

# Design and Implementation of an E-Policing System to Report Crimes in Nigeria



Nicholas Omoregbe, Sanjay Misra, Rytis Maskeliunas,  
Robertas Damasevicius, Adesola Falade and Adewole Adewumi

## 1 Introduction

There is no doubt about the importance of the internet; it has made people more connected than ever before. The use of the internet by the police could help the public easily get access to them, thereby making crime reporting easier and faster responses can be gotten, which will make crime fighting a lot easier. As defined by the Mohamed [1], “E-Policing is the exchange of information and services amongst police, related law enforcement agencies and citizens via internet”.

There are several areas of an E-policing system, but in this work, we are handling crime reporting in E-policing. Crime reporting involves the creation and submitting of crime reports. Crime reports are written description of crime events, which is gotten from one or more sources (location of crime) upon which decisions will be made. The proposed system will allow a police staff or citizens report crime incidents, accidents, and every other distasteful event, when they come in contact with such. The system allows upload of videos (if available), audio files, images from the crime

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N. Omoregbe · S. Misra (✉) · A. Falade · A. Adewumi  
Department of Computer and Information Sciences, Covenant University, Ota, Nigeria  
e-mail: [sanjay.misra@covenantuniversity.edu.ng](mailto:sanjay.misra@covenantuniversity.edu.ng)

N. Omoregbe  
e-mail: [nicholas.omoregbe@covenantuniversity.edu.ng](mailto:nicholas.omoregbe@covenantuniversity.edu.ng)

A. Falade  
e-mail: [adesola.falade@covenantuniversity.edu.ng](mailto:adesola.falade@covenantuniversity.edu.ng)

A. Adewumi  
e-mail: [wole.adewumi@covenantuniversity.edu.ng](mailto:wole.adewumi@covenantuniversity.edu.ng)

R. Maskeliunas · R. Damasevicius  
Kaunas University of Technology, Kaunas, Lithuania  
e-mail: [rytis.maskeliunas@ktu.lt](mailto:rytis.maskeliunas@ktu.lt)

R. Damasevicius  
e-mail: [robertas.damasevicius@ktu.lt](mailto:robertas.damasevicius@ktu.lt)

scene and description of the whole crime event. Crime reports by police personnel are more detailed, depending on the type of crime. It can include major suspects.

Information technology has made people's jobs in various sectors of the industry easier and the same can be said about the Nigerian police force if adopted. E-policing (crime reporting) will allow the police get fast access to incidents occurring in an area, in which there is no police personnel available. Also, a database of crime reports means a report can easily be lookup and decisions can take on them.

### ***1.1 Aim, Objective and Significance of Study***

The importance and relevance of an E-policing system in Nigeria cannot be overemphasized as the country is still lacking behind in automating some of its key security system such as E-policing and so on. E-policing system is a boost to the efficiency of crime reporting, with the deployment of an E-policing system, crime reporting becomes easy and faster. Citizens can easily report criminal incidence wherever they are, at any time. For the police, the E-policing system in Nigeria provides an organized record of complaints, criminal data, cases and records that can be easily accessed by the authorities (police force). Also for the police, the E-policing system delivers convenient and cost-effective services. The E-policing system provides a platform for affiliations with corporate organizations that are technologically inclined. With the current state of Internet availability through mobile networks and phones, citizens in the villages, remote and rural areas can access the internet and report their cases. Most citizens dread the word "police station", so they are unwilling to go to the police station to write statements, this e-police system makes it easy to report cases without visiting the police station.

## **2 Review of Related Findings/Technologies**

Colgan [2] designed a complete E-policing system for community policing. This system includes major features of a typical police activity such as crime reporting, investigation, documentation, crime monitoring and the likes. The system has been able to computerize policing activity in a community but it did not provide a fast and easy means for reporting crimes.

Fagbohun [3] designed a prototype for a crime reporting E-policing system. This system records geographical areas, streets, occupants and such information in the police control centre. This information is required for maximum functionality. The system consists of a one-touch sender, distress point call unit and a local area electronic policing controller designed to monitor and control each station. This system provides a faster transmission time and method for criminal activity.

Information technology is introduced by traditional into their activities to boost their competitive edge, improve performance, facilitate management and also

develop new potentials in their work [4]. Other components of a society are not left out. Technological changes are guided by three parallel fundamentals in policing: to enhance efficiency and effectiveness, to conform to the demands of improved forms of police accountability/management and in addition to meet external agencies for information growing demand.

## ***2.1 Efficiency and Effectiveness***

First, efficiency and effectiveness imperative is technology-inclined. Technology and police work has always been closely related. Technology does not only enhance police efficiency and effectiveness in eradicating crime but it also enhances their professionalism in executing their duties effectively.

Manning [5] and Davids [6] explained that the stock-in-trade of policing is information; naturally, the latest information technologies would be embraced by police organizations. Information technology is being invested by the police to raise their capacity to process and store appreciable amount of data; to provide full accessibility to criminal records and other information that is crime-related; and to improve their intelligence and investigative capabilities.

## ***2.2 New Public Management and Accountability in Policing***

Second, public management and accountability imperative is policy-inclined. Police organizations and commercial firms are quite similar in the sense that they both make use of information technology to improve performance. Since 1980s, a new era of public accountability has increased in major Western democracies such as Britain and Australia [7–10].

Traditionally, police procedures and practices are coordinated by rules and laws that are compelled by police hierarchies and the courts, respectively. Deterrence through investigation and enforcement, legislation and rule-making, criminal sanctions and organizational discipline is the major mode of control. Power [8], Miller and Nikolas [9] and O'Malley and Palmer [11] explained the recent accountability for public organizations, the uses of techniques at managerial level and private administrative structures for corporation's interest, efficiency, emphasizing cost control and decentralization of management, whilst creating quasi-market mechanisms such as risk assessment and audit procedures, contracting out, performance indicators. Power [8] and Mullen [12] traditional police force has changed to organizations with a new emphasis on crime management and marketing strategies, mission statements, business plans, customer service and performance measures due to the recent managerialism in policing.

### **2.3 External Demands for Information**

The demand from external agencies for information such as information crime and accident data for external bodies such as insurance companies and road traffic authorities is relatively high. This information is given at regular interval by the police organizations and watchdog agencies demanding for records regarding police accountability and actions. Therefore, there is a need to improve information technology capacities within police organizations for external demands for police records.

### **2.4 Information Technology on Policing and Its Effects**

Marcel-Eugene [13] explained the pervasive usage of IT, and it plays a major role in everyday life for many individuals and quite a number of organizations. But how visible this adoption is to be realized when it comes to the police force is an important aspect to consider [5]. Through the internet, our channels of communication are expanded by E-policing but it does not replace face-to-face contact or telephone, which is extremely important. Mell and Grance [14] developed an E-policing initiative which requires the development of a strategic vision and direction, evaluation of technology options, evaluating impacts of related legislation, predicting costs and recognizing limitations and resistance.

Improved approach of performing duties is open for the police through E-policing, improved tools and interactive flow of information between the citizen and the police. E-policing enables a dual communication and improved accessibility for police and public. Mell and Grance [14] stated that E-policing shows that police are in tune with present technology.

## **3 Context Diagram and Conceptual Framework of E-Policing**

Figure 1a indicates a context diagram for implementing an E-policing system in Nigeria whilst Fig. 1b indicates a regular collaborative virtual E-policing reference framework for implementing an integrated solution based on internet technology amongst locations in Nigeria.

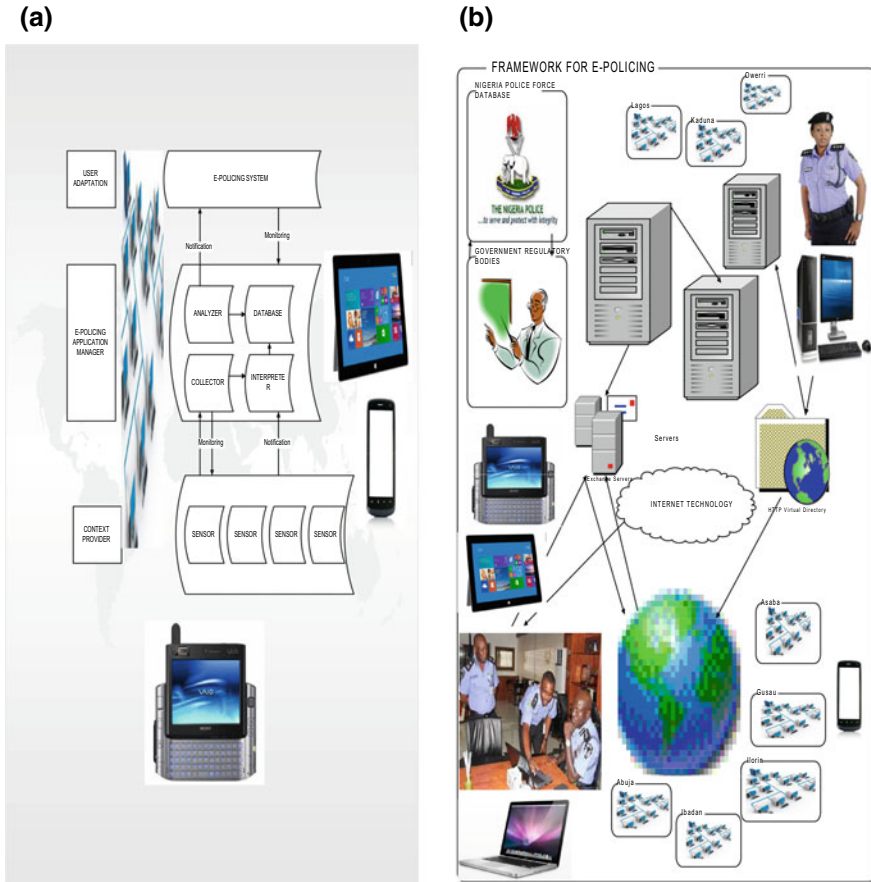


Fig. 1 a Context layout. b Conceptual framework

### 3.1 The Context Layout

The context layout focused on notification usage and monitoring systems that allow for the provision of several services, especially user adaptation services and mobile communication services.

### 3.2 The Conceptual Framework

Conceptual framework focused on the usage of connected police services, which allow the provision of several services especially communication services. Aggre-

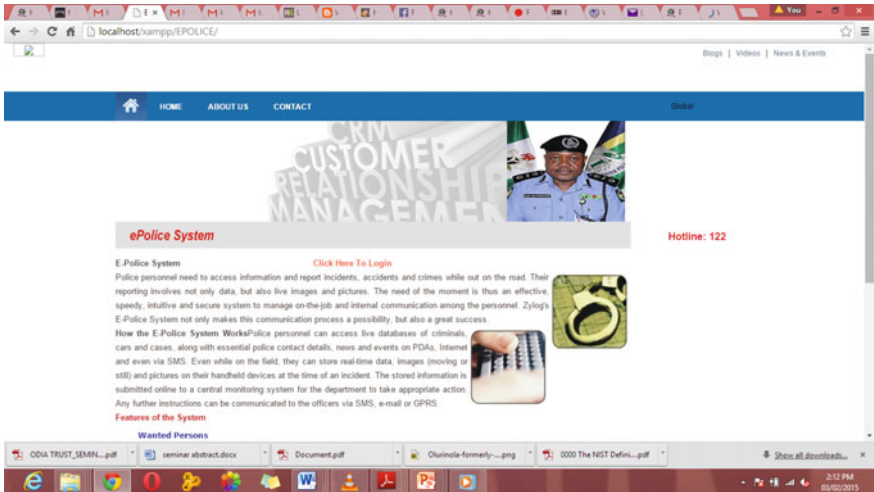


Fig. 2 The home page

gated E-policing framework indicates the mutual communication amongst stakeholders and infrastructures for information technology involved (Fig. 2).

- Regulatory bodies for government and NPF database certify proper authentication and accreditation of registered police officers. It also enables efficiency, reliable recording and database security.
- Different remote locations discussed earlier in the introduction and abstract indicates that police officers and police stations can communicate in real time heedless of their geographical locations. People requesting for police services can have access to any station through any of the internet-enabled device attached to the central server which will be located in the cloud as shown in Fig. 3.

## 4 Methodology

The study used programming tools such as JAVA script, CSS, HTML, Dreamweaver and PHP. These languages were selected due to their platform in-dependability, the wide acceptability they enjoy and open-source nature. The back-end design was designed using MySQL; a useful tool in designing relational databases. All these are resident on an Apache-hosted web server (the middleware). To address the security issue, passwords have also been introduced to allow access to records on role-based only (Figs. 4 and 5).

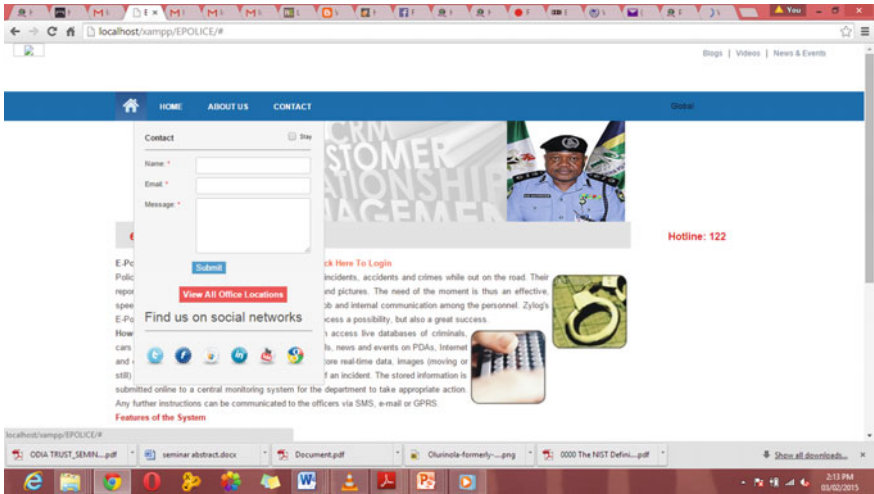


Fig. 3 The contact us page

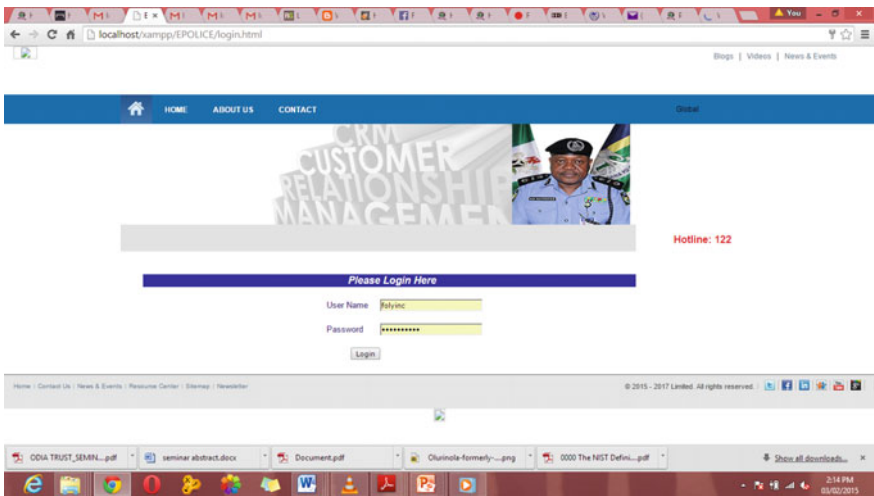


Fig. 4 The police station login page

### 4.1 Presentation and Validation of the Model

Just as continuity of safety of Nigerian citizens requires a cooperative environment, the development of a system using modern technologies that aid internet technology in policing services is an increasing necessity [15]. Hence, provision of a secure and easy to implement environment for E-policing applications will give notable positive effect in present computer systems and networks. It is highly necessary to increase

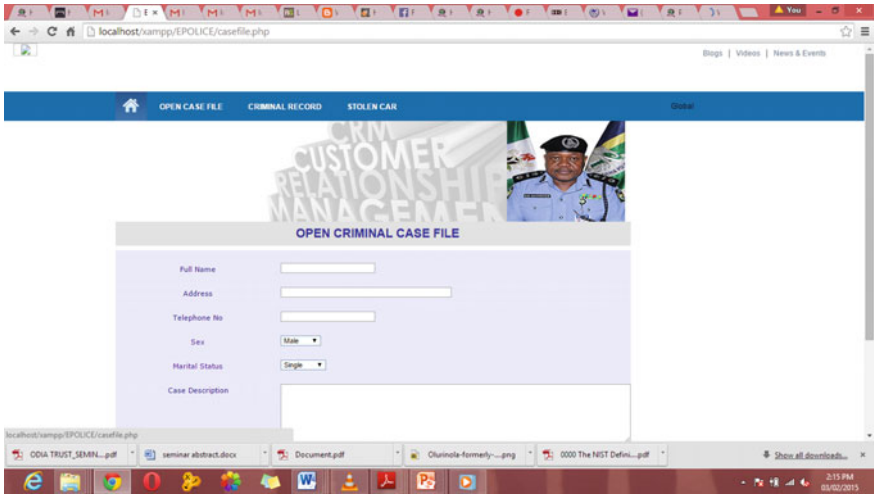


Fig. 5 The criminal case form

access to essential policing services, especially for rural and underserved populations considering the steady increase in the number of criminal offences police stations receive daily.

The home page provides a general overview of the system including the available menus. The contact us form enables the general public to report crimes and give necessary advice and information to the NPF. The login page allows registered officers or police station to login to the case file and other criminal offences. The criminal case form allows criminals or suspects to fill the case form electronically.

## 5 Conclusion and Future Work

This research has analysed the urge to improve information flow and communication amongst stakeholders in NPF. The designed system shows that E-Policing will help in eradicating the barriers of manual policing system in Nigeria.

Performing the task of maintainability which is a process usually comes with a heavy cost in any software development. Software life span increases with maintenance. Future works are to show a detailed statistical analysis. Preventing unauthorized users from gaining access into the system, a more sophisticated security measure will also incorporate into the implementation of the system. The evaluation of E-Policing in Nigeria will be done by benchmarking it with the existing systems in the USA and other developed countries.



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## References

1. Mohamed, T.: A proposed model-based security framework for E-policing. In: 2011, IEEE International Conference Computer Applications and Network Security (ICCANS 2011), IEEE (2011)
2. Colgan, G.: Electronic apparatus for implementing community policing program and method therefor. U.S. Patent 5,510,978 (1996)
3. Fagbohun, O.: Improving the policing system in Nigeria using electronic policing. *J. Eng. Appl. Sci.* **2**(7), 1223–1228 (2007)
4. Earl, J.: Experiences in strategic information systems planning. *MIS quarterly* 1–24 (1993)
5. Manning: *Information Technologies and the Police*, Tonry, M., Morris, N. (eds.) (1992)
6. Davids, C., Hancock, L.: *Policing, Accountability, and Citizenship in the Market* (1998)
7. Chan, J.: *Changing Police Culture: Policing in a Multicultural Society*. Cambridge University Press, Melbourne (1997)
8. Power, M.: *The Audit Society: Rituals of Verification*. Oxford University Press, Oxford (1997)
9. Miller, P., Nikolas, R.: *Governing Economic Life: Economy and Society*, vol. 19, no. 1, pp. 1–31 (1990)
10. Yu, Y., Alison, D.: The contribution of emotional satisfaction to consumer loyalty. *Int. J. Serv. Ind. Manag.* **12**(3), 234–250 (2001)
11. O'Malley, P., Palmer, D.: Post-Keynesian Policing *Econ. Soc.* **25**(2) (1996)
12. Mullen, K.L.: *The Computerization of Law Enforcement: A Diffusion* (1996)
13. Marcel-Eugene, L.: *E-Policing in Police Services—Definitions, Issues and Current Experiences* (2006)
14. Mell, P., Grance, T.: The NIST definition of cloud computing. *Nat. Inst. Stand. Technol.* **53**(6), 1–7 (2009)
15. Wiki Educator, Police Crime Report, site: [http://wikieducator.org/Lesson\\_2:\\_police\\_crime\\_report](http://wikieducator.org/Lesson_2:_police_crime_report). Accessed 17 Jan 2014