Draft Consultation Paper

on

Mobile Governance Policy Framework

March 2011

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The Draft Consultation Paper is available on the DIT Web site at the following URL:
www.mit.gov.in/whatsnew

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Contents

Note to all Stakeholders and Citizens

Consultation on "Mobile Governance Policy Framework for India"

Department of Information Technology (DIT), Government of India has taken up the initiative of formulating a comprehensive policy on Mobile Governance to make Government services available to the residents of the country through mobile devices. In this regard, a Draft Consultation Paper on Mobile Governance Policy Framework has been prepared by the National e-Governance Division (NeGD) within DIT, and is available on the DIT's website at the following URL:

www.mit.gov.in/whatsnew

DIT invites feedback and comments on the proposed policy framework on mobile governance from all the interested stakeholders and citizens to refine the methodology towards mainstreaming mobile governance in the country. We request you to go through this Draft Consultation Paper and provide your inputs/comments on the specific questions mentioned below:

S. No.	Consultation Questions
1	Which, according to you, are the most relevant areas where mobile based public services can be most effective?
2	Does the proposed Mobile Services Delivery Gateway address the interoperability issues comprehensively? If not, what according to you should be the additional features of MSDG?
3	Does the strategy of having pre-defined uniform long code for IVR services and short codes for other Government services address the goal of interoperable mobile services across the country?
4	How can the proposed Innovation Fund be utilized in the most transparent manner in order to help accelerate the development of applications for mobile based public services? Would you like to suggest other mechanisms for achieving the goal of rapid development and deployment of applications for m-governance services?
5	Does the Consultation Paper adequately address the goal of provisioning inclusive services? What additional suggestions would you like to give in this regard?
6	What would be the most appropriate PPP Model for development and maintenance of MSDG and the m-Governance Applications Store?
7	What would be the most appropriate mechanisms to enhance cooperation among the central and state Government departments and agencies for development and effective use of MSDG and sharing of applications?
8	Would you like to give any suggestions with regard to the policy recommendations and the implementation framework for mobile governance in the country?
9	Any other suggestions or comments that you would like to provide?

You can send your valuable comments and suggestions to DIT through email at mgov@negp.gov.in . Based upon your feedback, we may contact you for further inputs or invite you to participate in face to face consultations hosted by NeGD.

Introduction

Governments around the world have long recognized the need and potential of ICTs to make government services available to all the residents. As a result, e-Governance has emerged as a popular phenomenon to deliver government services around the world. However, e-Governance in an implementation sense is restricted primarily to the use of computer based internet access to deliver services. In countries where the penetration of computers and internet is relatively low, such as in India, there is an apprehension that the reach of e-Governance may be limited.

The limited reach of e-Governance has made governments think of new technologies, such as mobile phones, to reach the residents and deliver public services. This phenomenon has been driven primarily by the rapid growth of mobile phone subscribers in several developing countries. India, with its more than 771 million[1] mobile phone subscribers offers a unique proposition to develop into the world's first truly mobile digital society. In relation to the delivery of public services to the rural population, there is a rapidly growing interest in the concept of mobility and the various issues that arise in 'being mobile', both for the individual and the organization. While e-government is usually defined as the conventional government services made available for all users through electronic means such as computers connected to the internet, mobile government or m-government is defined as the overall strategy and processes for delivering various public services through all kinds of wireless and mobile technologies, applications and devices to all users, including residents, government departments and agencies and businesses.

In view of the vast potential of mobile platform for delivering public services in the country, the Department of Information Technology (DIT), Government of India has initiated the formulation of a new comprehensive policy framework on mobile governance. This policy framework aims to formulate comprehensive guidelines for utilizing the mobile devices in expanding the access to and reach of public services in India to all residents, especially in rural areas.

Potential of Mobile Governance

Mobile phones have tremendous potential to expand the access to and reach of public services in India. The rapidly expanding subscriber base of mobile phone users in India can help in accelerating the use of modern information and communication technologies (ICTs) for improving governance and ushering in inclusive development. 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%[2]. 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[3]. The huge user base of mobile phones in our

[1] Source: http://www.trai.gov.in/WriteReadData/trai/upload/PressReleases/800/MonthlyPressRelease-Jan-2001.pdf, accessed 23 March 2011
[2] Source: http://www.trai.gov.in/WriteReadData/trai/upload/PressReleases/800/MonthlyPressRelease-Jan-2001.pdf , accessed 23 March 2011
[3] Source: http://en.wikipedia.org/wiki/Communications_in_India#cite_note-tci_growth-32, accessed 08 Jan 2011

country presents us with an unprecedented opportunity to expand the reach of public services to every resident, especially in rural areas.

The relevance of mobile devices as a medium for delivery of public services is also evident when we compare the subscriber base of mobile phones to that of the internet. The total base of internet users in India at the end of 2009 was only 81 million[4] and the total number of broadband subscribers (with minimum connection speeds of 256 Kbps) was only 11.21 million as on 31st January 2011[5]. Wide access to mobile phones in the country has made it an ideal platform for Government to resident interface, especially in the rural areas.

[4] Source: http://www.internetworldstats.com/stats3.htm
[5] Source: http://www.trai.gov.in/WriteReadData/trai/upload/PressReleases/800/MonthlyPressRelease-Jan-2001.pdf, accessed 23 March 2011

2. Vision, Mission and Policy Goals

Vision

Providing public services to all the residents in the country, especially in the rural areas by utilizing the reach of mobile phones and the innovative potential of mobile applications and making India a world leader in harnessing the potential of mobile governance for inclusive development.

Mission

Transforming the delivery of public services by providing an enabling environment, catalysing innovation, and supporting and sustaining requisite infrastructure for mobile governance and fostering multi stakeholder partnerships (MSPs) in order to provide multi channel and ubiquitous access to government services to all the residents in the country.

Policy Goals

In order to achieve the vision and mission as stated above, the mobile governance policy of Government of India aims to:

a) Build an enabling mobile service delivery infrastructure consisting of a Mobile Service Delivery Gateway (MSDG) that is fully integrated with the existing infrastructure created under the National e-Governance Plan (NeGP).
a) Formulate relevant standards for applications for mobile governance to ensure seamless interoperability of services across multiple service providers and multiple Government departments and agencies.
b) Develop an appropriate regulatory regime for mobile governance to ensure proper coordination among multiple stakeholders, ensure compliance with the standards for applications and ensure seamless interoperability of services and implementation of short and long codes for public services across multiple service providers.
c) Develop suitable mechanisms to enable users to pay for public services through mobile phones.
d) Identify key public services for delivery though mobile platform through stakeholder consultations.
e) Formulate a Project Assessment Framework for the Government departments and agencies to ensure compliance of services planned under the mobile governance policy.
f) Create a state of the art knowledge portal as well as various toolkits for deployment of mobile governance. The aim will be to make India a thought leader as well as a global role model in the domain of mobile governance.
g) Develop and deploy innovative Public Private Partnership (PPP) and Multi Stakeholder Partnership (MSP) models for design and delivery of mobile governance services as well as encouraging development of cloud based implementation models and use of light technologies.
h) Deployment of an appropriate capacity building framework to enhance delivery and absorption capacity for m-Governance services.

Chapter I: Mobile Platform for Delivery of Public Services

1.1 Defining Mobile Governance and Mobile Platform

Mobile governance (m-Governance) can be defined as the delivery of all types of public services including making payment for such services through mobile based technologies, such as SMS, USSD, browser based or direct access through GPRS/3G/WiFi/WLan, Bluetooth, etc. In the proposed policy framework, the front end delivery channel or user access devices are defined as regular cell-phones, smart phones and personal digital assistants (PDAs). Desktop and laptop computers are not included in this category.

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.

1.2 Penetration of Mobile Phones in India

The growth of mobile phone subscribers in India over the last decade has been explosive. More than a decade ago, owning a mobile phone was viewed as a luxury. However, the scenraio has completely changed now with over 771 million mobile phones subscribers in the country as on 31 january 2011[6]. Out of these, the number of rural subscribers was 258.9 millions, amounting to 33.6% of the total. The introduction of 3G services in the country is expected to give a further boost to mobile phone penetration and the usage of internet on these devices.

Table 1.1 below shows a comparative status of the extent of mobile phone penetration in India with the same in South Asia. Table 1.2 shows the total number of mobile phone subscribers in India under various categories whereas Table 1.3 shows the number of internet and broadband subscribers in India.

Table 1.1 Comparative status of mobile penetration and usage in India and South Asia

Mobile Subscription and Usage	2000	2008	South Asia
Mobile cellular subscriptions (per 100 people)	0.4	30.4	32.6
Mobile telephone usage (minutes/user/month)	191	440	363
Price basket for mobile service (US$/month)	-	1.6	1.9

Source: World Bank: ICT at a Glance

Table 1.2 Mobile phone subscribers in India as on 31st January 2011

Category	No. of Subscribers (millions)
Total Wireless Subscrivers	771.18

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

Urban Subscribers	512.26
Rural Subscribers	258.9
Mobile Teledensity (Overall)	64.74
Urban Mobile Teledensity	143.3
Rural Mobile Teledensity	31.1

Source: TRAI

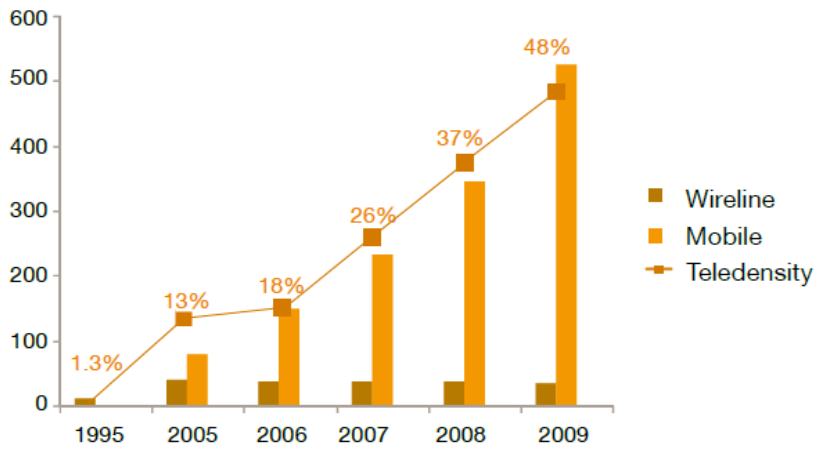
Table 1.3 Internet and broadband subscribers in India as on 31st January 2011

Category	**No. of Subscribers (millions)**
Broadband Subscribers	11.21

Source: TRAI

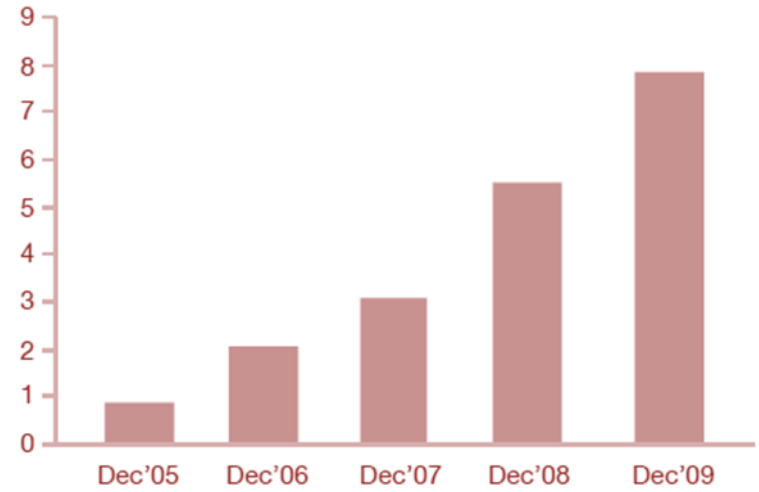
Figures 1.1 and 1.2 below show the growth of mobile phone and wireline subscribers in India during the last five years. Fig. 1.2 shows the growth of broadband subscribers during the same period.

Fig. 1.1: Growth of mobile phone and wireline subscribers in India



Source: TRAI

Fig. 1.2: Growth of broadband subscribers in India



Source: TRAI

1.3 Potential of m-Governance in Delivery of Public Services

Mobile governance holds tremendous potential for improving the access to and delivery of public services in India. The huge potential of m-Governance in the country arises from anumber of factors:

(a) **Huge and Growing Base of Mobile Phone Subscribers**: As noted before, India has over 771 million mobile phone subscribers as on 31.01.2011. The penetration of mobiles in rural areas is also substantial with over 258 million subscribers. This huge subscriber base presents a tremendous opportunity for delivery of public services to all residents, especially to those in rural areas.

(b) **Availability of Low Cost Handsets:** Though most of the handsets currently available in the country are low end ones with only text and SMS capability, handset vendors in India are increasingly producing low cost handsets with GPRS and, in some cases, even 3G featured in them. This has helped in expanding the reach of modern mobile technologies such as GPRS and 3G to a large number of people opting for these handsets. This has also made it possible to deliver public services using these technologies in addition to the SMS based services.

(c) **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.

There are a number of features of mobile governance that make it an ideal platform for improving the access to and delivery of public services. These include greater accessibility, low cost of mobile devices and low tariffs, low training costs, multiple access channels for services (SMS, GPRS, GPS, etc.), real time monitoring, and easy and effective adaptability. These factors are represnted in the Fig. 1.3 below.

Fig. 1.3: Drivers for mobile governance

Chapter 2: Initiatives in Mobile Based Delivery of Public Services

Governments and public agencies around the world have successfully deployed mobile based technologies for providing a wide variety of public services. There have been several initiatives within our country as well in providing public services using the mobile platform. The type of services being provided include both information and transaction based services and cover a wide range of services, such as agriculture, health, education, banking, status tracking, alerts, etc.

2.1 Mobile Based Delivery of Public Services in India

A number of initiatives have been launched in India by various Governments and Government agencies to provide public services through mobile phones. The examples discussed below highlight some of the recent initiatives launched in this area.

Mobile Governance in Kerala

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.[7] 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[8].

Mobile Governance in Goa

The Government of Goa has launched a mobile governance initiative by establishing a SMS Gateway for providing SMS based services to residents by various Government departments[9]. These services include SMS alerts for receipt of applications, shortcomings in the applications, and status tracking. The Gateway has integrated SMS into the e-services provided to the residents by the various departments by integrating API with the eServices software. Currently, the SMS Gateway services are being provided to the following departments: Goa State Pollution Control Board, Directorate of Accounts, Directorate of Printing and Stationery, Inspectorate of Factories and Boilers, Animal Husbandry and Veterinary services, and Commercial Taxes[10].

Passport Application Status on Mobiles

The Ministry of External Affairs, Government of India has launched a SMS based status tracking service for passport applications. Passport Office, Delhi provides this service to all applicants

[7] Source: http://www.itmission.kerala.gov.in/mobile-governance-initiatives-in-departments.html, accessed 21 March 2011
[8] Source: http://www.itmission.kerala.gov.in/mobile-governance-initiatives-in-departments/200-health-department.html, accesses 21 March 2011
[9] Source: http://www.infotechgoa.com/smsgateway.php, accessed 22 March 2011
[10] Source: http://www.infotechgoa.com/smsgateway.php, accessed 22 March 2011

enabling them to get the status of their applications by sending a SMS to a short code[11]. Similar services have been launched by several other Passport offices across the country, such as Ghaziabad, Hyderabad, and Madurai[12].

Mobile Based Intelligent Garbage Monitoring System in Hyderabad

Greater Hyderabad Municiapl Corporation has laucnhed a unique mobile phone based Intelligent Garbage Monitoring System that enables the sanitary supervisors to report the status of cleaning of garbage bins through their GPS enabled mobile phones[13]. They can also upload pictures of the cleaned bins through their mobiles in real time on the website. Any resident can view the status of cleaning of the bins at anytime on the website.

Mobile Banking in India

Over the years, banking has transcended from the traditional brick and mortar model to one where banking services are available anytime anywhere. The onset of mobile banking has transformed the banking services in the country by enabling the people to access their bank accounts almost instantaneously, conduct transactions, and receive alerts on transactions.

Checking account balances is the most popular banking service used by urban Indians with almost 40 million users followed by checking last three transactions and status of cheques with 28 million and 21 million users respectively . Table 2.1 below shows the type of usage and the number of users for the mobile banking services.

Table 2.1. Mobile Banking: Type of Usage and Number of Users in India

Type of Usage	Users (in millions)
Used mobile banking	43.70
Checking account balance	39.97
View last three transactions	28.15
Status of cheques	21.06
Payment reminders	20.92
Request a cheque book	19.11

Source: Manish (2009). *Market Report: Mobile Banking in India used by 40 Million Urban Indians*. http://www.pluggd.in/mobile-banking-in-india-market-report-297/, accessed December 14, 2010

[11] Source: http://passport.gov.in/delhi.html, accessed 14 March 2011

[12] Sources: 1. Ghaziabad: http://passport.gov.in/ghaziabad.html, accessed 14 March 2011, 2. Hyderabad: http://www.ap.nic.in/passport/ContactUs.htm, accessed 14 March 2011, 3. Madurai: http://www.maduraidirectory.com/passport.php, accessed 14 March 2011

[13] Sources: 1. http://www.osrt.in:8080/igms/ebin/ebin.jsp, accessed 14 March 2011, 2. http://www.hindu.com/2011/03/13/stories/2011031363050500.htm , accessed 14 March 2011

State Bank FreedoM – Your Mobile Your Bank, State Bank of India

The State Bank of India offers Mobile Banking services on Java enabled mobiles phones through SMS/GPRS/WAP and on non Java enabled phones through WAP. The user of the Mobile Banking services is required to download an application which is available on their website; this application gives the user access to the following services:

- Funds transfer (within and outside the bank)
- Interbank Mobile Payment Services (IMPS)
- Enquiry services (Balance enquiry/ Mini statement)
- Cheque book request
- Demat Enquiry Service (Portfolio value, Request for DIS booklet, Bill Statement, Last Five Transactions, Transaction status etc.)
- Bill Payment (Utility bills, credit cards, Insurance premium), Donations, Subscriptions
- M Commerce (mobile top up, top up of direct-to-home TV broadcasting service providers, SBI life insurance premium, etc.)

2.2 Mobile Based Public Services in Other Countries

Many countries around the world have laucnhed mobile based delivery of public services.

Go Mobile with Government – Singapore

The Government of Singapore has identified mobile service delivery as one of the strategic thrust areas for Singapore's iGov 2010 Master Plan[14]. It also provides a comprehensive range of public services through mobile phones. These are mostly SMS and WAP based. The services include Government news and information, alerts and notifications on provident fund account, passport renewal, road tax renewal, etc., mobile flight information, health services for information on hospitals, educational services like browsing library catalogues, information on need to file income tax return and the status of returns, etc.[15]

Bahrain Mobile Portal

The Government of Bahrain provides one of the most comprehensive suite of mobile phone based public services. Launched in May 2009, it provides 45 government services including information based services such as weather forecasts, doctor search, and embassy contcts; interactive services such as mobile blogs and polls; and transactional services such as payment of electricity and water charges and traffic violations[16]. The mobile portal is integrated with the various ministries and departments and communicates the data and information to the users. The workflow for delivering the mobile services through the portal is complex and uses multiple platforms as all data remain with the concerned ministry or department only[17].

[14] Source: http://www.igov.gov.sg/iGov_2010_Masterplan/Strategic_Thrusts.htm, accessed 22 March 2011
[15] Source: http://www.ecitizen.gov.sg/mobile/index.html, accessed 22 March 2011
[16] Source: http://www.wsa-mobile.org/winner/mobile-portal-kingdom-bahrain-49820101104, accessed 22 March 2011
[17] Source: http://www.wsa-mobile.org/winner/mobile-portal-kingdom-bahrain-49820101104, accessed 22 March 2011

Chapter 3: Mobile Services Ecosystem in India

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. The mobile applications for delivery of public services typically use light technologies and can be deployed using a cloud computing based platform. However, m-applications cannot work in isolation and the successful deployment of mobile applications for e-Governance requires collaboration among all the relevant stakeholders. Consequently, mainstreaming m-apps across the various Mission Mode Projects of NeGP needs an analysis of the ecosystem and resolution of any gaps or challenges that need to be addressed.

The mobile services ecosystem in India is at an advanced stage with multiple telecom operators, leading ICT companies and mobile application developers. The focus of various actors though has been limited to the entertainment and business applications rather than on developing applications for public services. This can be attributed to some of the issues which are sought to be addressed by the mobile governance policy framework. The challenges are:

- First, the lack of a common service delivery infrastructure and services may lead each ministry or department to develop its own stand-alone systems. This will lead to considerable duplication of infrastructure and services while fragmenting demand.
- Second, even though there are thousands of applications offered by various mobile network operators (MNOs) and value added service (VAS) providers in the domain of business and entertainment, very few applications have been developed for public services. This has resulted in limited availability of such applications within the country.

The challenges noted above point towards the need for a Government led effort for the development of a common service delivery infrastructure, development of standards, data sharing, development of applications, and delivery mechanism for providing public services through mobile devices. This is also relevant due to data security and safety concerns and for accessing data for authentication through the Unique Identification Authority of India (UIDAI) database. There is also a need to develop an appropriate regulatory mechanism to ensure compliance with the standards for mobile based applications and to ensure seamless interoperability of applications and services across multiple service providers in the mobile telecom space.

3.1 Stakeholders in the Mobile Services Ecosystem

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. The role of each of these stakeholders is explained in brief below.

Mobile Network Operators (MNOs) – Mobile Network Operators (MNOs) are entities that provide services for mobile phone subscribers. Mobile phone penetration has been rapidly increasing in both urban and rural parts of the country. MNOs are important stakeholders as the infrastructure created by them provides a new channel for delivery of mobile based public services to the residents. Also, the distribution and retail infrastructure operated by them for collecting and processing payments for mobile services can be leveraged for receiving payments for public services and delivery of basic financial services under the financial inclusion initiatives.

Value Added Service (VAS) Providers/ Application Service Providers (ASPs) – The value added service and application service providers currently focus on developing gaming, entertainment and business services and applications. There are more than 170 value added mobile applications developers registered with AUSPI and there may be many more that are not registered. The VAS and application service providers may be encouraged to develop applications for public services through appropriate policy interventions by the Government.

Unique Identification Authority of India (UIDAI) - The Unique Identification Authority of India (UIDAI) has been created as an attached office of the Planning Commission. It has been mandated to develop and implement the necessary institutional, technical and legal infrastructure to issue unique identity numbers (UIDs) to Indian residents. UIDAI will partner with Government and other agencies in order to enrol residents. UIDAI will specify standard procedures for all agencies, partners and registrars of UIDAI for collection of biometric information and issue of UID numbers to all residents. It is expected that UID numbers will be accepted and used by entities such as Banks, Mobile Service Providers, etc. as part of their requirements to fulfil their Know Your Customer (KYC) Requirements. In addition, UIDAI will also provide real-time authentication of UIDs using biometrics, PIN and dynamic PIN to various stakeholders like Government departments and agencies, banks, mobile service providers etc. The integration of MSDG with the authentication process of UIDAI in the subsequent phase of the mobile governance framework will be of immense importance.

Telecom Regulatory Authority of India (TRAI) – The Telecom Regulatory Authority of India (TRAI) has been created to provide a fair and transparent policy environment that promotes a level playing field and fair competition for the growth of telecommunications in the country. TRAI is responsible for issuing the necessary regulations, orders and directives to provide the required direction for the evolution of Indian telecom market from a Government owned monopoly to a multi operator, multi service, and open competitive market. TRAI is a key stakeholder in providing the necessary regulation for security and technical standards relating to the use of mobile communication and in ensuring a fair and competitive pricing policy for services such as SMS, USSD, voice calls etc. for delivery of public services. The support of TRAI is also required for creating a nationwide unified long and short codes specifically assigned for public services which should be reserved and provided by all the telecom operators to the Government departments and agencies.

National Payments Corporation of India (NPCI) – National Payments Corporation of India (NPCI) is a Section 25 Company under the Companies Act aimed at creating and operating for the benefit of all the member banks and their customers a high-volume and low cost infrastructure for providing payment services at a fraction of the present cost structure[18]. NPCI proposes to build a 24x7 real time remittance processing system known as India MoneyLine (IML) to give the customer

[18] Source: http://www.npci.org.in/aboutus.aspx, accessed 15 March 2011

convenience of instant payments and online transfers. The IML system would operate on a 24x7 basis facilitating real time funds transfer from the sending/remitting bank to the beneficiary bank. This service will be offered to all the Bank's customers through various retail and alternate channels. It has recently launched the Interbank Mobile Payment Service (IMPS) that offers instant, 24x7 electronic fund transfer service through mobile phones[19]. The service is available either through a specific downloadable application or through SMS. NPCI is an important stakeholder since the IMPS can be leveraged for 24x7 real time processing of small value transactions through mobile devices, mobile banking POS and Micro ATMs.

Equipment Manufacturers – There are a number of manufacturers of mobile handsets and other handheld devices in India. For providing public services, it may be desirable for the Government to work with the equipment manufactures to create low cost devices specifically suited to the requirements for delivering such services. The Government will need to work in close cooperation with the equipment manufacturers to develop standards and suitable applications for the low cost mobile phones for delivery of public services.

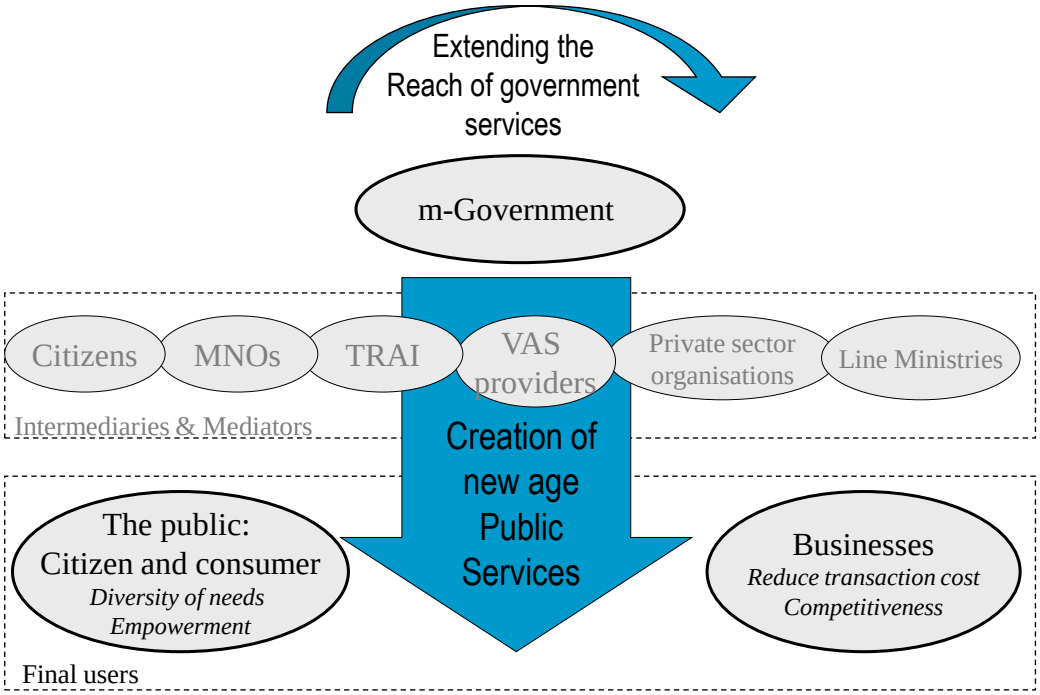
Government Departments and Agencies – Various Government departments and agencies provide a host of public services to the residents. They need to take the lead in developing appropriate applications for delivering their services through the mobile platform using the MSDG. Payment of benefits to the residents under various welfare schemes such as the National Rural Employment Guarantee Scheme (NREGS) can also be made directly to the beneficiaries through their mobile phones.

Residents – The residents are important stakeholders in the entire ecosystem as they are the users of the mobile services and provide critical feedback on the quality of the services delivered. They can also play an important role in creating the content and applications for such services.

The Fig. 3.1 depicts the interrelationship of the above mentioned stakeholders in the overall mobile services ecosystem for enabling the delivery of public services through mobile devices.

[19] Source: http://www.npci.org.in/aboutimps.aspx, accessed 15 March 2011

Fig. 3.1 Mobile Services Delivery Ecosystem for delivery of mobile based public services in India

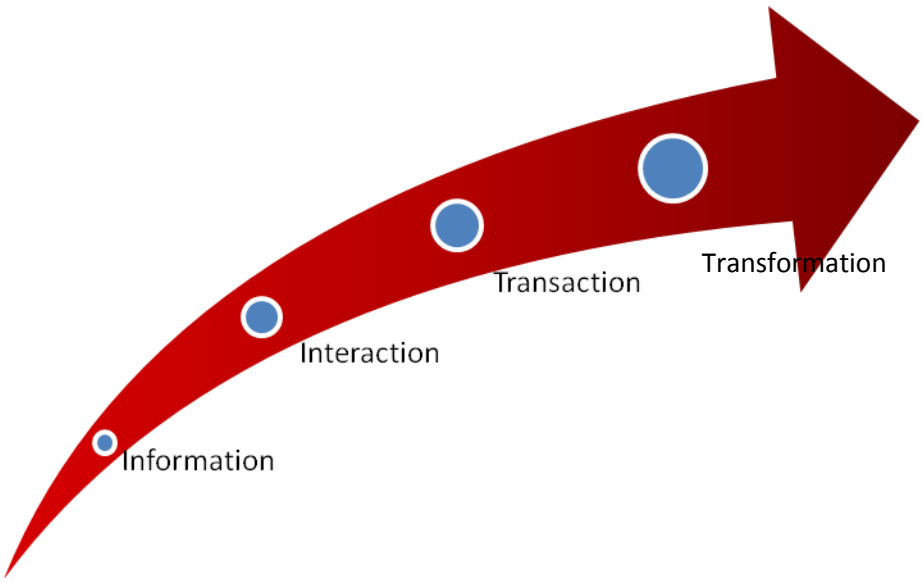


Chapter 4:Policy Framework for Mobile Governance in India

4.1 Development Stages of m-Governance

In India the use of mobile phones for sharing information has already been established in various government as well as private sector initiatives. To identify the nature of services which can be provided through mobile devices, it is important to understand the evolution process of mobile service delivery. The use of mobile phones to deliver services goes through several interlinked stages as depicted in the Fig. 4.1. Depending on various factors such as the mobile governance policy framework, mobile penetration levels, etc.; mobile based services in different countries may be at different stages of this developmental chain.

Fig. 4.1: Various Stages of development of m-Governance



It is important to clearly understand these distinct yet interlinked stages of m-Governance. These are explained below.

Information

In its nascent stage, m-Governance is usually limited to receiving information via the mobile phone. At this early stage, a two way communication is not established; and therefore the service available to a user will be restricted to receiving an SMS on the mobile phone stating her mobile phone bill. Typically the user may not be able to reply to this SMS to pay the bill; she will not even be able to resolve any queries that she may have through the mobile phone. At this stage the service could be provided through a 'push' platform or both 'push' and 'pull' platforms. In a push platform, the user receives computer generated alerts periodically, whereas in a pull platform, the user can request for services at any time.

Interaction

The next step in the development phase of m-Governance would be when two way communication is established between the user and the service provider. In this phase, instead of receiving alerts only when payment for a service is due, the user can send a code through SMS to the service provider at anytime and quickly receive a response.

Currently most m-Governance services in the country are stagnant at this stage of development.

Transaction

The ability to facilitate transactions comes at the third stage of the development phase. Transactions usually pertain to sending requests for services, receiving the services, making payment for services or transferring funds. Here, the user can not only receive an SMS stating his bill but can also pay the bill by sending an SMS. Similarly, she can send requests for other services and receive responses for the same.

The overall policy framework and the available technological infrastructure within a country play important roles in allowing m-Governance to advance to this stage of the development phase. Policies must support development of applications for mobile governance and the requisite technical infrastructure for seamless integration with the back-end systems of various Government departments and agencies. Necessary infrastructure must also be developed for enabling payments over the mobile phone and its integration with the core banking systems. Concerns on privacy and security of transactions over the mobile phones must also be addressed. In India, banks have already put in place a robust infrastructure for enabling mobile payments and transferring funds from one bank account to another.

Transformation

It is the highest stage of evolution of the m-governance initiatives. Technology is utilized to its maximum capabilities at this stage to transform how the government functioning is reorganized to fully exploit the potential of mobile based technologies. At this stage of evolution, any initiative taken facilitates the seamless integration and flow of information between residents and all levels of the Government and the Government officials themselves perform their functions using mobile devices.

4.2 Technologies for Delivering Services through Mobile Platform

A matured m-governance would require transaction oriented services to be provided to the residents. However, introduction of transactional services require a step by step transformation from simple information based services over SMS to application based services using WAP/GPRS/3G etc. The main technologies for delivering services through mobile devices are explained below in brief.

SMS based services

SMS forms the simplest of the services and can be used to provide information related services using Push and Pull methodologies.

USSD based services

Unstructured Supplementary Services Data (USSD) is a session based service unlike SMS which is a store and forward service. USSD can be used by the user to send command to an application in text format. USSD acts as a trigger for the application.

Bluetooth based services

Bluetooth can be used for information exchange among bluetooth compatible devices in close proximity. It could also be used through a compatible handset to access application on another device over a bluetooth connection.

WiFi/WiMax/WLan/GPRS/3G – Browser Based Access and Direct Upload

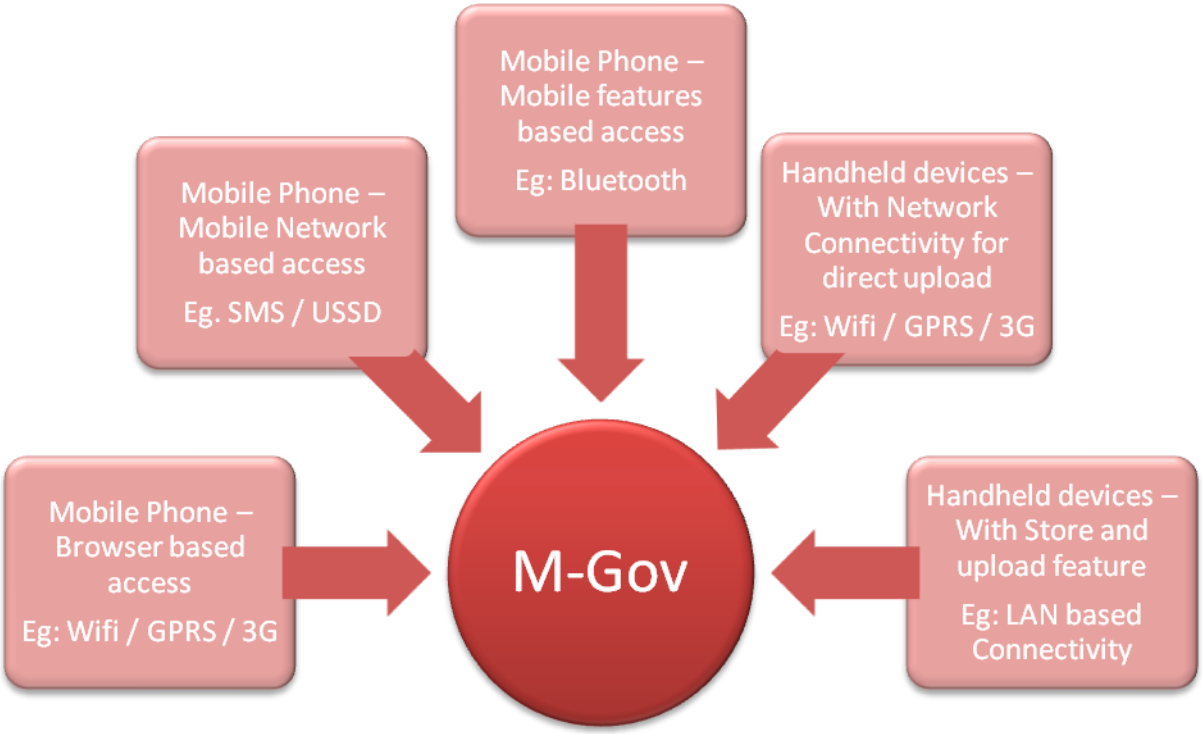
A mobile phone can be used to connect to the internet using Wifi, WiMax, wireless LAN, GPRS or 3G connection for browser based access to applications. They can also be used for direct upload using these technologies.

LAN based Connectivity - Store and Upload

Mobile phones can also be used to store and upload using LAN based connectivity.

Fig. 4.2 below explains the different technologies for mobile based services.

Fig. 4.2: Technologies for Mobile Based Services



4.3 Mainstreaming Mobile Delivery of Services under NeGP

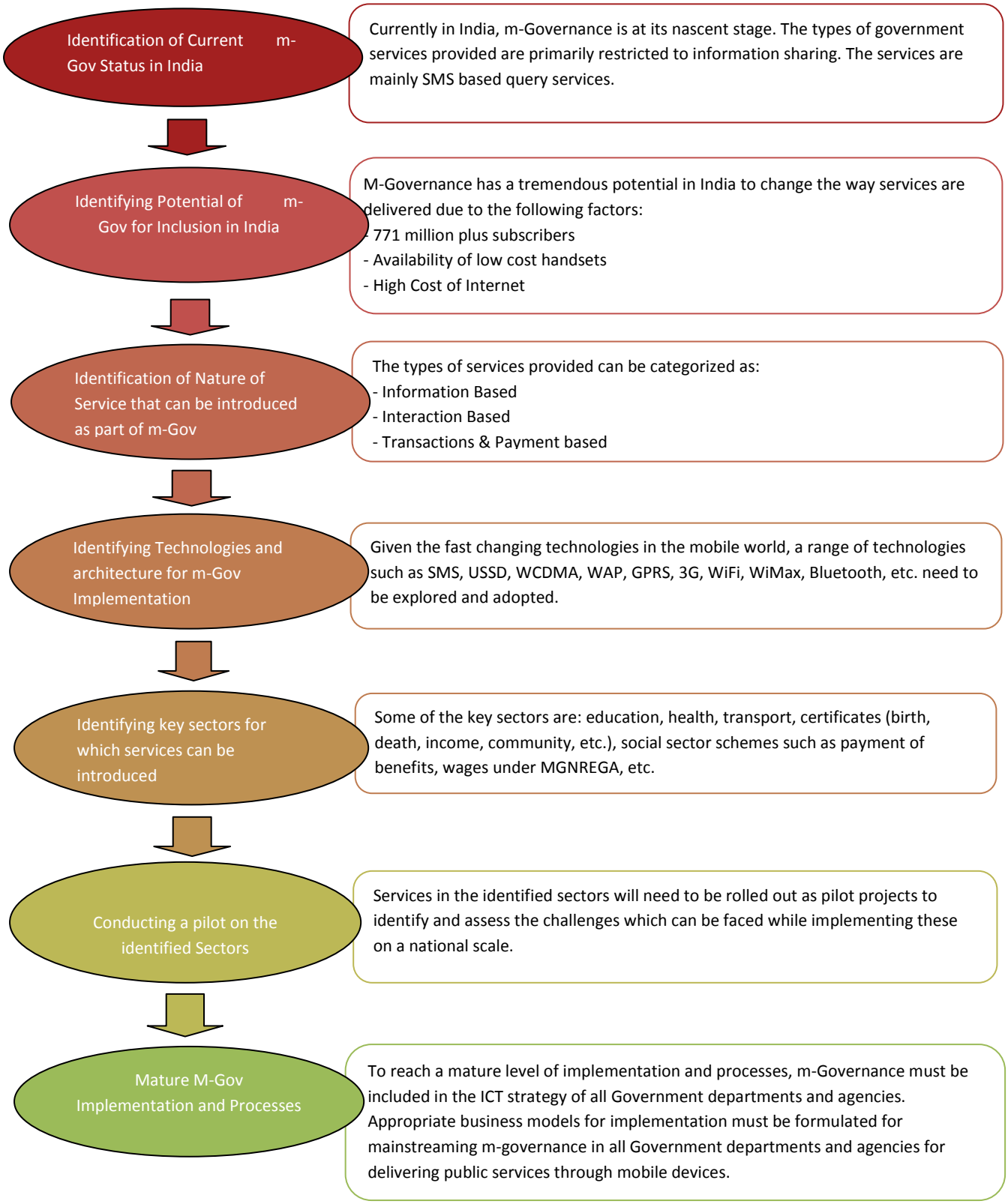
The National e-Governance Plan (NeGP) of India was formulated with the approval of the Union Cabinet in May 2006 to provide the foundation for long-term growth of e-Governance within the country. The plan seeks to create the right governance and institutional mechanisms, set up the core infrastructure and policies, and implement a number of Mission Mode Projects at the centre, state and integrated service levels to create a citizen-centric and business-centric environment for

governance. Under the NeGP, a robust technical infrastructure for delivering e-Governance services has been created across all the states. The infrastructure created consists of State Wide Area Networks (SWAN), State Data Centres (SDCs), State Service Delivery Gateways (SSDGs), State Portals, National Service Delivery Gateway (NSDG). Common service centres (CSCs) have also been established in all the states as front-end channels for delivery of services to the residents.

The focus under NeGP has been to provide mainly web-based services to the people. Providing these services through mobile devices requires a gradual and calibrated approach involving identification of the current status of mobile based public services, identifying the type of services that can be delivered through mobile devices, identifying the suitable technologies, identifying the key sectors or areas in which such services can be introduced, developing pilot projects in these sectors, and finally implementing fully matured mobile based services.

A brief overview of the above mentioned process for introducing mobile based public services is depicted in the Fig. 4.3.

Fig. 4.3: Approach towards Introducing Mobile Based Public Services in India



The National e-Governance Plan (NeGP) takes a holistic view of e-Governance initiatives across the country, integrating them into a collective vision, a shared cause. Around this idea, a massive countrywide infrastructure reaching down to the remotest of villages is evolving, and large-scale digitization of records is taking place to enable easy, reliable access over the internet. The ultimate objective is to bring public services closer home to citizens, as articulated in the Vision Statement of NeGP.

Vision of NeGP:

"Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realize the basic needs of the common man"

Mobile devices can form an important part of this vision statement to take the government services closer to the citizens, as mobiles have a much deeper and wider penetration with over 60% of the population having access to this medium. Introduction of mobiles as a platform to deliver government services to the residents could thus be an important step towards mature mobile governance in India.

4.4 Policy Recommendations

The mission that is envisaged to be achieved through m-Governance is to make public services available to all the residents of India through a mobile platform that is available 24x7 on anytime anywhere basis. In order to leverage the potential of mobile devices as the service delivery platform, following policy initiatives are proposed:

4.4.1 Making all Government Web Sites Mobile Compliant

The Government of India will support a "One Web" approach to government web sites. "One Web" means making, as far as possible, the same information and services available to users, irrespective of the device or the browser they are using. This means that the mobile device compatibility of all the government web sites should be ensured. As noted before, it has been estimated that the penetration of mobile phones in India will reach 1 billion subscribers by 2012. A substantial proportion of these phones will have the capability to access internet. It is proposed that standards for mobile based accessibility of central and state government Web sites be established and best practice guidelines for enabling mobile access to these sites be followed. Some of the guidelines that may be adopted in this regard are provided below:

a) Central and State government Websites should consistently enable mobile site access as new sites are designed and implemented. Mobile Web Best Practices 1.0 from the World Wide Web Consortium (W3C) at http://www.w3.org/TR/2008/REC-mobile-bp-20080729 may be referred to while formulating standards for enabling mobile web access.
b) All government agencies should use mobile optimized content as a primary method for device support, with device specific style sheets as appropriate. It may be noted that in

some smartphones, e.g. iPhone, Windows Mobile Phones, PalmPre, Android, etc., not much effort may be required to render a usable web site on the device.

c) Mobile web site access should be supported by CSS specific files for major smartphone devices using any of several device detection methods such as the Wireless Universal Resource File (WURFL) at http://wurfl.sourceforge.net to redirect to specific mobile implementations. Other types of web enabled mobile devices, when detected, should degrade gracefully to text based CSS implementations for less capable devices.

d) Specialized website addresses for mobile sites should be avoided in preference to using standard web addresses. As an example, a single URL address "www.india.gov.in" should render the website on a computer browser or a mobile device through a dedicated script that is capable of detecting the device used and redirect to the corresponding content structure.

e) The government websites should avoid the use of large graphics, image buttons, or graphic rich form elements, and assume constrained resources for bandwidth, screen size, colour, and resolution peculiar to mobile devices.

f) The government websites, before being made live for public use, should be tested for mobile website implementations in as many targeted devices and simulators as is practicable.

4.4.2 Creation of Mobile Service Delivery Gateway (MSDG)

The mobile applications for government services envisaged under the proposed policy framework will, in addition to the Mission Mode Projects being implemented under the NeGP, offer an opportunity for "anytime, anywhere" service delivery to support the range of programs implemented by various Government departments, e.g. in health, education, agriculture, rural development, etc. It is therefore recommended that a **Mobile Service Delivery Gateway (MSDG)** be developed and maintained by a suitable agency under DIT in collaboration with a technical partner through an appropriate PPP/outsourcing model.

The Proposed MSDG will act as a managed technical infrastructure to accelerate rapid and low-cost development, testing, deployment, provisioning, and maintenance of various m-Governance applications. The objective of creating MSDG is to create a Government-wide shared infrastructure and services to enable the rapid and inexpensive development, mainstreaming and deployment of m-Gov services. It will enhance the interoperability among various government services as well as reduce the total cost of operation of m-Gov services by providing a common pool of resources, aggregating demand for communication and e-Gov services, and act as a platform for various Government departments and agencies to test, rapidly deploy, and easily maintain m-Gov applications and provide mobile based services across the country. Provided below is a list of key, but not exhaustive, functionalities of the proposed MSDG:

a) MSDG will serve as the managed technical infrastructure to support m-Gov applications across the Government agencies in India. It would include facilities such as hardware and software needed to test and deploy m-Gov applications, the connectivity options for the residents to apply for and receive government services through the mobile devices irrespective of the mobile operator they are subscribed to.

b) MSDG will also have an integrated spoken web portal for delivering IVR based services to the residents who wish to access e-Government services through mobile and fixed line access modes.

c) The facility to use MSDG will be available for use to any Government ministry, department, agency, or program that wishes to provide mobile based e-Gov services to its users, thus eliminating the need for individual Government agencies for developing their own mobile governance infrastructure.

d) MSDG infrastructure will support the delivery of both voice and data services and content in a network- and device-independent manner, reaching the largest number of potential users. In addition, MSDG will offer shared tools (data collection, helpdesk services, APIs, SDKs) to the agencies that wish to deploy mobile applications for public services.

e) The MSDG architecture will be modular and will have capabilities for secure service provision, controlled access and scalability. Special modules and development tools will be made available so that various Government agencies can add or remove their services, test new applications through a separate interface thus ensuring that the overall functionality of MSDG is not affected.

f) The MSDG will have a provision for metered access so that the various agencies and partners of MSDG can account for the 'for fee' services based upon the actual delivery of services.

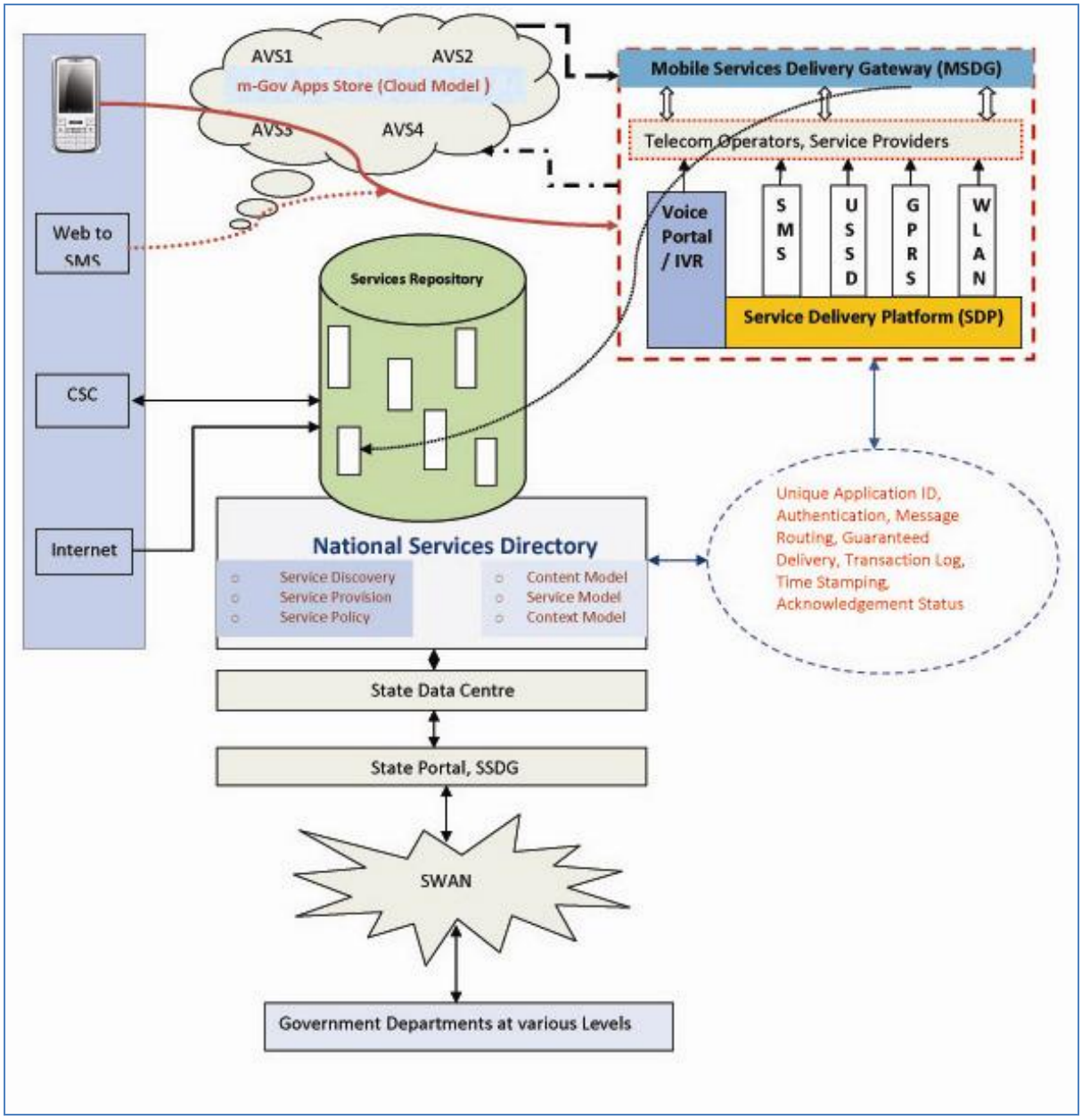
g) The MSDG will be developed in such a manner so that it readily connects to and integrates with the National Service Directory, NSDG, SSDGs and other existing IT systems and infrastructures deployed under NeGP, and have APIs to permit connection with users' IT systems in the future.

h) MSDG will be integrated with the existing mobile payment systems currently prevailing in the country. Additionally, the feasibility of having a dedicated payment gateway to receive payments through mobile devices for Government services shall be examined for integration in the subsequent phase.

i) The MSDG will be primarily owned by DIT, its agencies or any other organization as may be decided by DIT and shall be managed in association with an entity through an appropriate PPP/outsourcing model to ensure the quality of services to residents as well as its sustainability in the long term.

Fig. 4.4 depicts a suggested framework for MSDG and its functional relationships with the various elements of the current technical infrastructure for e-Governance in the country.

Fig. 4.4: Suggested Framework for MSDG and its Integration with NSDG, SSDG, etc.



4.4.3 Development and Notification of Standards for Mobile Applications

The standards for mobile applications will be developed and notified by DIT. The standards shall aim at ensuring the interoperability of applications across various operating systems and devices to the extent possible. The application providers will be encouraged to adopt these standards.

4.4.4 Notification of Long Codes, Short codes and m-Gov Number for Mobile Governance

It is proposed to have pre-designated numbers, long and short codes that will be uniform across the telecom operators and states. All the telecom operators will be required to allow the delivery of government services through these pre-designated numbers, long codes and short codes. Interactive IVR and SMS based interfaces will be made available through the MSDG for serving the diversified needs of residents irrespective of the language they use or their literacy levels. This will address the issue of Government agencies having to talk to multiple operators while implementing the m-Gov services. A long code for the mobile web portal will be designated for the IVR based access where as a series of convenient short or long codes for various government services will be notified. It is proposed that appropriate policy interventions shall be made in consultation with the Department of Telecom and TRAI to ensure that the users are not charged any premium fee for using the short codes for availing Government services.

4.4.5 Establishment of a Regulatory Regime for Mobile Governance

Ensuring proper provision of mobile based public services to the residents involves proper coordination and cooperation among multiple stakeholders, both from the public and the private sectors. Ensuring proper compliance with the standards for mobile applications and ensuring seamless interoperability of services across multiple service providers are also extremely important. In this context, it is proposed to create an appropriate regulatory regime for mobile governance in the country to ensure compliance with the standards for mobile applications and ensure seamless interoperability of services and implementation of short and long codes for public services across multiple service providers. The proposed regulatory regime shall be established and managed by DIT.

4.4.6 Creation of a Mobile Applications Store

It is proposed that a mobile applications (m-apps) store be created to facilitate the process of development of suitable applications for delivery of public services through mobile devices. The m-apps store shall be integrated with the MSDG and shall use the MSDG infrastructure for deployment of such applications. It is proposed that the store will be developed based upon service oriented architecture and cloud based technologies using open standards as far as practicable. The applications themselves can be developed and deployed by Government departments and agencies or by third party developers through an appropriate PPP model. The m-apps store shall be created, owned, and managed by DIT or an agency nominated by it.

4.4.7 Creation of a Mobile Governance Innovation Fund

Providing adequate financial and institutional support to various agencies to foster creativity and innovation in developing appropriate applications for mobile based delivery of public services is very important. It is proposed that DIT shall take the initiative in creating a Mobile Governance Innovation Fund to support the development of suitable applications by Government departments and agencies and also by third party developers. The Fund shall be created and managed by DIT for a minimum period of three years. The objective of this fund will be to accelerate the development and the mainstreaming of mobile applications across the entire spectrum of public services. To achieve this objective, the scheme will recognise and reward innovations in mobile applications and support

the development and rapid deployment of applications that address specific challenges in the delivery of public services and effective management of Government programs through mobile devices.

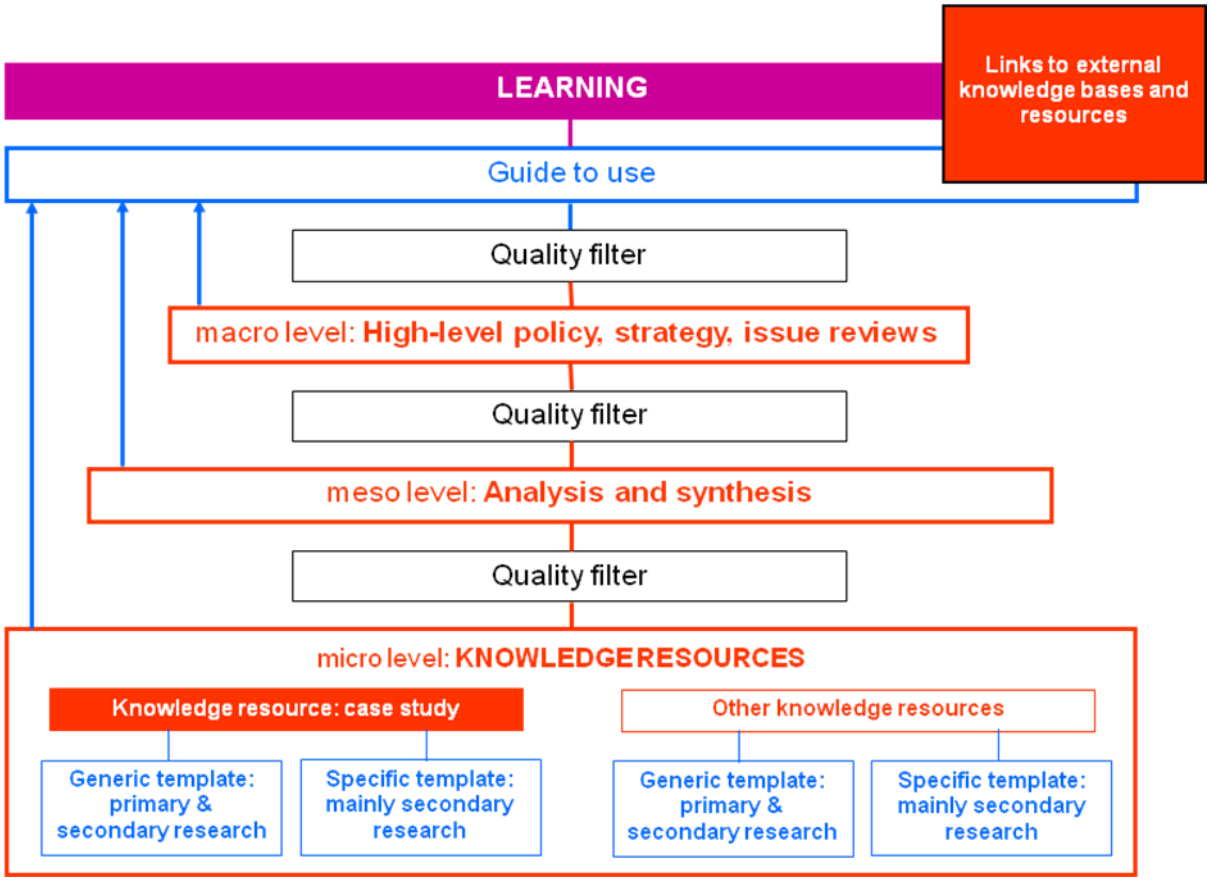
Various Government departments and agencies shall communicate their priorities based upon which proposals shall be invited for innovative applications to address specific needs and priorities of those departments and agencies. The financial support under this Fund shall be provided by DIT through a transparent evaluation of the proposals received in this regard. The appropriate institutional mechanisms for implementing this scheme shall be formulated by DIT.

4.4.8 Development of Knowledge Portal and Knowledge Management Framework for Mobile Governance

Mobile Government is in a nascent stage in India. In order to enhance the absorptive as well as the service provision capacities of various stakeholders in mobile governance, it is proposed that a state of the art knowledge portal and knowledge management framework shall be developed and deployed that acts as a platform for awareness generation and dissemination. The portal will connect the global experts, value added service providers, application developers and Government departments and agencies though web and social media platforms.

Fig. 4.5 depicts the knowledge portal and the knowledge management framework in detail.

Fig. 4.5 Knowledge Portal and the Knowledge Management Framework for Mobile Governance



Chapter 5: Implementation Framework

It is relevant to mention here that m-Governance is currently in its nascent stage of development not only in developing countries but also in the developed world. India is one of the pioneering countries to formally introduce a policy framework for mobile governance. The success of the proposed policy initiative in this area will greatly depend upon the ability of the Government departments and agencies to provide appropriate public services to the residents, necessary technical infrastructure created for delivery of the services, affordability of the services, creation of awareness among the residents, and building of necessary capacity among all the relevant stakeholders. The proposed policy aims at ensuring inclusive access to the public services through mobile devices at affordable cost. However, the experiences from the deployment of e-governance projects worldwide show that an innovative policy needs a very robust implementation framework with the flexibility to introduce periodic course corrections based upon the changes in technologies and feedback from the stakeholders. Since India is poised to be one of the pioneers in mobile governance, it will be critical to foster synergies between m- and e-governance, promote collaborative action among various Government agencies for production of interoperable applications for meeting diverse service demands from the residents and avoid costly duplications. In this context, it is important to formulate an appropriate framework for implementation of the policy recommendations for introducing mobile governance in the country. The following actions are proposed for implementing the policy initiatives recommended.

5.1 Stakeholder Consultations

The Department of Information Technology has already carried out wide ranging consultations internally as well as with key external stakeholder groups for introducing mobile governance. It is proposed to continue the process of consultations with different stakeholder groups and the public to gain insights into the type of services that are most suitable for mobile governance and to involve the relevant stakeholders in developing appropriate institutional mechanisms for successful implementation of mobile governance in the country. The following activities are proposed for involving the stakeholders in this process.

M-Governance Policy Consultation Website

It is proposed that the policy document will be placed in the public domain for consultation on the DIT website. The website will be integrated with the social media channels and will have additional features for receiving comments, running opinion polls etc. to receive inputs from all stakeholder groups.

Stakeholder Consultation Meetings

It is proposed that wide ranging policy consultation meetings shall be conducted with various Government departments and agencies both at the central and state levels, ICT industry representatives, telecom operators, industry bodies, academic institutions, civil society organizations, and the interested citizens. The schedule for holding consultations will be intimated to the stakeholders in advance and will also be published on the DIT website. It is proposed that the entire process of consultations with the stakeholders will be completed by May, 2011 and the final policy framework for mobile governance shall be notified by June 2011.

5.2 Creation of Mobile Service Delivery Gateway (MSDG)

Mobile Service Delivery Gateway (MSDG) is the core component of for enabling the availability of the public services through mobile devices. It is proposed that various mobile based technologies such as SMS, GPRS, Bluetooth, WLAN, USSD, voice, and multimedia (MMS) be exploited to ensure that mobile based services are available to the maximum number of users possible. The key functionalities of MSDG and its role in integrating the current e-governance infrastructure in the country for delivery of mobile based services have already been noted earlier. It is proposed that development and deployment of MSDG along with a basic suite of applications for delivery of public services through mobile devices shall be completed by December 2011.

5.3 Development and Notification of Standards for Mobile Applications

As noted before, it is important to develop appropriate standards for mobile applications to ensure the interoperability of applications across various operating systems and devices. It is proposed that DIT shall develop and notify the standards for mobile applications by July 2011.

5.4 Universal Codes for Government Services

As noted in the previous chapter, it is proposed to have pre-designated numbers, long and short codes that will be uniform across the telecom operators and states. A long code for the mobile web portal will be designated for the IVR based access where as a series of convenient short or long codes for various government services will be notified. It is proposed that appropriate policy initiatives in this regard shall be taken in consultation with the Department of Telecom and TRAI. This process is proposed to be completed by September 2011.

5.5. Establishment of a Regulatory Regime for Mobile Governance

As noted before, establishment of a regulatory regime is important to ensure proper coordination among all the stakeholders involved in the delivery of public services through mobile devices. The regulatory regime shall also help in ensuring compliance with the standards for mobile governance and in ensuring interoperability of services across multiple service providers. It is proposed that DIT shall complete the establishment of the regulatory regime by March 2012.

5.6 Creation of a Mobile Applications Store

Creation of a mobile applications store is aimed at ensuring the availability of a wide range of applications for delivering public services to the residents. The m-apps store shall provide the applications for delivering services using the MSDG infrastructure. It is proposed to complete the development of the mobile applications store by March 2012.

5.7 Integration of all MMPs for Delivering Services through the Mobile Platform

Mission Mode Projects (MMPs) are the flagship projects under the NeGP that aim at ensuring that a wide range of public services by various Government departments at both central and state levels are made available to the residents electronically. Making these services available through mobile devices is the key to widening the access to these services to all the residents, especially in the rural areas. It is proposed that all the electronic services under the MMPs shall be integrated with the MSDG for delivery through mobile devices. It is proposed to complete this integration by December 2011.

5.8 Creation of Mobile Governance Innovation Fund

Creation of a Mobile Governance Innovation Fund is important for fostering creativity and innovation in developing appropriate applications for mobile based services. It is proposed that DIT shall take the initiative in creating the Mobile Governance Innovation Fund by March 2012.

5.9 Creation of Knowledge Portal and Knowledge Management Framework for Mobile Governance

As noted before, it is proposed that a state of the art knowledge portal and knowledge management system shall be developed and deployed that acts as a platform for awareness generation and dissemination. This will help in enhancing the absorptive as well as the service provision capacities of various stakeholders in mobile governance. It is proposed to complete the development of the knowledge portal and knowledge management framework by March 2012.