

Design of a Case Processing System

Richard Bemile

Information Technology Department, Methodist University College Ghana
Dansoman, Accra Ghana

Abstract

This paper sought to design a case processing system for a Police Station. The main activities are capturing data of reported cases, processing them and storing case dockets in order to improve a police station administration and service delivery. The paper has the view of addressing the need to digitize and automate manual document processing within a Police Station in Ghana. Methods are applied to perform a system analysis of the existing and proposed system. The findings are used to design a case processing system. This design wants to make it possible to update data entries, create reports and keep better track of cases at the police station.

Keywords: *Complainant, Case, Processing.*

1 Background

The status quo at a police station in Ghana is that when a complainant reports a case, he is made to first write a statement. The next step is to take a Policeman to the culprit to be invited to the Station to also write a statement. Afterwards, the complainant brings a witness to also write a report. Depending on the gravity of the accusation, the culprit may be put in a cell awaiting the next action and also he may either be bailable or not.

What pertains now at most police stations in Ghana is cumbersome, as the processes involved are paper-based. Though records are kept, it is difficult to identify the category of inmates, the number of each category, etc at the time of need. This usually leads to innocent people being kept in cells, sometimes up to seven years, unattended to, as is sometimes reported in the news. Additionally, a criminal who has relocated is giving a fertile ground to operate since no data of him can be easily traced, thus promoting crime wave within the country.

The Information Technology deployed is very minimal, including typing of letters and reports and very basic excel operations that are due for high ranking Officers. This does not augur well in this current Information Age and thus this paper to look for an alternative for the Police Service.

The motto of the Ghana Police Service is “Service with Integrity” (www.ghana.gov.gh). The functions of the Ghana Police Service as stated in the Police Service Act,

1970 [Act 350] of Ghana are as follows (www.eservices.gov.gh):

- To protect life and property,
- To prevent and detect crime,
- To apprehend and prosecute offenders, and
- To maintain public order.

The Police Service is a single cohesive unit, organised on national basis with a unified command under the leadership of the Inspector-General of Police (IGP), who, subject to any direction/directives from the Police Council, is responsible for exercising general day-to-day supervision and control over the Administration and Operation of the Police Service (Pokoo-Aikins, 2002).

For efficient and effective policing and maintenance of law and order, the whole country is divided into thirteen (13) Police Regions (Pokoo-Aikins, 2002). Each Regional Police has a Regional Commander in charge of both administrative and operational concerns. He is directly responsible for all policing activities in the region. Administratively, the Regional Commander reports to the IGP via the Deputy IGP/Administration, who is assisted by the Commissioner of Police/Administration. All operational matters are reported to the IGP through the Deputy IGP/Operations, assisted by COP/Operations.

Every region, except the National Headquarters, is divided into divisions with each division headed by a Divisional Commander. Each division is divided into districts with a District Commander in charge. Each district has direct control and supervisory responsibilities over all Police Stations and Posts placed under it.

1.1 Criminal Offences

Conducts considered to be criminal offences as described by Act 29/60 include: Murder, Attempted Murder, Manslaughter, Threatening, Causing Harm, Assault, Robbery, Stealing, Causing Damage, Dishonestly Receiving, Rape, Possessing Indian Hemp, Possessing Dangerous Drug, Abduction, Forgery, Cocaine, Heroin, Extortion, Unlawful Entry, Fraud, Smuggling, Defilement,

Other Offences. The commonest of criminal offenses today is assault as mentioned by the Station Commander during the interview and also evident in Pokoo-Aikins (2002).

2. Existing System

On conducting an interview at a Police Station with regards to what pertains now, a case is lodged at the Charge Office by complainant no matter his status. The reported case which the complainant writes is called the Complainant Statement, and is made up of: Register of Offences (RO) Number, Station, Section, Complainant Name, Date and Time of Incident, Address, Occupation, Age, Sex, Native of, Incident Report.

The next step is for the Officer-in-Charge to form a Diary of Action, which contains: Details of Police Action Taken, Given dates and times, Particulars of arrests, Other documents. After the complaint has been made, the culprit is invited to the station and he writes a Caution Statement made up of: Register of Offences (RO) Number, Station, Section, Culprit Name, Date and Time, Address, Occupation, Age, Sex, Native of, Culprit Report.

The complainant is then asked to bring a witness to write a Witness Statement, made up of: Register of Offences (RO) Number, Station, Section, Witness Name, Date and Time of Incident, Address, Occupation, Age, Sex, Native of, Witness Report. These are put together to form a Docket. A docket therefore encompasses the following, depending on the type of Crime: The Diary of Action, The Report or Statement of the Officer in Charge of the case (mostly an Investigator), Complainant Statement, Caution Statement, Witness Statement, Other Relevant Documents. An inmate can either be in Counter back, Detention, on Remand or a Convict.

2.1 Role Analysis

A complainant submits a completed complainant form to the Non Commissioned Officer (NCO); who makes a Diary of Action and forwards it to the Investigator. The Investigator invites a witness and the culprit to write a Witness Statement and a Caution Statement respectively. The Investigator then completes a Docket and forwards it to a Senior Officer who decides whether the case should go to court or be settled out of court.

2.2 Information Analysis

The Police Station survives on information from both internal and external sources. Internally, reports and others are sent from one department to the other, for example, Daily Situation Report (DSR) and Disciplinary Action Report (DAR) are sent to the Divisional Commander. A bulk of the information is gotten from external sources including the complainant statement, caution statement, witness statement and others that constitute the docket. Information is also gotten from investigations and tip offs from citizens. The diagram below shows how required information flows at the station.

2.3 Information Flow Diagram (IFD)

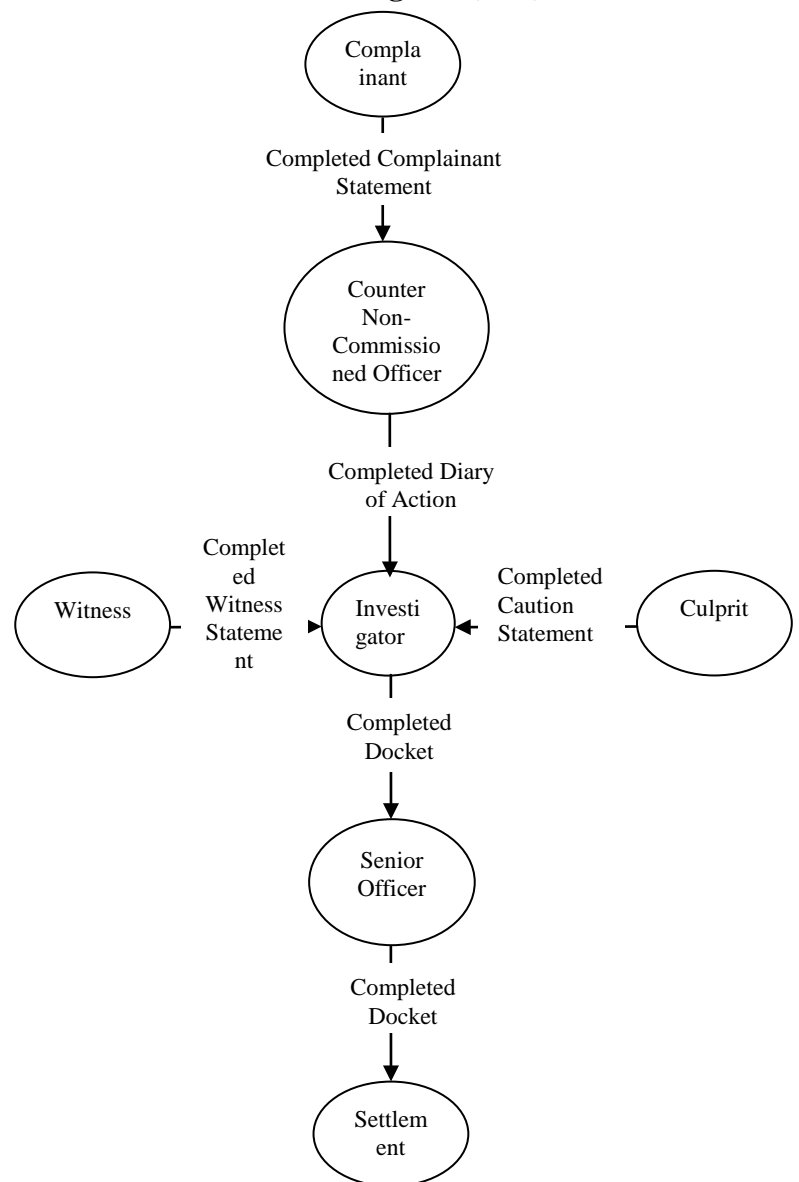


Fig. 1: Information Flow Diagram

2.4 Technology

At the visited Police Station, there were two official computers and printers and a few other computers which were personal properties of some staff, which they use to support their work. Some staff have found it necessary to acquire PCs for usage in the office as more were not forthcoming. They will take these PCs along when transferred. There were telephones too; both mobile and land lines, and radio sets for communication. Most of the work done was paper-based making their operation quite laborious. The few computers available are not networked thus making their work even more difficult.

2.5 Processes

There are two main processes: proactive and reaction. Proactive process deals with the protection of life and property. Reaction process deals with the apprehension and prosecution of criminals, investigation of criminals and it involves the formation of a Docket. Other processes include: financial functions of the station, and preparation of duty roster for the Police personnel.

2.6 Stakeholder comments

The Divisional Commander admitted that they were aware of the problems of the existing system and had been looking for an opportunity to solve them.

2.7 Improvement needs

From the weaknesses observed in the IS Audit and the analysis of IFD, it is realised that;

1. Detained inmates are sometimes left unattended to, since no right process to update their records
2. The manual-based system delays report processing
3. No proper keeping of dockets
4. Data is scattered
5. No intranet to facilitate communication

3. The Proposed System

3.1 Information Design

This helped to settle on the information requirements needed to meet system objectives.

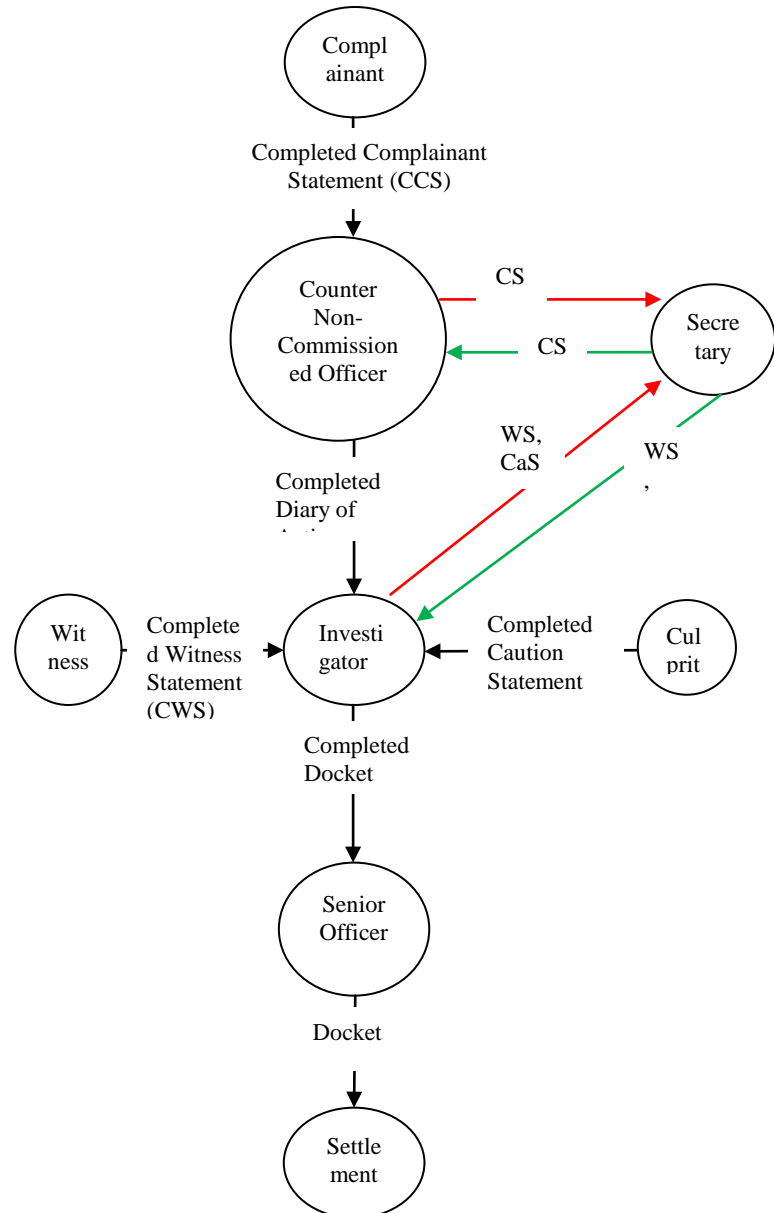


Fig. 2: Information Flow Diagram of Proposed System

Output					
Who	Divisional Commander	Station Commander	Senior Officer	CID	NCO
What	DSR DAR(rare though)	Staff List	Docket	Docket	Diary of Action
When	Daily Whenever necessary	Weekly	Could be anytime	Could be anytime	Could be anytime
	All reports, Dockets, DoA should be available on request as far as data has been captured				
Why	Monitor work progress	To enable report writing	Determine settlement procedure(in/out of court)	Facilitate investigation	Facilitate investigation
	Take necessary action			Enable SO take the right decision	Enable CID take necessary steps
Characteristics	All information is of high value; should be complete, accurate, timely with respect to data capture				
Capture and Input	Data	Source	Destination – System Entities		
	Statement (complainant, witness, culprit)	Statement form	Statement		
	Diary of Action	DoA form	Diary of Action		
	Case Docket	Docket	Case Docket		
Process	Next Section				
Storage	Central database on server which all permitted staff can access				
Retrieval	Selection of information with respect to desired report				
Communication	Intranet				

Table 1: Analysis of IFD

3.2 Process Design

Capture: Receiving statements

Input: Typing details into relevant database

Storage: Saving to commit data into database

Processes: Computerisation of all processes

Output: Desired output would initiate or integrate relevant processes to be generated

3.3 Conceptual Process Model

This is a model of what the new system should be in concept.

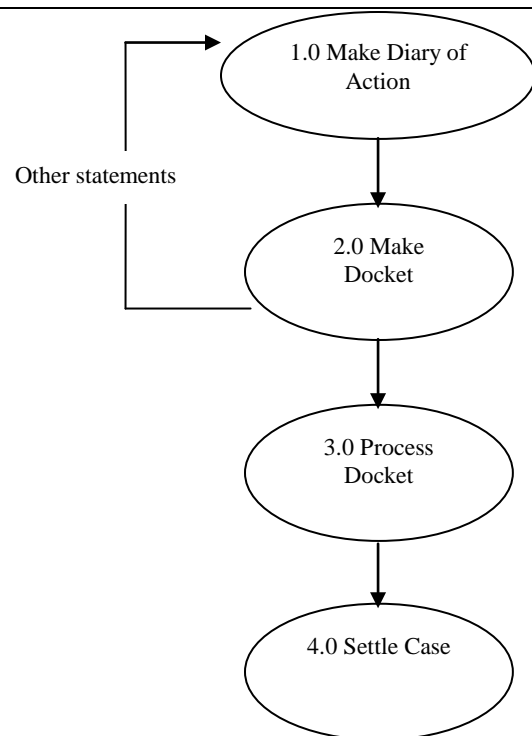


Fig. 3: Conceptual Process Model

3.4 Data Flow Diagram

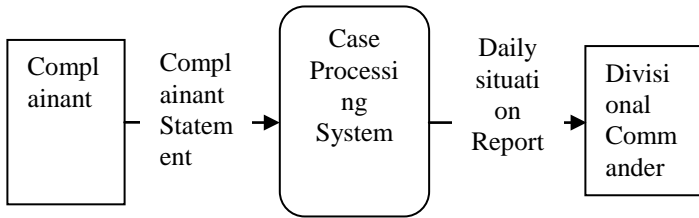


Fig. 4: DFD

3.5 Database Tables and Attributes

Table 2: Complainant Statement

Field Name	Data Type	Allow Null
ROID	int	no
CLName	Varchar(40)	no
CFName	Varchar(40)	no
Address	Varchar(30)	no
DoB	datetime	no
Sex	Char(6)	no
Occupation	Varchar(20)	no
Date-Time_of_Incident	datetime	no
Native_of	Varchar(25)	no
Statement_Details	Varchar (max)	no

Table 3: Diary_of_Action

Field Name	Data Type	Allow Null
ActionID	int	no
Date_Created	Datetime	no
ROID	int	no
Receiving_PoID	Char (10)	no
Supervising_PoID	Char(10)	no
Action_Taken	Varchar(max)	no
Other_Documents	Varchar(max)	no

Table 4: Witness Statement

Field Name	Data Type	Allow Null
WID	int	no
ROID	int	no
WName	Varchar (80)	no
Address	Varchar(30)	no
DoB	datetime	no
Sex	Char(6)	no
Occupation	Varchar(20)	no
Date-Time_of_Incident	datetime	no
Native_of	Varchar(25)	no
WReport	Varchar (max)	no

Table 5: Caution_Statement

Field Name	Data Type	Allow Null
CaID	int	no
ROID	int	no
WName	Varchar (80)	no
Address	Varchar(30)	no
DoB	datetime	no
Sex	Char(6)	no
Occupation	Varchar(20)	no
Date-Time_of_Incident	datetime	no
Native_of	Varchar(25)	no
Culprit_Report	Varchar (max)	no

Table 6: Docket

Field Name	Data Type	Allow Null
DocketID	Int	no
ActionID	int	no
CaID	int	no
WID	Int	no
OfficerID	Char(10)	no
Officer_Statement	Varchar(max)	no
DateSent	Datetime	no
ReturnDate	Datetime	no
DStatus	Char(7)	no

Table 7: Case

Field Name	Data Type	Allow Null
DocketID	int	no
StatusID	int	no
CStatus	Char (10)	no

Table8: Crime

Field Name	Data Type	Allow Null
CrimeID	int	no
Crime_Name	Varchar (20)	no

Table9: Police Unit

Field Name	Data Type	Allow Null
PUID	Int	no
PUType	Varchar(50)	no

Table 10: Inmate

Field Name	Data Type	Allow Null
IID	Int	no
Lname	Varchar(40)	no
Fname	Varchar(40)	no
DoB	Datetime	no
Sex	Char(6)	no
Address	Varchar(30)	no
IType	Varchar (20)	no
CrimeID	int	no
Date_Admitted	datetime	no
Release_Date	date-time	no
Cell_Type	char(10)	no
DocketID	Int	no
BaileeName	varchar(80)	no
Bail_Amount	Float	no

Table 11: Staff Category

Field Name	Data Type	Allow Null
SCatID	int	no
SCat	Varchar (20)	no

Table 12: Police

Field Name	Data Type	Allow Null
PoID	Char (10)	no
Sname	Varchar (40)	no
Fname	Varchar (40)	no
DoB	Datetime	no
Sex	Char (6)	no
SCatID	int	no
PUID	int	no

Table 13: Users

Field Name	Data Type	Allow Null
Username	Varchar (40)	no
Password	Varbinary (40)	no

3.6 Entity Relationship Diagram

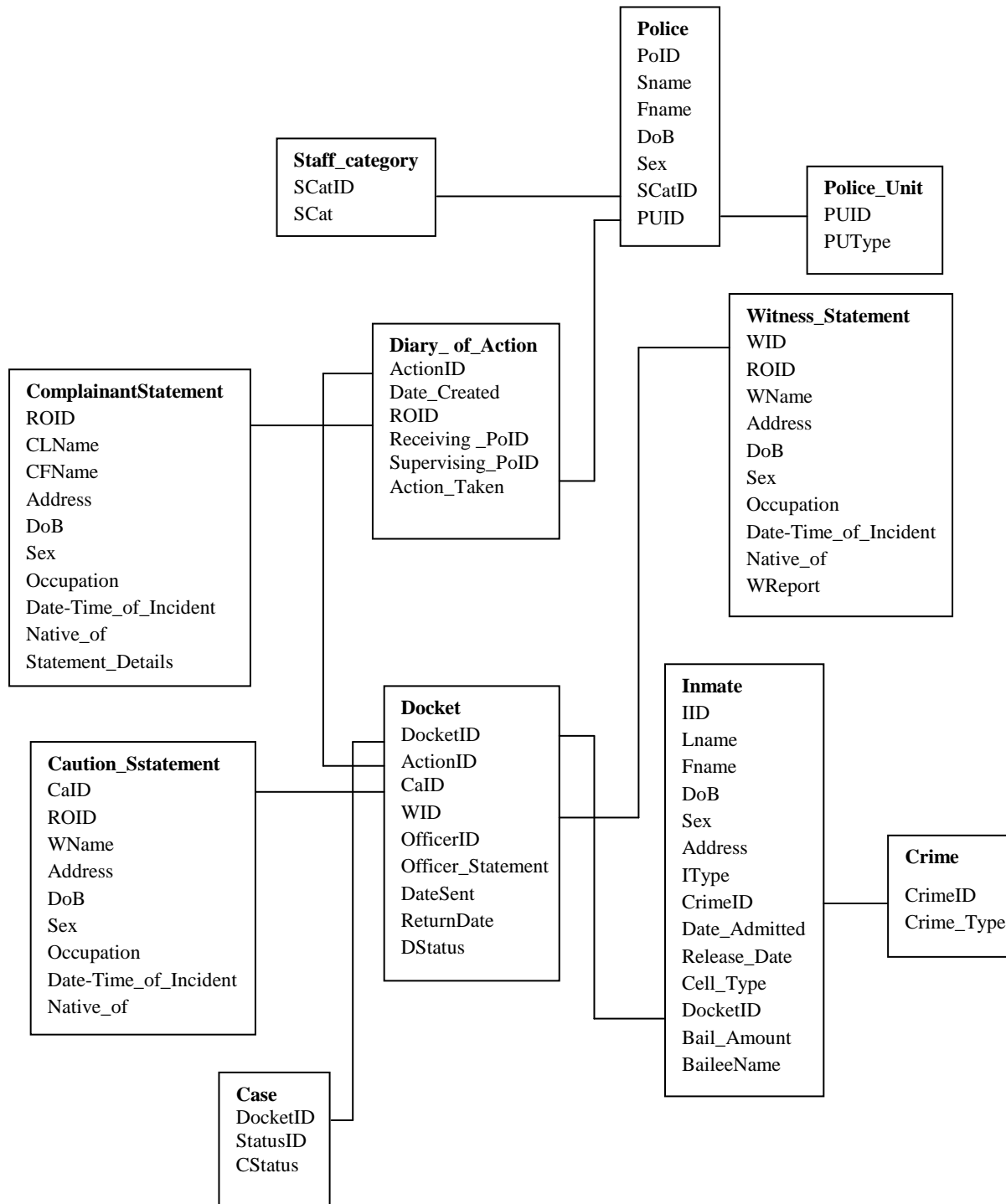


Fig. 5: ERD

Conclusion

There is a real need for a design of a case processing system for a country like Ghana. The Police Stations in Ghana still run a paper-based system which creates room for delays in the dispensation of justice. With such a design, data needed for processing a case are obtained with ease. This designed system can bring about a change in the way cases are handled at the police station. It is to enable quick report creation for the officer in charge to execute the right actions leading to the settlement of a case.

References

- [1] R. Boateng, *CCC Database Management System (CBASE) Project*, 2003/4.
- [2] J. Kasprzak, *The Use of SGML for a Police Information System*, Luxembourg.
- [4] A. Molla, and R. Heeks, *Introducing Information Systems in Organisations Handout 2: IS Project Assessment*, Course Handout, IDPM, University of Manchester, Manchester, 2004.
- [5] E. Owusu-Oware, *Contemporary Application Development Handout*, 2009.
- [6] J.B. Pokoo-Aikins, *The Police in Ghana 1939–1999*, Accra, 2002.
- [7] ‘Criminal Code, 1960 (ACT 29), Acts of Ghana’.
- [8] ‘Ghana Police Service Instructions’.
- [9] ‘What is CATWOE Analysis?’
<http://bpmgeek.com/blog/what-catwoe-analysis>.
Accessed: 01/12/13.
- [10] <http://www.ghanapolice.info>, Accessed: 01/11/13.
- [11] <http://www.ghana.gov.gh/index.php/public-service-directory/624-ghana-police-service>. Accessed: 30/11/13.
- [12] <http://www.eservices.gov.gh/GPS/SitePages/GPS-Home.aspx>. Accessed: 30/11/13.
- [13] <http://www.monkeybubblemedia.com/tmc/images/pdf/activity4TMC.pdf>. Accessed: 01/12/13.