Exploring issues in Mobile Governance- a select case of Kerala m-governance plan

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Abstract - In India, m-Governance is still at new stage and still need for more improvement to get a better m-Governance. While many innovative applications are underway in both private sector as well as government domains, it may be a little premature to celebrate its success and still need for the improvement. Currently, m-Governance in India is still facing challenges in both management and technology.The M-Governance project in Kerala, is a comprehensive Mobile Governance project covering ninety odd Government Departments. The paper also tries to capture the various challenges faced while trying to implement mGovernance, as well as the solutions devised to address some of those challenges, through the presentation of Kerala case study.

Keywords: Governance, Kerala, Mobile Technology

I. INTRODUCTION

As on 31st January 2011, the number of mobile phone subscribers in India stood at over 771 million and the mobile teledensity was 64.7%. Out of the total mobile subscribers, the share of rural subscribers was 33.6% and the rural mobile teledensity was31.1% whereas the same for urban areas was 143.4%. The total subscriber base of mobile phone users is projected to grow to one billion by 2012. Wide access to mobile phones in the country has made it an ideal platform for Government to resident interface, especially in the rural areas. Mobile platform is a broad term that includes all mobile based technologies and the related infrastructure such as a Mobile Service Delivery Gateway (MSDG) that are deployed for delivery of public services to the residents.

The various stakeholders which are expected to play an important role in enabling the delivery of mobile based public services in India include Mobile Network Operators (MNOs), Value Added Service (VAS) and Application Service Providers (ASPs), Unique Identification Authority of India (UIDAI), Telecom Regulatory Authority of India (TRAI), National Payments Corporation of India (NPCI), Government ministries and departments, equipment manufacturers, and residents or users.

1.1 M-governance: 'always –on'

M-Governance is a sub-domain of e-Governance and it is not a replacement of e-Governance, through which the governments delivers their services to the citizens using mobile devices. m-Governance is as an alternative to e-Governance especially for the country like India, that has very large population of citizens where accessing or having the personal computers and internet usage is comparatively low as compared to mobile phones. Hence, the alternative of m-Governance or mobile Governance can help make public information and government services available anytime and anywhere by bringing personalized, localized and context aware services close to citizens and officials. Most of the government realized a long time back that mobile is no longer a tool meant only for communication but it's a medium for empowering the citizens and a powerful enabler of good governance. m-Governance can be defined as a strategy and its implementation involving the utilization of all kinds of wireless and mobile technologies, services, applications and devices.

1.2 Why m-governance

1. *Mobile Society:* People, vehicles, air traffic, post and information havebecome more and more mobile around the world and oursociety is increasingly being recognized as a nomadic ormobile society. All these clearly indicate the burgeoningpublic interest in mobility and various issues relating to 'beingmobile.' Mobility is being regarded as a new paradigm incomputing. The new paradigm shift will be marked by mobile,

2. **'***always –on' citizens:* "Always- on" citizens, government, as well as the transienton-line communities. Citizens are able to save time andenergy by accessing and communicating with governmentnetworks through mobile phones and other wireless devices.Providing Information and Services to citizens on the go willhelp improve the quality of information and servicesincredibly. Transparency of the Government mechanism is alsoenhanced.

3. *Economic booster:* A report on the socio-economic impact ofmobile technology by a team of researchers led by ProfessorRajatKathuria of the Indian Council for Research onInternational Economic Relations (ICRIER) has found clearevidence to suggest that mobile penetration facilitateseconomic growth. It shows that Indian states with 10% highermobile phone penetration will enjoy an annual average growthrate 1.2% higher than those with a lower teledensity. Thestate of Kerala is the ideal playground to test the concepts ofmobile governance comprehensively, as it has a much higherteledensity (above 80 percent currently), compared to thenational average of 47.89 percent

4. *Remote Availability*Mobile phones can reach areas where the infrastructurenecessary for Internet services or wired phone services isdifficult to set up. The ability of reaching rural areas is animportant feature that will enable m-governance

5. *Low Cost and Efficient ROI:*Mobile phones are a relatively low cost technology ascompared to Internet technology and is more affordable.

6. *Easy Learning Curve*Usage of mobile devices is fairly simple thus making iteasy for any common person to use it and access neededinformation. Mobile technology promises to help overcomethe hurdles that hinder the progress of many e-governanceapplications. Internet mandates certain basic infrastructuralrequirements such as electricity, communication lines andcomputer workstation besides knowledge of English. Alsosome basic training has to be imparted in order to educatecitizens about computer and internet. On the other hand, noeffort is required to train citizens to use mobile phones. Voiceapplications make mobile phones even more suitable for thepeople with limited reading skills.

7. *Location Based Services*Mobile platform has the potential to provide locationspecific information with regard to emergency services,locating a nearby Bank /ATM, information regarding trafficand weather conditions in that locality etc.

8. *Low Penetration of Internet and Broadband:* Internet and broadband penetration is still relatively very low in India. This has restricted the access to e-governance services through the traditional medium of computers and internet. The extremely high individual ownership of mobile phones makes it possible to expand the access to public services dramatically, especially to those in the rural areas. Moreover, mobile handsets are available at a far lower cost than that of computers and low tariffs make them a very attractive medium for delivery of public services.

II. 2. M-GOVERNANCE IN INDIA

To know the relevance of mobile devices in developing countries such as India, we must know the benefit of these devices. The growth of mobile technology is increasing rapidly day by day and every month, a new mobile device might come out in the market. This grows with the demand and the use of mobile devices by the users is increasing now a days. The high demand of mobile devices from the users especially in developing countries

such as India which has high population is because of the benefits and advantages that they can get from these devices.

Information in rural India isn't centralized through census information, medical and health records, or a regional phone book. Therefore, the contact lists on mobile phones become an extremely valuable mechanism for creating adhoc networks that enable information sharing. For example, several research participants recorded the blood type of the contacts stored in their phone's address book. These users were able to act on this information when medical emergencies occurred in their village. They could quickly identify possible donors for blood transfusions and alert their network of the need.

To show how data could be made tangible, and how illiterate users could easily share contact information, Adaptive Path, a product experience and strategy design company created a concept called *MobilGlyph*. Solving the "save a contact" problem for illiterate users became one of the focuses for their project.

Today, India is moving towards m-Governance after major involvement in e-Governance. It's a well known that Information and Communication Technology (ICT) is very essential for processing, storing, organizing, and presenting data and information. The reasons for the keen interest in governing through mobile are not tough to guess. As the Indian telecom subscriber base reached the extraordinary figure of 700mn, mobile phones have become the most accessible tool of communication available to such a large population.

Some examples of common citizen services using mobile devices are Indian Meteorological Dept's Weather Information, Kisan Call Centre's Agriculture related queries solution, CBSE's Exam result of class 10 and 12 and so on. DataQuest (May 2011) may be referred for detailed list

III. KERELA M-GOVERNANCE PLAN

The Government of Kerala has launched mobile based public services in a number of Government departments in the state. These include agriculture, health, district administration, tourism, fisheries, motor vehicles, police, elections, etc. For example, the health department has launched "Dr SMS"; a SMS based m-health information system for providing information on health resources and the medical facilities available in the locality of the resident.

The approach adopted to identify services for M-Governance in Kerala has been based on Consulting. The project managers would initially establish contact with Heads of various Departments and discuss the possible applications of Mobile and Wireless Technologies. After short listing potential areas, field-studies would be conducted for a thorough as-is analysis. In the next stage a detailed Functional Requirement Specification (FRS) would be prepared for the proposed solution. The project implementation would commence after the FRS has been approved by the project stakeholders, i.e. the Government Departments. The consulting model has proved to be ideal for M-Governance, as it is hard to conceive one-size-fits-all solutions. More often than not, the requirements are very unique even though they may not pose huge technology challenges. The major challenge has been to build solutions that are Accessible to the masses, irrespective of their sociocultural and educational background.

- Scalable to such an extent that the entire population benefits from them.
- Acceptable by and deployable across all the Telecom Operators(Kerala currently has the presence of more than 10 operators)
- Replicable and Deployable with minimal changes, for similar requirements.

The team working on Kerala M-Governance has tried to keep these points in mind while designing solutions. While the solutions developed for the masses depend on Voice Applications, the ones designed for students/Government officials depend more on signaling (texting). The solutions developed for surveillance depend on imaging technology and Data Service based applications.

All the solutions deployed for M-Governance services are based on Open Source. The SMS, Voice and Data servers that are being used for M-Governance are based on Open Source technology and run on Linux. The technologies used are Linux-Ubuntu, Asterisk and My SQL. Along with Bulk- SMS pushing capability, the SMS server also supports regional languages and Flash SMS.

1. *The electoral Details on Mobile***:** Kerala State IT Mission (KSITM) has added a new m-service by which citizens can check their Voter ID details by sending an SMS. The voters just need to send the message ELE to the Kerala m-Governance short code 537252 and the sender will get the details regarding his/her voter details Roll No, and polling station. Another example is that Gujarat State Election Commission has developed a project called 'Online Voting System' for its Local Body Elections in October 2010 and in April 2011.

2. *Bluetooth Kiosks:* Bluetooth Kiosks would play an important role in information dissemination. Bluetooth Kiosks would be deployed in places like bus-stations, railway stations and airports. Citizens can turn on Bluetooth in their handsets and receive information regarding Government schemes, tourism etc on their phones.

3. *The Short code 537252:*Short codes (also known as short numbers) are special telephone numbers, significantly shorter than full telephone numbers, that can be used to address SMS and MMS messages from mobile phones or fixed phones. Theshortcode '527252' which corresponds to 'KERALA' in the non-QWERTY mobile keypad has been opened with all the operators in the region. This shortcode will be used exclusively for Government Services. It is an effort towards bringing a wide range of Government services under the same umbrella.

4. *IVR based Survey for State Planning Board:* The SampoornaOorjaSurakshaMission, is a State-level initiative aimed at achieving total energy security. The mission focuses on total electrification, energy conservation and tapping of renewable sources to meet the growing energy demands of the city. The initiative required conducting a statewide survey in order to identify households and other buildings without electricity. The conventional mode of surveying would require personnel plying throughout the state conducting the survey and recording the details in paper forms. Consolidation of the collected data would add another layer of work. Instead, the Planning Board decided to use an IVR(Interactive Voice Response) based system for surveying. The IVR menu in the regional language was set up in a ten digit number and this number was advertised in all the major dailies. Citizens were asked to call in to this number and speak out the details as required by the voice menu. The IVR was up and running for about a month, during which approximately 25,000 calls were recorded. Now the major challenge was to convert the voice data into text. Project Managers set out to check if there existed a voice recognition engine that could transliterate Malayalam language to text. Discussions were held with innovators who developed language-agnostic speech recognition engines, but a huge repository of voice samples and considerable time were required in order to train the engine. As a result, manual translation was resorted to. The personnel engaged in transliteration were found to convert 25-30 audio files per hour on an average.

5. *Other Major Services* Information services for many departments, like weather alerts for farmers form an important part of M-Governance. Information regarding departments would be available to citizens via text on their mobile phones. The services are made available either on-demand, wherein the citizen can send in the query via text, to which the answer will be send, or through subscribed services. Complaint readdressed systems also provided under M-Governance. Such systems leverage voice and text based mobile technologies. Complaint registering would typically be done by calling into the IVR system. The complaint registration number and periodic updates would be sending via SMS. Alerts would also be sending to concerned officials via SMS. Such systems would considerably reduce the turnaround time.

3.4 Challenges-'entry barriers'

The main challenges of m-Governance are typically the same as those of e-Governance, such as low levels of computerization of government operations at the back-end, lack of digitized data or content and change management.

- *Cost:* m-Governance tends to be yet one further channel for e-governance, in which case it will create additional costs. This will continue until m-Governance can truly substitute for other delivery channels. Such substitution will be viable for applications within government.

- *Low levels of literacy* The low levels of literacy in India mostly happening in the rural areas. Currently, most mobile phones available have a text driven interface, making it near impossible for illiterate users to obtain, read and get any information provided by the government.

- *Lack of knowledge of English language:* most of mobile devices applications are developed using English language. So, this factor will give challenge to the m-Governance services to reach their services to the citizens especially in rural areas through mobile devices.

- *Computer illiteracy:* This is because some mobile devices are using technology in m-Governance which is related to computer based devices such as tablet PC, iPad, iPhone etc. Therefore, the computer illiterate users might face problems and difficulties to access government services which are offered through such mobile devices

- *To develop application in each of local languages* Another challenge is to develop applications that can be offered in each of local languages. Because India is facing a lack of knowledge of English language challenge, the applications that can be offered in local languages should be developed. But, it still has another challenge where currently, India has 22 different national languages which will give major challenges for developers.

- *Trust/security* If m-Governance is to encompass m-payment systems or other transactional public services, then it must have good security and must be trusted. As yet, there is still a credibility gap to be crossed for many mobile device users.

- *Data overload* Mobile devices increase the pressures of a world in which users are permanently connected. These connections increase the number of messages circulating and can cause a blizzard of communications by spam, junk and unwanted messages.

IV. RECOMMENDATION- FROM E-GOVERNANCE TO M-GOVERNANCE

The key issues that need attention while selecting the different components for the mobile-governance framework are:

- Protocols and services based on open standards, rather than proprietary, closed standards
- Vendor independence for the avoidance of vendor or proprietary format lock-in
- Rapid prototyping and deployment capability
- Security and authentication procedures for safe-guarding of critical data and ensuring the privacy of information
- Scalability and high availability

Making all government websites mobile compliant/mobile site access should be promoted. All government agencies should use mobile optimized content as a primary method for device support. Plan strategies to popularize the use of mobile devices technology in rural areas by giving subsidies, training and guidelines.The government should plan a strategy how to popularize the use of mobile devices among the Indian rural citizens.

- To overcome this problem, the government should provide and give subsidy to own a mobile phone and they should be given a training how to use that mobile device.
- The Government of India should come out with the plans and strategies to formulate guidelines about the use of mobile devices and enable government departments to provide services from mobile phones like paying utility bills etc.
- It also should aims to formulate standards for applications for easy interoperability of services across multiple service providers and multiple Government departments and other agencies.
- Implement m-Governance by developing mobile applications in local languages and more mobile utilization applications.
- Currently in India, most of urban kids are already exposed with those technologies but the problem is for the kids in rural areas. To overcome this problem, the government should provide more learning by using the mobile technologies in the education space in India. This learning method is called as m-learning. Whereas m-learning apps already exist in the education in India but this learning method might still not in use in rural areas.
- Multi stakeholder partnership models for the design and delivery of mobile governance services should come out. It will also encourage the development of cloud-based implementation models. Besides that, a platform should be proposed for the way the mobile services deliver to the citizens which will be fully integrated with existing infrastructure created under the National e-Governance Plan (NeGP).
- Implement laws for mobile Governance for better m-Governance services.

V. CONCLUSION

All the ingredients for successful implementation of m-Governance services in India are present. In fact, by enabling a collaborative framework among various players, India stands in a unique position to be a global leader in the development and deployment of mobile applications (m-apps) for public services.

After the launch of 3G technologies in India, users will be able to access health, educational, agricultural, infotainment services on their mobile phone. In India, m-Governance is still at a nascent or new stage. While many innovative applications are underway in both private sector as well as government domains, it may be a little premature to celebrate its success. However, embracing the possibilities and opportunities that this technology provides will only lead to an effective and cost-efficient way of exploiting the same.

REFERENCES

[1] "Telecom Subscription Data as on 31st December 2009, Information Note to the Press", (Press Release No. 8/2010) by Telecom Regulatory Authority of India, 27th January 2010. This release can be seen online atwww.trai.gov.in/WriteReadData/trai/upload/PressReleases/721/Pr27jan2010no8.pdf

[2] Article on "M-Governance" in the Kerala State IT Mission Official Website. The article can seen online at http://itmission.kerala.gov.in/index.php?option=com_content&view= article&id=434&Itemid=67

[3] "Telecom Subscription Data as on 31st December 2009, Information Note to the Press", (Press Release No. 8/2010) by Telecom Regulatory Authority of India, 27th January 2010. This release can be seen online at www.trai.gov.in/WriteReadData/trai/upload/PressReleases/721/ Pr27jan2010no8.pdf

[4] TRAI press release, Source: http://www.trai.gov.in/WriteReadData/trai/upload/PressReleases/800/MonthlyPressRelease-Jan-2001.pdf , accessed 23 March 2011

[5] IT mission, Source: http://www.itmission.kerala.gov.in/mobile-governance-initiatives-in-departments/200-health-department.html, accesses 21 Jan 2012

[6] Draft Consultation Paper on Mobile Governance Policy Framework , March 2011 , National e-Governance Division, Department of Information Technology, Available at : www.mit.gov.in/whatsnew, accessed on 12 Jan 2012

[7] CGAP, Mobile Banking, http://www.cgap.org/p/site/c/template.rc/1.11.14910/

APPENDIX

I. Table1: Technology basis summary of the available models

Telecom Standard	**Data Bearer**	**User Interface**	**Method of Invoking / Initiating Transactions**	**Security**	**Hardware / Setup Requirements**
GSM	Plain Text SMS	Structured Text	SMS / J2ME	Weak Encryption	Works on any phone. Workarounds like IVR call backs for sensitive information are possible
GSM	USSD / Application SMS	GUI (Graphic User Interface) / Structured Text	SMS / J2ME	Secure Channel	J2ME client requires Java enabled phone.
GSM	GPRS / WAP	GUI	J2ME / Browser	Secure Channel	Java enabled phone with GPRS. Without GPRS this can work within the Telecom provider's walled garden.
CDMA	Application SMS / GPRS / WAP	GUI	Brew / Browser	Secure Channel	Operator centric usage