

Research Paper

Computer Science

An Online Crime Reporting System

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ABSTRACT

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Crime is part of human activities and needs to be managed. No human society as ever been total-ly free of deviants and it is unlikely that society will ever be. The more populated and complex a society becomes the wider the range of antisocial conducts that must be controlled by the gov-ernment through the armed forces and other agencies especially the Police Force. The incident-based system reports on a much broader range of crimes and includes data on the circumstances of the crime, the victim, and the defendant. The current crime reporting system is faced with sev-eral difficulties as there is no instant means of reporting crime other than telephone calls, mes-saging or perhaps face-to-face which is usually cumbersome especially where the reporter wishes to keep anonymity. A prototype crime reporting system was designed that relies on four reporting forms: a complaint or dispatch reporting form, a crime event report form, follow-up investigation report form, and an arrest report form. The system consists of three functional mules data capture module, a report management and control module, and a data utilization module. Future work on crime reporting system can be tailored towards accessibility (mobile version), awareness and improvement on the usage.

KEYWORDS : Crime reporting, incident-based, victims, criminals

1. INTRODUCTION

Modern society is characterized by increasing levels of global social mobility and uncertainty relating to levels of risk posed by internal and external security threats. Within this climate security driven by technology is increasingly being used by governments, corporate bodies and individuals to monitor and reduce risk . There has been an acceptance that the criminal justice system is limited in its capacity to control crime which has led to the exploration of other avenues for tackling crime and this has provided a market for private companies to push forward the growth of technological security innovations. Both Information Technology (IT) and crime are complex and constantly changing. Social and technological changes introduce new targets, tools and motives for crime. E-crime targets include confidential information, technical infrastructure and denial of service. Improved and faster technology and worldwide communications make it easier to both organize and conceal crime. Software to help criminals is available, even as commercial products: criminals have used attack-testing software to probe the security of target systems.

1.1Problem Statement

Crime is part of human activities and needs to be managed. No human society has ever been totally free of deviants and it is unlikely that society will ever be. The more populated and complex a society becomes the wider the range of anti-social conduct that must be controlled by government using police power. The incident-based system reports on a much broader range of crimes and includes data on the circumstances of the crime, the victim, and the defendant. The current crime reporting system is faced with several difficulties as there is no instant means of reporting crime rather than telephone calls, messaging or perhaps face-to-face which is always cumbersome in a case the reporter might want to keep anonymity. To strengthen crime reporting system, an online system is enhanced to fully take the responsibility of reporting crime in a manner that will be useful to the Police Force . For instance, in cases involving property crime the incident-based system will report on the:

- Type and description of the article;
- Its value:
- Type of loss (e.g., stolen, vandalized);
- Type of victim (e.g., individual, business);
- Location of crime (e.g., convenience store, residence);

1.2Research Objectives and Significance

The aim of CRIS is to assist the Nigerian Police Force (NPF) in their bid to solve crimes with timely and useful information about criminals and/or their mode of operations so as to nip in the bud criminal activities in a given locality.

The objectives of the research work are as stated below:

- To provide a deterministic crime reporting model. 1.
- 2. To create a distributed data warehouse for crime reporting based on the model.

2. REQUIREMENTS DESIGN AND SYSTEM DEVELOP-MENT METHODOLOGIES

The existing system in which a victim has to visit the nearest police station makes crime reporting a very strenuous action as a result of difficulties involved before information on a particular crime is lodged. Most victims prefer to report directly to court as to maintain law and order in a bid to seek justice. The police approach as regards FIR (FIRST INVESTIGATION REPORT) encumbers rigid investigation and analysis of crime thereby render innocent sometime culprit.

The same difficulties are faced by volunteers who wish to report crime occurrence within their vicinities. This is a quite critical process by which the victim has to undergo before lodging his/her FIR (FIRST INVESTIGATION REPORT). With the current trend in Information Technology, most of our daily activities are encapsulated by the standardization and advent of innovation, therefore the era of constituting police services and operation in a confused systemic approach needs to end and a total embracement of Information Technologies should be a concern. On the other hand, maintaining the paper based records and duplicating them when required is another tedious process. For instance if a police officer is asked for a separate file of any criminal record/file it may take few hours or days to locate it depending on the size of the record. If the same case arises with the computerized system, it will take only few seconds for duplicating the records/files. We can also print the hardcopy of these records.

Also, protecting the files of important records requires huge amount of money is expended for the physical safety of the important files/records. Thus there are various challenges for manually maintaining the records instead of the modern computer systems.

The followings are the problems gathered from existing system

- Accuracy The present system cannot be ascertained as containing accurate information as regards any information on a crime gathered by the police. The system is corrupt and porous to accommodate any manipulation by corrupt officer(s) in charge.
- Waste of Time It leads to waste of time as there is much paper work involved which requires flipping through loads/stocks of file before information is fetched.
- Lack of integrity
- Efficiency

3. SYSTEM CAPABILITIES

The portal has the following few sections, which are discussed below:

3.1 System Functionalities

Crime reporting forms, progress tracking, proof attachments.

- On form submission an e mail goes to regional police officer in case if it's serious category crime where quick attention is required.
- Facilitate crime and criminals search region, crime-type, gender, age group wise etc.
- · Missing citizen or valuables reporting and search
- Secure registration and profile management facilities for detectives and security agencies
- Facilitate communication between all stakeholders Discussion forum/chat/mail/polls
- Help book & time-to-time instructions to users through mail

Administrator

- An Administrator page is provided through which handles the site, databases and allow detectives, citizens and Defense Officials access to the site. A FIR (FIRST INVESTIGATION REPORT) form is provided through which citizens can enter details of the crime reported. This data once entered can be edited/deleted as required.
- There are sections provided for Defense Officials, Detectives and citizens.

Citizens

In Citizens sections, user can enter the details of FIR (FIRST INVESTIGA-TION REPORT) through the help of portal. The portal has forms that will ask for the details of victim(s), crime id /name /location/ address / city /country /contact person /contact number /contact, Email-Id. After entering the details the data will be saved by clicking save button and the details will be stored in the FIR database. Each FIR will be given a unique ID.

Administrator(s)

- In Administrator section, various data is available for searching details of criminals, FIRs, judicial results, case hearings and other. Administrator can update databases for the required fields.
- Proofing Crime Reporting forms, progress tracking, and proof attachments.
- Search- In Search section, authorized detectives and Defense Officials will search for matching records of criminals, FIR details, missing people etc.
- Alert Services- An alert can be sent to the citizen regarding the FIR ID and an alert can be sent to a concerned person of the area regarding the CRIME.

4. SOFTWARE DEVELOPMENT METHODOLOGY 4.1 Architecture of the Proposed System



The proposed system is aimed at providing a flexible platform that enhances user friendliness.

4.2 Description of Architectural Design

In this context diagram, the information provided to and received from the 'Online Crime Reporting System' is identified. The arrows represent the information received or generated by the application. The closed boxes represent the set of sources and sinks of information. In the system, we can observe that the user interacts with the application through a graphical user interface (GUI). The inputs to the system are the FIRs, profile, police detail etc. criteria provided by the user,

4.3 Object-oriented System Analysis and Design System Description

- Victim/Volunteer reports officially or lodges FIR
- FIR ID number is generated to assist easy referencing rather than
 a muddle up
- Victim/Volunteer performs a follow-up as a confirmation if the re port is being taken care
- Police examines the report for further analysis and identification
- Police marks a particular area as notorious.

4.4 Identifying the Actors

The actors in the system are the victim/volunteer, the police and the reporting system consisting of form processing, record documentation, Analysis and report generation. The victim/volunteer is a passive user-actor who initiates the process and lodges FIR, a goal of measurable value. The police are an active user-actor, who triggers the system and has the role of performing investigation with the responsibility of collecting the correct information from the victim/volunteer, which is a measurable value.

5. PROCESS MODEL -CRIME REPORTING SYSTEM

Based on the system observation by the analyst, a high-level activity diagram is drawn modeling the process of crime report lodged by the victim/volunteer. The activity diagram brings everybody concerned with the system on the ground to a common understanding of the system as it functions.



Figure 2: The Activity Diagram of Crime Reporting System

Users	Roles	Use Case
Crime Reporting System	Server System	Structures the report, process FIR and prepare documentation Updates the record, enforce data integrity and back- up
Victim/volunteer	Lodging FIR/Complaint Process Provide necessary Information Follow-up	Crime Reporting Process
Police	Perform validation and verification of the information Data Manager Report Generation	

4.6 Interaction Diagrams

Interaction diagrams are used to show the interactions between user/ actor and the system. Use case is a scenario that develops through interaction. Let us model different scenarios through interaction diagrams:

Use Case: Crime reporting process

- 1. Victim/volunteer fills form to lodge FIR
- 2. Police checks for validity and verifies the information source.
- 3. If OK, the police proceed with the investigation.
- 4. If not OK, the police ignore and file the report as counterfeit.
- 5. Document for an immediate action.
- 6. Steps 2 to 4 are repeated.



Fig 3: Use case Diagram of Crime Reporting Process

Figure 3 shows the steps in the activity diagrams of use case crime reporting process

Use case: Police

The steps involved in this use case are:

- 1. Police logins to the platform
- 2. Performs analysis on FIR lodged by a victim or volunteer.
- 3. Document the FIR for an immediate action





Figure 4: Access Use Case

5. APPLICATION SOFTWARE MODULES Password Module

In this module, user enters a password and the portal checks its validity. If the password is valid then he is allowed to enter, otherwise "Invalid User/Password" message is displayed. This is done to avoid unauthorized access.

Search

In the Search section, authorized detectives and Defense Officials will search for matching records of criminals, FIR details, missing people etc.

Contact of Concerned Authority

Contact details of the area official who is solving the case.

Progress

Case study and progress of the case entered by the FIR can be found in this section. Administrator(s) can enter all the progress reports and special remarks in the database.

Queries

Detailed information of the crime can be entered and retrieved by administrator(s) only because of the security point of view.

Registration

Secure registration and profile management facilities are available for detectives and security agencies.

• Validation of Data entered by the user and error handling

In this module, the validity of data entered by the user during the

various processes is checked through various validation checks. For example, there shouldn't be any characters entered in the numeric fields. Likewise if there is any error it should handle that particular error and give the appropriate messages.

6. CONCLUSION

The world is experiencing an information knowledge revolution that is fundamentally transforming the way in which human activities are carried out. Governments worldwide are adopting e - government as a means of improving their services to businesses and citizens, promoting economic and social development, and enhancing the effectiveness and efficiency of government operations. In current competitive scenario every business/public establishment needs quality and systematic process to increase their working efficiency as well as improve their productivity. It is keeping in mind this business philosophy that we propose.



security"

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