information in statistical format would be extracted to complement the paper archival systems the police and other agencies keep in hard copy.

Essentially, this research project application is in response to the older way of record keeping, which is susceptible to decay and slow retrieval process as against the maintenance of a record of criminal history in a digital form.

## 1.1    BACKGROUND

In practice, the most prevalent form of record keeping in the Nigerian Police Force, Prison Service, Justice Dispensation as well as other security agencies is the hard copy paper format (which is susceptible to degradation by moisture, fungus and other environmental factors). Also, storage of tons and pile of paper would be required to store information in this form. Retrieval of information under this means is also cumbersome compared to the real-time online means which the digital media avails it users.

Under, the present paper archival format it is not easy backing up data, as that would involve duplication of paper using Xerox machines.

Further to this, criminal investigation has improved beyond elementary techniques to advanced DNA matching to reading patterns of the pupil structure in the eye. Recently, we have seen improvement in investigation using the pattern in how people walk and talk being used to ascertain identities of people. All of these have been made possible by the use of customized computer programs, which are designed to analyse patterns and synchronize an entity's different state of motion, mind and status.

## 1.2    AIM AND OBJECTIVE OF THE STUDY

The Criminal Information System is intended to serve as a central repository of data on persons arrested, accused, prosecuted and acquitted after a period of litigation. It should provide avenue to search for individuals or persons with criminal record or history.

## 1.3    SCOPE AND LIMITATION

Criminal Information System is an organized collection of criminal data reported to a Police Station, and could be subsequently used by other law enforcement agencies as well as justice dispensation apparatus of government.

However, it has no provision for DNA technology data, simulation of how people walk, talk or eat; these are essentially a subject of further research and development for another day. Detailed information on calls to the Police for service may not be available. As a result can not be inputed into the system.

**What data is captured?**

Criminal Information System requires that information on arrests, prosecutions and the disposition of the case for persons arrested or reported and under investigation.

Police Departments and any other criminal justice agency that arrests a person for an offense, misdemeanor or violation of the laws should have cause to input record into the system. The report, if on paper, must be on the Criminal History Reporting form entered by a Police Station. A form created by a local booking system also may be used, if approved.

The report must include the arrested person's fingerprints, the Incident Tracking Number and other data required by law.

Each record identified a single report of criminal activity that was filed. The data fields used to identify the hot spots spatially and temporally were the starting date and time of the event, ending date and time of the event, address of the event, and the event type code, which identified the type of crime that was committed.

The preferred method of reporting arrests captures the person's fingerprints via "live scan" fingerprinting devices. The same data must be included in the electronic transaction as when reported on paper. The electronic submission provides a near-real-time response to the arresting agency and causes the Criminal Information System to be updated much more quickly than paper reporting.

A critical component of successful reporting is cooperation within the country. A large part of that cooperation is each reporting agency passing the Criminal History Reporting form entered by a Police Station to the next level. The arresting agency needs to send the Criminal History Reporting form entered by a Police Station to the prosecuting agency.

**Prosecuting Agencies:**

The ministry of Justice prosecutor receiving a report on an offense must report to the Attorney-General or his/her representative, as to the decision to accept, reject, change, or add to the charge for trial. As with the arresting agencies, prosecutors may report on paper or electronically. The system works in such a way that the prosecutor must also include the incident tracking number, as received from the arresting agency.

**Court Clerks**

The systems in a way that allows the court clerk to report the disposition of the case to the Police Station from where the case emanated from. As with prosecutors, the clerks are dependent upon receiving the Criminal History Reporting form, from the prior reporting Police Station or agency; say EFCC for example. Depending upon the level of automation within the Police Force in the country, the implementation between the police, the courts, and the prison service may be inaccurate.

## 1.4    DEFINITION OF TERMS

**Database** is a structured collection of records or data that is stored in a computer system. A database relies upon software to organize the storage of data. In other words, the software models the database structure in what are known as database models (or data models). Databases are designed to offer an organized mechanism for storing, managing and retrieving information. They do so through the use of tables.

A **computer database** relies upon software to organize the storage of data. This software is known as a database management system (DBMS). Database management systems are categorized according to the database model that they support. The model tends to determine the query languages that are available to access the database. A great deal of the internal engineering of a DBMS, however, is independent of the data model, and is concerned with managing factors such as performance, concurrency, integrity, and recovery from hardware failures. In these areas there are large differences between products.

**VPN** stands for Virtual Private Network. It uses a series of encryption and algorythems to secure the data transmitted over the public internet. It allows me to work on my company network from my home with a higher level of confidence that no one else can access my work. VPN is a method of using tunneling to build a private overlay network on top of a public network. A **VPN** utilizes public telecommunications networks to conduct private data communications. Most VPN implementations use the Internet as the public infrastructure and a variety of specialized <u>protocols</u> to support private communications through the Internet.

L2TP stands for layer two tunneling protocol

PPTP refers to point to point tunneling protocol

**Front-end** application is one that application users interact with directly. For example, the graphic user interface that has the dialogue boxes, combo box, textbox e.t.c. examples are Visual basic, FoxPro as well as other languages.

**Back-end** application or program serves indirectly in support of the front-end services, usually by being closer to the required resource or having the capability to communicate with the required resource. The back-end application may interact directly with the front-end or, perhaps more typically, is a program called from an intermediate program that mediates front-end and back-end activities. Examples are MS SQL, Oracle.

**NPF** refers to Nigerian Police Force as established by Section 194 of the 1979 constitution as the national police with exclusive jurisdiction throughout the country. Constitutional provision also exists, however, for the establishment of separate NPF branches "forming part of the armed forces of the Federation or for their protection of harbours, waterways, railways and airfields.

**Case File** refers to organized information obtained from investigation, interrogation and reports made to the Nigerian Police pertaining/concerning a particular person or object. The case file entails all there is to enable government prosecutor make a case in court.

CHAPTER TWO

2.0    LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

## 2.1    LITERATURE REVIEW

Over the years, many theories have been presented in attempts to define and explain Criminal Information Systems as well as criminal activity. Some of these have focused on technology while others on examination of the aggregate crime within an area. Although the public perception may be that crime is randomly distributed in space; however, only an extensive use of evidence in form of data can validate this perception.

Sherman, Gartin & Buerger (1989) detailed the many early problems associated with the analysis and identification of high crime areas or hot spots. An inability to pinpoint the location and/or the time of some crimes added error into the analysis. Also, until recently, reliable, complete data was not generally available.

As ever smaller police departments make the transition to computerized systems, both the quantity and quality of crime data available for research has seen tremendous improvement. However, the overwhelming quantity of data and the difficulty associated with processing such multidimensional data presents new difficulties (Guo, Peuquet & Gahegan, 2003). Exponential growth in the power of computers and the development of sophisticated GIS systems has advanced this research tremendously and it is now possible to process large amounts of spatial data and determine trends where they may not have been previously visible.

It was Kent in 1984, who postulated that, "the word computerization or automation may readily bring to a situation whereby technological know how is used to manufacture machines with little or no human intervention". Accordingly, this implies writing of an application to perform specialized tasks (according to sets of instructions) with a database capable of holding millions of useful information.

Several techniques have been used to analyze crime data. One limitation that has arisen when techniques are applied to administrative real units such as census tracts or police beats is called the Modifiable Areal Unit Problem (MAUP). This problem occurs when different results are produced depending on the selection of areas within which the data is aggregated (O'Sullivan & Unwin, 2003). This issue is of particular importance in the study of crime. Since crime does not necessarily occur in any particular relation to the land area or the residential population, analyzing a simple spatial concentration of crime can be more valuable (Ratcliffe, 2004). Studies have produced several methods of spatially identifying hot spots. Among these methods are the Spatial and Temporal Analysis of Crime (STAC), which produces ellipses which cluster crime points (Block, 1995), and methods using kernel density estimation (Levine, 1998).

Nelson, Bromley, & Thomas (2001) note that the most common feature of all categories of crime reported was the spatial concentration into a relatively small number of hot spots allowing the anticipation of high crime in these areas in the future. It was also noted that these concentrations peaked at fairly specific times on a regular basis. According to Liu &

Brown (2003), the prevalent forecasting method is currently primarily spatial in nature, with the assumption that clusters of crime will persist in the near future. Researchers have noted that a system capable of utilizing existing information in real-time and able to predict where and when high rates of crime are expected would be of great value for police resource allocation (Corcoran, Wilson, & Ware, 2003). Also, a greater understanding of the patterns of crime can result in a better grasp on the causes, and lead to improvements in urban planning and design to reduce susceptibility to crime (Nelson, et. al., 2001).

One problem encountered when attempting to analyze the temporal qualities of the crime data involves the lack of detail in many police crime databases. In crimes such as burglary or theft, it can be impossible to pinpoint the actual time of occurrence and the possible window of opportunity may cover many hours. The Aoristic Temporal Analysis Method, a temporal weighting method, was developed to attempt to deal with this problem (Ratcliffe, 2002). Ratcliffe (2004) also proposed several general categories of temporal clustering based on prevalent patterns.

A crime data analysis model utilizing information on spatial location as well as time of day would have the advantage of being able to pinpoint more accurately when additional policing may be needed in an area. Also, if certain areas are noted as problematic primarily during holidays or specific weekdays, this information can then be used to make better predictions and to improve the allocation of resources. When utilized with real-time data, such a model could possibly help to identify crime trends as they develop in unexpected areas.

The temporal information about a specific type of crime when presented visually, allows the Police to distinguish changes in crimes and criminality. Photographs, Blood groups, genotype and finger prints can be studied for clues; also newer ways in which crimes are perpetrated can be studied and patterns about cyclical variations can be arrived at and to identify the time of day, the week day, or the date of increased criminal activity.

The identification of these patterns of activity can be very useful in understanding the timeframe in which spatial hot spots of crime exist, and in planning police activities to ameliorate the conditions leading to increased crime. Events within specific hot spots can be analyzed to determine if they fit the typical pattern or if they produce a unique pattern which may point to an unusual and possibly modifiable problem which is encouraging the

When working with crime data, accuracy will always be an issue. Often reports rely on a victim's memory, conflicting reports of witnesses or bystanders, or in the case of crimes with no witnesses, the best that can be done is to define a probable time span during which

This study suggests a number of areas that would benefit from further research. Until that time, there is a need for tools that can facilitate the type of analysis presented in this study.

Research continues on the integration of temporal components with spatial data. Peuquet (2001) notes that extending the relational model to include data in the temporal dimension can be effective when the temporal data is linear. However, the common use of temporal "snapshots" leads to inefficiency and inflexibility. Future work will continue to develop the theoretical framework and techniques to deal with both linear and non-linear temporal data. Corcoran et. al. (2003) have demonstrated the use of artificial neural networks to facilitate predictive modeling. Any effective approach to modeling the temporal dimension

must incorporate both absolute and relative views of space-time to adequately represent temporal dynamics in geographic information systems (Peuquet, 1994).

## Nigeria Police Force (NPF)

Nigeria's police began with a thirty-member consular guard formed in Lagos Colony in 1861. In 1879 a 1,200-member armed paramilitary Hausa Constabulary was formed. In 1896 the Lagos Police was established. A similar force, the Niger Coast Constabulary, was formed in Calabar in 1894 under the newly proclaimed Niger Coast Protectorate. Likewise, in the north, the Royal Niger Company set up the Royal Niger Company Constabulary in 1888 with headquarters at Lokoja. When the protectorates of Northern and Southern Nigeria were proclaimed in the early 1900s, part of the Royal Niger Company Constabulary became the Northern Nigeria Police, and part of the Niger Coast Constabulary became the Southern Nigeria Police. Northern and Southern Nigeria were amalgamated in 1914, but their police forces were not merged until 1930, forming the NPF, headquartered in Lagos. During the colonial period, most police were associated with local governments (native authorities). In the 1960s, under the First Republic, these forces were first regionalized and then nationalized.

In the 1980s, serious crime grew to nearly epidemic proportions, particularly in Lagos and other urbanized areas characterized by rapid growth and change, by stark economic inequality and deprivation, by social disorganization, and by inadequate government service and law enforcement capabilities. Published crime statistics were probably grossly understated, because most of the country was virtually unpoliced--the police were

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concentrated in urban areas where only about 25 percent of the population lived--and public distrust of the police contributed to underreporting of crimes. In the late 1980s, the crime wave was exacerbated by worsening economic conditions and by the ineffectiveness, inefficiency, and corruption of police, military, and customs personnel who colluded and conspired with criminals or actually engaged in criminal conduct.

Violent crime affecting foreigners is an extremely serious problem, especially in Lagos and the southern half of the country. Visitors, as well as resident Americans, report widespread armed muggings, assaults, burglary, carjackings and extortion, often involving violence. Carjackings, roadblock robberies and armed break-ins occur often, with victims sometimes shot by assailants for no apparent reason. Reports of armed robberies in broad daylight on rural roads in the northern half of the country appear to be increasing. Law enforcement authorities usually respond to crimes slowly, if at all, and provide little or no investigative support to victims.

A major and continuing problem is the commercial scam or sting that targets foreigners, including many foreign citizens. Such scams generally involve phony offers of either outright money transfers or lucrative sales or contracts with promises of large commissions or up-front payments. Alleged deals frequently invoke the authority of one or more ministries or offices of the Nigerian government and may even cite by name the support of a Nigerian government official. The apparent use in some scams of actual government stationery, seals, and offices is grounds for concern that some individual Nigerian officials may be involved in these activities.

The Nigeria Police Force (NPF) is designated by Section 194 of the 1979 constitution as the national police with exclusive jurisdiction throughout the country. Constitutional provision also exists, however, for the establishment of separate NPF branches "forming part of the armed forces of the Federation or for their protection of harbours, waterways, railways and airfields." One such branch, the Port Security Police, was reported by different sources to have strength in 1990 of between 1,500 and 12,000.

The NPF performed conventional police functions and was responsible for internal security generally; for supporting the prison, immigration, and customs services; and for performing military duties within or outside Nigeria as directed. Plans were announced in mid-1980 to expand the force to 200,000. By 1983, according to the federal budget, the strength of the NPF was almost 152,000, but other sources estimated it to be between 20,000 and 80,000. Reportedly, there were more than 1,300 police stations nationwide. Police officers were not usually armed but were issued weapons when required for specific missions or circumstances. They were often deployed throughout the country, but in 1989 Babangida announced that a larger number of officers would be posted to their native areas to facilitate police- community relations.

The NPF was under the general operational and administrative control of an inspector general appointed by the president and responsible for the maintenance of law and order. He was supported at headquarters in Lagos by a deputy inspector general and in each state by police commissioners. The 1979 constitution provided for a Police Service Commission that was responsible for NPF policy, organization, administration, and finance (except for pensions), In February 1989, Babangida abolished the Police Service Commission and

established the Nigeria Police Council in its stead, under direct presidential control. The new council was chaired by the president; the chief of General Staff, the minister of internal affairs, and the police inspector general were members. As part of the government reorganization in September 1990, Alhajji Sumaila Gwarzo, formerly SSS director, was named to the new post of minister of state, police affairs.

In late 1986, the NPF was reorganized nationwide into seven area commands, which superseded a command structure corresponding to each of Nigeria's states. Each command was under a commissioner of police and was further divided into police provinces and divisions under local officers. NPF headquarters, which was also an area command, supervised and coordinated the other area commands.

The 1986 NPF reorganization was occasioned by a public eruption of tensions between the police and the army. A superintendent was suspended for a time for grumbling that the army had usurped police functions and kept police pay low, and there were fights between police and army officers over border patrol jurisdiction. The armed forces chief of staff announced a thorough reorganization of the NPF into the seven new area commands and five directorates (criminal investigations, logistics, supplies, training, and operations) under deputy inspectors general. About 2,000 constables and 400 senior police officers were dismissed by mid-1987, leaving senior police officers disgruntled.

In mid-1989 another Nigerian Police Force reorganization was announced after the AFRC's acceptance of a report by Rear Admiral Murtala Nyako. In 1989 the NPF also created a **Quick Intervention Force** in each state, separate from the mobile police units, specifically to monitor political events and to quell unrest during the transition to civil rule. Each state

unit of between 160 and 400 police was commanded by an assistant superintendent and equipped with vehicles, communications gear, weapons, and crowd control equipment, including cane shields, batons, and tear gas.

The NPF operating budget between 1984 and 1988 remained in the N360 million to N380 million range, and in 1988 increased to N521 million. More notable were large capital expenditure infusions of N206 million in 1986 and N260.3 million in 1988, representing 3.5 and 2.5 percent of total federal capital expenditures in those years. These increases were used to acquire new communications equipment, transport, and weapons to combat the rising crime wave, such as 100 British Leyland DAF Comet trucks delivered in 1990. Despite these purchases, an NPF study in late 1990 concluded that the force's budget must double to meet its needs.

Although generally considered an attractive career, the NPF experienced endemic problems with recruiting, training, inefficiency, and indiscipline, and it lacked expertise in specialized fields. Corruption and dishonesty were widespread, engendering a low level of public confidence, failure to report crimes, and tendencies to resort to self-help. Police were more adept at paramilitary operations and the exercise of force than at community service functions or crime prevention, detection, and investigation. During the Obasanjo period, an attempt was made to expand the NPF by reducing the recruitment age from nineteen to seventeen and by enrolling demobilized soldiers, but it failed. In mid-1980 the then federal police minister acknowledged that the police had recovered only 14 percent of the US$900 million worth of property reported stolen in the preceding six months, and that only 20 percent of the 103,000 persons arrested had been found guilty, a performance record about

the same as that reported in the 1960s. The use of excessive violence in quelling student disorders led the AFRC in June 1986 to direct the police to use only rubber bullets in containing student riots. Reports of police collusion with criminals were common, as were official appeals to police officers to change their attitude toward the public, to be fair and honest, and to avoid corrupt practices. In an effort to reduce bribery and to make identification of offenders easier, police officers on beats and at checkpoints were not allowed to carry more than N5 on their person.

Police training was directed from headquarters by a deputy inspector general designated as commander. Recruits were trained at police colleges in Oji River, Maiduguri, Kaduna, and Ikeja, which also offered training to other security personnel, such as armed immigration officers. The Police College at Ikeja trained cadet assistant superintendents and cadet subinspectors. There were also specialized schools for in-service training, including the Police Mobile Force Training School at Guzuo, southwest of Abuja, the Police Detective College at Enugu, the Police Dogs Service Training Centre, and the Mounted Training Centre. The NPF inspector general visited Algeria in January 1988; as a result new training practices were under consideration.

In August 1989, the then President Ibrahim Babangida laid the foundation stone for a Nigeria Police Academy (NPA) in Kano State. The NPA was to be affiliated with Bayero University until adequate infrastructure was available for independent operation. Admission was to be regulated by merit, by the quota system, and by federal character. The commandant was to be at least an AIG and assisted by a provost who would oversee the academic program. Modeled after the Nigerian Military University in Kaduna, the NPA

would offer a five-year academic and professional degree program for new cadets and an eighteen-month intensive course for college graduates aspiring to a police career. Babangida also disclosed plans to obtain technical assistance from Britain to establish a central planning and training program to modernize and upgrade police training.

## 2.2    CONCEPTUAL FRAMEWORK

The concept behind this system is to avail the Police first hand information upon which to present a case file, even if the hard copy is misplaced; to allow for easy reference by the judicial system and to enable the Prison service give up to date feed back on either reformation activities on inmates, if need be or whether accused persons have finished serving prison terms.

There are five dimensions of information exchange that are relevant to integrated Criminal Information Systems research, design, development and implementation. These dimensions are:

1. **STATES** - Stages of the case which the subject is in at the time of the exchange, e.g., Investigation, Detention, Post-Disposition Supervision, Incarceration, etc.

2. **EVENTS** - Institutional/Subject actions that triggers the exchange, e.g., Arrest, Warrant Review, Prosecution Charging Decision, Correctional Discharge, etc.

3. **AGENCIES/BRANCHES** - Institutions/entities involved in the exchange, e.g., Law Enforcement Agency, Prosecutor, Defense Attorney, Trial Court, Treatment Provider, Victim, etc.

4. **CONDITIONS** - Factor(s) associated with the case, person or event that govern the exchange of information and define the processing flow and circumstances surrounding the exchange of information, e.g., whether the case is a felony or misdemeanor, whether the subject is an adult or a juvenile, whether the subject is in custody or at large, etc.

5. **INFORMATION** - Data that is actually exchanged between agencies, including:

    a. **DOCUMENTS** - May be paper documents or virtual documents transferred as part of an electronic exchange. Paper documents include Arrest Reports, Criminal Complaints, Minute Orders, etc.

    b. **DATA SETS** - Logical compilations of related data elements, such as Basic Identification, Law Enforcement Charges, Court Case Data, Disposition Data, etc.

    c. **DATA ELEMENTS** - Traditional data elements include First Name, Last Name, Suffix, Social Security Number, State Identification Number, Offense Date, Originating Agency Name, etc. Data elements may come in the form of text, numbers, images, photographs, etc.

The above framework is a guide for the implementation of policy and practices prevalent in the criminal investigation system at present. As a result, an information system fashioned out

using appropriate programming language is required. Here, Visual basic comes to the rescue by virtue of the ease of which event procedures are obtained and implemented using object oriented programming.

Essentially, in designing an algorithm that outlines solution for our proposed Criminal Information System we must bear in mind the following:

- ◆ Criminal Investigation apparatus , Justice dispensation system and agencies such as :

  - ■ Police, EFCC and ICPC.

  - ■ Justice and Industrial Relations (Courts, Corrective Services, DPP, Legal Aid Commission)

  - ■ Prison Services

  - ■ Immigration Services

  - ■ National Identity Card Project

  - ■ National Population Commission

  - ■ Emergency Services i.e NEMA

  - ■ National Health Insurance Scheme and National Youth Service Corp

  - ■ Infrastructure, Energy and Resources (Motor Registry and Vehicle Inspection Office, Federal Road Safety Commission)

The government agencies above all have reference numbering system and record keeping system that can ensure that at least a citizen of Nigeria has a record against which his or her name can be traced and verified. Therefore a Criminal Information System designed bearing in mind the investigative potential they hold would go a long way in building a water tight case before presentation in a law court for prosecution.

**What technology specifications would be required?**

Wide Area Networks running on Frame Relay, VPN or other platform may be utilized in connecting the numerous State Police Head Quarters, while Metropolitan Area Networks could be used to link Police Stations or posts within a state. Irrespective of what Information Technology protocol used the most durable infrastructure is undoubtedly a fibre optics link across the country. This would save money and resources compared to the down time that could be experienced from the use of NigComSat 2 or 3 when operational. However, within a state a wireless could be used because of the proximity to resource personnel that could fix problems as they arise

**Reporting at Present?**

An analysis by simple random sampling indicates that only at the Police Head Quarters, EFCC and state Police H/Q commands have semblance of an electronic reporting system in place. The two primary reasons for this disposition are that:

1. There is the need for a wide area network that should connect all state commands on one hand and all police posts and state commands on another.

2. The courts have to report disposition of cases, so as to enable the police update their records on offenders and status-either criminal or civil.

**How Reporting Can Be Implemented?**

As suggested above, the most important factors contributing to successful Criminal Information System reporting are local communication and coordination. The arresting agency must begin the process with the fingerprint submission. That event must be reported to the nearest Police post or station and subsequently to the prosecutor in the ministry of justice and the court system. The Criminal History Reporting Form contains all the required information, except the State Identification Number, which must be received back by the arresting agency from NHIS or National Identification Card project after the arrest is reported. The arresting agency and prosecutor must agree on a process for the efficient flow of information via first information form received or other appropriate method.

Likewise, the prosecutor must report his/her action to Police so as to enable them keep track record of a case. As with the arrest information, it may be passed via the first information form, but we envisage a plethora of proliferation of automated systems, therefore it should be required passed via an intra-country system. Internal cooperation and communication is critical to successful Criminal History Reporting at the local level. Each agency must fulfill its responsibility or the succeeding agency may not be able to accurately report the next step in the process. Criminal History reporting is not the responsibility of a single agency, it is a country-wide responsibility, and the best solutions are developed in

stations that have established plans for country-wide area network communication, coordination and implementation.

## How Information in Criminal Information System Would Be Used.

The Criminal Information System is a nationwide criminal history repository managed by the Police, with the following set of objectives:

1. To assist criminal justice agencies for criminal justice purposes, including law enforcement agencies during investigations,

2. To assist entities identified by the Government (statutory agencies) for background searches for specific non-criminal justice purposes, such as:

   - Certain governmental licenses (medical, law, educator, etc.)

   - Certain jobs serving vulnerable populations, especially children, the elderly and the disabled (day care centers, nursing homes, hospitals, mental health workers, etc.)

   - Certain security sensitive jobs, such as nuclear power plants, financial institutions, etc.

   - Issuance of firearm licenses.

   - For certain research purposes.

# CHAPTER THREE

## 3.0    SYSTEM ANALYSIS AND DESIGN

### 3.1    SYSTEM ANALYSIS

This entails the methodological appraisal of Nigerian Police Force dealings, interactions and relationships especially between all entities that keep and handle criminal records in the security operations of government: the manual systems, often prior to their automation as computer systems, and the interactions within those systems. It is also an explicit inquiry carried out to ascertain factors requiring attention, before we embarked on the design of an automated system, identify a better course of action and make a better decision (than might otherwise have been made).

Essentially, reports are made when crime is committed, then first information report is entered into the case file, and finally a decision is made as to whether further investigation is needed or not. Subsequently, the Police prosecution team assesses merit of a case as well as what would be stated on the charge sheet before pursuing a conviction of an alleged accused or offender. Also, an assessment is conducted to verify whether to send the case to Ministry of Justice and Attorney-General for professional handling. Here, lies the crux of the matter; our analysis of the various aspect involved, and the design of the best way to automate the NPF's criminal information operations.

## 3.2    SYSTEM DESIGN

We envisage that photographs and/or finger prints of an alleged accused would be obtained; as a result provision for capture, recording and storage for future use. Importantly too, other biodata is captured for future use. Nevertheless, criminals are known to repeat their act if not caught; therefore, provision is made for history of arrests, prosecution and sentence passed by a competent court.

We equally anticipate other agencies to use the records; as a result it is designed to be widely distributed across various platforms and hardware systems.

Identification is of high priority in NPF's record keeping; as a result every accused shall have a number marching his or her arrest and subsequent prosecution to a case number as well as to incident number. That way number of arrests, prosecutions and sentences would be separated, even if running concurrently.

Provision for report printing is also made, to allow for production of hard copy could be used in correspondence as well as for referral purposes.

## 3.3    INPUT AND OUTPUT

Here, the various type of data, backup, input devices and designation of data entry officials would be examined vis-à-vis the hierarchical setting within the Police Force.

As earlier mentioned, officers below the rank of inspectors would photograph front view, left side view, right side view and use the biometric scanner to obtain finger print, assign

incident number and enter first information report before sending to inspectors for packaging a case file.



Fig.1   Text box and combobox for data entry

Fig.2    textboxes for criminal history

Essentially, data about a traffic offender who has violated traffic laws would be included in this system, provided he is charged properly or has a case of "hit and run", or manslaughter against him/her. Therefore, cases that are minor (traffic offense) in nature may not be captured as expected. Also, Public nuisance and disturbance: neighbourhood quarrel, noise, and illegal use of fireworks are not expected to be captured.

However, cases of theft, burglary, arson, smuggling, armed robbery, carjacking, hijacking, obtaining money under false pretence, drug trafficking, public funds looting and misdemeanour of all sorts are the main data anticipated for capture.

**Registration form**

CIS Number :-

| Suspect's BioData | Arrest Cases And Other Information | Education And Investigation Officers |

EDUCATION

Primary :-

Secondary :-

Tertiary

1

2

3

INVESTIGATION

| OFFICERS INVOLVED | DURATION | INFERENCES/RESULTS/ CONCLUTIONS |

1

2

3

SAVE    FIND    UPDATE    EXIT

## Choice of Development Platform and Programming language

Security of the application; both front-end and backend was paramount in the choice of programming language due to the nature of Criminal Record or history. Subsequently, ease of installation, administration, maintenance, and backup operations favoured the use of Visual Basic 6.0 for the front-end and Microsoft Structured Query Language for back-end.

Fundamentally, the criminal history would be distributed to a large extent, we compared the advantages of Visual Basic.net to that of Visual Basic 6.0, and reached a convergence point where the ability to further develop and upgrade the application by the user organization was critical to its continued usage: it is easier to learn Visual Basic than Visual Basic.net i.e. the learning curve an of IT personnel.

Nevertheless, the tunneling and encryption of Visual Basic 6.0 application on the networks on which it would be used is compatible with L2TP, PPTP, VPN and frame Relay because visual basic has been well tested and has been found secured under this settings.

In terms of interconnectivity, scalability and redundancy needed, visual basic application have been vastly tested, and found secured and adaptable to both Linux and windows platforms without fundamental kernel errors.

## 4.0 Implementation

## 4.1 Software Requirement

This application runs on all windows platform, Linux Ubuntu version 10 and requires Microsoft structured query language to warehouse large data.

## 4.2 Hardware Requirement

An average computer by today's standard would allow smooth operations of this application. Specifically, in computers with multiple processors, a processor could be dedicated to it in order to run faster and with more memory load and execute with speed, bearing in mind that this application is input-output bound. Since, todays operating systems support multithread and processors of duo core capabilities, it is anticipated that a clock speed of 1.8 GHz or more, with 4 GB random access memory and a 250 GB hard disk supporting RAID would be able to handle this application excellently.

## 4.3 Installation

The installation of this application entails double clicking on the setup.exe or clicking start, then typing the location of setup files and subsequently setup and finally clicking ok button to commence installation. The application can save it data or use MS sql after due configuration.

## 4.4 Testing and Results

Imperatively, with the exception of the dialog box in fig.4, no bug has shown up after compilation, however, it will take comprehensive when live data are entered from different locations.
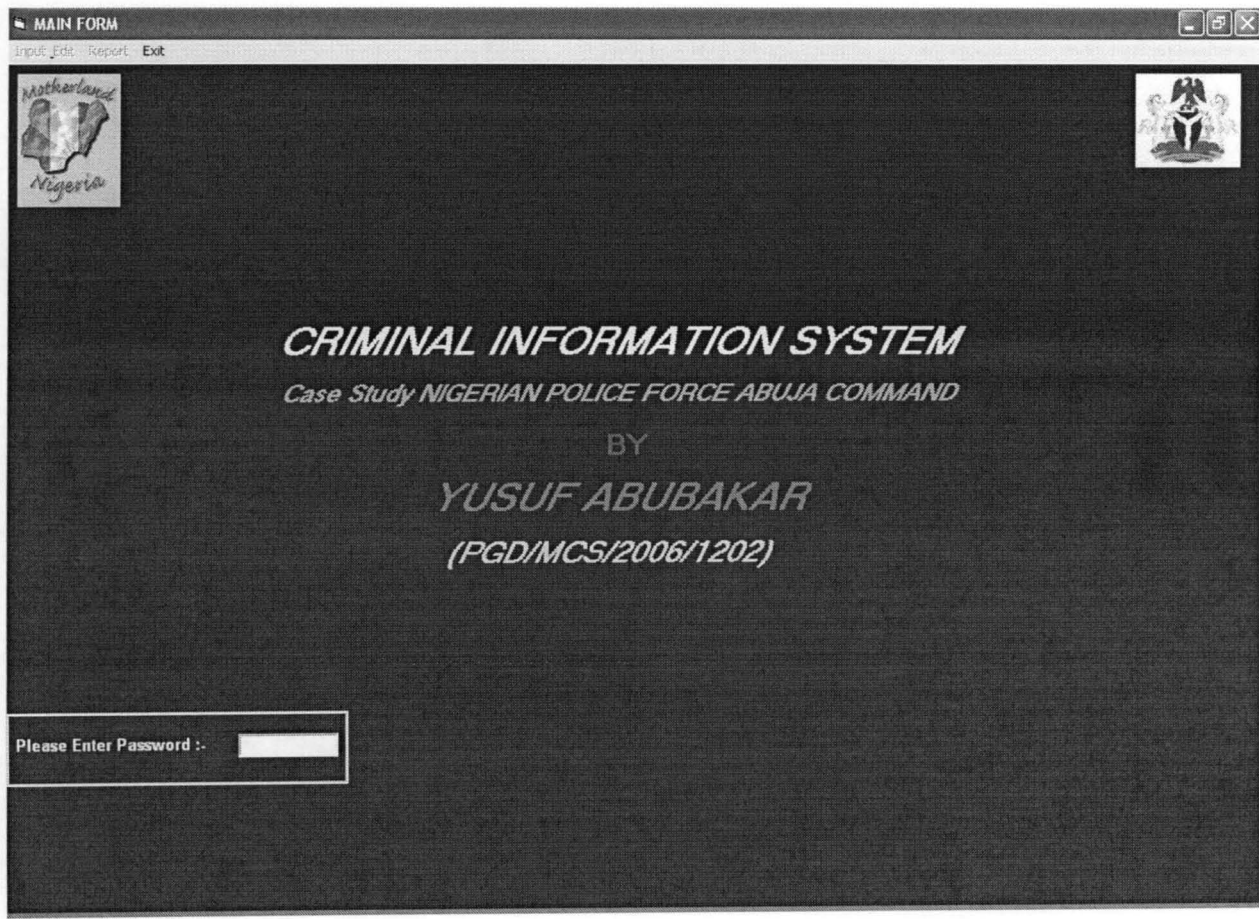
Fig.4   Login credentials

Fig 5   Report format showing photograph

# CHAPTER FIVE

## 5.0   SUMMARY, CONCLUSION, RECOMMENDATION

### 5.1   Summary and Conclusion

As population of a people grows larger and more mobile; and the level and spread of crime becomes overbearing, it would then become increasingly necessary for law enforcement departments to utilize sophisticated technology to fight crime and to increase the effectiveness of the available resources. Hence, the need for a central repository of data and information organized for retrieval when required.

Basically, the application would register arrests, frequency of arrests, convictions as well as categorize crime into different types such as theft, burglary of a motor vehicle, unauthorized use of a motor vehicle, assault, and vandalism, drugs and property etc. In addition, the application would indicate the number of court dispositions for offenders, be it felony, manslaughter, murder and/or traffic offences

### 5.2   Recommendation

The study of crime data and the behavior of criminals is a field that is growing at a phenomenal rate at this time. In the past year, many state police head quarters have installed and begun using sophisticated computer systems to maintain their information. The amount of data produced has previously been a stumbling block for researchers due to the fear that inadequacies would be uncovered. Use of the resulting information produced from this data would require computer and statistical skills that are not commonly held by those personnel who need these results. However, current advances in computing speed

and capabilities, and the continuing downward trends in cost have made it increasingly possible to put this wealth of data to use. With advances in computer graphics capabilities, techniques that are more visual and intuitive are possible which opens up this information to users who are neither statistical specialists nor computer professionals. The future in the study of crime data for policing purposes is the development of tools utilizing real-time data that are intuitive, easy to use, and quick to produce. This would open up this wealth of information to every police department and greatly assist in the understanding of patterns of criminal activity.

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```
Private Sub mnuExit_Click()

    End

End Sub


Private Sub mnuInput_Click()

    Load frmReg

    frmReg.Show

End Sub


Private Sub mnuPassW_Click()

Dim Prompt As String, Pasw As String, Pas As String, Coorp As String, Pass As String


    Frame15.Visible = False

    Prompt = "Input the old Password"

    Pas = InputBox(Prompt, Title, xpos)

    Pasw = UCase(Pas)

    Coorp = "CIS"

        With Adodc1


            .ConnectionString = "Provider=Microsoft.Jet.OLEDB.4.0;Data Source=C:\CIS\CISData.mdb;Persist
Security Info=false"

            .RecordSource = "select * from Keys where Key='" + UCase(Coorp) + "'"

            .Refresh


        End With
```

```vb
With Adodc1.Recordset

    Pass = .Fields(1)


End With


If Pass = Pasw Then


    Load frmPassWord

    frmPassWord.Show


Else


    MsgBox "Make sure you remember your password", vbCritical + vbOKOnly, "Warning"


    mnuInput.Enabled = False

    mnuReport.Enabled = False

    mnuPassW.Enabled = False

    'Command4.Enabled = False

    'cmdHelp.Enabled = False

    Frame15.Visible = True

End If

End Sub
```

```vb
Private Sub mnuReport_Click()

    Load frmReport

    frmReport.Show

End Sub

Private Sub txt_Password_KeyPress(KeyAscii As Integer)

Dim Pass As String, Coorp As String


    On Error Resume Next


    If KeyAscii = 13 Then


        Coorp = "CIS"

        With Adodc1


            .ConnectionString = "Provider=Microsoft.Jet.OLEDB.4.0;Data Source=C:\CIS\CISData.mdb;Persist
Security Info=false"

            .RecordSource = "select * from Keys where Key='" + UCase(Coorp) + "'"

            .Refresh


        End With


        With Adodc1.Recordset


            Pass = .Fields(1)


        End With
```