Web 2.0 Technology Enhancements to Support E-governance Implementation

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Abstract— **Web2.0 is the recent emergent technology supporting high threshold of user interactions with the exuberance of the digital information in e-governance. Web2.0 technology support e-governance in all the stages of development and implementation as depicted in different maturity models of e-governance. Social networking promoted by Web2.0 technology promote the dissemination and help to gather topics capturing interest of discussion in social forums and blogs This paper suggest an interactive network model for government-customer interactions in developing countries in the final stage of development of e-governance with the back end support of web2.0 technology and social networking.**

Keywords— **Web2.0 Technology, e-governance, Social networks.**

I. INTRODUCTION

E-democracy implementations differ in developed and developing countries. Developed countries has full potential to access internet in contrast with developing countries. Digital divide keep a major part of society away from e-government services. E-democracy will be more effective if there exists responsible citizen who interact with government using online service without reluctance, which makes the communication and networking as the key element in the success of e-governance.. In all maturity models final stage of e-governance is featured with seamless information exchange or e-government interoperability (EGI). At this stage integration of diverging systems of government administration and communication are the main features. Web2.0 and predeceasing web based technological support is the scope of next version of interactive communication.

II. E-GOVERNANCE

E-governance is defined as "The continuous optimization of service delivery, constituency participation and governance by transforming internal and external relationships through technology, the Internet and new media."[1]. Gartner (2000) defined it as "the continuous optimization of service delivery, constituency participation and governance by transforming internal and external relationships through technology, the Internet and new media."

United nations survey report prepared by an independent organisation (UNPAN United nations programme and networking) identified four stages of development in the maturity model of e-governance as shown in Figure 1.0 [2].

The 1st stage is "emerging information", where static information is the main focus. . "Enhanced information services" is the second stage where the web presence is enhanced bi- way communication. • The 3rd stage is "transactional services, a two way interaction with citizens is concentrated. In the 4th stage "connected services": is characterised by seamless interaction with the customers and use of Web 2.0 tools. Initial stages of evolution of e governance focussed on digitisation of the document, sharing storage, security in information and secured fiscal transactions. But final stage of e-governance is featured with seamless information exchange interactions. Measures for extensive communication at lower cost in cost effective manner is to be selected for final stage of e-governance implementation [2][11]. Thus e-democracy will be more effective if there exists citizen who is ready to respond and there exist means for effective communication available at lower cost for all levels in the society.

E-governance support e-democracy, though implementations differ in developed and developing countries. Developed countries have full potential to access internet in contrast with developing countries who lack direct online personal communication. Most of the developing countries fill the gaps with aid of public private partnership of service delivery. In both cases, e-governance gain success with advancement in effective communication through internet. Web2.0 is the best example for back end support in this regard which can be effectively used by developing nations Web 2.0 Technology.

Web 2.0 is a revolution in the computer industry caused by the move to the internet as a platform for communication and an attempt to understand the rules for success on that new platform.[3]. It support social media and is dynamic in nature supporting user generated content. It support sharing of information rather than keeping it as the personnel possession. Instead of using conventional time consuming procedures for interactions with the government, online transactions using Web2.0 technology improve customer inter operability by reducing time and supporting e-democracy. Transformations in the society are results of four interlocking factors. The changing role of knowledge and the changing forms of social organisation and co-operation, globalization and utilization of new IC technologies [4]. Web 2.0 is an emerging support of radical change in the society caused by implementation of e-governance. In all the stages of development of e-governance, communication is an important factor.

In the initial stage of maturity model computers and mobile phones are used for exchange of static information. In the second stage of development, dynamic web sites promoted e-governance with the networking technologies and data management technologies . In the final stage of development of e-governance supporting seamless data exchange, the importance of networking, data sharing and managing technologies gained prominence. Main features of Web 2.0 technology helpful for e governance implementation are multi-channels for information dissemination and opinion gathering. The speed with which information is disseminated is another crucial factor. This accomplished by diverging features of Web2.0 technology.

III. TECHNOLOGIES USED IN WEB2.0.

Web 2.0 groups, such as discussion boards, documents and bookmarks save time. Major supporting tools of Web2.0 are listed in Table 1,2 and 3.
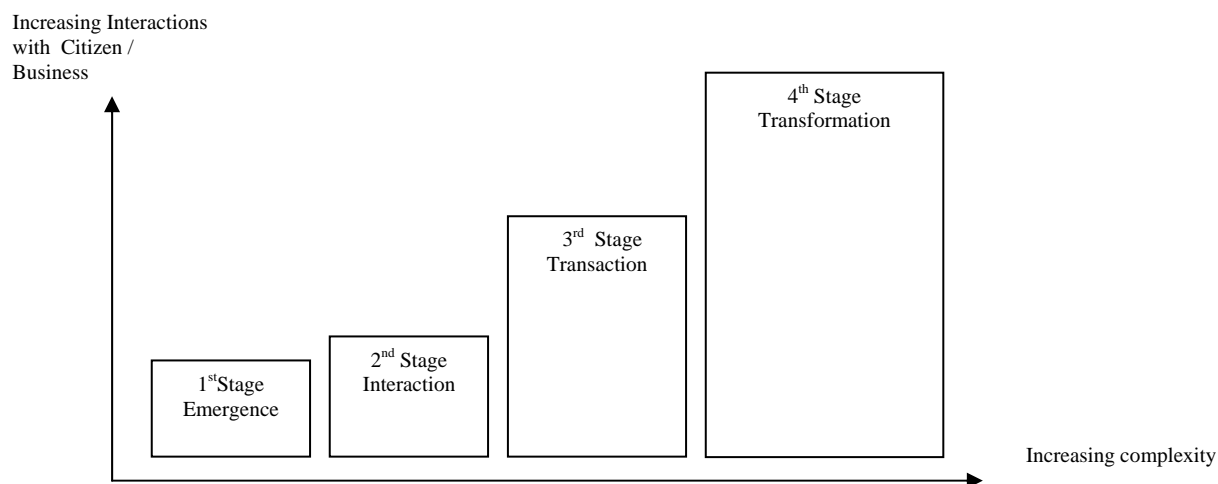
Fig.1. Four stages of maturity model defined by UNPAN.

TABLE 1 WEB 2.0 TECHNOLOGIES FOR CREATION AND SHARING OF INFORMATION [5]

Function	Applications	Tools
Writing Applications	Notepad	Gmail, Fleck, Google Notebook, Helipad, Magnoto, Posticky.com, shortText.com, SnapBits, SNIPPit, StickyTag, stikkit, Workspace, Wridea.
	Weblog	WordPress, Blogger, Blogtronix, TypePad.
	Word Processor	GoogleDocs -Writely Zoho writer (Spreadheet, presentation, database. writeboard.com) YourDraft -, re-editing and sharing ,Widget code to include in another application. writewith.com, can import *.doc (without pictures) or *.html. thinkfree - *.doc compatible tool, Coventi MoonEdit. Features real time, ajaxWrite, gOFFICE Word Processing, iNetWord, RallyPoint
	Desktop Publishing	gOFFICE Desktop Publishing
	Document Manager	EchoSign, Alfresco, Blinksale, FreshBooks, Koral, ShareMethods.
	Web Publishing	Google Pages, Blockstar, Freewebs, Office Live, SiteKreator, Socialtext, Synthasite, Weebly, Weebly, Wetpaint.
	Flash Sharing	StudyStack create and share flashcards. Quizlet a flashcard sharing site created by a high school student. FlashCardExchange is another flashcard sharing site.
	Wikis	wikispaces ,Jotspot
	Other collaborative working	YouFig.com , BricaBox. - allows to combine wiki, photos, maps, etc.

TABLE. 2. WEB 2.0 TECHNOLOGIES FOR INTEGRATION AND COMMUNICATION IN E-GOVERNANCE [5]

	Applications	Tools
Integration	Desktop	Google Homepage, Nowsy, ORCA Desktop, Pageflakes, Protopage, Windows Live, YouOS, YourMinis, Zimbio, XIN
	Office suites	Google Docs. Word processor (ex- Writely), spreadsheet and presentations. The Zoho suite - Zoho writer, spreadsheets, show, online database, project manager, DB and Planner
	Think free Boards	Stixy,YouFig.com
	Feed Reader	Google Reader, Bloglines, FeedLounge, Feeds 2.0, NewsAlloy, NewsGator, Newshutch, Rojo, Wizag.
Communication	Email	Gmail, Hotmail, Mailroom, Simdesk, Webmail.us, Yahoo! Mail, Zimbra Collaboration Suite.
	Fax	eFax, InterFax, TrustFax
	Feed Processor	Feed Digest, FeedBlitz, FeedBurner, Feeds2Be, SocialMail, Spanning Salesforce, Teleflip
	File Sender	YouSendIt, Approver.com, DropLoad, DropSend, Krunch, MailBigFile, Gigafile.
	Instant Messenger	Meebo, Campfire, eBuddy.com, Gabbly, JumpChat, Kool IM, Lingr, Mabber, MSN Web Messenger, Wablet.
	Polls	Zoho Polls, dPolls, PollGenius, PollPub.com, QuestionForm.
	Voicemail	SpinVox, Aptela, GotVoice, Odeo.
	Web Conferencing	Webex, oToMeeting, Dimdim
	Voice over IP	Vyew
	Microblogging / status	Jaiku, Twitter, Pownce

Data creation storage, collection processing and dissemination using networking are the major database related work. Web 2.0 provides tools for each of these. Major creation and publishing tools are listed in Table1. First stage of development is characterized by static information of the forms and formats down loadable in general knowledge about the system .This can be easily accomplished with the writing and sharing tools listed in Table1.

Table.2 describes the tools which ensure data integrity and standard format which require conversion tools, the basic requirement of data sharing and communication. Tools for online conferencing will help in managerial decision making irrespective of the geographical distance and time and reach. This facility will save time and money if there is permanent setup in government offices, without interrupting the work of the employees and managerial staff. Fax, file sender, instant messenger, voice mail help to transfer documents and messages without loss of time. Opinion polls facilities in web2.0 help decision making. Surveys are available to identify user needs and satisfaction levels. Several tools are available for this.

More than this web creating and data managing tools can be helpful in e-governance to disseminate information to the public in a wide range. Web sites and pages help to upload and share videos and pictures using webtops like Pageflakes, Facebook (Wikipedia article). ,Work treamer Social Collaboration, Spruz.

For data gathering and analysis online survey tools requestio and typeform are suitable. . For calculation and analysis of data google calculator and calcoolate instacalc are helpful. Wide range of spread sheet are also available. eg:- - Office tools of Google and Zoho. ajaxXLS, EditGrid, gOFFICE Spreadsheets, iRows, Num Sum, Sheester, ThinkFree Calc, wikiCalc, XCellery (share Excel files) are of remarkable ease of use. Data management repositories are also of much importance.

Excellent database support is provided by Google Base, Dabble DB , commercial for private, Zoho Creator, Baseportal , Bitcut , Google gears - API (local db), Caspio Bridge, eUnifyDB, Lazybase, MyOwnDB and QuickBase. Online CMS & Knowledge Management System Available online. Knowledge Base are also available. File hosting and sharing are managed by Manager:4shared Box.net, fluxiom, Backpack, Omnidrive, Openomy, Streamload, Strongspace, Xmail Hard Drive and allmydata. Social bookmarking and references and include

Bookmarks :Delicious, Diigo, BlinkList, BlogMarks, Blue Dot, Clipmarks, Cogenz, ConnectBeam, Furl, Google Bookmarks, listal, LookLater, ma.gnolia, Netvouz, Raw Sugar, Simpy, Spurl, Yahoo! My Web, zurpy. Reference managers examples include Connotea , LibraryThing [5] .

TABLE. 3 WEB 2.0 TECHNOLOGIES FOR INTEGRATION AND SOCIAL METWORKING [6][7][8]

Function	Applications	Tools
Media and digital artefacts sharing	Photo Manager	Flickr, AllYouCanUpload, Riya, SmugMug, Zenfolio, Zoto.
	Video	Youtube ,Video.Google , ClickCaster
	Music Player:	MP3tunes, ajaxTunes, Jinzora, last.fm, Pandora, Streampad.
Format convertors	http://media-convert.com	Converts between many kinds o files: text formats, video formats, audio formats, image formats, archive formats etc.
	http://zamzar.com	Converts between all types of files
	http://pdfmenot.com	Converts PDF to Flash
Networking	Contacts	LinkedIn, Plaxo , Plugoo, Bebo, Yahoo! 360, Multiply
	Places	Ning, Facebook

IV. PROPOSED INTERACTION E-GOVERNANCE MODEL WITH SOCIAL NETWORKING ON WEB2.0 PLATFORM

Fig.2.0 Proposed Interaction Model
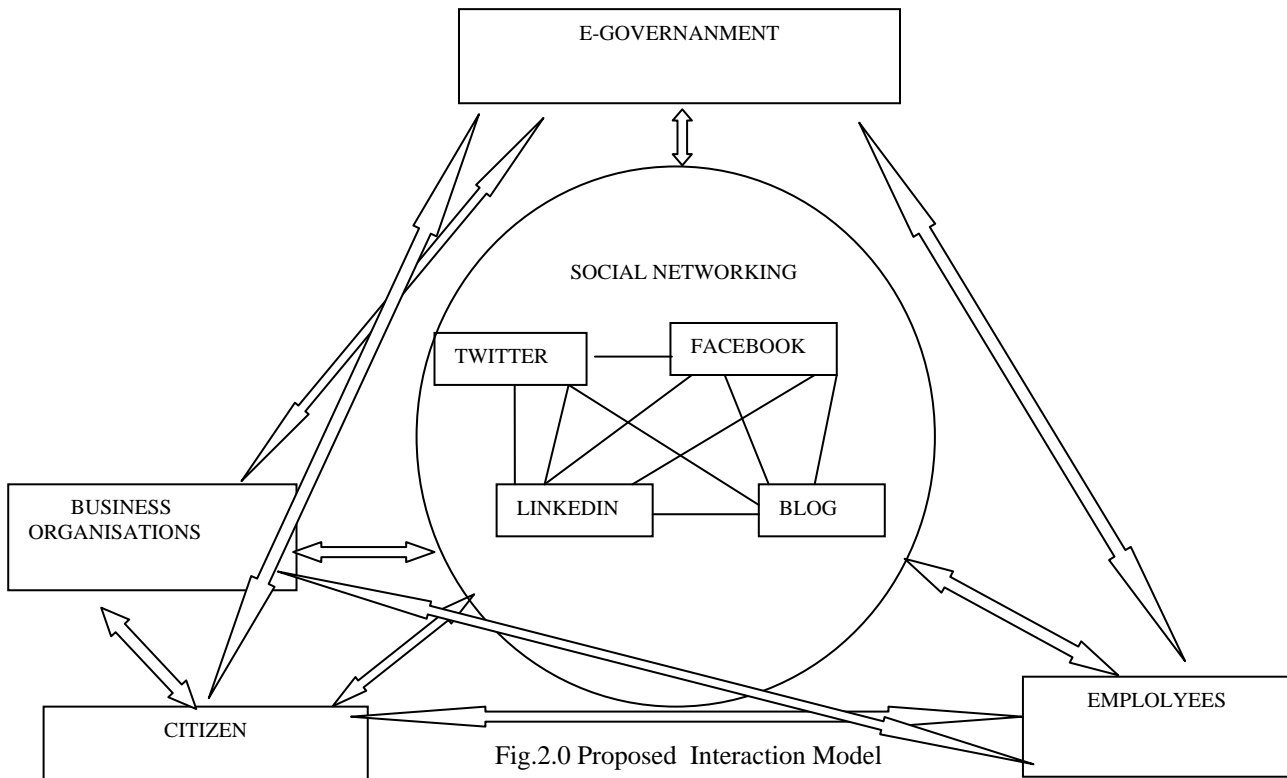
Methodology used in this work include search of reference articles related with e-governance and e-government models for user acceptance, user satisfaction and major factors. Web of science is a data repository of research journals and it provided more than 9000 articles related with e-governance and e-government when used as key words for search. By analyzing the contents of the most cited and recent articles it is clear that the research in e-governance is focusing of multi-channels for communication. Use of social networking should be an integral part of the government architecture. 20% of the top cited articles discuss the topic on social networking which is a token of the emerging research trend in e-governance [9, 12].

Study of articles of models and design identify the need of incorporating social networking in the administrative structure. It will be the focus of next exuberance development in e-governance development. Information dissemination, opinion polls, surveys, online conferences and document and message passing in a particular group are possible in efficient manner by making use of the caliber of web2.0 technology. [5, 14, 15, 16]. This structure is more suitable for developing countries where there are limitations to afford high end communication infrastructure. The conventional elements of mutual interactions are government, business organization, citizen and employees who make major transactions in e governance transaction and service as G2C, G2B, G2E. In the proposed model social networking based on web2.0 platform is embedded as the collaborating medium in which the popular social networking services interact with each other as well as with the elements of e-governance administrative system[17,18,19]. Government and business organization can create official groups in blogs, twitter or facebook where reliable official information can be disseminated in a responsible manner by a deputed authority or officials[20,21,22]. This will help the group of end user of e-governance, the citizen for accessing correct information in a speedy manner with considerable reliability. This will help in user acceptance and timeliness and transparency of e-governance system[23,24].

V. CONCLUSIONS

Web 2.0 is a promising technology supporting user interaction and user adoption in e-governance. Document creation and sharing is promoted to a great extend by Web2.0. It provides a means for dissemination of government related information transferred to the lower levels of administrative hierarchy and end users in a faster way rather than the conventional methods. It can effectively support disaster management system and decision making system where time taken for communication is very crucial. Other features help to store and share data with unified format without losing data integrity. E-governance maturity level demand extensive interaction and networking in economically feasible manner. This high end goal can be accomplished in developing countries with the support of social networking based on platform of web 2.0

technology. This paper proposes an embedded model of social networking in e-governance architecture in the final stage of e–governance maturity model.

REFERENCES

[1]. Backus, Michiel. "E Governance in Developing Countries". IICD, 2002.
[2]. United-Nations. (2012). UN E-Government Survey report 2012: E-Government for development.
[3]. http://www.oreilly.com/pub/a/web2/archive/what-is-web-20.html.
[4]. Douglas Holmes ," e gov – Strategies for Government,", Nicholas Brealey Publishing, London, 2002.
[5]. http://edutechwiki.unige.ch/en/List_of_web_2.0_applications.
[6]. http://media-convert.com
[7]. http://zamzar.com
[8]. http://pdfmenot.com
[9]. A.Chadwick,". Bringing E-Democracy Back, " Social Science Computer Review ,Vol 21, Issue 4
[10] Layne, K., & Lee, J. (2001). "Developing fully functional E-government: A four stage mode", Government Information Quarterly, 18.
[11]. Baum, C., & Di Maio, A. (2000) ." Gartner's four phases of e-government model". Gartner Group.
[12]. Weerakkody, N. (2004) "Technology and marginalization: A case study of the limited adoption of the intranet at a state-owned organization in rural Australia", InSITE 2004 Informing Science + Information Technology Education Joint Conference, 545-564, Informing Science Institute, Santa Rosa, USA
[13]. Eder, L. B., & Igbaria, M. (2001)." Determinants of Intranet diffusion and infusion". The International Journal of Management Science, 29(3).
[14]. Chadwick, Andrew. "Web 2.0: New challenges for the study of e-democracy in an era of informational exuberance." Isjlp 5 (2008): 9.
[15]. Calista, Donald J., and James Melitski. "E-government and e-governance: Converging constructs of public sector information and communications technologies." Public Administration Quarterly (2007): .
[16]. Pavlichev, Alexei, and G. David Garson, eds. Digital government: principles and best practices. Igi Global, 2004.
[17]. Mälkiä, Matti, Ari-Veikko Anttiroiko, and Reijo Savolainen, eds". E-Transformation in governance: New directions in government and politics". Igi Global, 2004.
[18]. Taubman, Geoffry. "A not-so World Wide Web: The Internet, China, and the challenges to nondemocratic rule." Political Communication 15.2 (1998)
[19]. Bertot, John C., Paul T. Jaeger, and Justin M. Grimes. "Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies." Government information quarterly 27.3 (2010).
[20]. Bonsón, Enrique, et al. "Local e-government 2.0: Social media and corporate transparency in municipalities." Government information quarterly 29.2 (2012).
[21]. Sørensen, Eva, and Jacob Torfing. "Theoretical approaches to governance network failure." Theories of democratic network governance. Palgrave Macmillan UK, 2007.
[22]. DiMaggio, Paul, et al. "Social implications of the Internet." Annual review of sociology 27.1 (2001).
[23]. Dadashzadeh, Mohammad. "Social media in government: From e-Government to e-Governance." Journal of Business & Economics Research 8.11 (2010): 81.
[24]. Magro, Michael J. "A review of social media use in e-government." Administrative Sciences 2.2 (2012).