

# Design and Implementation of an E-deliberation System

## Case Study: Nigeria's Federal Ministry of Power, Works and Housing

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**Abstract**— The adoption of ICTs by the government has provided opportunities for interaction between the government and her citizens. This has also introduced new steps to be taken towards the future of democracy. The future of democracy entails full participation and engagement of citizens in socio-political and economic decision-making through e-deliberation system. This is already being adopted in some continent including Europe and Asia but yet to be fully embraced by African countries such as Nigeria. Citizen participation in decision-making is very important as their views, opinions and perspectives must always be taken into consideration. The main aim of this study therefore is to investigate the salient requirements for the design and implementation of an e-deliberation system, which creates a platform for deliberation between citizens and their representatives in government and government ministries and agencies. The case study used in this study is the Federal Ministry of Power, works and Housing in Nigeria. The outcome of this research work is a system prototype developed which is aimed at fostering citizen's participation & engagement in Government decision-making via e-deliberation. The system prototype was developed using PHP, JavaScript, CSS, bootstrap and XAMPP server. Although a fully scale functional evaluation of the system is in-view, however, the first hand user testing done revealed that that system achieved its basic minimum requirements.

**Keywords**—e-government; e-deliberation; participation; consultation

### I. INTRODUCTION

Democracy, as described by Lincoln (1863) is “the Government of the people, by the people, for the people.” In this connection, democracy is a system of government that allows every citizen to have equal access to power through legitimate means. Article 21 of the Universal Declaration of Human Rights by the United Nations proclaims that “*Everyone has the right to take part in the government of his country*” and “*Everyone has the right of equal access to public service in his country*”. Putting an “e” before democracy therefore means just utilizing ICTs to encourage, enhance and eventually develop the exercise of democracy (Caldow, 2004). “E-democracy” can simply be defined as information technology use in democratic processes. One of which includes enhanced deliberation among citizens and the government (Briony,

2003). Webster defines deliberation as “to think about or discuss something very carefully in order to make a decision. Democracy was built on the right of citizens in a country to be involved in the management of public affairs (Bassiouni, 1998) but since its origination, it has been constrained to familiar forms of democratic administration such as conducting elections and selecting greater part votes, partition of forces and choosing representatives in parliaments which really shouldn't be. There's a whole lot more to democracy than just casting votes, decision making is also involved (Fatland, 2007). Decisions are been made regularly by the government which will need the involvement of citizens and so to eliminate the need to meet face to face, electronic deliberation can be adopted as a means.

A major benefit would be an increase in transparency and accountability as the citizens are provided with information and allowed to participate in government. It would keep the government closer to the consent of the governed and lead to an increase in its political legitimacy especially in Nigerian context where issues like lack of transparency and bad governance constitute hindrances to the development of our infant democracy.

With Bribery and corruption being the order of the day at all levels of governance and low citizen participation in Nigerian governance, it is clear that the Nigerian democratic system is porous, inefficient and susceptible to negative infiltrations (Azeta, 2015).

### II. BACKGROUND AND RELATED WORK

#### A. Democracy

Understanding the true sense and very essence of democracy is a major prerequisite for the implementation of an E-democracy system. Democracy is a well-recognized ideal which is largely based on corporate values shared by people regardless of their differences (Cultural, political, economic and social differences). It is built on the right of citizens in a country to be involved in the management of public affairs and so it requires the presence of representatives across all levels and a parliament which is also known as House of Representatives in Nigeria where all states are represented and the members of the house have a means to express the will of the people (Bassiouni, 1998).

Political Scientist, Larry Diamond (2004) identified four main elements of democracy which include: A Political System designed for selecting and changing members of the government; An active and continuous participation of every citizen in all matters pertaining to politics and civic life; A Constitution that defines the principles upon which the country is based; and Protection of human rights of all citizens.

**B. E-democracy Models**

Like democracy, e-democracy is a complex concept and a number of different models of e-democracy have been advocated by different academics and institutions.

**1. The E-democracy Model by the Institute of Electronic Government (IEG):**

The IEG model takes a jump forward in the definition and practice of e-democracy. It indicates how effectively an administration substance translates and reacts to the computerized world and adventures technology in like manner to propel impact. From this model, leaders can thoroughly consider how to overlay both strategic and tactical e-democracy endeavors into a general e-government methodology.

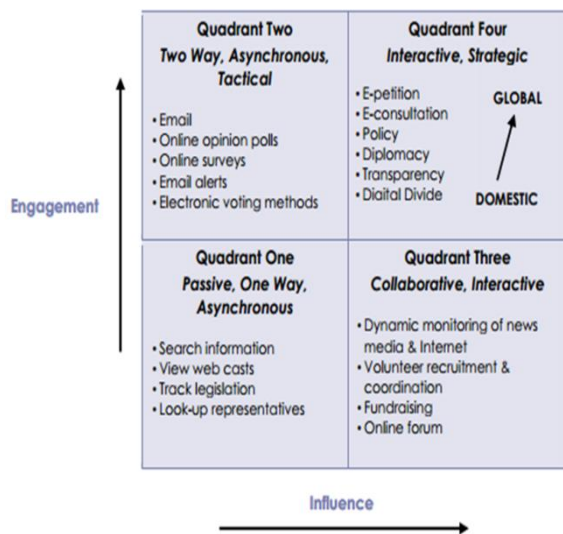


Figure 1: E-Democracy Model

Source: institute of electronic government (Caldow, 2003)

**2. The E-democracy Model by the Organization for Economic Co-Operation and Development (OECD):**

The OECD devised a three-stage model:

- i. Information: A restricted connection in which government creates and conveys data for use by citizens.
- ii. Consultation: A two path connection in which citizens give feedback to the government.

- iii. Active participation: A connection taking into account association with government, in which citizens effectively participate in the choice and strategy making process.

**C. Why Deliberative democracy**

Deliberation is battled to engage more informed rational decisions, more wonderful and more uninhibitedly organized results and upgraded city aptitudes (Hendricks, 2006). A deliberative methodology is also seen to improve the way of decision making by sharing so as to make to make: information and pooling learning, revealing the relationship between certain slant courses of action and sectional premiums, propelling realness, engaging open vigorous perspectives on open issues and progressing usually cognizant strategy of choice making (Held, 2006; Gutmann, and Thompson, 2004).

Cohen contends the deliberative democracy progresses value, has innate excellences as a ways to deal with settle on aggregate choices (Cohen, 2007). Deliberative popular government is in like manner seen as a method for Reducing so as to increasing the soundness of aggregate decision the quantity of issue measurements and bringing more structure into individual inclinations (Dryzek and Christian, 2003).

All around that truly matters, the turn towards deliberative democracy has additionally been aggravated by an anxiety with the sorts of association methodologies required for a complex created society (Barnes et al., 2007). This is particularly clear by virtue of common procedure, which, in view of its multifaceted nature, demands systemic approaches to manage data equipping across over intelligent, social, experiential and ecological circles (Muton, 2003; Liston, 2011).

**D. The Context of Deliberation**

Deliberation makes sense just inside of a social setting and is important when connected with the different “levels” of society, including, at last, the possibility to be a variable on social change. “The context of deliberation” can be depicted visually in an hourglass form. This depiction shows the necessary social factors of a society in which deliberation can be said to function adequately. The lower portion of the hourglass demonstrates that deliberation depends on the craving and the capacity of the general population to think and that the venues inside of which individuals can consider are accessible. The upper half demonstrates that "social access focuses, which includes daily papers, instructive frameworks, open gatherings, government foundations can convey the substance and the choices of a deliberative body to a more extensive group of onlookers in the public arena additionally exist (Schuler, 2008).

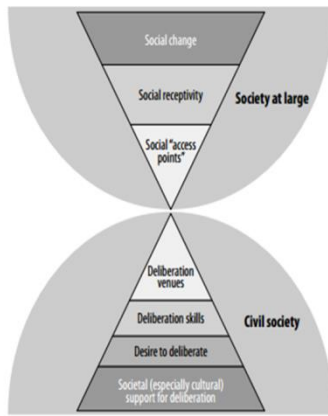


Figure 2: The context of deliberation (Schuler, 2008)

### E. Types of Deliberation

According to Rosenberg (2006), several researches that have been conducted on democratic deliberation have focused on individual or joint outcomes of deliberation and have paid little attention to the deliberative processes themselves. Rosenberg then identified three types of democratic deliberation by focusing on deliberative processes. These include: Conventional, Cooperative and Collaborative

1. Conventional Deliberation: is concerned with two primary objectives: Determining the way of an issue and how to address it proficiently and the second objective is to direct the social interaction between the members as indicated by winning social traditions of consideration and pleasantness. A conventional deliberation is regularly started in light of a specific issue. Something has turned out badly; an undesirable result has happened or a social tradition has been damaged. On the other hand the talk might be started in light of the demands of civility thus the topic is presented by one of the participants of which for this situation would be the citizen of a country. The next speaker may follow with a claim that remains on topic but does not address the first speaker's claim. There might be an acceptance then again, there might be a rejection of the principal speaker's case of causal, all out or evaluative relationship by proposing an alternate relationship. The discussion towards the end, delivers produces a depiction of the topic that consists of a list of loosely associated claims and narratives.
2. Cooperative Deliberation: One of the orienting points of co-operative deliberation is to develop a right comprehension of the issue, both with respect to its basic nature and motion. A second objective of co-operative deliberation is to develop a common comprehension of the issue and how it is being tended to. Co-operative deliberation is composed around a general subject as opposed to a particular concrete topic. The subject of the discussion is the systemic nature of the issue and the connection in which the issue is caught on. To be relevant, propositional claims must be identified with the issue's goal, social or subjective context.

3. Collaborative Deliberation: The essential component of collaborative deliberation is a communicative strategy. It comprises of an endeavour to engage others in a collaborative effort to recreate (a) who every participant is (as an intelligent subject and purposive specialists), (b) how the social connection manages how the participants cooperate with each other, and (c) how these individual and social components of the discussion situation impact each other

### F. Existing Systems:

#### 1. [www.citizensconstitution.org](http://www.citizensconstitution.org):

Citizensconstitution.org – Citizens constitution of Europe is a website built as a form of political protest. It permits Citizens from Europe to take part in an open, online procedure to make a substitute constitution for the European Union. This is done through a deliberative process instead of being done in mystery by the administration.

#### 2. E-liberate

E-liberate is an online rendition of Robert's Rules of Order Robert (2002) The Robert's guideline of request gives a structure for online deliberative gatherings so that a fundamental property of law based level headed discussion is satisfied. With e-liberate, every item in a meeting session is debated through a succession of particular movements containing members' recommendations. Only one main motion at once is permitted and it might be explained through succeeding secondary motions, for example, amend, vote, postpone and so forth (De Cindo, 2008).

### III. DESIGN AND SYSTEM STRUCTURE

The E-deliberation system provides a platform for Co-operative deliberation. When compared with Robert's rule of Order, co-operative deliberation is a much easier way of carrying out deliberation especially for illiterates. The system has a very clean and user-friendly interface which would be very easy for users especially in Nigeria to carry out deliberation. Co-operative form of deliberation gives the government ample opportunity to carry out deliberation in a structured manner when engaging citizens in decision-making. With the e-deliberation system, users can clearly propose a new claim which would be transparent to other users. Users can also build discussions on existing claims by either supporting or opposing them.

A formal model of the proposed system was built using Unified Modeling Language (UML). UML is a modeling system which provides a set of conventions that are used to describe a software system in terms of objects. It offers diagrams that provide different perspective views of the system parts.

The users of the system include the citizen and system administrator. The citizen interface consists of the following pages: e-deliberation homepage, login page, registration page, e-deliberation forum, new discussion page, iReport module and dashboard.



Figure 3: Use Case Diagrams of the System

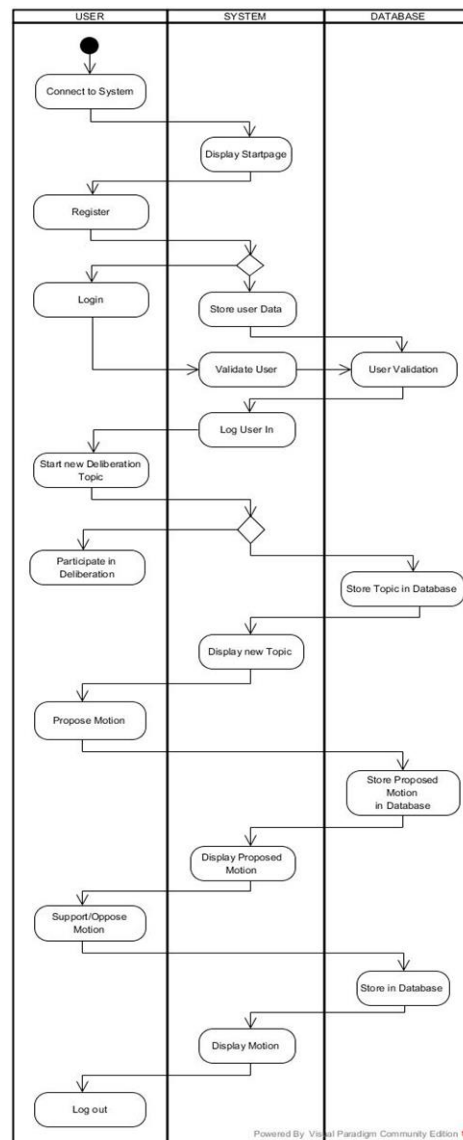


Figure 4: Activity diagram of the system

**A. Welcome page:**

The welcome page is the first user interface displayed at the launch of the application. The Login/registration feature can be accessed from the Start page. The interface was created using bootstrap features, PHP & MySQL

**B. Login page:**

The login page is a form for registered users to allow access to the e-deliberation system.

C. *Registration page:*

The registration page includes a form that displays cells for user to input personal data such as username, First and last name, password, email, Occupation, gender and date of birth

D. *E-deliberation forum:*

The e-deliberation forum shows the list of past and ongoing deliberations based on the 3 ministries: Ministry of Power, Ministry of Works and Ministry of Housing.

E. *New discussion page:*

The new discussion page is a form for authenticated users to create new topics for other users to deliberate on. It includes the topic, category, description and the end date for the deliberation

F. *Deliberation page:*

The deliberation page consists of the propose motion, support/oppose motion and comment features which allow users to argue about the right outcome

G. *iReport Module:*

The ireport module is an extra feature created to enhance the operations of the ministry by allowing citizens send in reports on issues that pertain to the ministry.

H. *Dashboard:*

The dashboard was built using a business intelligence tool called Qlikview. Some of the data used in building the dashboard was retrieved from last year’s budget proposal to the Federal government while the rest were formulated.

The admin interface consists of the Notification page, result page, new discussion page, view users and ireport module.

I. *Notification page:*

This basic form is used by the admin to send notifications to users which would serve as reminders before deliberations begin.

J. *Result page:*

Based on Motions proposed by users, the admin can view the number of users who support or reject a motion. This page gives an overall result on Deliberations.

#### IV. IMPLEMENTATION

Hypertext Pre-processor (PHP), Hypertext mark-language (HTML) and JavaScript programming languages were used in the implementation of the system. JavaScript was used as the client side scripting language, Hypertext Pre-processor (PHP) programming language for server side scripting to interact with the database. Hypertext mark-up language (HTML) to develop the user interface of the system. For the design and outlook of the system, cascading style sheet (CSS) and bootstrap was used. For the creation of the dashboard, Qlikview11 was used and Microsoft Excel was used as the database for the dashboard. Finally the XAMPP server was used for communication between the web server and the web-browser.

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Figure 5: Home Page of the E-Deliberation Site

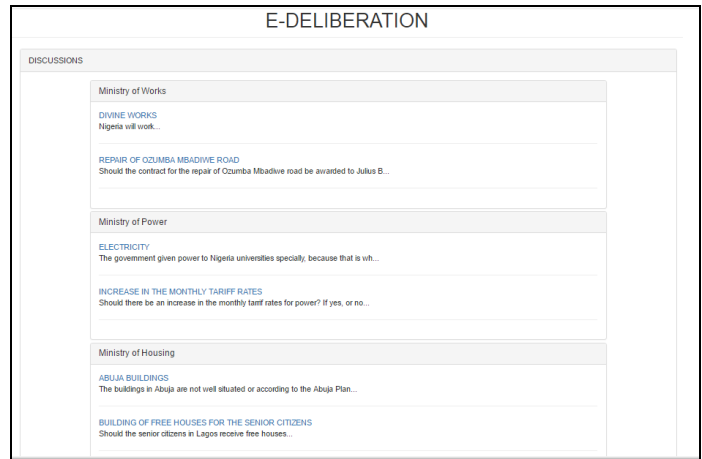


Figure 6: E-Deliberation Forum



Figure 7: iReport Module

#### I. SUMMARY AND CONCLUSION

The aim of this study was to design and implement an e-deliberation system, which creates a platform for deliberation between citizens and their representatives in government and government ministries and agencies. The system was designed and implemented as outlined in the methodology.

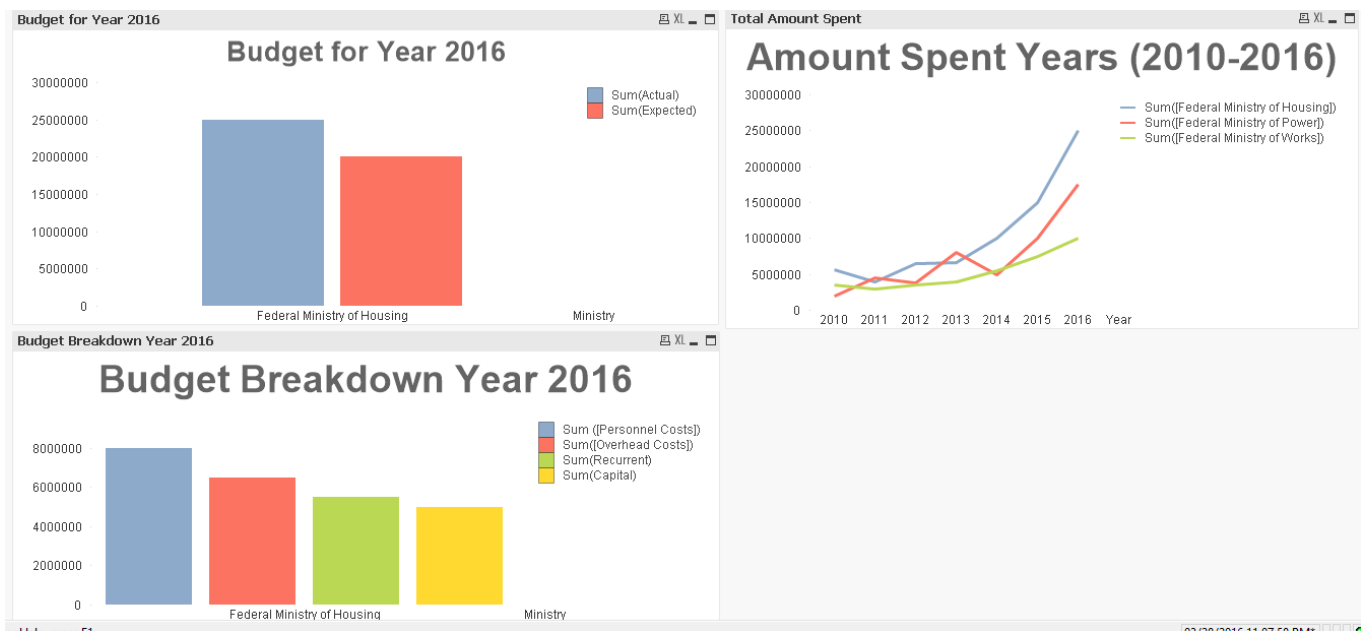


Figure 8: Government Financial Reporting Dashboard

The e-deliberation system has the potential to give each citizen a sense of power by taking their wishes, feelings and aspirations into consideration in the scheme of things. It allows for quick access to relevant information because it is a web-based application that will be deployed on the internet. Other features in this project include the iReport module and the Analytics dashboard. The iReport module will allow citizens to lodge quick complains on issues that pertain to the ministries and the dashboard will lead to an increase in transparency and accountability as the citizens are provided with information on the ongoing projects in the ministry and its financial status.

To make the e-deliberation system more robust and enhanced, it is recommended that the following features which were not incorporated due to time constraints be added. These features which are not limited to the following include: A Decision Support System to support the government in making decisions based on input from citizens, a Multilingual Features which include the 3 major languages in Nigeria: Yoruba, Igbo and Hausa, an enhanced Security measures, and other e-participation tools such as video conferencing, social networks and petitions to enable full participation. This project has been designed for the government to engage citizens in decision making so that their voice (their opinions, feelings and wishes) would be heard and taken into consideration in final decision-making. The result of this therefore would be a true democratic nation and a great change in Nigeria.

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