



A Framework for e-Democracy implementation in the Developing Nations

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ABSTRACT

Several e-Democracy implementations started as an offshoot of e-Government implementation where other models of e-Government such as Government to Government (G2G), Government to Business (G2B), Government to Employees (G2E), and Government to NGOs (G2N) etc were first implemented before Government to Citizen (G2C). However, going by the resulting issues of lack of trust and apathy between Government and Citizen as well as the observed decline in voters' turnout for elections all over the world, a paradigm shift is hereby proposed in the design methodology starting from G2C to other models.

This paper presents a framework for e-Democracy implementation that is premised on the e-Government development cube proposed by Rabaiah and Vandijck (2011), and Funikul and Chutimaskul (2009), which is based on fundamental platforms of organizational, infrastructural and institutional guidelines. Also, the incremental software engineering approach as described by Lizarralde et al. (2007) was employed for phased implementation of e-Government starting from e-Democracy (G2C); and a multi-channel approach, which includes Web 2.0, mobile devices and Internet that will enable a wider cross-section of the society to engage with e-Government was implemented. The deployment architecture of Evangelopoulos and Visinescu (2012) is employed.

Essentially, the developed framework offers potentials for: increased participation and trust in the polity; reduced apathy between the electorate and the political class; and reduced intra and inter country politically motivated conflicts within the developed nations.

Indexing terms/Keywords

e-Democracy, e-Government, ICT, Framework, e-Participation, Engagement, Models and Developing Nations.

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INTRODUCTION

Best practices in governance have expanded recently to include Internet and wireless technologies that assist governments around the world to improve the quality of services to their citizens. With the proliferation of the Internet, governments become e-Governments, citizens become e-Citizens, businesses become e-Businesses and democracies become e-Democracies (Evangelopoulos and Visinescu, 2012).

Generally, e-Government is about transformation, it is about delivering services effectively and seamlessly, it is about developing new forms of communication between government and the governed, and it is about enhancing quality of lives through economic development and enhancing civil society using the capabilities of ICT (Worrall, 2011). Similarly, e-Democracy can broadly be defined as the use of ICT to increase and enhance citizens' engagement in democratic processes (Postnote, 2009).

According to Cliff (200), e-Democracy is considered the use of information and communication technologies and strategies by democratic actors (governments, elected officials, the media, political organizations, citizen/voters) within political and governance processes of local communities, nations and on the international stage.

e-Democracy is still evolving all over the world but there is better adoption level in the developed nations. In the UK, virtually all the population have mobile phones, 66% have Internet access and it has been projected that about 99% would have digital TV by 2012. This is also true of the US and other developed world but the story is different in the developing nations of the world (Postnote, 2009). According to the Institute of Public Policy Research, e-Democracy is considered to be a system that encourages people to interact on a neighbourhood level to solve their problems.

The evolution of e-Democracy is strongly related to the evolution of ICT as shown in figure 1.

The radio, television, telephone, PCs and Internet appeared prominent in the evolution of ICT. Many of these tools are powerful and effective in promoting of e-Democracy (Lizarralde et al., 2007).

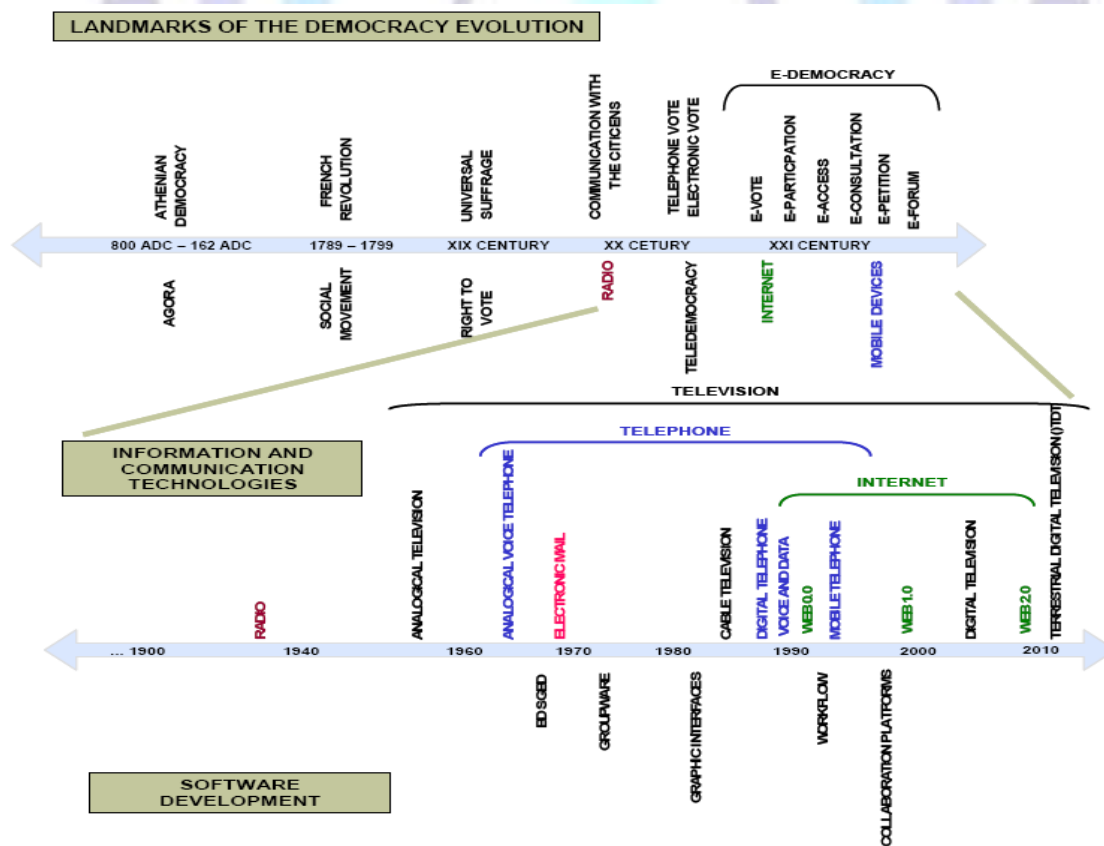


Figure 1: Evolution of ICTs and e-Democracy

For several decades, a decline in the number of voters was reported in the US, UK, Japan among other developed nations. This trend was attributed to lack of trust and interest in governance (Funiikul and Chutimaskul, 2009). Thus, they are in need for a system that will engender communication and participation in between citizens and government.



Øystein (2007) presented the four models of e-Democracy in table 1 based on the level of government's and citizens' involvement in decision-making as Partisan, Liberal, Direct and Deliberative.

Table 1: Four models of e-Democracy

	Citizen implicitly included in Decision-making	Citizen explicitly included in Decision-making
Citizens set the agenda	Partisan	Direct
Government sets the agenda	Liberal	Deliberative

- In Liberal e-Democracy, both politicians and government set the agenda and are in charge of decision-making. The citizens are merely being informed. The main focus of interaction is information exchange.
- In Deliberative e-Democracy, citizens are in charge of decision-making while government sets the agenda. There is real dialogue between the parties.
- In Direct e-Democracy, everything is completely in the hands of the citizen. They set the agenda and are also involved in decision-making. The main focus is voting and decision-making.
- In partisan e-Democracy, like Direct e-Democracy, everything is in the hands of the citizens. There is possibility through ICT to mass-communicate and increase public debate.

ICTs get citizens involved in democratic practices such as information enquiry and service requests through government web sites; expression of citizens' opinions through forums; and complaints submission to government organization. Therefore, e-Democracy is considered a viable alternative way of supporting democracy by giving citizens participatory power through ICT (Ayo et al., 2012).

The onward march of democracy, considered virtually unstoppable by many, has been stalled in many countries. This is detrimental to human rights and prospects for greater equity and less exclusion (Worrall, 2011). It can also impede development particularly in the developing nations.

Most of the conflicts witnessed all over the world are preventable if there had been avenues for dialog and interaction. Some were politically motivated and caused by leaders out of their selfish interests while others were borne out of anger by the oppressed minority groups because of unavailability of a forum to be heard. The happenings in Nigeria, Egypt, Liberia, Sudan, Mali, and DR Congo etc are a few examples. The colossal waste, cost and wanton destruction of lives and property cannot be quantified (Ayo and Ekong, 2008).

The heart of democracy is the freedom of the people to freely choose those who govern their affairs; the power to renew or to change such managers at regular elections; and the right to expect accountability from the elected officers (Gana, 2007). Nwabueze (2003) described the problems of authority in a contemporary African setting as being personal, permanent, mystical and pervasive. Consequently, some African leaders up till the early 1990's held unto power for decades. Examples are Boigny of Cote D'voire (34 years), Eyadema of Togo (31 years), Sekou Toure of Guinea (26 years), Bourguiba of Tunisia (32 years), Muammar al-Gaddafi of Libya (42), Hosni Mubarak of Egypt (30) etc.

Also, with the democratic waves sweeping across Africa and the developing nations in general, the application of ICT to governance becomes inevitable. However, e-Government as a whole may not succeed without a well-formulated and articulated e-Democracy system, which is a form of government to citizen (G2C) interaction that engenders access to information and interaction.

Ayo (2009) & Rabaiah and Vandijct (2011) presented the models of Government as Government to Citizen (G2C), Government to Government (G2G), Government to Business (G2B), Government to Employees (G2E), Government to NGOs (G2N), etc. These models refer to the interaction between Government and the other parties: citizens, government, business, employees and NGOs respectively.

Trust was recognized as a major threat to e-Government adoption all over the world. A major solution to this would have been a phased implementation of e-Government starting with an interactive G2C (e-Democracy) implementation followed by other models G2G, G2B and G2E. Trust can be better built among citizens and later extended to all facets of e-Government models.

Rabaiah and Vandijck (2011) developed a building block for e-Government as shown in figure 2.

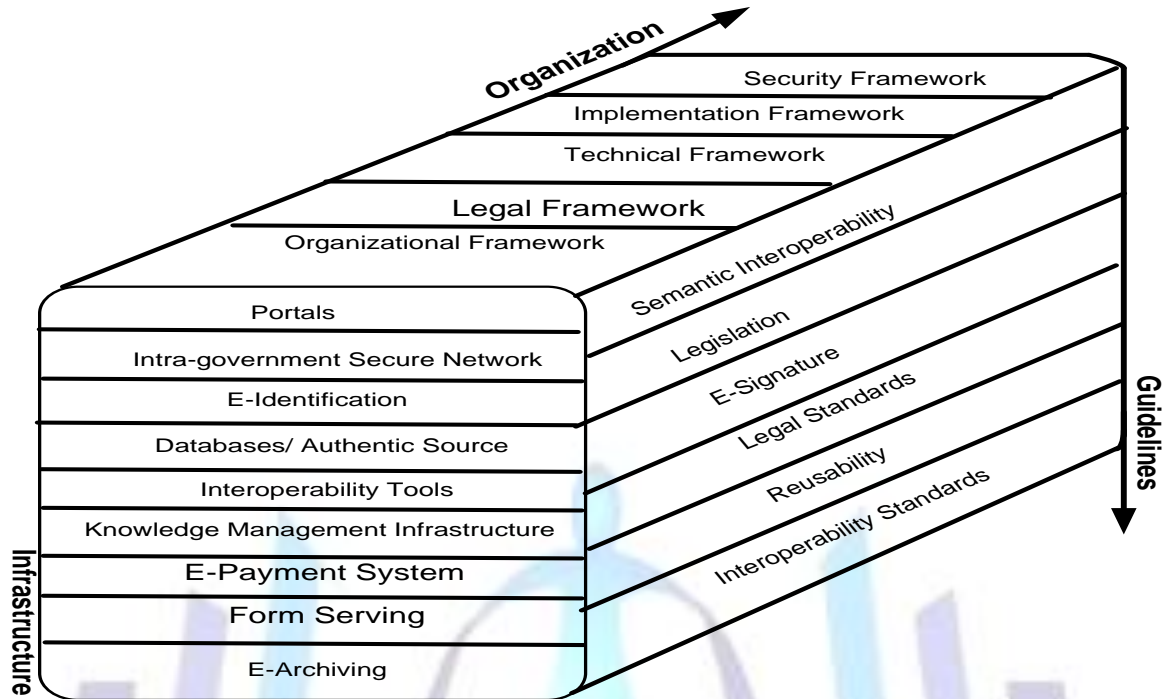


Figure 2: e-Government Building Block

The cube is composed of three major components which are infrastructural requirements, organizational framework and standard guidelines. All these are essential requirements for e-Government/e-Democracy implementation.

Furthermore, for effective e-Democracy implementation, Funilkul and Chutimaskul (2009) identified five principles of democracy and the equivalent electronic platforms that would accomplish them as shown in figure 3.

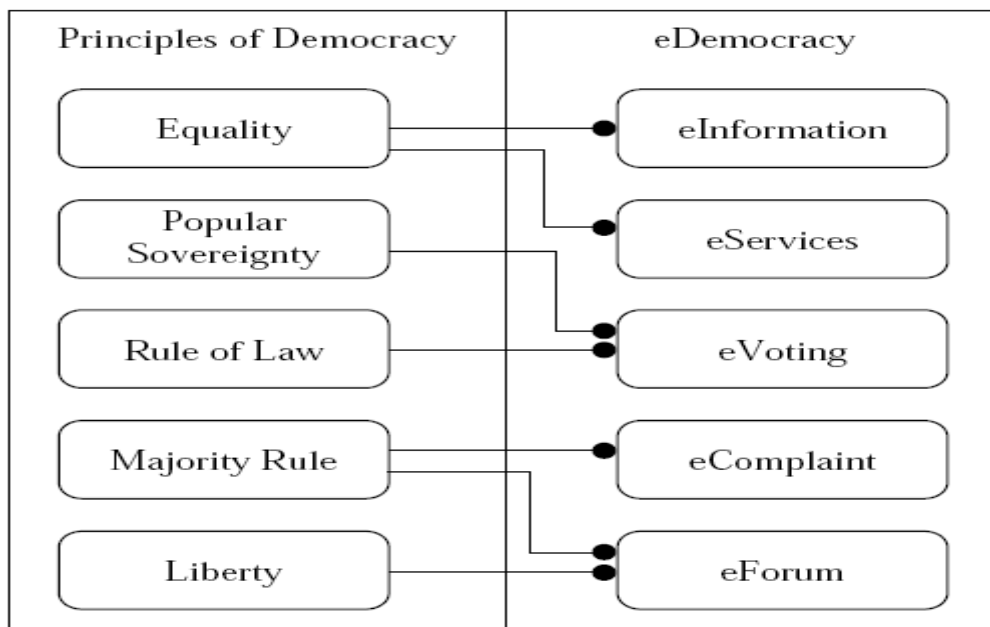


Figure 3: Intrinsic e-Democracy Applications [Source: Funilkul and Chutimaskul, 2009]

Thus, any e-Democracy system must make provision for e-Information, e-Services, e-Voting, e-Complaint and e-Forum or their variants as the minimum requirements.



RELATED WORK

This research work is premised on the framework proposed by Rabaiah and Vandijck (2011). The work developed a strategic framework for e-Government implementation based on generic and best practices. The framework serves as a generic abstraction of an e-Government strategy, which was largely missing from many national e-Government strategies reviewed from both developed and developing nations.

The work also observed that there cannot be a universally acceptable framework for e-Government, as countries differ from one another based on the following characteristics: Political system, Legal system, Economic situation, Available technological infrastructure, Internet and PC penetration, Availability of skills and human resources, Literacy rate, Computer literacy, Level of poverty, Leadership, Ethnic diversity in terms of norms, languages, etc, Training capacity and E-Readiness among others. However, an e-Government building block was presented as shown in figure 2. The cube is based on commonalities in describing the building blocks in the national strategies of e-Government of some sampled countries.

Jayasena and Karunaratna (2007) proposed a framework for e-Democracy development based on a promising relationship between e-Democracy and spatial dimension. This system is Web-based that allows regular interaction between policy makers and citizens. The system presents an extensive use of the spatial dimension in a wiki collaboration environment to capture and integrate of e-Democracy information.

Similarly, Bouras et al. (2012) presented a unified framework for political parties to support e-Democracy (e-PASSOK) by the party of PASSOK in Greece. The objectives of the system are two-fold: to develop a system that fosters communication via the Internet between the party and the citizens; and to create a supplementary medium that supports internal processes and actions within the party.

Also, Liarralde (2007) presented an e-Democracy model as an incremental process that involves: Inform, Communicate, Consult, Deliberate, and Decide. The process is divided into three stages: Unidirectional communication from government to citizens (Inform and Communicate); Bidirectional interaction between government and citizens (Consult); and Active participation between government and citizens (Deliberate and Decide).

Furthermore, Funikul and Chutimaskul (2009) presented a framework for sustainable e-Democracy development based on the governance development standard called COBIT 4.1. The system introduced the 4 + 1 construct of e-Democracy as comprising: Stakeholders and policy; Information and Communication Technology; Development methodology; Process and project management; Environment and e-Democracy components.

Therefore, the objectives of this paper include: to develop a framework for e-Democracy implementation that is premised on frameworks proposed Rabaiah and Vandijck (2011) and Funikul and Chutimaskul (2009) using incremental software engineering approach as described by Lizarralde et al. (2007); to develop a multi-channel approach, which includes Web 2.0, mobile devices and Internet that will enable a wider cross-section of society to engage with e-Government; and create a channel for the disadvantaged, the aged, the unemployed and the physically challenged.

E-DEMOCRACY DESIGN CONSIDERATIONS

Designing an effective e-Democracy system requires that careful considerations be given to the various application areas, the e-Democracy tools, and the ICT tools available to fast-track its implementation (Øystein, 2007). All these are presented in tables 2, 3 and 4 respectively.

Many important forms of public interaction take place among citizens, which is often referred to as 'steering in the public domain'. This new form of public participation is called citizen to citizen (C2C) interaction (Meijer, et al., 2011).

For enhanced participation in the polity, implementing a multi-channel service provisioning (MCSP) is key. That is employing the various forms of ICTs such as PCs, mobile devices, Internet and the social media for mass mobilization for participatory democracy (Veenstra and Janssen, 2011). The MCSP offers individual citizens or businesses different channels to interact with government based on their preferences, needs, abilities and circumstances. Particularly the social media, which can bring about a paradigm shift and has the capability to radically change the way things are done and the business process as well as to improve the efficiency of government.

Social media are interactive and multimedia and can facilitate the development of human networks. They are not broadcasting tools but two-way communications tools which have the potential to blur boundaries between government and the governed (Landsbergen, 2011). Thus, social media allows individuals to form social networks, allows social interaction rather than broadcasting, employs multimedia platform (text, audio and video), and relies on measures and objectives to facilitate communication.



Table 2: e-Democracy Application Areas

Information Provision	ICT to structure, represent and manage information in participation contexts
Community building / Collaborative Environments	ICT to support individuals come together to form communities, to progress shared agendas and to shape and empower such communities.
Consultation	ICT in official initiatives by public or private agencies to allow stakeholders to contribute their opinion, either privately or publicly, on specific issues
Campaigning	ICT in protest, lobbying, petitioning and other forms of collective action (except of election campaigns, see electioneering as participation area)
Electioneering	ICT to support politicians, political parties and lobbyists in the context of election campaigns
Deliberation	ICT to support virtual, small and large-group discussions, allowing reflection and consideration of issues
Discourse	ICT to support analysis and representation of discourse
Mediation	ICT to resolve disputes or conflicts in an online context
Spatial planning	ICT in urban planning and environmental assessment
Polling	ICT to measure public opinion and sentiment
Voting	ICT in the context of public voting in elections, referenda or local plebiscites

Table 3: Core e-Democracy Tools

Tool Category	Brief Description
eParticipation Chat Rooms	Web applications where a chat session takes place in real time, which is especially launched for eParticipation purposes
eParticipation Discussion forum/board	Web applications for online discussion groups where users, usually with common interests, can exchange open messages on specific eParticipation issues. Users can pick a topic, see a “thread” of messages, reply and post their own message
Decision-making Games	These typically allow users to view and interact with animations that describe, illustrate or simulate relevant aspects of an issue; here with the specific scope of policy decision-making.
Virtual Communities	Web applications in which users with a shared interest can meet in virtual space to communicate and build relationships.
Online Surgeries	Web applications specifically designed to support elected representatives to engage with the citizens they represent
ePanels	Web applications where a ‘recruited’ set, as opposed to a self-selected set, of participants give their views on a variety of issues at specific intervals over a period of time
ePetitioning	Web applications that host online petitions and allow citizens to sign in for a petition by adding their name and address online
eDeliberative Polling	Web applications which combine deliberation in small group discussions with random sampling to facilitate public engagement on specific issues
eConsultation	Web applications designed for consultations which allow a stakeholder to provide information on an issue and others to answer specific questions and/or submit open comments
eVoting	Remote internet enabled voting or voting via mobile phone, providing a secure environment for casting a vote and tallying of the votes (other types of electronic voting are available, but for the purposes of this report we focus on internet voting)
Suggestion Tools for (formal) Planning Procedures	Web applications supporting participation in formal planning procedures where citizens’ comments are expected to official documents within a restricted period

Source: (Øystein, 2007)



Table 4: ICT Tools used in E-Democracy

Tool Category	Brief Description
Webcasts	real time recordings of meetings transmitted over the internet
Podcasts	publishing multimedia files (audio and video) over the Internet where the content can be downloaded automatically using software capable of reading RSS feeds
Wiki	Web applications that allow users to add and edit content collectively
Blogs	Frequently modified web pages that look like a diary as dated entries are listed in reverse chronological order
Quick polls	Web-based instant survey
Surveys	Web-based, self-administered questionnaires, where the website shows a list of questions which users answer and submit their responses online
GIS-tools (Map-server for maps and plans)	Web applications that support information provision and enable the users to have a look at maps underlying planning issues and to use them in various ways
Search Engines	Web applications to support users find and retrieve relevant information typically using keyword searching
Alert services	One-way communication alerts to inform people of a news item or an event, e.g. email Alerts and RSS Feeds
Online newsletters	One-way communication tools to inform a general audience or a pre-registered audience of specific news items and events.
Frequently asked questions (FAQ)	A 'tree' of questions and answers that can be searched using keywords or by inputting a question or statement
Web Portals	Websites providing a gateway to a set of specific information and applications
Groupware tools	Tool environment to support computer-based group works

Source: (Øystein, 2007)

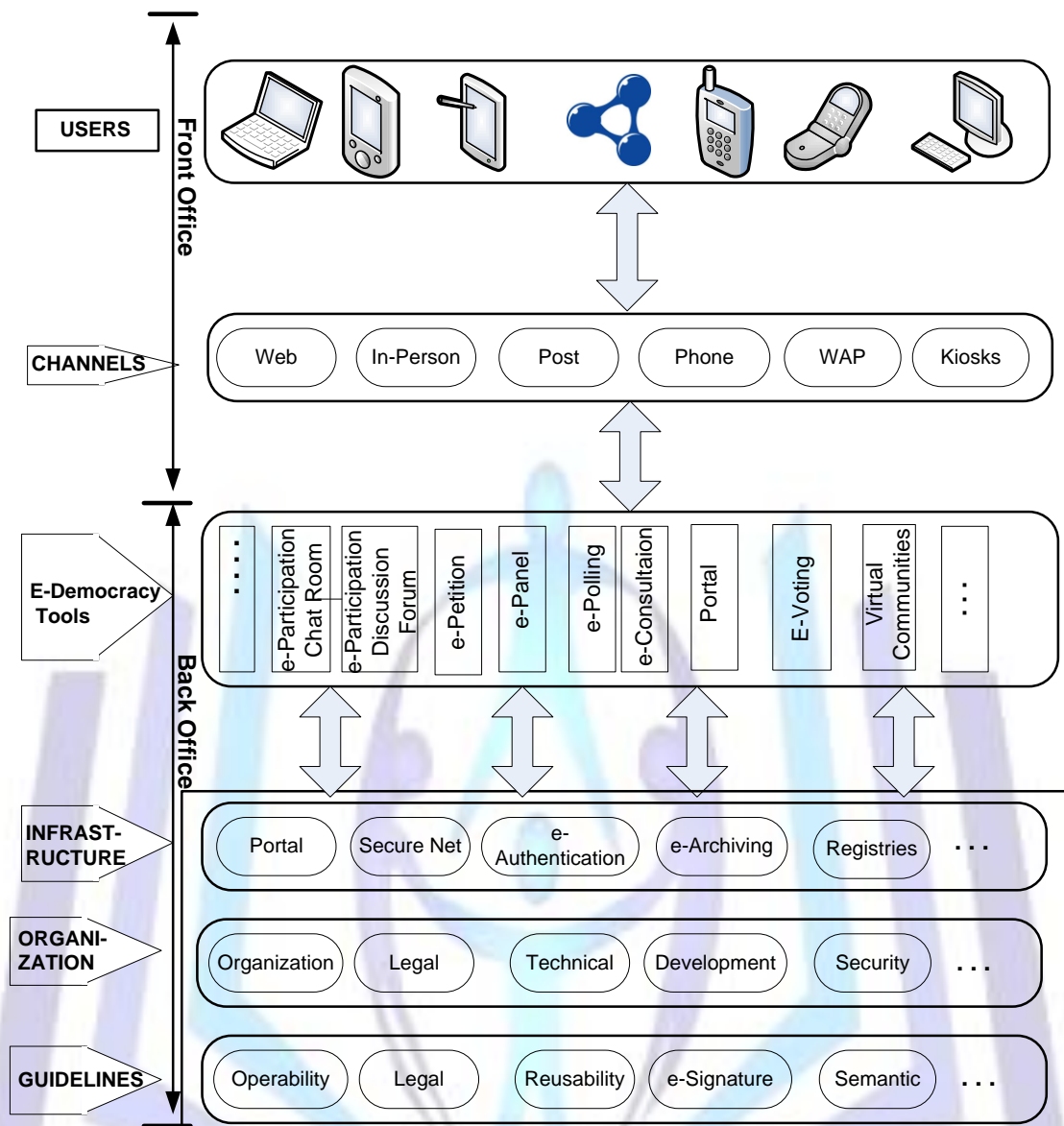


Figure 4: Proposed e-Democracy Framework for the Developing Nations

This framework is premised of the e-Government framework developed by Rabaiah and Vandijck (2011). The infrastructural, organizational and guidelines are retained because these will also form the platform for G2G, G2B, and G2E among others. Thus, using the evolutionary software engineering approach, from e-Democracy, that is G2C; other models can be implemented on an incremental basis.

The framework is categorized into two: front-end and back-end as shown in figure 4. The front-end is composed of users and the available channels of connectivity. That is, users can participate via, PCs, tablets, PDA, mobile phones and social media among others. Thus, multi-channel service delivery platforms are placed at the disposal of all and sundry.

The back-end is composed of the various application areas and the required infrastructural, organizational and guidelines for a successful implementation of e-Government. The application areas include but not limited to chat room, discussion forum, e-Petition, e-Panel, e-Poling, e-Consultation, e-Voting and virtual communities. While the other part include the e-Government Building Block as shown in figure 2.

DESIGN IMPLEMENTATION

The system architecture for the proposed framework implementation of the multi-channel e-democracy system is shown in Figure 5. The client-server communication was based on standard Internet protocols Hypertext Transfer Protocol (HTTP) and Transmission Control Protocol/Internet Protocol (TCP/IP). The server module for the Mobile SMS, Mobile Voice and Web were developed in PHP and all modules for the client were developed in Hypertext Markup Language (HTML), Voice

Extensible Markup Language (VoiceXML) and HTML respectively. Ozeki SMS server and Voxeo Voice server were used to deploy the SMS transaction code and VoiceXML code respectively.

Thus the system offers three interfaces including SMS User Interface (SUI) and Web User Interface (WUI), for citizens that are able-bodied and Voice User Interface (VUI) for those that are visually impaired. E-participation tools included in the prototype include: online opinion polls, e-petition, e-referenda, discussion forum and online consultation in capturing citizens input, e-mail alerts, SMS alerts, Really Simple Syndication (RSS), site-specific search for information on issues.

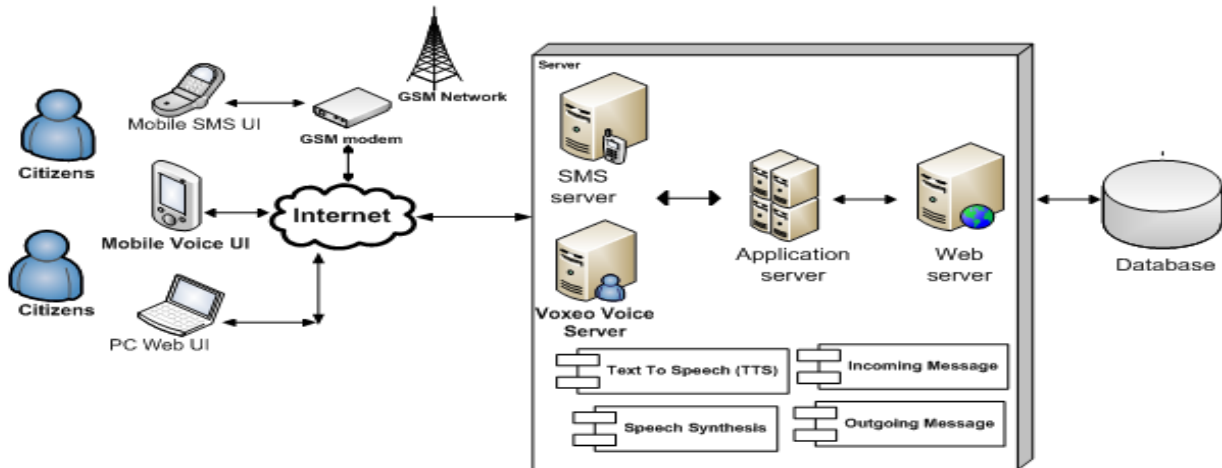


Figure 5: Proposed System Architecture of E-democracy

The components of the system that have been implemented include: e-Petition, e-Profile, e-Polls, Online Forum, mobile SMS, and e-News.

1. e-Petition: allows citizens make complaints and observations on government issues (See Figure 6 and 7 for the WUI and database table).

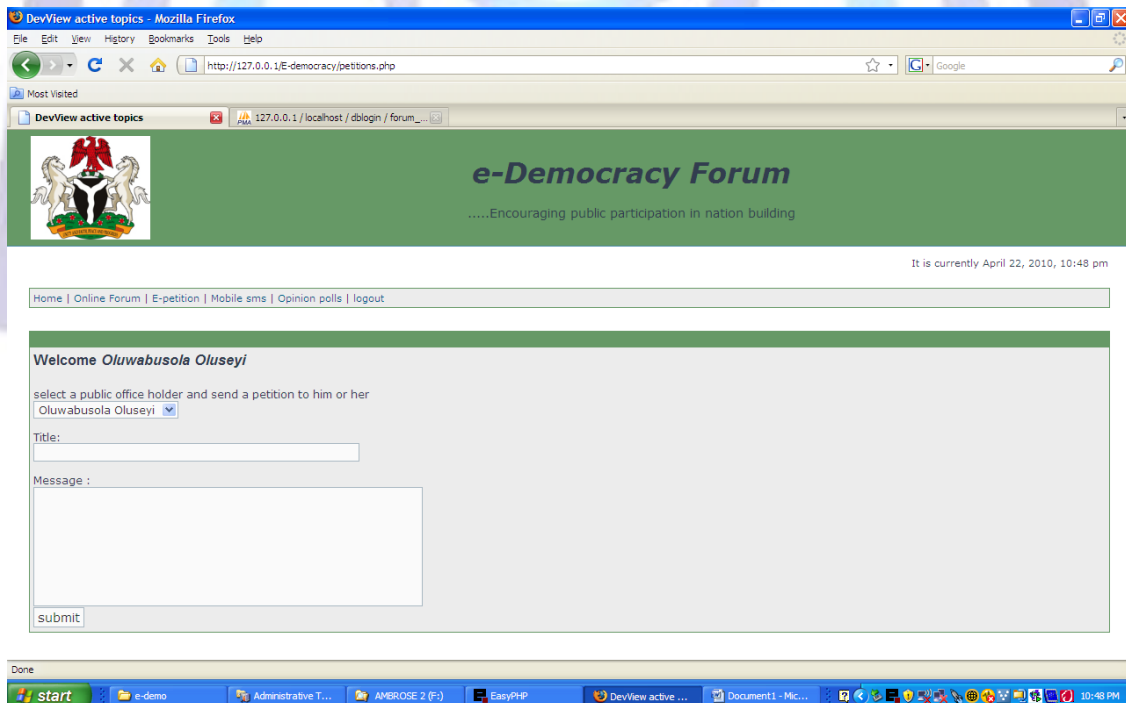


Figure 6: E-petition WUI

Internet Explorer

Query results operations
[Print view](#) [Print view \(with full texts\)](#) [Export](#)

Show : 30 row(s) starting from record # 0
 in horizontal mode and repeat headers after 100 cells

	petitionee	pet_sender	pet_msg	pet_title
<input type="checkbox"/>	seun	seun	We have not being having power in my area for two...	Power
<input type="checkbox"/>	Oluwabusola Oluseyi	Oluwabusola Oluseyi	There is too much extortion of the policemen opera...	Policemen
<input type="checkbox"/>	Oluwabusola Oluseyi	Oluwabusola Oluseyi	Sir, with all due respect, u are a man of inquetio...	Recommendation
<input type="checkbox"/>	Charles Korede	Charles Korede	Sir, kindly provide the transformer you promise my...	Promise
<input type="checkbox"/>	Oluwabusola Esther	Oluwabusola Esther	Gud goverance	Better
<input type="checkbox"/>	Oluwabusola Esther	Oluwabusola Esther	our roads are in a state of anomy...it needs urgen...	Water and Bad roads in Sango-Ota
<input type="checkbox"/>	Azeta ambrose	Azeta ambrose	Thanks for providing good leadership in my zone	Good Governance

↑ Check All / Uncheck All With selected:

Figure 7. e-Petition Database table

2. e-Profile: where contact information such as email, GSM phone, etc, of public servants are kept.
3. e-Polls: allows for opinion polls for users to cast their votes on specific government programs for accessing and evaluating governments policies on certain issues (see Figure 8).

DevView active topics - Mozilla Firefox

http://127.0.0.1/E-democracy/polls_result.php

Most Visited

DevView active topics

 **e-Democracy Forum**
Encouraging public participation in nation building

It is currently April 22, 2010, 10:49 pm

Home | Online Forum | E-petition | Mobile sms | Opinion polls | logout

Welcome Oluwabusola Oluseyi

The result of the polls conducted shows the analysis of votes selected as at this time

- Inagurate an interim Government ----->27 vote(s)
- Wait till he is physically capable-----> 14 vote(s)
- The Vice president should take over----->9 vote(s)
- Conduct another election ----->12 vote(s)
- do nothing -----> 2 vote(s)

Done

start e-demo Administrative T... AMBROSE 2 (F:) EasyPHP DevView active ... Document1 - Mic... 10:50 PM

Figure 8. Online opinion poll



In order to see which of the available options the general public agrees with, the statistical analysis of the opinion poll is presented using a bar chart. Figure 9 shows a result of a survey conducted using the opinion poll. Mobile SMS allows you send a message to any phone number using the short message service.

1. e-Forum: where citizens are able to discuss issues of national relevance on government policy making and implementation. Users can reply and contribute to topics posted on the forum (e-Bulletin). Users can use the WUI and Mobile SMS to send and receive messages to and from the forum (see Figure 9).

	Topics	Author	Replies	Views	Last post
No new posts	I shoud do a Masters	seychellesbussy	3	23	April 22, 2010, 9:54 pm seyi Oluwabusola
No new posts	early resumption	Seyi o.	5	23	April 22, 2010, 11:40 am Oluwabusola Oluseyi
No new posts	ASSU strike	Charles	4	23	April 22, 2010, 4:58 am Oluwabusola Oluseyi
No new posts	Transaction Alert: NGN5,000.00 CR on 0160001017719 (Cash Deposit - TOYIN O) at 12:51 PM, 31/03/2010. Your Balance is NGN6,218,67,0,20,0	OceanicBank	2	23	April 22, 2010, 2:59 am Chinomso Esinaulo
No new posts	Please Tell me how Can i go to my Way ?????	Lola Olusoga	1	23	April 22, 2010, 2:52 am Chinomso Esinaulo
No					April 22, 2010, 2:48 am

Figure 9: Online forum

DEPLOYMENT FRAMEWORK

Local Government Connect

The beauty of an e-Democracy system is to engender grass root mobilisation and participation. Thus, for efficient result, the implementation and adoption must be bottom-up, from the local government areas, followed by the States and then the Nation at large.

Figure 10 shows an e-Democracy deployment framework in Ogun State of Nigeria. Ogun State has its head quarters at Abeokuta and the State houses Ado Odo Ota Local Government Area, the pilot local government for e-Democracy implementation, where Covenant University, the home institution of the researcher is located.

Nigeria is the fastest growing Telecoms Nation in Africa and the third in the world. It has over 100m active telecoms subscribers, and about 50m Internet subscriber base (NCC, 2012). Thus, e-Democracy can thrive in the country via active participation from the local government areas.

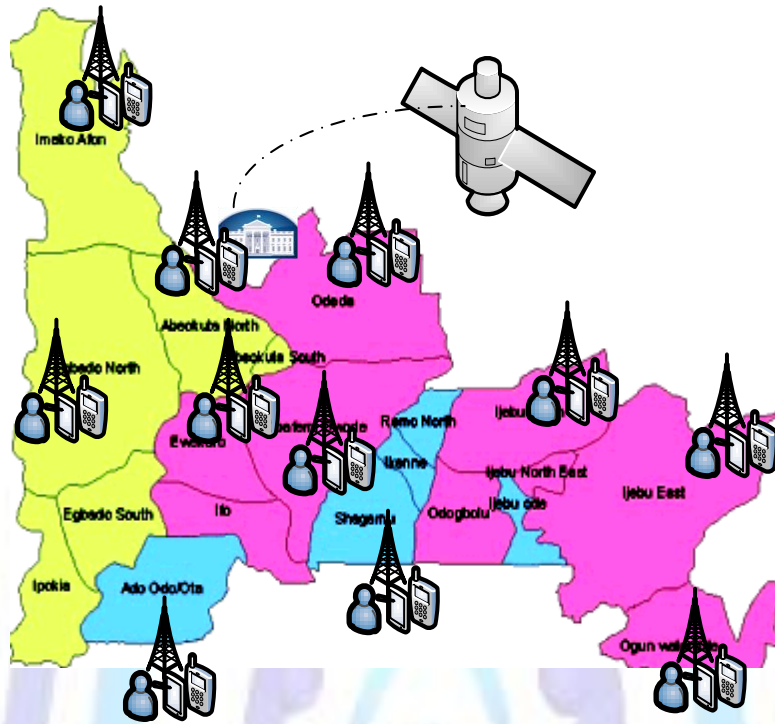


Figure 10: e-Democracy Deployment in Ogun State

Nigeria Connect

The national capital is Abuja, the seat of power. So, all the 36 States in Nigeria have multi-channel access to their representatives. However, at the local government areas, the various wards enjoy same access as the local authorities.

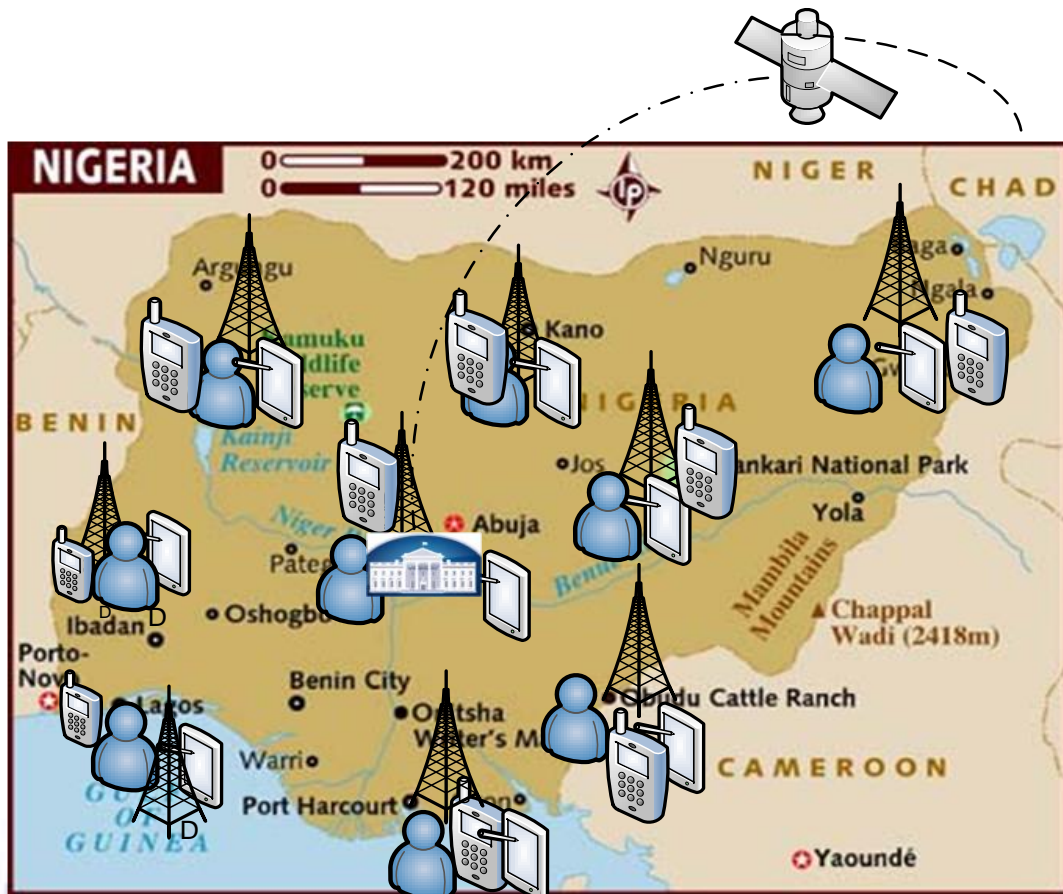


Figure 11: e-Democracy Deployment in Nigeria

Africa Connect

With Africa representing the developing nations of the world, figure 11 shows the deployment of the system across the nations in the continent. The head quarters of African Union (AU) is located in Addis Ababa, Ethiopia. African leaders and citizens in general can make contributions to issues that affect the individual nations and the continent at large.

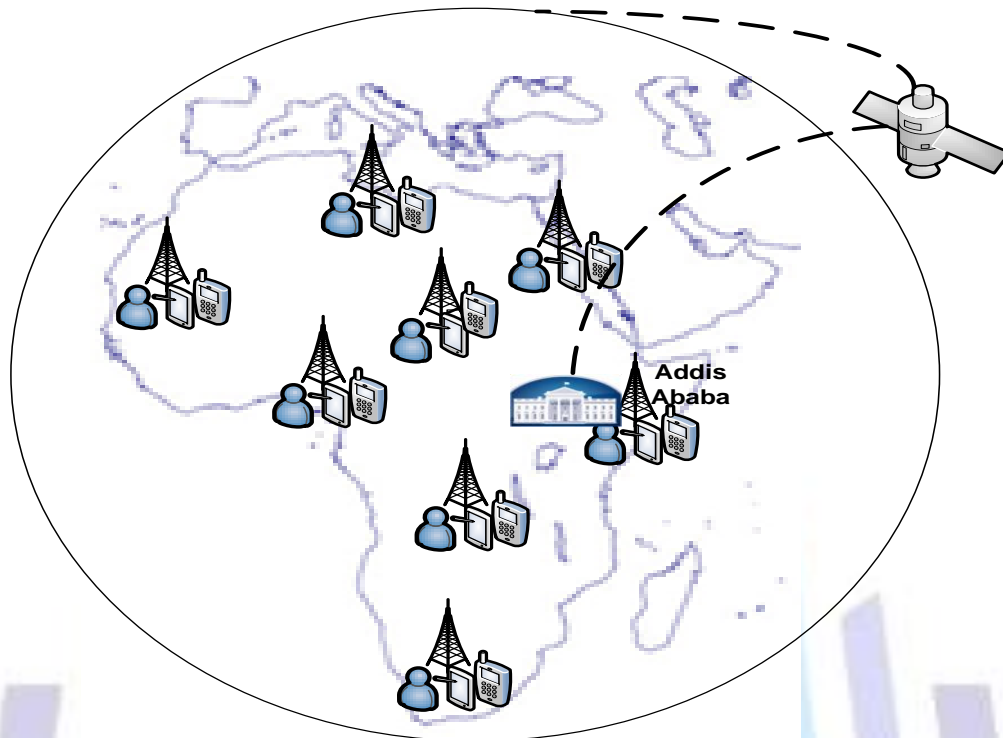


Figure 12: e-Democracy Deployment in Africa

Generally in the world, the total mobile-cellular subscriptions reached almost 6 billion by end 2011, corresponding to a global penetration of 86%. By end 2011, there were 105 countries with more mobile-cellular subscriptions than inhabitants, including African countries such as Botswana, Gabon, Namibia, Seychelles and South Africa (ITU, 2012).

FUTURE RESEARCH

The incorporation of the voice-based platform for the physically challenged-particularly the visually impaired, needs to be fully developed and integrated into the system. This module is important if democracy must achieve its objectives without any social segregation along the line of disability.

CONCLUSION

This work presents e-Democracy as a panacea for successful e-Government implementation. The developed framework offers multichannel platforms such as Web 2.0, mobile devices and Internet for democratic participation and thus offers grass root mobilisation and participation in the polity.

The proposed system explored the integration of speech recognition, web and SMS technologies into e-Democracy to reduce access barriers. The system takes advantage of the ubiquitous mobile devices and mobile ad hoc network to increase the level of participation in democratic practices. Similarly, the availability multi-channel platforms offer additional avenues for electronic/mobile government (e/m-Government), electronic/mobile democracy (e/m-Democracy) and electronic/mobile voting (e/m-Voting) implementation among others.

Furthermore, the framework offers potentials for Increased participation and trust in the polity; Reduced apathy between the electorate and the political class; Improved National e-Government Strategy; Enhanced forum for participatory and grass root democracy; Reduced gap between the policy makers and citizens; Improved transparent access to information and policy making process be it at local, state or federal level.

Finally, the bottom-up implementation approach is suggested from the Local Government Areas to the States, through to National to Continental/Regional levels. Therefore, with enhanced interaction, dialog and consultation, there will be reduced conflicts, better utilization of funds and resources with the overall goal of making the world a better place to live in.



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