

CASE 2015

Improving transparency and openness in Nigerian elections
through the collaborative use of technology



Pre-Implementation Phase for Shared Election Monitoring Platform

Photo Credit: Maggie Fick

Progress Report

Prepared for the Canadian
High Commission in Nigeria

March
2014

18 Nigerian civil society organizations

7 international partners

&

countless social media enthusiasts
ready to make a difference

are uniting behind one platform:

CASE 2015

Content Aggregation System for Elections

The project team and participants wish to express their sincere appreciation to the Canada Fund for Local Initiatives (CFLI) for its critical support for this project.

◆ FOREWORD

The Yar'Adua Foundation wishes to express its sincere appreciation to the Canadian High Commission and the Canada Fund for Local Initiatives (CFLI) for their important support to encourage credible Nigerian election processes.

Funding from CFLI enabled the Foundation to establish a critical pre-implementation phase for a technology-driven, coordinated approach by civil society groups planning to engage in election observation during the 2015 general elections. CASE 2015, "Content Aggregation System for Elections", will develop a shared electronic platform and mobile app that will standardize the process of new media driven election observation.

A requirement analysis and feasibility study were conducted from December 2013 to February 2014 to gather information on the needs of civil society organizations and features of the platform. This report summarizes the planning phase of the project and provides further insight as to how this innovative project can facilitate a transparent electoral process that Nigeria can be proud of. Positive outcomes include:

- The overwhelming commitment of civil society stakeholders and international partners to improve the credibility of elections;
- The willingness of civil society organizations to collaborate for improved election observations using the technologies proposed by this project;
- The commitment of international technology labs to develop cutting-edge tools required to support the collaboration;
- The generosity of international development partners to support efforts to implement the second phase of this project.

Nigerian youth and social media users are driving the gains of Nigeria's young democracy. The Yar'Adua Foundation is committed to foster and facilitate technology-driven initiatives to engage this crucial sector of Nigeria's expanding population toward a free, fair and transparent election process.



Jacqueline Farris
Director General
Shehu Musa Yar'Adua Foundation



CONTENTS

- 5 Introduction
- 7 User Requirements Survey
 - 10 Summary of User Requirements Findings
 - 19 User Requirements Justification
 - 21 User Requirements Specifications
- 23 The Technology and Its Features
 - 24 Features
 - 26 Technology Recommendations
- 27 Feasibility Study
 - 28 Operational Feasibility
 - 29 Technical Feasibility
 - 34 Technology Scan Chart
 - 36 Schedule Feasibility
 - 38 Feasibility Ranking Strategy
- 40 Roundtable Report
- 41 Recommendations





INTRODUCTION

Elections are a critical pillar of democracy and good governance the world over. When free, fair and transparent, they confer legitimacy and acceptance on resulting administrations.

In Nigeria, elections have frequently been a sour point of our democracy. Incidences of fraud, rigging, vote buying and blatant results manipulation have undermined the credibility of this important process. As a result, public confidence in the outcome of elections is usually low.

If Nigeria's young democracy is to be sustained, openness, transparency and credibility must be institutionalized as part of the culture of electoral processes. This means that access to information and results that could aid independent assessments of election outcomes must be democratized.

Civil society is uniquely positioned to meet this challenge. However, several factors have limited the capacity of civil society's effectiveness within the Nigerian electoral process. These include:

1. Lack of structured conventions, frameworks and knowledge-bases to provide neutral context for election assessments
2. Severe lack of operational capacity for election observation resulting in limited scope of coverage
3. Duplication of observation efforts which result in an inefficient employment of scarce operational resources
4. Lack of collaboration within the practice – fractionalized

assessments; loss of opportunities for synergy and collaborative growth of the practice

If Nigeria's young democracy is to be sustained, openness, transparency and credibility must be institutionalized as part of the culture of electoral processes.

One of the many highlights of the Nigerian 2011 general elections was the role that technology played in empowering Nigerian civil society organizations to organize, collaborate and mobilize around the elections. The Social Media Tracking Center (SMTC), a joint initiative between the Yar'Adua Foundation, Georgia Tech University and Enough is Enough Nigeria, was an example of multi-stakeholder collaboration in sharing election observation information.

Established to track new media's impact on the elections, the SMTC aggregated 500,000 micro election reports from 70,000 stakeholders. The aggregated view provided a richer, more insightful perspective on the conduct of elections than any single election monitoring attempt.

The experience of 2011 points to the feasibility of a technology-driven approach to address and overcome challenges encountered by civil society organizations in encouraging transparent and credible elections in Nigeria.

Therefore, the Yar'Adua Foundation, as part of its goal to institutionalize fairness and equity in Nigeria's governance, is

collaborating with several stakeholders to develop innovative technology solutions to address some of the unique challenges of Nigeria's election process.

In the build up to the 2015 general elections, the Foundation has identified the development and implementation of a technology enabled election observation system as an important initiative.

The proposed technology, Content Aggregation System for Elections (CASE 2015) platform, is designed to improve collaboration and information sharing for Nigeria's traditional election observers, crowd-sourced citizen observers and social media users.

The system is comprised of a mobile application and aggregation platform for the purpose of real time and post-election analysis.

The platform will combine information gathered from social media sources as well as traditional observer teams in a single, meaningful view. This will allow civil society stakeholders to:

1. Participate in real time social media dialogue about the ongoing elections;
2. Gain the benefit of multi-dimensional perspectives in their analysis of the elections;

3. Access an easy-to-use mobile application for observation and reporting on the process across the country.

CASE 2015 is a technology-driven platform designed to improve collaboration and information sharing resources

CASE 2015 is envisaged to provide:

1. A framework for technology driven election observation in Nigeria;
2. Election observation planning tools;
3. Stakeholder collaboration;
4. Online stakeholder management;
5. An election reporting and monitoring platform.

This report captures the findings of the user requirement analysis and feasibility study conducted during the pre-implementation phase of CASE 2015.

◆ User Requirement Summary

To successfully develop a useful election observation platform and application, it was necessary to conduct interviews with Nigerian civil society organizations (CSOs) and community groups, the primary focus of this project, to determine user requirement specifications.

This user requirement analysis presents expectations of stakeholders (CSOs, social media users and international partners).

The Process

Selection of organizations

Organizations selected for the user requirements gathering phase are actively involved in the election observation process. Most of these organizations serve as umbrella bodies with large geographic scope consisting of various community based organizations that plan to deploy observers for the 2015 elections.

Interviews

Interviews were conducted with individuals and stakeholders involved in the election observation process to determine their objectives and level of interest to participate in this project. A total of 25 stakeholders at the national level were canvassed.

User Requirement Survey

To ensure a strong user-centered approach for the requirements analysis, one-on-one interviews and discussions were conducted with end-users. Where a one-on-one interview was not possible, questionnaires were sent to representatives of CSOs via e-mail. Fifteen one-on-one interviews were conducted and three were done via e-mail.

The questions contained in our survey were aimed at gaining an understanding of the specific practices of CSOs in election observation. Direct questions relating to technology were also presented in simple terms to elicit responses that sufficiently cover the entire system functionality.

When respondents were not familiar with technical questions, an analysis of their responses served as valuable input for developing features for the platform.

It is important to ensure that the system contains features that are highly relevant to end users (election observers). Hence, it was necessary to incorporate the perspectives of civil society stakeholders.

This study was conducted during the period December 2013 to February 2014.

Part 1 of the survey focused on understanding the methodologies CSOs adopted for election observation in previous elections. Sample questions of Part 1 include:

1. What information did your organization gather directly during previous elections?
2. What methods did you use to gather information?
3. Was technology used to send the information?
4. How was the information analyzed?

Part 2 of the survey concentrated on gaining an understanding of CSO plans for 2015 elections relating to the adoption of new methods or improvements. Sample questions of Part 2 include:

1. Do you plan to deploy election observers?

2. In the 2015 elections, what information does your organization plan to gather directly?
3. How do you plan to share information in real-time during the 2015 general elections?
4. How do you plan to store the information you gather?

Participants

Eighteen civil society organizations were selected to assess practices, experiences and geographical coverage in election observation.

TABLE 1. Partner Civil Society Organizations

Organization	Role	2015 Elections
Alliance for Credible Elections (ACE)	Nationwide election observation in partnership with other organizations.	Deploy observers; interest in using new media tools for election observation.
Action Aid	Election observation in partnership with community based organizations.	Empower citizens to observe election after casting their vote.
Centre for Democracy and Development (CDD)	Election observation through a network of organizations.	Deploy observers through a network of organizations.
Centre for Information Technology and Development (CITAD)	Coalition with community based organizations especially in the North-east and North-west geo-political zones.	Deploy observers in 8 northern states.
CLEEN Foundation	Focus on conduct of security agencies during elections.	Deploy observers in each state with focus on rural areas.
The African Centre for Leadership, Strategy and Development (Centre LSD)	Experience in election observation, accredited by INEC and active in the election situation room.	Deploy observers in the Niger-Delta region.
Enough is Enough Nigeria (EIE)	Increasing citizen interest in election activities using a mobile app developed for election observation in 2011.	Deploy citizen observers to gather information using ReVoDa mobile app.
Election Monitor Nigeria	Synergizes election observer groups.	Deploy observers to cover each local government area in Nigeria.
Federation of Muslim Women's Associations in Nigeria (FOMWAN)	Nationwide organization with branches in all states of the federation; partners with other organizations in election observation.	Deploy observers for PVT in the general elections.
Human Rights Monitor (HRM)	Branch of the Independent Election Monitoring Group (IEMG); election observation	Deploy observers nationwide and collaborate with other organizations.

	experience since 1999 and active in the election situation room.	
Justice Development and Peace Commission (JDPC)	Vast experience in election observation and strong observer mobilization capacity.	Deploy observers nationwide with focus on rural areas with no police presence.
The Nigerian Bar Association (NBA)	104 branches across Nigeria consisting of credible election observers.	Deploy observers nationwide.
Nigerian Women's Trust Fund (NWTF)	Working with women leaders and women in politics to ensure credibility of Nigerian elections.	Deploy one observer per polling unit across the country.
Stakeholder Democracy Network (SDN)	Focus on election observation in the Niger-Delta region using network of organizations.	Deploy observers in the Niger-Delta region.
Transition Monitoring Group (TMG)	Vast experience in election observation.	Deploy observers for quick count and general elections.
Youth Initiative for Advocacy, Growth and Advancement (YIAGA)	Engaging interest of Nigerian youth in election activities.	Deploy citizen youth observers.
Reclaim Naija	Committed to use of technology for election observation and engaging community based observers.	Deploy community based observers in all states.
Youngstars Foundation	Increasing youth interest in election activities.	Deploy observers and gather information through voters.

Summary of User Requirement Findings

Information Gathered in Previous Elections

Incident Reports



17/17
CSOs
gathered this

All CSOs gathered information about incidents during previous elections

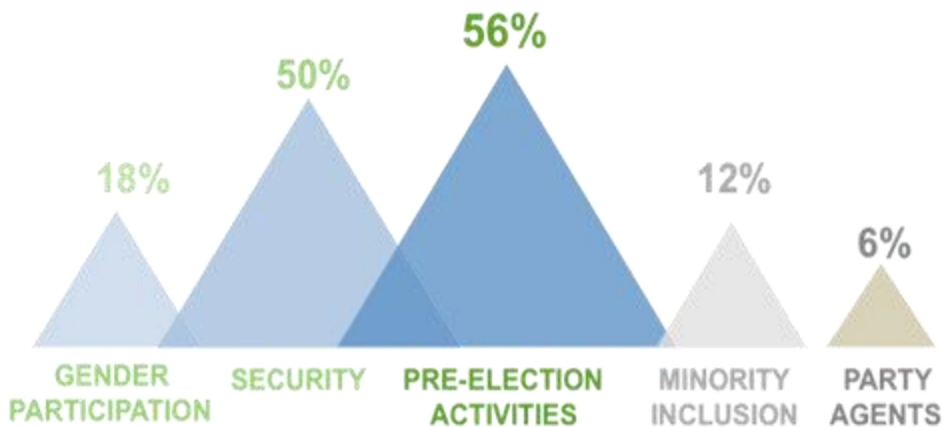
Election Day Process Performance



15/17
CSOs
reported on
this

All CSOs gathered information on the performance of election day processes

Stakeholders also gathered information about...

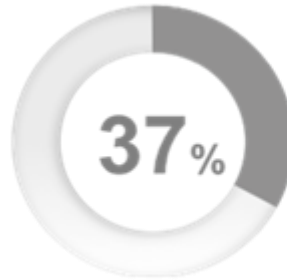


Sourcing Information From Others

Did you use information gathered by others in previous elections?



13/17
CSOs say they did



37% of the CSOs Surveyed found incident reports created by other stakeholders in previous elections useful

Majority of CSOs surveyed showed no aversion to using information from other sources in previous elections

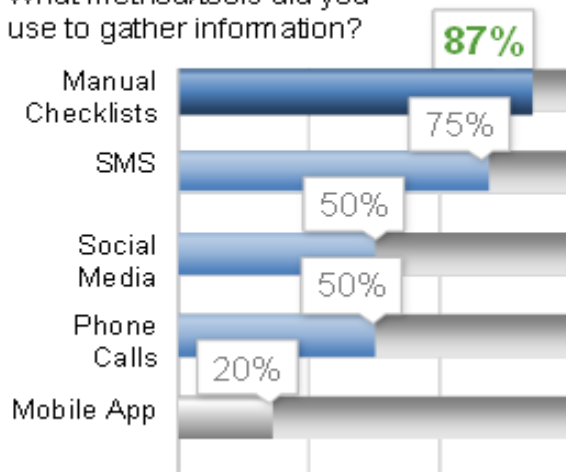
In previous elections, CSOs sourced other civil society groups to obtain these categories of information



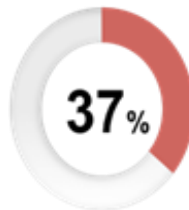
Gathering Information In 2011

Methods for Capturing Data

What method/tools did you use to gather information?



CSOs surveyed used trained, STATIC observers as direct sources of information about the elections in 2011



CSOs surveyed used trained, ROVING observers as direct sources of information about the elections in 2011



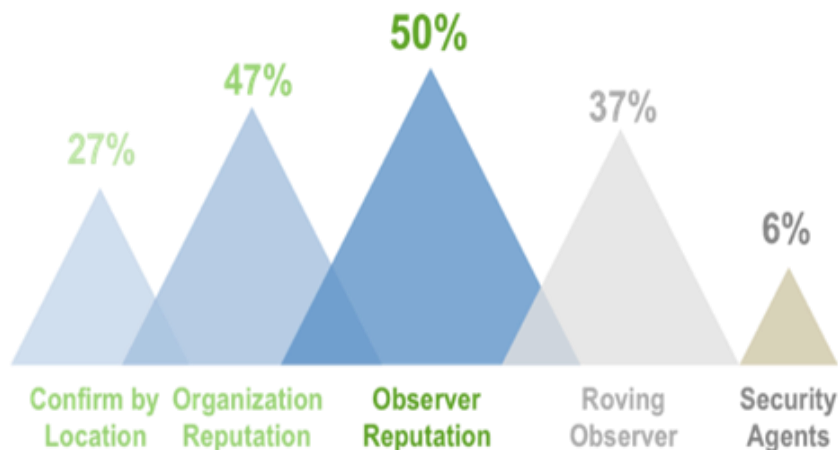
CSOs surveyed used citizen observers to gather information about the elections in 2011.



PARTNERSHIPS 56% of CSOs surveyed indicated they leveraged partnerships to gather information

Ascertaining Credibility of Information Sources

How were the sources of information identified (and ascertained to be credible)?



Information Transmission And Analysis

Use of New Media



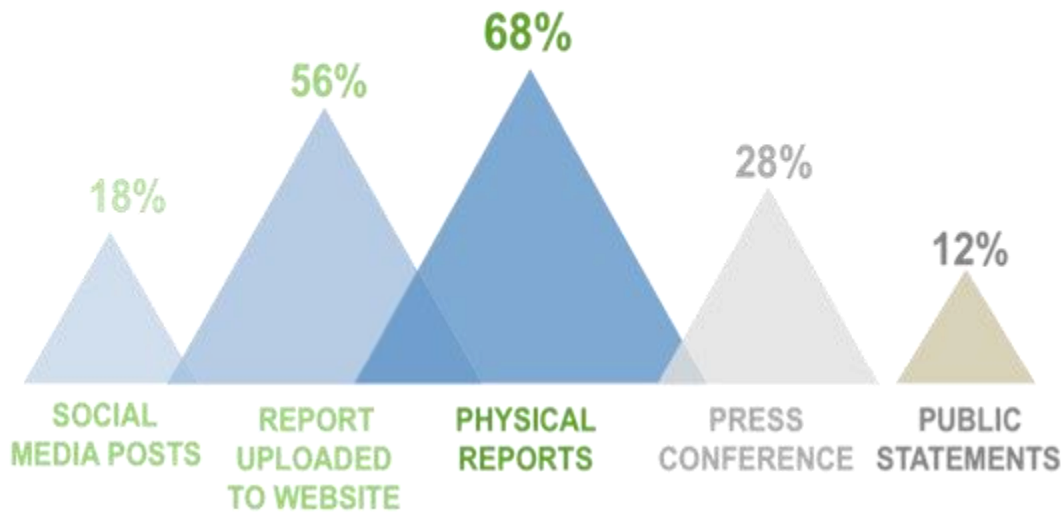
Almost all CSOs surveyed used some sort of new media to transmit all or part of their reports

Automated Analysis



Most CSOs depended entirely on human intervention to analyze election reports

Communicating outcomes of analysis...



Information Requirements for 2015

Incident Reports



18/18
CSOs plan to gather this

All CSOs intend to gather information about incidents during previous elections

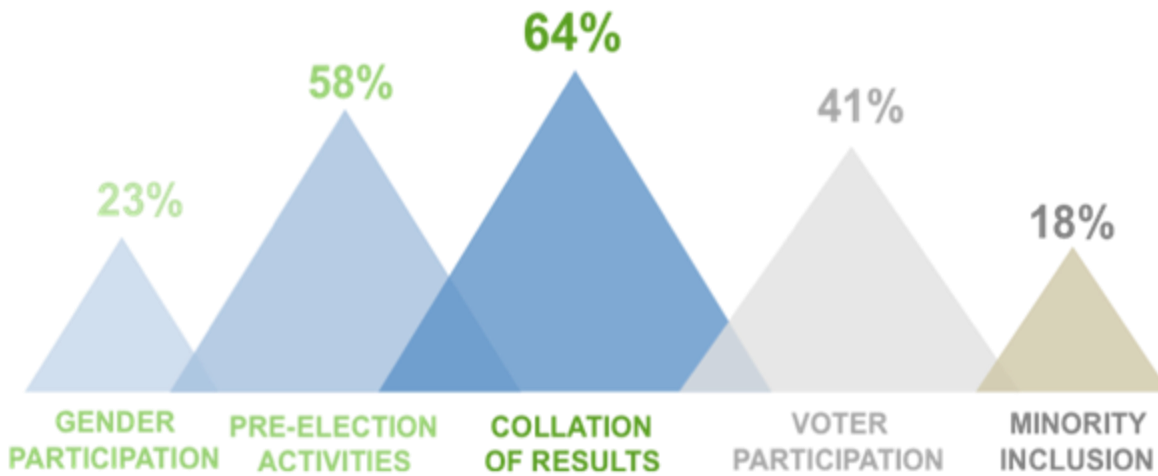
Election Day Process Performance



16/18
CSOs will report on this

All CSOs will like to gather information about performance of election day processes

Some other information needs



Sourcing Information From Others For 2015

Using information from other CSOs



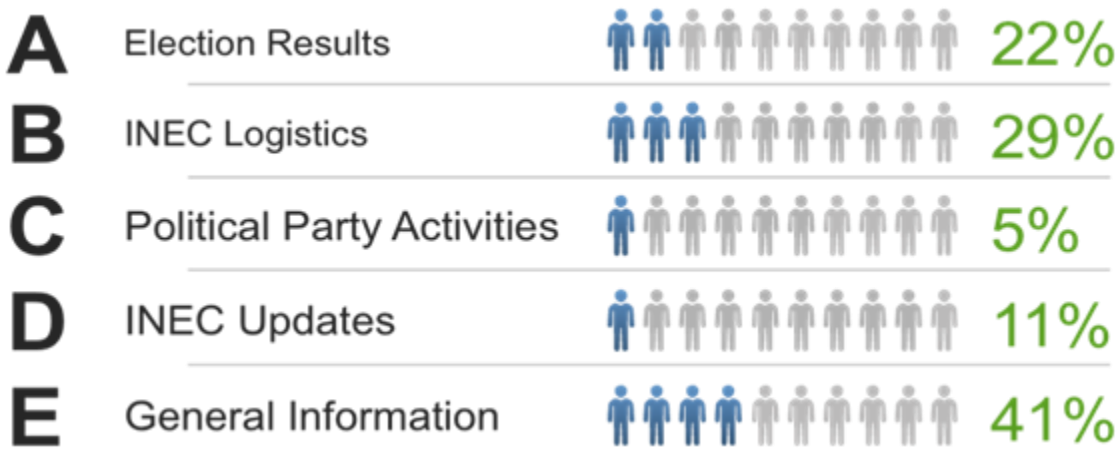
Majority of CSOs surveyed plan to rely on other CSOs for election observation information they can't gather themselves

Most CSOs were listening to others for Incident Reports



83% of the CSOs Surveyed plan to increase the scope of incident reports they receive by relying on reports from other CSOs

For the 2015 election, CSOs are likely to obtain these categories of information from other civil society groups



Real Time Report Transmission and Analysis

SMS Reports from the field



94%

CSOs interviewed plan to have their observers send SMS reports directly from the field during elections

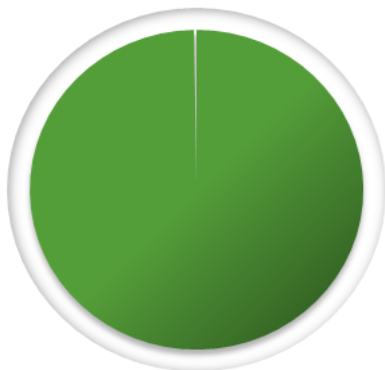
Social Media Reports from the field



41%

CSOs interviewed plan to have their observers send Social Media reports directly from the field during elections

Real Time Analysis



100%

CSOs interviewed plan to analyze field reports received in real time

Automated Processing



5%

Only 5% CSOs interviewed plan to use some sort of automated process to analyze field reports in real time

Information Sharing In 2015

Sharing **SOME** information with other CSOs in real time



18/18
CSOs plan to

All CSOs surveyed plan to share at least some information that they gather with other CSOs

Sharing **ALL** information with other CSOs in real time

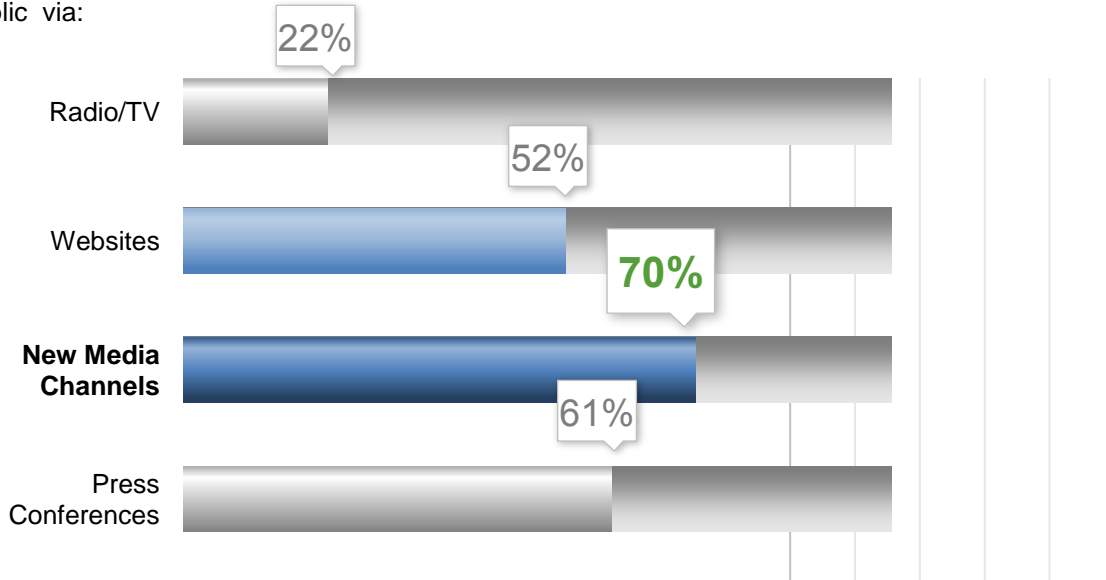


14/18
CSOs will not mind

Most CSOs surveyed will not mind sharing all information that they gather with other collaborating CSOs

Sharing Real Time Reports with the Public

Percentage of stakeholders that plan to share real time information with the public via:



Technology Needs - 2015

Mobile Application Development



17/18
CSOs need help with this

Most CSOs surveyed have identified the development of a mobile application as an information system need for 2015

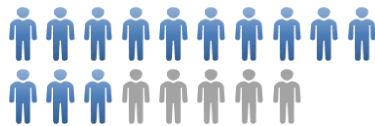
Event Reporting/Aggregation Platform



15/18
CSOs identified this as need

Most CSOs surveyed have identified the acquisition of an event report aggregation platform as a need for the 2015 elections

Data Analysis and Content Presentation



13/18
CSOs identified this as need

Most CSOs surveyed have identified the capacity to analyse reports and present digital content online as a need for the 2015 elections

◆ User Requirement Justification

The outcome of the analysis presented below suggests that certain user needs stand out for most respondents. From the interviews and analysis, requirements were identified and formulated for all respondents. These requirements are listed and justified below.

Requirement Number	User Requirement	Justification
UR_01	The app should enable information gathering from the field	CSOs indicated that the platform should enable information gathering related to: <ul style="list-style-type: none"> • Pre-election activities • Election day activities • Post-election activities
UR_02	The app should support rich media	Some organizations emphasized the importance of pictures, voice notes and video clips as mediums of collecting additional information and evidence during election observations
UR_03	The app should support multiple languages	A few users indicated that language translation capacity would benefit users in rural areas who are not English-language inclined
UR_04	The app should support observer modes	CSOs deploy "stationary" and "roving" accredited observers to the polls. They indicated that these observers gather different types of information. Some CSOs use information from crowd-sourced observers who are registered voters and independent election observers
UR_05	The app should support reporting modes	CSOs indicated that during the election observation period, critical and non-critical information is compiled for reportage
UR_06	The app should provide registration for accredited observers	To ensure the credibility of information shared over this platform, CSOs specified users must register before engaging with the app
UR_07	The app should tolerate limited/no network connectivity	The unstable condition of mobile networks in areas across Nigeria underlies the specification for the app's capacity to work offline to gather and store information
UR_08	The app should be compatible with various mobile devices	The app requires compatibility with the wide variety of mobile devices available to end-users

UR_09	The system should support user management	To support observer registration at the front end there should be support for user management at the back-end along with restriction of content that need not be publicly shared
UR_10	The system should support data visualization	CSOs suggested a data gathering specification to facilitate the reporting and analysis of information before, during and after elections
UR_11	The system should generate alerts and notifications	CSOs cited the need to contact observers and relevant stakeholders via the platform, especially during emergencies
UR-12	The system should facilitate reporting	Election observation efforts are usually documented through reports. CSOs expressed interest in accessing and generating reports through the system
UR_13	The system should be able to filter information	CSOs indicated the need to filter content from the system based on their areas of interest or specialization
UR_14	The system should provide content aggregation	The system should provide a means of collating information sent via SMS, Web and social media for easy accessibility to users connected to the platform
UR_15	The system should provide tools for incident management	Due to the absence of proper incident management in previous elections, CSOs indicated interest in reporting and addressing incidents through this platform
UR_16	The system should provide support for various data types	The back-end should be able to collate information sent through the app containing different data types including images, voice notes, video clips, GPS Information and time stamps
UR_17	The system should enable information gathering from other organizations	Many CSOs indicated interest in gathering information from others and a unified system to help share information between organizations

◆ User Requirement Specifications

The questions contained in the survey helped identify specific user needs, methods and technologies for election observation so these can be analyzed and translated into software features. An analysis of answers given by the partnering CSOs revealed that the suggested user requirements varied in order of priority. The table below presents user requirement specifications derived from these answers and shows resulting features and requirement priorities.

Requirement Legend:

1. Priority 0 (P0) Not Required
2. Priority 1 (P1) Optional
3. Priority 2 (P2) Minimally Required
4. Priority 3 (P3) Moderately Required
5. Priority 4 (P4) Strongly Required

Requirement Number	User Requirement	Features	Use Case Scenario	Priority
UR_01	The app should enable information gathering from the field	SMS data submission	The observer uses SMS to send information about activities at polling units	P4
		Web based data submission	The observer uses a web form to send information about activities at polling units	P3
		GPS location tagging	Geographic information confirms the location of the observer sending this information	P4
		Timestamps	Date and time at which this information is recorded and attached	P4
UR_02	The app should support rich media	Voice note sharing	The observer records voice notes on a mobile device and sends it to the central database through the mobile app	P2
		Image sharing	The observer captures images on the mobile device and forwards it to the central platform	P3
		Video clip sharing	Video clips are captured by the observer and forwarded to the central platform	P3

UR_03	The app should support multiple languages	Language translation	Multiple languages should be made available as options which the observer can choose from to utilize the app	P1
UR_04	The app should support observer modes	Stationary observer mode	A stationary observer, attached to a participating CSO, assigned to a single polling unit, using the app for information gathering and reporting pertaining to that polling unit	P4
		Roving observer mode	An observer, attached to a participating CSO who will be permitted to file reports from more than one polling location	P4
		Independent citizen observer mode	An observer with no CSO affiliation sending reports from one polling location	P3
UR_05	The app should support reporting modes	Incident reporting mode	An observer witnesses an event that occurs randomly, he is able to choose from a list of categories and report this event	P4
		Process driven reporting	The observer is prompted, from time to time, to complete a checklist of process questions to provide update on the elections	P4
UR_06	The app should provide registration for accredited observers	Observer registration	The observer is required to fill registration fields after downloading and installing the app	P4

UR_07	The app should tolerate limited/no network connectivity	Offline Mode	The app enables observers to gather and store information when there is limited/no network connection. App synchronizes with backend when connectivity is restored	P4
UR_08	The app should be compatible with various mobile devices	Multi-platform support for: -Feature phones -IOS phones -Android phones -Blackberry phones	The app is available for download on all the identified platforms for mobile devices	P4

◆ The Technology and Its Features

Overview

The proposed system will enhance CSO collaboration by providing tools and applications that facilitate information sharing for the purposes of real time and post-election analysis.

Desirable System Benefits

The system will combine information gathered from social media sources as well as traditional observer teams in a single, meaningful view. This will allow civil society stakeholders to:

1. Participate in real time social media dialogue about the ongoing elections
2. Provide the benefit of multi-dimensional perspectives in their

analysis of the elections. These perspectives will include:

- a. Social media sentiments;
- b. Crowd-sourced observer reports and;
- c. Traditional observer updates.

The system is also expected to provide traditional and crowd-sourced observers with an easy-to-use mobile application for observation and reporting on the general election process across the country in order to:

1. Simplify the process of submitting electronic reports – reducing training needs;
2. Standardize technology-driven reporting;
3. Facilitate the adoption of technology by civil society organizations that might not have the resources to fund technology development.

Mobile app – Data Collection and Reporting

The mobile application will constitute the front end of the platform. This app will provide the means for collecting and relaying data to the back-end. Field observers will use the mobile app to send observation updates and incident reports to be collated and analyzed at the back-end and displayed through a Web portal and other online spaces.

Aggregation platform – Analysis & Presentation

The back-end will consist of hardware and software that collates and analyzes real time reports from traditional observers, crowd-sourced citizen observers and social media. The aggregation platform will use information gathered from these various sources to present a status dashboard of the elections. A Web portal will serve as the presentation interface for the back-end of the proposed platform.

Features

Based on feedback obtained from the user requirements survey conducted with stakeholders, the following desirable features for the mobile app were identified:



Usability:

- Simple, form driven information entry
- Multi-language support
- Ability to capture GPS location
- Alerts/notifications
- Rich media support



Connectivity

- Tolerance for limited/no connectivity
- Support for SMS data submission
- Support for web based submission
- Offline mode



Flexibility:

- Support various observer modes
- Support various reporting Modes



User Management:

- Observer registration



Mobile Device Compatibility

- Multi-platform support

Based on feedback obtained from the user requirements survey conducted with stakeholders, the following desirable features for the aggregation platform were identified:



Functionality:

- Messaging
- Alerts/Notification
- Filtering capabilities



Data Visualisation

- Interactive geographic presentation
- Interactive graphical presentation
- Customisable visualisation



Reporting

- Report generation
- Observer report categorisation
- Report tagging



Incident Management

- Incident identification
- Incident recording
- Incident visualisation
- Incident tracking

◆ Technology Recommendations

The technology research led to a recommendation to integrate Aggie and ELMO into the platform. Aggie and ELMO offer nearly 80% of the desirable features, identified from the user requirements gathering process. The platform recommendations made by Mike Best, an AGGIE and ELMO technology expert, Georgia Institute of Technology, are highlighted below.



Content Aggregation:

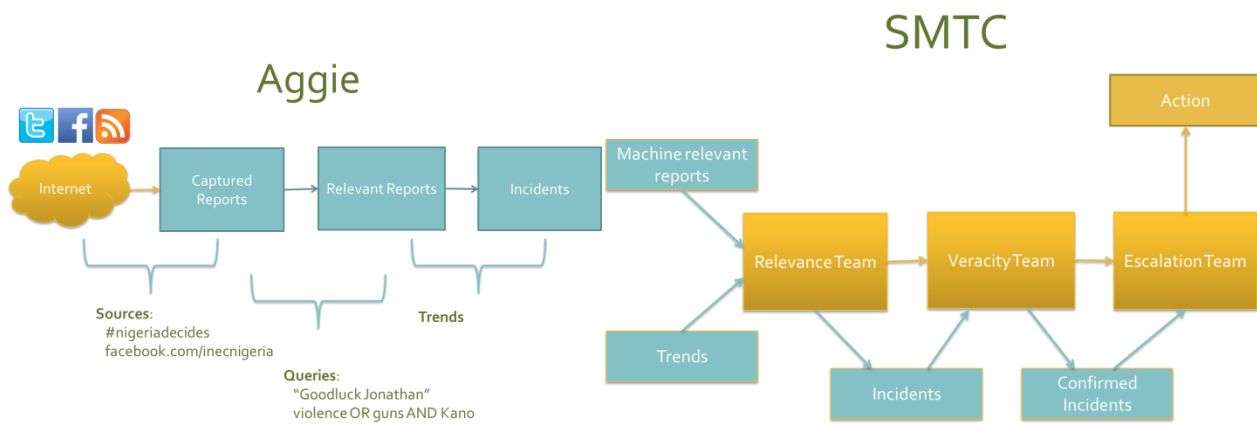
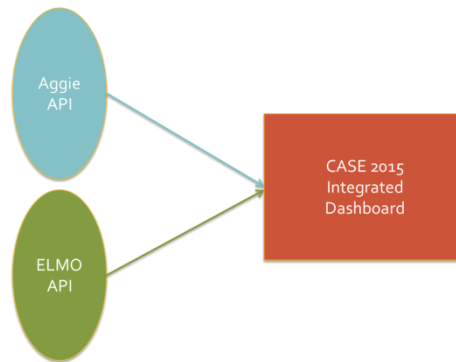
- Support for SMS reports
- Support for web based reports
- Social media crowdsourcing



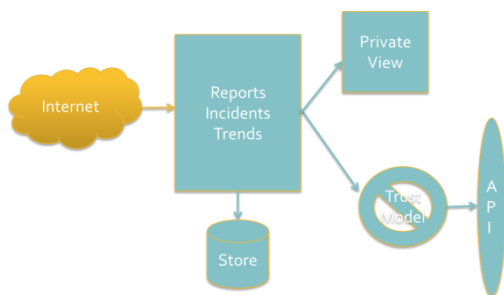
User Management

- User creation
- User grouping
- User monitoring

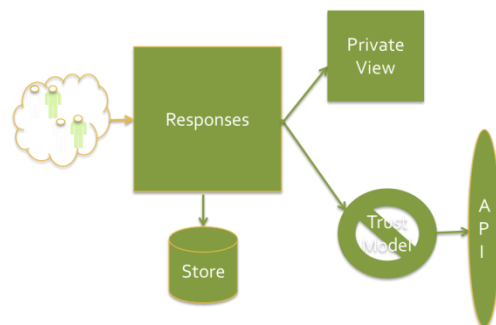
Content Aggregation System for Election Observation (CASE 2015)



Aggie 2.0 / SMTC Outputs



ELMO Outputs



◆ Feasibility Study

This study analyzed the probability of success for implementing a collaborative, technology-driven system for observing the 2015 general elections in Nigeria. It also assesses a range of similar electronic applications and platforms, which could be easily adapted to suit the requirements of this project. Finding a platform (or a set of applications) that could be customized or adapted for the purposes of this project is desirable as it will save significant development time and resources.

The feasibility study emphasized the following objectives:

1. Determine the feasibility of deploying this platform in Nigeria;
2. Identify a subset of related systems that can be adopted for the purpose of this project;
3. Identify infrastructure, environmental, resource and technology requirements for this project;
4. Provide recommendations to improve strengths and weaknesses, seize opportunities and mitigate threats.

Methodology

The following approach was undertaken during the course of this feasibility study:



Interviews with potential end users and other stakeholders



Evaluation of similar electronic systems developed for other elections



Assessment of overall project feasibility



Analysis of stakeholder needs to identify desired application features



Research: Desk review and interviews with technology and infrastructure information sources to determine feasibility constraints

Operational Feasibility

The successful and effective implementation of this project requires sufficient buy-in from key stakeholders. This section examines how well the proposed system will work with current stakeholders.



Usability

- Over 80% of surveyed stakeholders have previously used mobile technologies for election observation
- Reduced learning curve
- Desired usability is achievable



Usability

- Over 80% of surveyed stakeholders have previously used mobile technologies for election observation
- Reduced learning curve
- Desired usability is achievable



Stakeholder Role Perception

- Civil Society Election Observer Groups
- Citizen observers
- International Development Partners and Donors
- Technology Partners



Potential resistance to adoption

- Stakeholders may feel loss of total control over information
- Scepticism about benefits of sharing information in real time
- To overcome resistance by allowing users choose what information to share

Technical Feasibility

Electronic applications have been developed to aid election observation around the world. These applications have been designed to address varying requirements and have adopted various approaches to supporting election observation. Significant savings in development time and effort could be achieved if any subset of these existing

applications could be adopted and adapted for the purposes of this project.

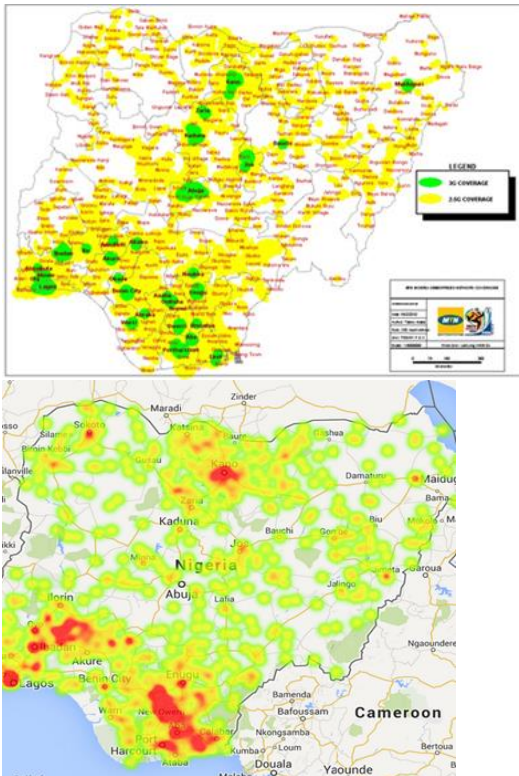
This section examines how practical the proposed system is with consideration to the conditions of telecommunication infrastructure in Nigeria. It also examines the availability of technical resources and expertise to design, develop and implement the proposed solution.

Practicability

Mobile Network Infrastructure

For a successful nationwide implementation of this system, there are minimum Infrastructural conditions that should be met. Measuring these conditions serves as a means of determining the practicability of deploying a system of this nature in Nigeria.

Mobile Network Coverage



Comparison of MTN coverage map and Polling Unit Heat Map of Nigeria

¹ 2G coverage allows users to send SMS and data at severely limited speeds. 2G coverage will support mostly text-based reports from observers using this platform.

² 3G coverage provides faster data speeds which allow users to send rich data like voice, images and video.

A study of various sources of information concerning mobile network coverage with regard to polling unit clusters in Nigeria provides the following insights:

Coverage information was only available for two Mobile Network Service Providers (MTN and Glo Mobile). Airtel and Etisalat coverage information was not available to this study.

Although the information available to this

Source	Type of Information	Currency of Information	Insights
GSMA Mobile for Development	MTN Coverage Map (2G ¹)	2009	Suggests about 90% coverage of polling unit clusters
	Glo Mobile Coverage Map (2G)	2009	Suggests about 80% coverage of polling unit clusters
	Glo Mobile Coverage Map (3G ²)	2009	Suggests about 65% coverage of polling unit clusters
MTN Nigeria	MTN 3G network coverage Map	2010	Suggests 80% coverage of polling unit clusters

study was limited, a minimum coverage of 80% for 2G and 3G services as of 2010 is sufficient to consider the proposed platform practical with regard to mobile network coverage.

Quality of Mobile Services

Another condition for the proposed system's practicality is the quality of service for available mobile networks required to support the type of communication required by the platform.

Because the communication between the observer and the platform must be as close to real time as possible, latency on the network is an important factor.

Also, reliability of the transmission network is a critical consideration if failed messages are to be kept at a minimum.

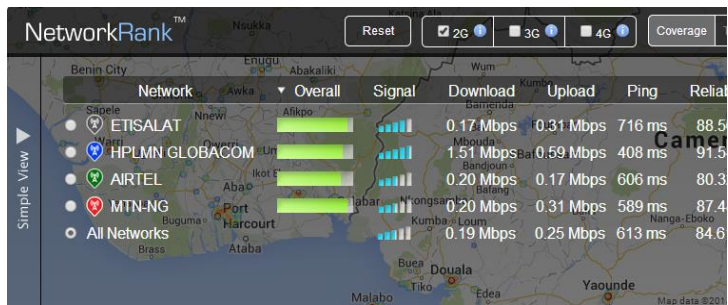
OpenSignal is an on-going project that measures the quality of mobile networks worldwide using crowd-sourced data. It functions by collating information about mobile networks from individual cell phones that have the open signal app installed. As at the end of January 2014, **OpenSignal** had sourced over 9,200 actual readings of network quality from across Nigeria, providing the following insights:

As illustrated above, the quality of service for mobile networks in Nigeria range from satisfactory to very good.

SMS delivery latency is typically below 15 seconds for 95% of all messages.

Therefore, the quality of service available on Nigeria's mobile networks will practically support the operation of the proposed platform.

2G Service Quality Results for Nigeria



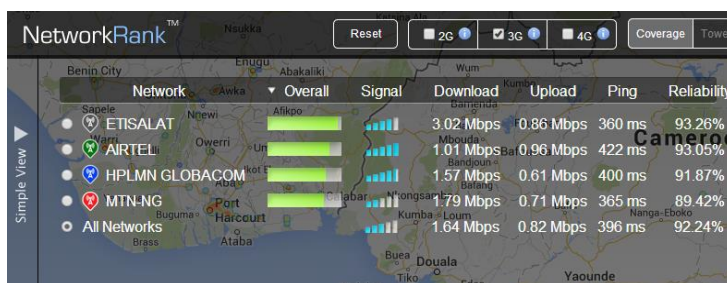
Platform Hosting Infrastructure

The reports aggregation platform must be hosted on equipment with adequate network infrastructure to handle traffic demands, provide security, data integration, analysis and presentation.

The following are minimum requirements for a hosting facility for the aggregation platform:

1. Sufficient internet access
2. Mobile network interconnect
3. High availability

3G Service Quality Results for Nigeria



A scan of several managed hosted service providers in Nigeria identified providers capable of providing a hosting environment that will meet the set criteria.

	MainOne	Galaxy Backbone	MTN Hosting	Data
Internet Access	Undersea cable access with bandwidth of 1.92Tbps and upgrade capacity of 4.96Tbps.	Over 600Mbps Optical Fiber Internet backbone with redundancy	Dedicated access to submarine fiber cable Access to MTN's nationwide fibre optic network	
Mobile Network Interconnect	Service provider with access to at least two mobile networks (MTN & Airtel)	Service provider with access to at least two mobile networks (MTN & Glo)	Mobile Network service provider with access to other mobile networks	
Availability	99.9%	99.7%	99.8%	

Given that there are, at least, three domestic providers that can provide hosting for the aggregation platform; hosting infrastructure does not constitute a feasibility constraint.

Availability and Accessibility of Technology

Access to the relevant technology is a key factor for technical feasibility. This study examined systems that have implemented technologies applicable to some or all of the scope of the proposed project.

The following applications were reviewed for the purposes of this project:

Revoda

ReVoDa is an election reporting application that was built for EnoughisEnough Nigeria (EiE Nigeria), by a team of tech volunteers. ReVoDa allows voters to act as independent citizen observers from their respective Polling Units anywhere in Nigeria, having registered to map their mobile number, name and polling unit number to specific locations. It also allows EiE Nigeria to send relevant information about the electoral process to registered users. ReVoDa was designed to run on Java-based feature phones and blackberry smartphones during the 2011 general elections.

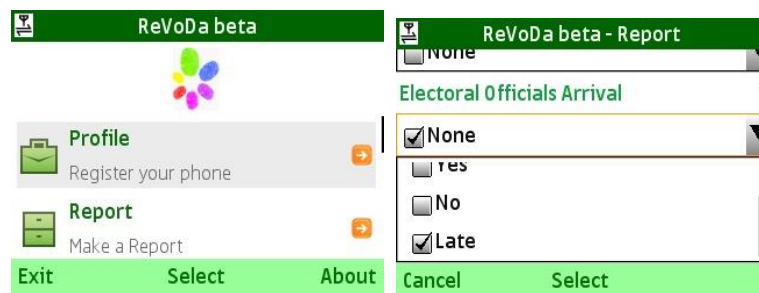


Figure 1 - Screenshots of ReVoDa Mobile App

ODK COLLECT/FORMHUB/ELMO

This application is an open source data collection and reporting program that enables the use of programmed questionnaires on mobile devices. The application serves as a front end for integration with customizable back-end systems. Although ODK Collect conventionally uses Formhub as its back-end system, it features an open-source application programming interface (API). ODK Collect is designed to run on android mobile devices. It supports different data types including GPS location, images, videos, barcodes, voice and text.

The ODK was used in conjunction with an election monitoring back-end (ELMO), which was developed by Georgia Institute of Technology for the Carter Center. Data tablets supplied polling unit information through the online form contained on the Website. Real time server updates were generated based on the information received.



Figure 2 - Screenshot of the ODK collect mobile app

Frontline SMS:

This is a desktop based app that was initially developed by Ken Banks in 2005. It converts a computer and a mobile phone

or modem into a central communication hub which enables large groups of users to send and receive text messages through their mobile phones. This two way communication is totally independent of internet connection. The system is highly scalable because it can be implemented using all kinds of mobile phones. Frontline SMS was used in Nigeria for election monitoring in 2007 and since then, been applied to other social development programs. It is highly efficient for offline communication.

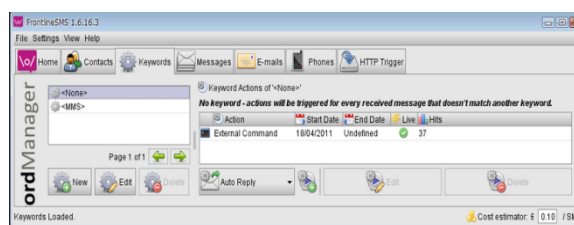


Figure 3 - Screenshot of Frontline SMS desktop app

Ushahidi:

This platform was created by a team of volunteers in 2008 to assist Kenyans in monitoring post-election violence reports. Since the initial deployment of the platform for the Kenyan situation, the Ushahidi platform has become a relevant and widely used tool for structured incident reporting, content management and incident mapping. The platform is open-source and easily customizable for use by various organizations worldwide.

Uchaguzi, is one of the popular platforms which was an Ushahidi customization for election observation in Kenya (2013) and Uganda (2011). This system incorporates early warning features and provides tools to visualize data for response and recovery.

Ushahidi also provides an application called Swift River. This app enables prompt data collation and analysis, especially in real-time, during crisis or emergencies. It provides observers with the tools to quickly

analyze large amounts of data and generate reports. The platform facilitates data integration in real-time, from Web feeds, social media and other online channels.



Figure 4 - Screenshot of the Ushahidi back-end in Liberia elections

OneWorld UK PLATFORM

This system was developed by OneWorld in the UK for facilitating effective election observation. The customized OneWorld platform was developed for Senegalese (Senevote) and Sierra Leone elections (Salonevote) in 2012. The system provides tools which are used by observers for information gathering and reporting. It is a very flexible platform, because it can be incorporated with any type of mobile device through SMS.

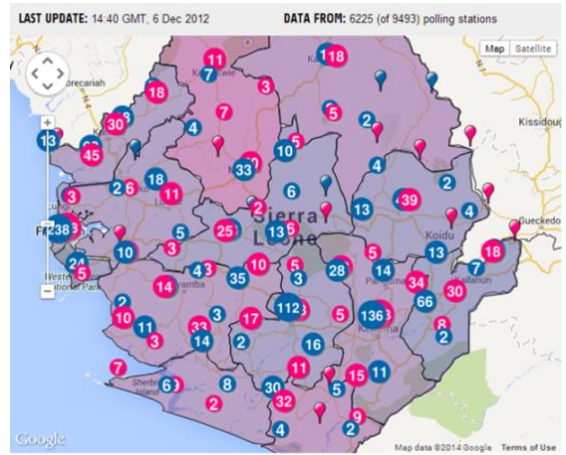


Figure 5 - Screenshot of OneWorld Salonvote Geographic Visualization

Aggie/SMTC:

This system was developed in 2011 primarily by the Georgia Institute of Technology in partnership with the Shehu Musa Yar'Adua Foundation. It is an information aggregation platform, which was implemented during the Nigerian 2011 elections to comb through social media sources, online feeds and other data on the Web in real-time to facilitate data aggregation and analysis. After the positive results from the use of the system in Nigeria, it was used in Ghana, Liberia and Kenya for election monitoring.

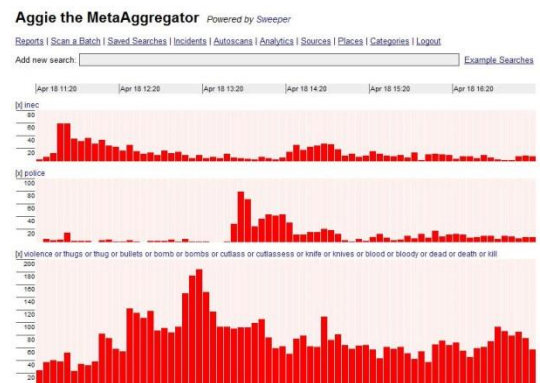


Figure 6 - Screenshot of Aggie's back-end

Technology Scan Chart

The tables below compare the features of each election observation application. Applications have been grouped into two main categories based on their functions.

Mobile Applications

	Revoda	Ushahidi	ODK Collect
Functionality	Observer registration Reporting	Observer registration Reporting	Reporting Observer registration
Integration	Alerts/notifications GPS location	Alerts/notifications GPS location Support for rich media	GPS location Alerts/notifications Support for rich media
Usability	User friendly interface SMS data submission	User friendly interface Web based data submission	User friendly interface Web based data submission
Connectivity	Tolerance for limited connectivity	Tolerance for limited connectivity Offline mode	-
Multi-vendor support	Supported on feature phones and smartphones	Supported on Android, IOS platforms	Support for android devices
License	Proprietary	Open Source	Open Source

Report Aggregation Platform

	Revoda	Ushahidi	ELMO	OneWorld	Aggie
Content aggregation	Support for SMS reports	Support for SMS reports Support for Web based reports Limited support for social media crowdsourcing	Support for Web based reports Support for SMS based reports	Support for SMS based reports	Support for Web based reports Strong social media crowd-sourcing
Functionality	Supports messaging via SMS Alerts/notification generation	Supports messaging via SMS or Web Alerts/notification generation	Supports messaging via Web Alerts/notification generation	Supports messaging via SMS	Alerts/notification generation
Observer Modes	Supports crowd-sourced Observer mode	Supports crowd-sourced Observer mode	Supports Traditional Observer mode	Supports Traditional Observer mode	Supports Social Media Observer mode
Visualization	Geographic information presentation Customizable visualization	Interactive geographic presentation Customizable visualization Graphical presentation	Interactive geographic presentation Graphical presentation Customizable visualization	Interactive geographic presentation Graphical presentation Customizable visualization	Interactive geographic presentation Graphical presentation

User Management	User creation	User creation User grouping	User creation User grouping		
Reporting	Report generation	Report generation Report categorization	Report generation Report categorization Report tagging	Report generation Report categorization Report tagging	Report generation Report categorization
Incident Management	Incident reporting Incident recording	Incident identification Incident visualisation Incident recording Incident reporting	Incident identification Incident recording Incident reporting Incident visualization	Incident identification Incident recording Incident reporting Incident visualisation	Incident identification Incident visualization Incident recording
License	Proprietary	Open Source	Partner Developed	Proprietary	Partner Developed

Two out of three mobile applications reviewed were open source. These applications already possess 80% of the desired features and could easily be customized to include additional features.

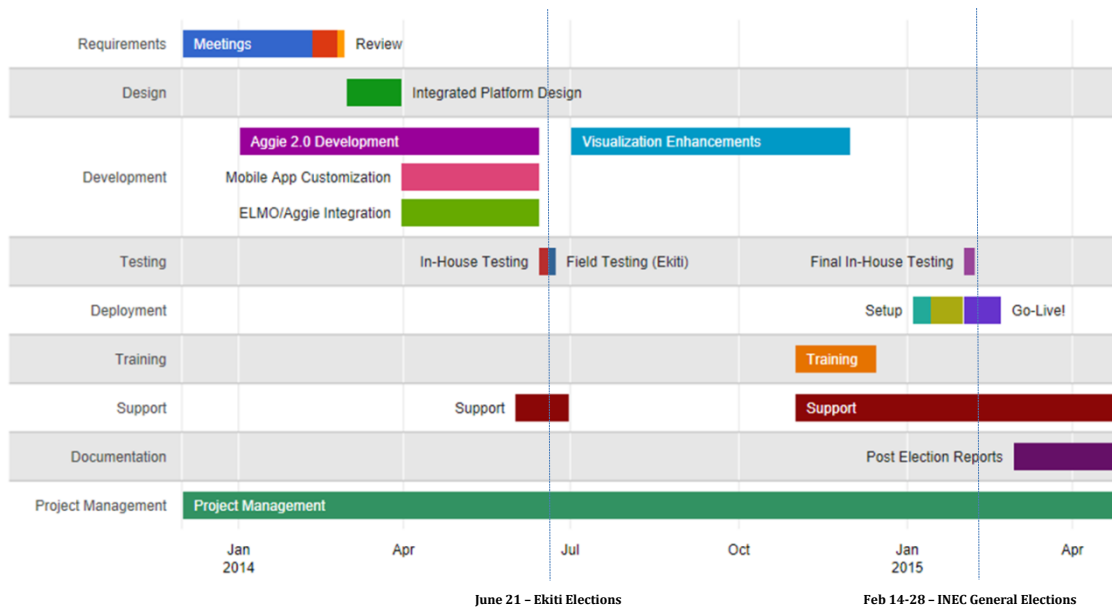
Three out of five aggregation platforms reviewed were either partner developed or open source. A combination of these platforms possesses about 70% of the desired features for an aggregation platform for the CASE 2015. Access to the source codes implies that the desirable features of these platforms can be integrated and upgraded to meet the requirements of this project.

Schedule Feasibility

Two important milestones have been identified for implementation of the proposed project:

1. **Pilot Test** – June 21, 2014: Ekiti State Gubernatorial Elections
2. **Full Deployment** – February 2015: INEC General Elections

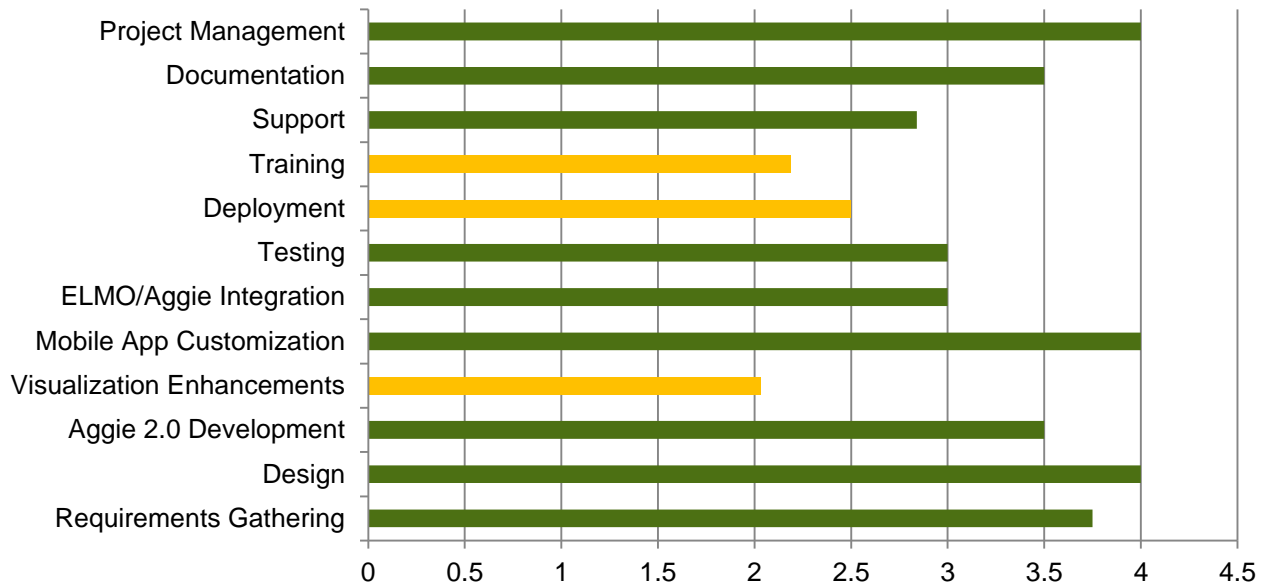
The Gantt Chart below illustrates how estimated implementation timelines stack up against these critical milestones.



Therefore, given that the cost requirements are met, completion of the project within schedule is feasible.

FEASIBILITY RANKING STRATEGY: CASE 2015							
OBJECTIVE	4=Certain 3=Likely 2=Somewhat. 1=Unlikely EFFICACY¹	4=<\$50,000 3=\$50,000- 2=\$250,000- 1=>\$1,250,000 RESOURCES²	4=Very Functional 3=Functional 2=Somewhat 1=Non-functional ORGANIZATION³	4=Highly 3=Accessible 2=Somewhat 1=Inaccessible EXPERTISE⁴	4=Support >> 3=Support >= 2=Support <= 1=Support << MOTIVATION⁵	4=Well Documented 3=Somewhat 2=Weakly 1=Undocumented INFORMATION⁶	Summary Rank
Requirements Gathering	4	4	4	4	4	3	3.75
Design	4	4	4	4	4	4	4.00
Aggie 2.0 Development	4	3	4	4	4	4	3.50
Visualisation Enhancements	3	2	3	3	3	4	2.03
Mobile App Customisation	4	4	4	4	4	4	4.00
ELMO/Aggie Integration	3	2	4	4	3	4	2.34
Testing (Pilot test)	4	4	2	3	4	3	3.00
Deployment	4	4	3	4	4	4	3.75
Training	3	4	3	3	4	3	2.84
Support	3	4	3	3	4	3	2.84
Documentation	3	4	4	4	4	4	3.50
Project Management	4	4	4	4	4	4	4.00
1 Expected success of the proposed action in abating the targeted risk or improving health 2 Estimated cost of implementing actions to achieve the objective 3 Experience and efficiency of existing or developing organizational structures poised to implement the action 4 Availability of skills and knowledge necessary to see implementation through 5 Anticipated level of buy-in of all involved public and private interests 6 Quality or reliability of the evidence, experience, or factual knowledge supporting the scores provided 7 Summary rank= $((a+b/2)/4)((c+d+e+f)/4)$, where a=efficacy score, b=resources score, c=organization score, d=expertise score, e=motivation, f=information							

Feasibility Scorecard



◆ The Success Factors

Critical factors necessary for the successful deployment and use of the platform have been identified as the following:



Information sources:

- Ability to extract meaningful and verifiable information from social media
- Critical mass of reporting observers – about 10,000



Coordination and Administration

- Information verification
- Liaising with the CSO situation room
- Sending alerts to deployed observers and the situation room
- Resolving system issues
- Tracking observers and events



Access to smartphones

- Stakeholders estimate about 70% of their observers will have access to smart phones
- Interventions might be required to bridge gaps



Training:

- Development of graphic user manuals
- Training of platform administrators and coordinators
- Train-the-trainer sessions for approximately 400 CSO participants
- Monitoring of training activities



Availability of resources

- Additional Funding may be required to achieve the quality of graphical visualisation required.

◆ Roundtable Report

Overview

A roundtable held on February 24, 2014 to present a summary of the findings from the user requirement survey as well as a presentation by Mike Best, Georgia Institute of Technology, who is a key partner of the Yar'Adua Foundation in this project. The roundtable was also an opportunity for stakeholders to make their input.

In attendance were representatives of civil society organizations who participate in election observation and representatives of international development organizations. Ms.

Alexandra Mackenzie, representing the Canadian High Commissioner, Mr. Perry J. Calderwood, delivered the welcome address.

SUMMARY OF PRESENTATIONS

Presentations included:

- A power point summary of the user requirements findings and the feasibility report summary.
- A presentation of the platform technology and its features.

SUMMARY OF DISCUSSIONS

Questions/Comments/Concerns

- The feasibility of training and deploying 10,000 observers to use the application in the 2015 election
- Platform accessibility and restrictions to non-CSO observers
- Need to standardize the format for reporting incidents to enhance consistency and understanding
- Creating more awareness about CASE 2015 throughout the community of civil society activists
- Monitoring the distribution of permanent voter cards and the continuous voter registration process

◆ RECOMMENDATIONS

- International Development Partners should increase technical and financial support for the proposed technology-driven platform.
- Civil society organizations should pursue their commitment to a collaborative election observation effort to ensure the broadest geographic coverage of polling units.
- Social media users and civil society organizers should adopt and incorporate technology-based solutions in planning for election observations.
- Support is required for training to enable stakeholders to use the platform and tools effectively.
- Develop graphic user manuals in three major ethnic Nigerian languages and English.
- Organize train-the-trainer workshops for nominees of participating Civil Society Organizations.

About The Shehu Yar'Adua Foundation Public Policy Initiative

The Yar'Adua Foundation's Public Policy Initiative addresses issues of public concern through conferences, roundtable discussions, advocacy and publications. Projects organized under the Public Policy Initiative include: m-learning Nigeria (a mobile learning pilot project); New Media and Governance Conference 2012; the Oil Revenue Tracking Initiative; and the 2011 Social Media Tracking Centre.

The Shehu Musa Yar'Adua Foundation was established by the friends, family and associates of Shehu Yar'Adua to establish the legacy of one of Nigeria's foremost leaders and inspire Nigeria's future generations with his life of service.

Through its facilities and programs, the Foundation endeavors to further the ideals of Shehu Yar'Adua – his commitment to national unity, good governance and to building a just and democratic society for all Nigerians.

