

Design of Crime Reporting & it's Active mapping via Mobile Systems

¹Numan Salim Shaikh, ²Sayed Sajjad Haider, ³Yadav Meet Mukesh, ⁴Dr. Anupam Choudhary

¹Student, Rizvi College of Engineering, Mumbai, India,

²Student, Rizvi College of Engineering, Mumbai, India,

³Student, Rizvi College of Engineering, Mumbai, India.

⁴Assistant Professor, Rizvi College of Engineering, Mumbai, India.

¹Department of Computer Science Engineering

¹Rizvi College of Engineering, Mumbai, India

Abstract: “The Guardian” (alias name for our Project) is a crime mapping tool with its applications spanning not only to just report a crime but also actively mapping the severity and locality of the said incident. With the help of our app, citizens can report crimes of various types with just a push of a button. Sure, there exists a number of systems to achieve the above goal. But, the most unique feature of this project is that, it is built around the paradigms that it will be government controlled so there can be no misuse of identity which is the biggest flaw in the present systems.

Also, this app is built heavily around the idea of real time activity monitoring. This will help the concerned authorities to not only identify the type of threat but also scale the forces to be dispatched in order to counter the reported activity which will minimize the infrastructural constraints and maximize the efficiency rate in dealing of these problems.

After the crime has been resolved, the activity can be released to the general public after the approval of concerned authorities and will be displayed on the map with redacted details in order to maintain a transparent approach.

Keywords— Crime Reporting, Crime Mapping, Cloud Architecture, Mobile Infrastructure, Dynamic Database, CompStat.

I. INTRODUCTION

Even being the world's largest democracy, crime rates are rampant and more prevalent than ever. In our country there doesn't exist any service that helps in actively reporting crimes to the concerned authorities in real time and subsequently mapping them.

With the help of our app, citizens can report crimes of various types with just a push of a button.

This will help the concerned authorities to not only identify the type of threat but also scale the forces to be dispatched to counter the reported activity.

A separate dashboard will be created for Superusers/Administrators who will verify the authenticity of the reported crime and will further allocate the scale of response action to be taken depending on the degree of the reported incident

After the crime has been resolved, the activity can be released to the general public and is displayed on the map with redacted details.

With the help of this mapping ability, an analysis on regions spatial data can be generated which in turn will enable the policy forming authorities to understand suspicious patterns

and allocate resource as per the geographical activity profile of a region[8].

II. LIMITATIONS IN EXISTING SYSTEMS

There are some applications based on Crime Mapping and Reporting in the market, but they also have their limitations such as, one cannot have both the features in a single application [7]. So, we have come up with the application in which you can have the information about the crime took place in that particular area, which is obviously verified by the nearest police station. Many of these applications are run by the private companies, but our focus is to work with government bodies. Our applications main focus is on reducing the criminal activities with the help of general public and the police both.

Limitations are:

- No Credibility about the information when a crime is reported.
- Present Systems controlled by the Government take too long to authenticate an incident.
- Time consumption in authentication leads to a delayed response action which leads to fatal consequences [2].
- After a Crime has been resolved, the time spent in documenting the incident with particulars such as time of reporting as well as other major details is done manually.
- Records are maintained manually so there are chances of damage and loss of data.
- Also, in order to draw conclusions, an entirely new team is assembled to work out the statistics and form further future planning

The biggest and the most hindering flaw in current systems which is common to them all is the source of credibility. Since there is no downside in reporting a false crime, legitimate reports begin to lose their credibility.

Table 1: List of some Popular Crime Reporting Applications

Application	Features	Platforms
• National Cyber Crime Reporting Portal	• Anonymous tips related to crime	Web Based
• Citizen COP	• Geared more towards creating awareness	Android
• bSafe	• Real time sharing of GPS location with people in their contact list	Android

III. PROPOSED METHODOLOGY

The System overview & architecture are show below with the help of Figure 1 and Figure 2. The biggest problem as discussed in previous systems is the credibility of a reported incident. In order to combat this problem, the user is required to register with the Gov issued SSN or (AADHAR No.). This ensures that the crime reported is being done by a legitimate user and not any bot or automated process. Also, this will automatically inhibit users to generate fake reports. Hence, the monitoring forces can treat a report as a legitimate case of emergency.

The Architecture can be summed up along these lines;

(A):

For the User End (Refer figure 1), the process takes place in the following manner:

1. Informer logs into the system to report an incident
2. If unregistered, user is prompted to create a temporary ID to make an emergency report
3. When making a report, various categories will already be provided such as theft, arson, malicious activity, etc. The user has to select the suitable category & make a report.
4. After making a report, as a captcha like feature an OTP code will be sent to the user’s device, this code will act as an Authentication factor while finally submitting a report. This inhibits mass reports from a single account [2].
5. After successful validation, a Certificate will be added to the report which will act as a DB entry ID for the report.
6. The report is further propagated to a monitoring officer who further evaluates the situation and takes subsequent action for it.

This ends the course of action from the user’s end, further action is taken by authority personnel.

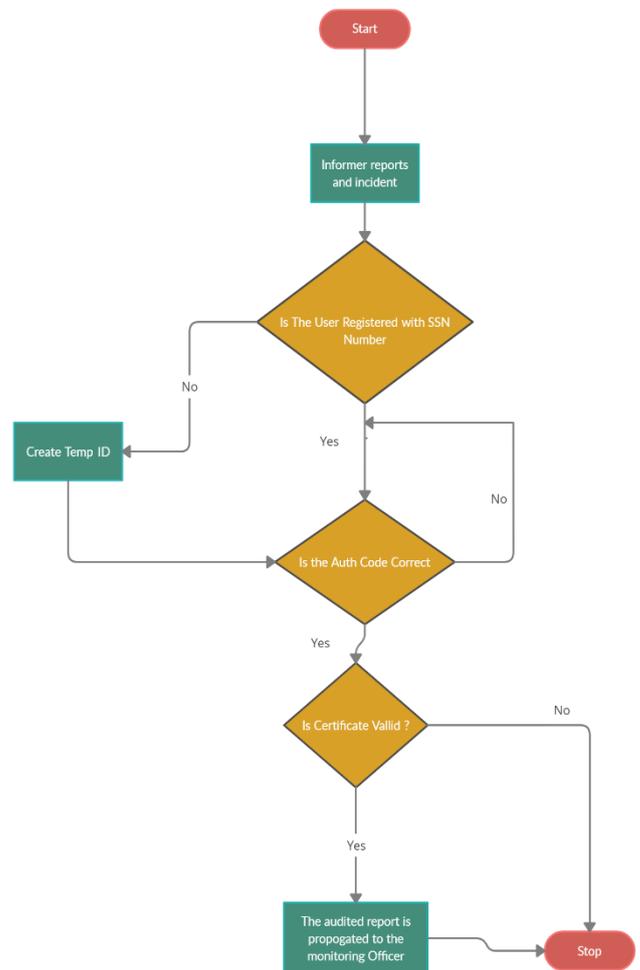


Figure 1: User End Architecture

(B):

For the Authenticator’s End (Refer Figure 2), the process takes place in the following manner:

1. The forwarded report is received by the Nodal Policing Office, i.e. The local police station.
2. The Monitoring officer reads the report and assigns the degree of priority to the reported incident.
3. Based on the degree of activity, corresponding scale of forces are dispatched to solve the issue
4. In the current system of police, after a crime is resolved, reports are made about the incident.
5. In a similar manner a digital report will be made by the officer to be submitted forward
6. This report is then verified by the superior officer to be true.
7. This report will be written to Databases.
8. A short report will be made available to the public after redacting the details, which will be used for mapping of that crime

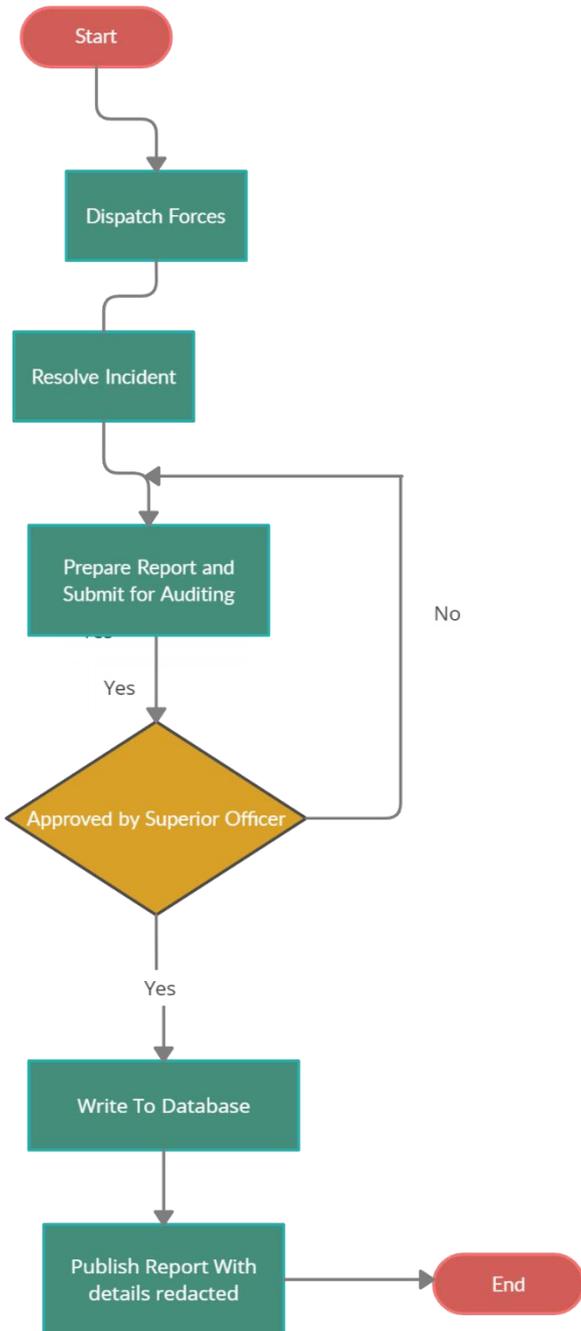


Figure 2: Authenticator's End Architecture

IV. PROPOSED ARCHITECTURE

The term 'Crime-Mapping' is often confused with the ability of being able to access any crime-related information without any restrictions; if it were true, it'd result in a lot of misuse. Crime mapping plays an important part in resolving crime, since it gives the general public a chance to report tip-offs about suspects which can speed up the process of nabbing the criminals. In our proposed system information access is divided into categoric levels in which the general public will only be able to access the information released by the monitoring authorities. Example of such information could be the crime-type committed, criminal-activity trends, suspicious alerts.

Information uploaded by the informer about any incident is uploaded to the server and is not accessible to the general

public right away. From the server it is redirected to the monitoring officer who approves the report by reviewing it. Then corresponding course of action is taken to resolve it. During this process of Report and Successful solving of the case, an alert is generated with suspects details to warn that the suspects are still at large in the open [1],[4]. It is only after when the case is resolved, the information with details redacted is then opened to the general public,

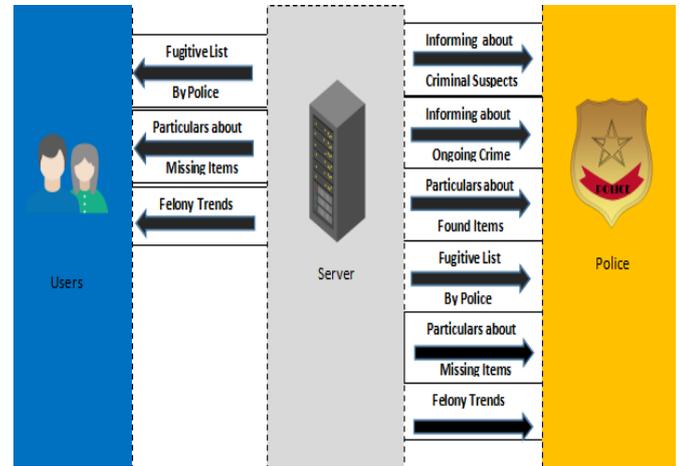


Figure 3: Information Access Hierarchy

V. SOFTWARE INTERACTION

(A) User's Interaction with the Client Software

- I. The User (Client) App is a platform for connecting the user with servers and enabling interactions using appropriate ID.
- II. The platform provides various categoric widgets for users report an event.
- III. Enable user to upload media content to serve as a proof for the report.
- IV. Provides a user-friendly interface for mapping criminal activities

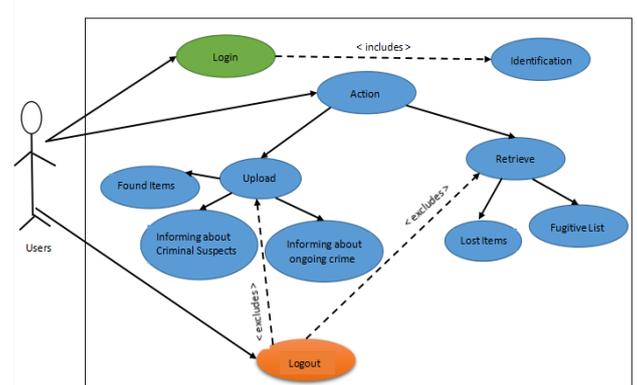


Figure 4: User App interactions

(B) Police System Interaction

This platform provides a framework that bridges the interaction gap between the general user and the system Database. The monitoring authorities fill in this gap by reviewing the content and approving it [9] further to be released to the general public to be used as means of mapping the crime.

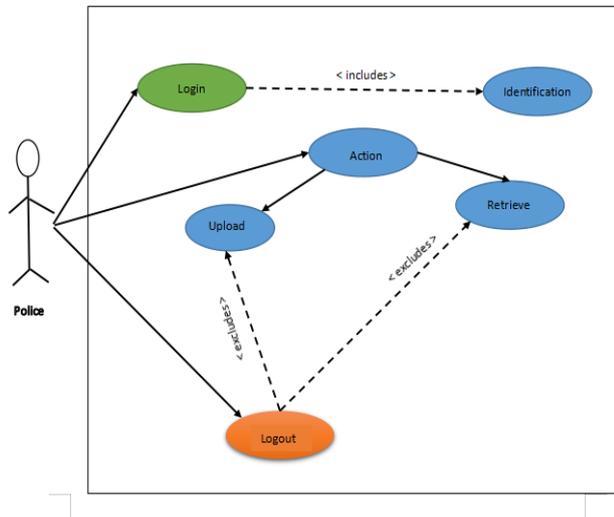


Figure 5: Authority System Interaction

VI. FUTURE SCOPE

In our final design of the product, we concentrated on real time crime reporting as well as its subsequent mapping with the help of advanced technology. This will not only be quality of life application for the users but will also function as a means of saving time for the concerned authorities when the relevant action was performed to counter the problem, thus maintaining things transparent. The system will act as a ledger and will function as a two-way report i.e. It will not only log the time an incident was reported but it will also log the time. The current scope revolves around active reporting as well as mapping. However, in future, this application can be added an extra feature of generating historical records which will make it easier to predict and analyse various schemes in order to combat most common problems faced as per the given data which was amassed overtime in the system.

VII. CONCLUSION

The development of this project will identify mobile phone technology as a crime fighting platform in society, as its use can effectively bridge the communication gap between the police and the general public in crime fighting. A mobile communication framework has been suggested, based on the client server model; allowing both the police and the general public to interact more effectively with the help of a mobile application. Our future research will be concerned with implementing this design and carrying out a survey to test our hypothesis stated earlier.

VIII. REFERENCES

1. Ku, C.H.; Iriberry, A.; Leroy, G. Crime Information Extraction from Police and Witness Narrative Reports.
2. Bajpai, D.; Vardhan, M.; Gupta, S.; Kumar, R.; Kushwaha, D.S. Security Service Level Agreements Based Authentication and Authorization Model for Accessing Cloud Services.
3. A Cloud-Based Crime Reporting System with Identity Protection by Tzay-Farn Shih, Chin-Ling Chen, Bo-Yan Syu and Yong-Yuan Deng.
4. Simon, I.S. The Fear of Reprisal and the Failure of Victims to Report a Personal Crime. J. Quant. Criminol.
5. From Crime mapping to Crime Forecasting: The evolution of Place-based Policing by Joel Hunt
6. VicPD, "Report Crime, Tack Crime, Fight Crime, From your pocket".
7. LexisNexis, "LexisNexis Accurint Mobile".
8. Accenture (2013), "Preparing police services for the future: Six steps toward transformation".
9. Zwattendorfer, B.; Slamanig, D. The Austrian eID Ecosystem in the Public Cloud: How to Obtain Privacy While Preserving Practicality.
10. All Icon credits: pngtree.com
Flowchart: Created at creately.com