

**DEDAN KIMATHI UNIVERSITY OF TECHNOLGY**

**PROJECT PROPOSAL FOR DEGREE IN BSc. INFORMATION TECHNOLOGY**

**BY**

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**TITLE: CRIME MANAGEMENT SYSTEM**

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**SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR AWARD OF DEGREE IN BSc. INFORMATION TECHNOLOGY**

# DECLARATION

I ………………………………………………………………., hereby declare that the project in proposal submitted to the Department of Information Technology in the School of Computer Science and Information Technology in partial fulfillment of the requirements for the award of degree of Bachelor of Science in Information Technology in Dedan Kimathi University of Technology is my own original work and has not been submitted to any other college/university or published earlier.

STUDENT’S NAME: …………………………………………

SIGNATURE………………. DATE………………...

SUPERVISOR’S NAME: ……………………………………

SIGNATURE…………………... DATE…………………...

# **ABSTRACT**

The crime management system is aimed at automating the process of reporting cases to the police. Reporting a case to the police involves filing an abstract form incase a person reports loss of property, getting a P3 for body injuries sustained in an assault and making a statement that will accompany your abstract. This whole process is done manually therefore a lot of work and time consuming. People sometimes have to wait in the queue to report. The system will provide a convenient platform for both the police and people to easily perform the reporting process.

People are expected to report a case without necessarily visiting a police station. The users are expected to register by providing their details and then file their complains. Police officers who are supposed to attend them are expected to register also then access the reported cases.

Iterative model of software development will be used to develop the system majorly because it’s a cyclic process, it has continuous feedback between each stage and the prior one this ensures errors are rectified early enough. The fact finding methods used to acquire the data required will be interviews and questionnaires.

To develop the system, Java script and CSS will be used to create the front end(client side), that is the interface and PHP and mySQL to create the back-end(server side), that is the database.

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# **CHAPTER ONE**

## **INTRODUCTION**

### **Background**

Crime is an illegal act for which someone can be punished by the government ; especially a gross violation of law. In the latest results released by research firm IPSOS synovate the rate of ordinary crime in Kenya seems to be increasing , evidence from a proportion of residents from a survey show an increase from 5% to 8% of crime. Moreover there was a considerable increase in the proportion of respondents who suffered more than a single incident from 31% to 43% . The poll also found out that only about half of such crime victims report them arguing that they find the response from the police unsatisfactory, either weak response or no follow up by the police.

Criminology researchers have urged the creation of alternative reporting methods that serve as a mediating instance between witness fear of contacting the police and police goal of preventing and solving crime. Using the internet, the system addresses the fears and concerns of victims confronted with the decision to file or not file a report. The system provides the convenience to reach authorities 24/7 from any location with internet access while protecting the victim's identity. Crime management system is a convenient, alternative and presumably a good alternative to address unreported crime, using the system individuals can file reports any time of day or night and take the time they need to report in their own words the incident they witnessed, witnesses can use this alternative to report quality of life threats or suspicious activities that might otherwise go unreported. Evidences to suggest the potential of internet crime reporting exists. However, existing implementation of internet crime report will fill-in-the-blank forms and emails are not capable of enhancing the quality of information witnesses provide in the way a full Criminal investigation would. Especially if one considers the challenges witnesses may possibly face at the time of reporting (e.g., stressed, unable to remember, unaware of what is relevant to the investigation). The CMS is expected to be interactive therefore capable of enhancing witnesses reporting experience and encourage them to report or report more information.

The system also is expected to use global positioning system technology to locate the police stations and give recommendations on which one to easily access based on their distance in the case where an individual is in a new place and not aware of the location of police stations. Some filed reports are occasionally ignored by the officer out of laziness and because there is no platform to follow up criminals go unpunished; the system will show the status of the reported case. Citizens and head officers after a case is reported can be able to view the progress of the case or cases.

The physically handicapped such as the blind sometimes are the key witnesses to a crime. As much as they are willing to give their FIR they struggle a lot given that they can't see and therefore can't write. The system in proposal is expected to use voice recognition to record and process their statement and put It down therefore improving efficiency and saving time that would otherwise be wasted doing that. With the Crime management system, both the public and the police are both benefited as it reduces the time and increases the chance of solving the case, which then reduces crime rate. The public can login to the site and register their complaint. A user friendly interface will guide even a layman who has Basic English knowledge to register their complaints. Duplicate records are eliminated and forging with dummy complaints are controlled with the help of a one-time password which is sent the individual who will register with the system. Only verified users records will be saved else the complaint will be discarded.

The aim of proposed system is to develop a system of improved facilities. The proposed system can overcome most of the limitations of the existing system. The system provides proper security and reduces the manual work. The existing system has several disadvantages and many more difficulties to work well. The proposed system tries to eliminate or reduce these difficulties up to some extent. The proposed system will help the user to reduce the workload and mental conflict. The proposed system helps the user to work user friendly and he can easily do his jobs without time lagging.

### **Problem statement**

Many cases go unreported due to fear and privacy concerns. For instance if a girl is a rape victim she might hesitate to report to the police because she's afraid of exposure and the stigma that comes with it. The system is expected to ensure a complain reaches relevant authority without the identity of the victim being threatened. Also the location of police stations is sometimes far. This increases the cost incurred and alot of time is wasted travelling. Travelling all the way to report could discourage some people from going. In the case where people are in New places wherey they don't know where the police stations are, they waste time looking for a nearest police station from where they can put their complaints.

Witnesses play an important role in solving crimes; they can lead to an easy identification of the criminal in question. Sometimes the key witnesses are physically handicapped such as they could be blind. Given that they are blind they can't write, taking information from these kind of witnesses could be time consuming and tiresome. Police officers waste alot of time extracting this important information from these witnesses which they could otherwise have used to contain the criminal.

After reporting a case to the police, citizens expect their complaints to be taken to consideration. However, some officers are lazy and could choose to ignore the workload added. This allows the criminals to still have time to victimize other people. Some officers ask for cash in order to consider your case. Citizens follow up and sometimes give up. The number of cases unattended could be many but there is no way to know.if the number is big, it means that many crimes were committed and no one was brought to justice.

### **Objectives**

### **General Objectives**

To create a system which will automate the process of reporting cases to the police.

### **Specific objectives**

* To enable people to file their complaint from wherever they are without necessarily vising a police station.

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* To enable people locate a nearest police station using GPS technology.
* To enable police officers create reports automatically using the system.
* To enable people to check the progress of their case from home.

### **Problem justification**

Every year millions of crimes are committed in Kenya Research indicates that the principal determinant to solving crimes is the completeness and accuracy of eyewitness reports [30]. However, 50% of crimes go unreported due to fear and privacy concerns. In addition, police resource shortages (e.g., investigators, training, time to respond and transcribe reports) often lead to incomplete or inaccurate information.

Criminology researchers have urged the Creation of alternative reporting methods that serve as a mediating instance between witness fear of contacting the police and the police goal for preventing and solving crime Instances of Internet use to report crime currently exist. The FBI Tips and Public Leads System and the Claremont University Consortium’s Silent Witness Program are examples.The FBI’s and the CUC’s systems allow victims and witnesses to report incidents to police with the option to provide information. The FBI’s system provides a single textbox for victims to file their report. The CUC’s system presents victims with a standard set of questions regardless of the type of crime being reported. Both systems require that the person filing a report remembers all vital information related to the crime without support for event recollection. Police authorities need to have more accurate and complete information related to a crime.

These systems however limit the user from giving all the information. For instance the FBI system provides a single text box, which limits the user from uploading any relevant evidence he could be having such as pictures or scanned documents. This also doesn't guide the user incase he can't clearly know how to explain himself/herself. The CUC'Ss system also applies similar standard questions to all the criminal cases which sometimes do not apply in all conditions.

The crime management system may help alleviate the shortage of police resources while maximizing the quality of information collected from witness’s good alternative to address unreported crime. Using the Internet individuals can file reports any time of day or night and take the time they need to report in their own words the incident they witnessed. Witnesses can use this alternative to report quality of life threats or suspicious activities that might go otherwise unreported. Evidence to suggest the potential of Internet crime reporting exists. However existing implementations of Internet crime reporting with fillin-the-blank forms and email address are not capable of enhancing the quality of information witnesses provide in the way a full interactive system would. Especially if one considers the challenges witnesses may possibly face at the time of reporting (e.g., stressed, unable to remember, unaware of what is relevant to the investigation). The Crime management system being interactive will be capable of enhancing witnesses reporting experience, and encourage them to report or report more information.

## **Scope**

The crime management system is expected to be used by all that are protected by the constitution and whose rights can be violated, they general public who after being victimized report to the police. The police officers who service the general public are expected to use the system to improve on the accuracy and information they get from the complainants. The system also covers the physically handicapped (blind) that have a hard time putting down their statements. Using speech recognition, the system can record and process their statements.

### **Assumptions**

The police officers will accept to adopt the new system.

Availability of internet connected devices.

### **Limitations**

The computer illiterate people will find it hard to use the program.

# **CHAPTER 2: LITERATURE REVIEW**

## **INRODUCTION**

Research done by many criminology researchers have urged the creation of alternative reporting methods that serve as a mediating instance between witnesses fear of contacting the police and police goal for preventing and solving crime. Most crimes go unreported due fear and privacy concerns. Some police stations are located quite a far distance from where people live, the long distance discourages people from reporting any uncommon event they witnessed.Using the crime management system individuals can file reports any time of day or night and take the time they need to report in their own words the incident they witnessed. Witnesses can use this alternative to report quality of life threats or suspicious activities that might go otherwise unreported.

It is essential that police processes for investigation and crime management are proactive, clear and transparent. Without this, citizens can lose confidence in policing services and many crimes may go unreported. Public confidence in the police can often hinge on the way crimes are investigated and not simply the result of investigations.

An effective crime reporting, recording, investigation, and monitoring process will change the style of policing to a victim centered approach to crime management. This will not only enable the police to be more effective in fighting and managing crime, but could also lead to the better image, reputation and more public confidence in the police force.

The FBI Tips and Public Leads System and the Claremont University Consortium’s Silent Witness Program are examples. Using the Internet, these systems address the concerns and fears of victims confronted with the decision to file or not file a report. The Internet provides the convenience to reach authorities 24/7 from any location with Internet access while protecting the victims’ identity. However, the CUC’s system gives the user just a textbox limiting him the chance to upload any available evidence.

## **Case studies2.1.1. Case study 1: Regional Crime Analysis Project (ReCAP)**

This project was implemented by the University of Virginia in Charlottesville along with their local Police departments for use by crime analysts. ReCAP used a GIS with statistical analysis and machine learning to examine a corporate database that is used by the City and County Police Forces as well as the University. This subsequently allows the rule based system access to relevant information across Police jurisdictional areas thereby 15 enabling spatial and temporal crime analysis together with forecasting. After approximately three years of development, the system was deployed to the crime analysts during the latter part of 1997.

## **2.1.2. Case study2: Devon and Cornwall Constabulary Expert System**

During 1985 a pilot system for detecting domestic burglary offences was developed using a Mimer RDBMS linked to a Prolog interpreter which itself was used as a query language and as an inference engine . A rule-based system was developed which matched crimes using a hierarchical arrangement of modus operandi (MO) after separating domestic from commercial offences.

The MO information was gathered from two viewpoints: -

1. The Officer observations at the scene of the crime

2. from a criminal's perspective and in six sections: - the disposition of the dwelling before and during the offence, the method of entry, how the burglary was executed, the method used to remove stolen items, the items stolen and any special peculiarities.

The MO was codified using a keyword system that represented a path through the data entry form by ticking nodes from root to leaf. An example being: - 16 [door, front, ground,secure,lock,forced, bodily pressure] Approximately 100 crime complaint reports were processed and data entered into the system. The rule base comprised two main components 'detect' and 'extract'. The former used the entire MO set for a crime and constructed prolog terms that constituted effective search branches with the objective to identify the most significant MO's and, therefore, to create an MO for searching against solved crimes. The latter took the created MO and printed a list of criminals whose MO matched various aspects and on what branches the matches were made. The criminals were not ranked in any order but listed in the order in which they were found. The developers established that a criminal's MO remained reasonably constant across several crimes and a weighting between 1 and 5 was introduced to reflect the significance of MO items.

The system was used for three weeks in November 1985 during which extractions were performed on thirty-two burglaries. As a result a number of weaknesses were discovered the foremost being incomplete and/or insufficient data. The rule base was also enhanced to include the calculation of consistencies in the MO and the perceived significance of an MO, using these in the extraction process. During the live trial no arrests were made for a burglary offence, however, from the tests made by the developers, indications were that the system had potential for accurately targeting burglars. The system was subsequently developed further for the Baltimore County (Maryland) Police (BCPD) as ReBES (Residential Burglary Expert System). Based on 3,800 cases their development produced: - a list of suspects in 17 ranked orders, messages to aid investigators, MO's that identify suspects because of some unique behavioral pattern. If, during the matching process, no match was found or the scale scores too low, the system provided a general profile of the burglar from the characteristics of the crime. The Devon and Cornwall system never extended beyond the alpha testing stage [16] as the concepts could not be proved. Poor data capture was an issue that was often demonstrated as there were, at that time, insurmountable problems with the amount and type of data collected. A simplistic crime reporting system was installed in the Force between mid-1988 to the end of 1989 abandoning the expert system concept. The ReBES system was also dropped from usage. Reasons given include high turnover in users, new users disagreeing with the knowledge it contained, the volatility of the knowledge used by ReBES, the lack of integration with existing computer systems.

## **2.1.3. Case study3: ACRS (Automation of Record in Crime Section of Cb Cid)**

This Crime Review software was prepared in year 2005. This software system is a multi-user web application that collects statistics (FIR Case details) from different sources. The statistics are then consolidated and reported; Monthly Crime Review and reports to home secretary are generated automatically. Software features automatic data entry lock by 10th of every month, cross validation to verify data discrimination etc.

## **2.1.4. Case study4: Suspect Prioritization System (SPS)**

Royal Newfoundland Constabulary (RNC) established a Criminal Behaviour Analysis Unit (CBAU) tasked with providing an offender profiling service. This was developed based on a documented academic research which suggested that procedures could be developed which could analyze offender data thereby provide investigators with a list of suspects in a prioritized order. However this system goes further by correlating crime behaviour to offender characteristics.

The Information Technology Division of the Constabulary implemented a database, to record data, linked to a MapInfo Geographical Information system (GIS) to visualize the crime patterns. In excess of 7000 Offenders’ criminal history was entered into the system and continues to be expanded by the entering of current overnight arrest information. The system generates a report indicating suspect(s) in ranked order the system although not yet in general use was used to by the originator of the system who had property stolen from his car. The crime was profiled by the system, the ‘top’ five suspects were investigated and the offender was found to be the third ranked suspect.

## CONCLUSION

The systems although helpful, don’t address the most important aspect of solving crime, the completeness and accuracy of eyewitness reports. They had no module for uploading evidence, from the users. The system addresses the fears and concerns of victims confronted with the decision to file or not file a report. The system provides the convenience to reach authorities 24/7 from any location with internet access while protecting the victim's identity. Crime management system is a convenient, alternative and presumably a good alternative to address unreported crime, using the system individuals can file reports any time of day or night and take the time they need to report in their own words the incident they witnessed, witnesses can use this alternative to report quality of life threats or suspicious activities that might otherwise go unreported.

## **CHAPTER THREE: METHODOLOGY**

## **INTRODUCTION**

## **ITERATIVE MODEL**

The iterative development model is the most realistic of the software development models. This model is best suited because it’s a cyclic process it has continuous feedback between each stage and the prior one. Occasionally it has feedback across several stages in well-developed versions, as illustrated in the Figure. After the initial planning stage; a small handful of stages will be repeated over and over, with each completion of the cycle incremented, hence improving the software. The stages involved with this model include: initialization, planning and requirement gathering, design and coding, implementation, testing and evaluation.

**Functional Design** – here, mapping of the specifications is done. Both software and hardware requirements are gathered so that to prepare on the upcoming cycles.

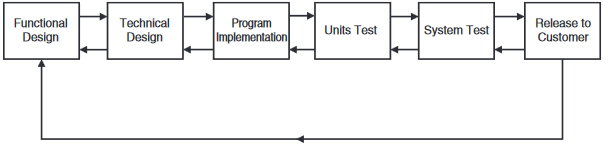
**Technical Design** – after planning, analysis of the requirements is done so that an appropriate business logic of the system can be created. Then design follows thereafter.

**Program Implementation** – coding and implementation into initial iteration of the system will follow.

**Units Test** – perform a series of tests so that to ensure different units of the system work as expected.

**System Testing**– the whole system is tested to ensure the whole system works as expected. Then the users of the systemareinvited to examine the system.

**Release to Customer-**priorto expected performance the system is put to use.



## **Fact finding methods**

The user's opinion on the proposed system is an important part from where the user requirements are made. The most suitable fact finding techniques to be used are: interviewsand Questionnaires.

### **Interviews**

Interviews involve asking the respondent questions directly, this allows you to read his/her facial expression. When involving the respondent in person, the accuracy and richness of the information obtained from respondents is significantly higher. Interviews are not bound to set of questions the respondent can comment any additional information he/she wishes to add. They also give the researcher enough time with the respondent.

### **Questionnaires**

Questionnaires can be sent over long distances where interviews would be costly. Closed questionnaires only capture the intended specific part from the respondent where as open questionnaires give the respondent the flexibility to express his opinion entirely about the system for the developer.

## **Data presentation**

The collected data from different sources will be presented using flow charts.

## **Software and Hardware Specifications**

**Hardware Specification**

Processor : intel

RAM : 4GB

Hard disk : 500GB

**Software Specification**

Operating System : Windows 10

Languages : java 2(EJB2.0, JDBC, JSP, Servlet, Java Mail)

Front End : python, JavaScript

Platform : J2EE

Web Servers : Xampp/Wampp Server

Backend : My SQL

## **Justification**

### Iterative model

Thismodel is more suitable because it focusses on initial, simplified implementation which then progressively gains more complexity and a broader feature set until the final system is complete.

### **Why Interviews and Questionnaires**

Interviews allow the developer time read the respondents facial expressions and, gives more time with the respondent .

Questionnaires can be sent over to the respondent without having the developer move there. Open questionnaires allow the respondent to give his opinion without limitations

## **Data presentation**

Flow charts will display the data to give the intended understanding.

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# **APPENDICES**

## **Appendix A:**

### **Table 1: Project schedule**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Duration | 1st month | 2nd month | 3rd month | 4th month | 5th month | 6th month | 7th month | 8th month |  |
|  |  |  |  |  |  |  |  |  |  |
| Proposal writing and presentation |  |  |  |  |  |  |  |  |  |
| Analysis and design |  |  |  |  |  |  |  |  |  |
| Coding and testing |  |  |  |  |  |  |  |  |  |
| Implementation |  |  |  |  |  |  |  |  |  |
| Documentation |  |  |  |  |  |  |  |  |  |
| Presentation |  |  |  |  |  |  |  |  |  |

## **Appendix B:**

### **Table 2: Budget**

|  |  |  |
| --- | --- | --- |
| **NO.** | **TASK DESCRIPTION** | **TOTAL AMOUNT** |
| 1 | Computer(laptop/desktop) | 35000 |
| 2 | Hard disk and flash disk | 5600 |
| 3 | Modem | 1000 |
| 4 | Printing | 800 |
| 5 | Miscellaneous | 4000 |
|  | **Total** | **46,400** |