

# E-neighborhood Management Architecture for Crime Detection and Control in Nigeria

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**Abstract** The menace of crime particularly Armed Robbery, Kidnapping, Oil theft and Burglary in Nigeria today is real and potent. Many Schemes have been devised so far to control this trend but all the current strategies have not been able to reduce the threat. E-neighborhood is particularly neighborhood originated electronic monitoring system to monitor the movement of criminals in a neighborhood in order to nip their activities in the bud so as to either prevent crime commission or track crime after it is committed. In this work we examine various crime control methods adopted so far to reduce incidences of armed robbery in Nigeria and propose an e-neighborhood paradigm for crime detection and control. The system has the basic component of the Voice to Text (VTT) interface, Centre Control (CC), Main server, sub-servers, pagers and mobile phones. It is capable of receiving the voice message of crime alert and automatically translating the voice message to text message for further processing.

**Keywords** Crime, Database, Security, Networking, Neighborhood

## 1. Introduction

Crime is human behavior condemned by the society which prescribes reward and punishment as the case may be to show the total abhorrence of crime in any society. Crime is described as an action committed in violation of the law that prohibits it and authorizes punishment for its commission. It is noteworthy that crime is condemned in all human societies by ancient traditions, formal laws and normal sentiments. [1] described crime as antithesis of the growth of any nation.

Crime in Nigeria as reported in [2] is the violation of norms or values thought to threaten a society. It is more of a sociological concept which encapsulates the spectrum of other related components of negative events in the society. Prominent crime in Nigeria include the predatory crime, that which does harm to another and benefits only the offender; occupational crime, committed by a person in the process of his occupation which utilizes his occupational skills; service crime, which encourages the purchase of illicit or illegal goods and services; organized crime, which has an administrative structure; companionate crime, which involves accomplices; and episodic crime, a type of crime with low probability of repetition by the same person. These types of crimes which range from armed robbery to advanced fee fraud popularly called 419, examination

malpractices, tax evasion, abortion, child-abuse, smuggling, bribery, contract inflation, car theft, cultism and piracy, are concomitants of social change or development in a society. Thus, despite the combined efforts of law enforcement agencies and some aggrieved members of the public, crime rate has yet to be minimized as new tactics as in such crimes emerge daily in our society [3]. Persistent human right violations, poverty, unemployment and political economic frustration were identified as the root cause of crime in Nigeria [4].

Crime prevention is the attempt to reduce victimization and to deter crime and criminals. It is applied specifically to efforts made by governments to reduce crime, enforce the law, and maintain "Criminal Justice". There is the need for the state and federal governments to go beyond law enforcement and criminal justice to tackle the risk factors that cause crime because it is more cost effective and leads to greater social benefits than the standard ways of responding to crime [5].

There is clear evidence that well-planned crime prevention strategies not only prevent crime and victimization, but also promote community safety and contribute to the sustainable development of countries. Effective, responsible crime prevention enhances the quality of life of all citizens. It has long-term benefits in terms of reducing the costs associated with the formal criminal justice system, as well as other social costs that result from crime. Crime prevention offers opportunities for a humane and more cost-effective approach to the problems of crime [2].

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## 2. Crime in Nigeria and Security Measures

It should be noted that rapid industrialization, urbanization, socio-economic, political and other sectorial development are usually associated to an expectant increase in various crime rates. In recent times in Nigeria the influx of people from the neighboring and far-away countries to the different parts of the country has brought about another form of crime (*Boko Haram* insurgency).

In this regard, since it is noted that crime rate is a concomitant of economic development, adequate response to change is vital to the effective functioning of the criminal justice system. Crime remains one of the biggest businesses in Nigeria today and violent crime among young people had risen to unprecedented level. The inability of the appropriate authority to arrest and bring criminals to justice is added incentive to crime perpetration in the country. The corresponding advancement in telecommunication technology which makes contact between criminals easier has added fillip to individual and collective insecurity. It is opined in [5] that crime will continue to increase in the society due to some of the following reasons:

- a. Community laws / Norms appear favorable to crime perpetration and condonation.
- b. Availability of guns / lethal weapons and easy access to drugs by miscreants, street urchins and men of the underworld. According to media reports, large consignment of arms and ammunition are being smuggled into the country regularly.
- c. The inherent disorganization of our communities and break down of family values brought about no doubt by the parlous and deplorable state of the nation's economy.
- d. Recourse to individualism and self-conceitedness of the extractive elites making us no longer to be our brother's keepers.
- e. Lack of co-operation with the law enforcement agencies by the public (even victims) as far as sourcing for information is concerned.
- f. Media over publication and dramatization of crime in the society, (though correct) without corresponding exposition of deterrent actions taken by the appropriate authorities.
- g. Extreme economic deprivation causing blistering state of unemployment in the country.
- h. Life styles of many people with dubious pedigrees around us.
- i. Lack of appropriate training, equipment, logistic support, welfare and motivation for the security agencies to confront the increasing wave of crime.
- j. Lack of necessary liaison and inter connectivity among the diverse agencies charged with the responsibility of crime control. There is always, what is called supremacy tussle, and service jealousy.
- k. Lack of mutual cooperation and understanding for enhancement of better performance. No sharing of security information or protection of source.

l. Lack of adequate and timely compensation for injuries or fatalities sustained in the course of fighting crime.

m. Unresolved conflicts and problems in the society, government and business organizations. There are so many 'cold' case files gathering dusts on the police shelf.

n. Everyone pays lip service to security issues and it appears we are not security conscious enough.

Currently many schemes are being used to control crime in Nigeria. These methods range from awareness campaign by government and various media organization in the country to the use of various security outfits we have in the country.

One of the efforts by the Federal Government of Nigeria to combating crime is the introduction of various laws prescribing various punishments for different categories of crime. For example death penalty was prescribed for proven cases of serious crime such as armed robbery and felony against State. Also, crime such as Fraud, rape and lying under oath carry different penalties. One major problems encounter in the area of prosecution is the inability of police to sincerely prosecute offenders.

Another ways of controlling crime in Nigeria is through the use of different security organization in the country. These organizations include the Nigeria police force, the economic and financial Crime Commission (EFCC), National Drug Law Enforcement Agent (NDLEA), National Food and Drug Administration Control (NAFDAC), The Nigeria Custom, The Nigeria Immigration, The Nigeria Civil Defense Corp, and the Nigeria Navy for monitoring criminal activities on our territorial Sea. In some cities with serious problem of crime the Nigeria Armed forces are deployed to assist police in combating crime. Also, men of Nigeria Road safety recently intercepted criminal that are involved in child labour trafficking.

Two methods are closely associated in ensuring that people takes active part in their own security issues. These are neighborhood watch and modern community policing which is the modernization of the former.

### 2.1. Neighborhood Watch

Neighborhood Watch is a program, which encourages residents to become more aware of activities while they go about their normal routines each day. The primary function of a Neighborhood Watch program is to act as the eyes and ears of the police force department. Participants of this neighborhood watch are instructed to promptly report any unusual activity as accurately as possible to the proper authorities [6].

Neighborhood watch members are supposed to report cases such as unusual vehicles or person in the area, strange people around uncompleted or vacant houses, vehicles which appear to have been abandoned, unusual activities such as child abuse, harassment, etc. Criminals find it difficult to operate in areas where citizens take an active role in crime prevention. Neighborhood Watch members are not authorized to perform in a law enforcement capacity.

However, Neighborhood watch is predominantly traditional community-based policing system in which everyone is responsible for his neighbor security, the communities usually involves themselves in taking stock of what goes on in their environment during the day and report any suspicious movement to the community leader. Moreover, roasters are drawn for joint security surveillance at night. In most cases arrest are made and necessary punishment meted on culprit. Sentiments are usually not tolerated as members give in to secret oath retribution in case anyone among them violate the term(s) of the oath. This has been the common practice in some part of Nigeria before the advent of colonialism. One major problem with this method of security measure is that it lacks continuity and the absence of legal framework for imposing appropriate punishment for the crime committed. Also, cases are not really investigated before punishment is administered. Therefore the system often results in 'Jungle' justice, misapplication of force to take confession from the criminal. It is highly risky and sometime involves the vendetta thereby compromising the moral and integrity of the system.

## 2.2. Community Policing

Community policing could be said to be an advance form of Neighborhood watch. In [7] the *Committee on Law and Justice* described Community policing or neighborhood policing as a policing strategy and philosophy based on the notion that community interaction and support can help control crime, with community members helping to identify suspects, detain vandals and bring problems to the attention of police. The community policing has been found to be effective in London where crime reporting and investigation is taking serious. In a nation that adopt community policing, member of the community are usually actively involved in policing the community. The basic idea of community policing is to involve various people in the security of their immediate environment. The overall objective is to bring down the barometer of crime. The ten principles of community policing was given in [8]. The community policing takes advantage of the fact that only people living within certain community know themselves very well. It also necessary implies that criminals living in a community can easily be identified within the community. Criminals who are involved in credit card scam popularly called *Yahoo-Yahoo* in Nigeria, Burglary, pick-pocket, *Area boys* and other classes of similar crimes are usually known to people living in the neighborhood.

One other objectives of community policing is to curb the case of bribery and corruption among police community. The concept assumes that once police are posted to their immediate community then they become conscious of the fact that everybody within the environment knows them, and then the inclination to being corrupt would be low. This is because they are aware that all eyes are on them. Even when such officer is corrupt they can easily be brought to book because all eyes will be on them. This is because in Africa

culture any crime committed by an individual in the family is tied to the entire generation. Aspersions are usually cast on children and grandchildren for the sin committed by their father, grandfather and great grandfather. The whole idea is not only premised on policing alone but community programmes are initiated to reoriented the community about security of the community. For example the Belleville Police Service introduced the School Response Unit in 1998. The School Response Officer investigates all criminal occurrences within the schools and also participates in pro-active policing initiatives such as presentations, conducting information seminars, and assisting the Student Crimes toppers Programs. The Unit operates within the schools, which allows for a greater interaction between the students, staff and police who then work together to make our High Schools safe for all [9].

## 3. E-Neighborhood

The traditional mode of delivery of police services was accomplished in a reactive, sometimes brute and unscientific manner. Little attention is given to proactive policing. E-Neighborhood is the synergy between traditionally neighborhood watch and electronic informatics system. It is particularly interesting that the beauty of the traditional neighborhood has not been lost in the new design. E-Neighborhood takes advantage of the advances in electronics information system to propose a new system that reports any suspicious criminal activities within a community. Criminals such as *Yahoo-Yahoo* boys are well known to the community. Fraudsters too are well known, and so on. The criminals' lives within us and in most cases they are well known within the community where they live. For example in the case of internet fraud, the perpetrators converge at night usually between 10pm and 6am at designated cyber-café for their nefarious activities. They often constitute nuisance and security risk to the neighborhood where they operate. We always see them, we know them and they live within us.

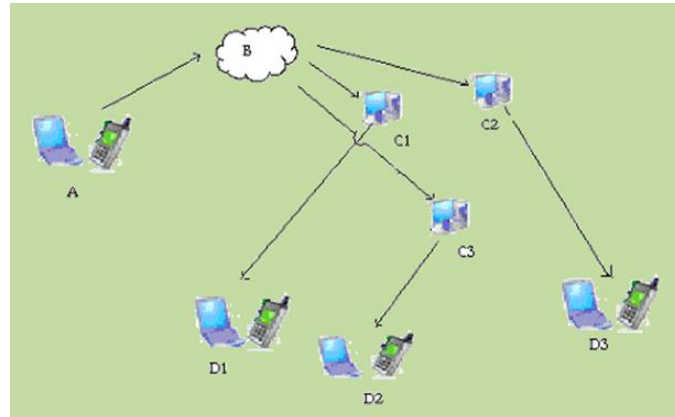
### 3.1. Description of the Architecture

The conceptual model of the Architecture of e-neighborhood is depicted in fig 1a, 1b and 1c. The architecture of our e-neighborhood consists of a Voice to Text (VTT) interface, Centre Control (CC), Main server, sub-servers, pagers and mobile phones.

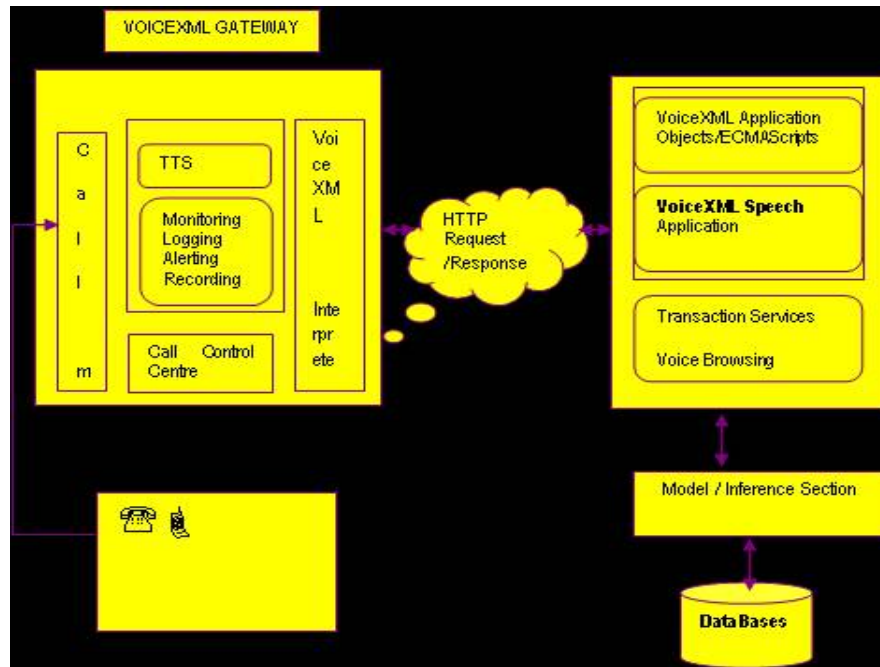
The caller's module is a device capable of sending an alert on the occurrence of a crime. For the purpose of this paper we have adopted the use of mobile phone. We can as well send the alert from the computer unit. The second part consists of consoles depicted by Fig. 1b which is the VoiceXML Gateway for processing voice and Text message. Component B of Fig. 1a has a residence database for processing the information it receive. Also, the Architecture consist sub-server C which host a Database that consist of

data and information received from B. The final and other part of the architecture is the mobile devices D1, D2, D3 .....

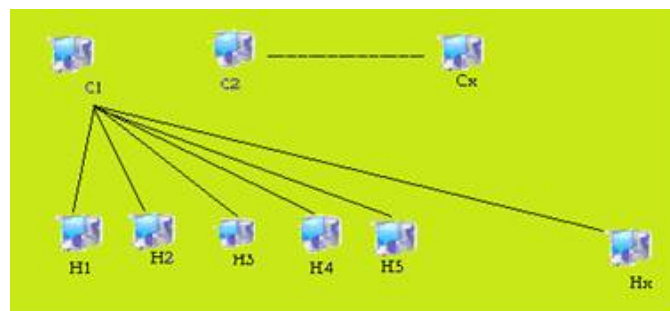
Dx and network/Internet enabled computer H1, H2, H3 ..... Hx where x can take on any value.



**Figure 1a.** Architecture of e-neighborhood



**Figure 1b.** a diagrammatic representation of B in Fig 1a



**Figure 1c.** Interaction between sub-servers and workstation at crime scene

### 3.2. How the System Works

This system works in the following ways. Whenever vigilant people or neighbors watch suspects anyone with criminal intent, a call or text message is initiated at *A*. *A* could also be a Scene point of the incidence. The call or the message, as the case may be, is communicated to the Control Centre (CC) at *B*. *B* represents the VoiceXML “Machine” which is able to process caller’s Text/Voice. *B* is able to process the caller’s voice or text messages by converting Voice to Text and vice versa. Once the centre accept an alarm message that a crime is going on in a place, then, the system automatically trigger alert which is sent to the regional Server(*C1*, *C2*, *C3*) around the areas of the crime or likely crime spot. Once in the server another alert is triggered and a crime-alert is sent to all neighbors in the vicinity. Also a page is sent to the police mobile phone or a pager to all the police personnel in the vicinity.

It should also be noted here that the police around the scene of crime are essentially community police. These community police officers are quite familiar with the topography of the areas and have a thorough knowledge of the vicinity of the crime. This is because they live in the place. It should also be noted that sub-server could be more than *C1* to *C3* as the case may be. Also the alert could be transmitted to as many servers and as many phone or pagers as many as possible.

The Architecture also allows voice communication to be strictly sent from the main server to the control sub-system. The message is always routed to the police patrol Vehicle for urgent action taken after the crime is reported.

Also, we know that Nigeria is shy of reporting crime suspects for fear of being exposed. The system incorporates a section for reporting suspect in case the crime has been committed.

## 4. Conclusions

In this work an e-neighborhood for crime control has been propose. The system makes use of traditional neighborhood to synergize with modern information and communication system to combat crime in our society. Different types of crime and the effect of crime in our society was examined. Neighborhood watch, a traditional community based approach to fighting crime was discussed. The paradigm was

synergized with the most modern technology to propose a community based Information and Communication Technology (ICT) paradigm christened e-neighborhood to fight crime in our society.

## REFERENCES

- [1] Adeola S.O, AleseB.K and Falaki S.O., National Crime Intelligent System, Asian Networks for Scientific Information, ISSN 1812-5638, 2007.
- [2] United Nations Guidelines for the Prevention of Crime, Economic and Social Council resolution 2002/13, Annex downloaded on 30 Sept, 2013 from [http://www.google.com.ng/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=0CDsQFjAD&url=http%3A%2F%2Fwww.unodc.org%2Fdocuments%2Fjustice-and-prison-reform%2Fcrime-prevention%2Fresolution\\_2002-13.pdf&ei=dqVJUq\\_IJaaW0AX26YCgBg&usg=AFQjCNG9Jl6Qr5t-lzfpiyS-tbSpYheOMA](http://www.google.com.ng/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=0CDsQFjAD&url=http%3A%2F%2Fwww.unodc.org%2Fdocuments%2Fjustice-and-prison-reform%2Fcrime-prevention%2Fresolution_2002-13.pdf&ei=dqVJUq_IJaaW0AX26YCgBg&usg=AFQjCNG9Jl6Qr5t-lzfpiyS-tbSpYheOMA)
- [3] Okpo Ojah, Crime and crime prevention in Nigeria. Punch, January 21, 2013.
- [4] Olabode O. and Adeola S.O, Crime Alert Decision System, Conference on Application of Information and Communication Technologies to Teaching, Research and Administrations (AICTTRA, 2007) eds. Kehinde, L.O., Adagunodo, E.R. and Aderounmu, G.A., OAU, Ife, pp. 190 – 200, 2007.
- [5] AF Dowell Mirin, Nigeria and the technology of crime prevention, downloaded on 10 Sept, 2013 from <http://elombah.com/index.php/articles-mainmenu/13752-nigeria-and-the-technology-of-crime-preventio>, 2012.
- [6] Judith Klipin and Kirsten Harrison, The Future for Policing and Crime Prevention in SADC, International Crime Prevention Centre, Montréal, 2003.
- [7] *Committee on Law and Justice, Fairness and Effectiveness in Policing. National Academies Press, p. 24.*:[http://en.wikipedia.org/wiki/Community\\_policing](http://en.wikipedia.org/wiki/Community_policing), 2004.
- [8] Community policing ten principles, downloaded from <http://www.police.belleville.on.ca/community%20policing/principl.htm> on 12th March, 2008.
- [9] School response Unit, downloaded from <http://www.police.belleville.on.ca/community%20policing/sru.htm> on 12th March, 2008.