Use of MOBILE PHONES for Social & Behaviour Change

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Use of **MOBILE PHONES** for Social & Behaviour Change

Executive Summary

The consultation paper (draft) presents the key areas of emphasis in the growing mobile for development space in India. The purpose is to understand the scope and magnitude of the expanding mobile domain as it is lately linked essentially to advance development and governance objectives and seen as the most democratic technology medium to offer scope to deliver service needs anytime, anywhere. The Paper content has been derived from existing research and field inputs. The paper is intended to assist consultation (Mobiles for Social and Behavior Change) stakeholders to get an overview of issues, scope and relevance in mobile thrust to support development efforts of the government and private players including bilateral agencies and civil society bodies.

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Today, India has more than 800 million subscriptions – up from 6.4 million in 2002 - and the mobile pundits believe this number will exceed 1.2 billion by 2016.More people than ever before have access to mobile phones and many of them are those at the bottom of economic pyramid (BoP) living in 250 backward districts of the country. The mobile density stands at 70 per 100 and the penetration rate is 51 %, which is below expectation. The low penetration rate indicates there is still room for growth.The most important driver of mobile growth is the wave of liberalisation and privatization of the telecom sector in 1990s that has led to more players determining the deployment, reach and usage of mobiles. Thus, mobile 'culture' has arrived and going to stay.

Competition among mobile operators has resulted in the rapid extension of mobile networks, falling prices of services and mobile handsets, and innovative service and business models that have reduced much of traditional information and communication bottlenecks and resultant impact in social and economic processes. Given rising demand for network, access and services, it is estimated that by 2015, more than 90% of the total population will come under the "coverage gap", and will need enhanced services and access networks. Rural areas will need special focus on 2G coverage followed by 3G services. The intra and interdepartmental thrust under the proposed Mobile Governance Framework of the government is expected to spur service delivery till the last household.

There are increasing numbers of mobile-based projects, and the government, bilateral agencies, private sector players, and the civil society continue to invest in mobile based practices that can provide local solutions in local context and problem areas. For instance, The United Progressive Alliance (UPA) II government during the 65th Independence Day on August 15 (2012) announced a new Har

Hath Mein Phone (HHMP) (Mobile in Every Hand) scheme. It is expected that if implemented, this scheme will enable 28 million poor people (6 million families) across India to have access to free connectivity and thereby ride on mobile platform to access services and other impacts from programme focus.

A review of 13 practices for this paper indicates the most common sectors for focus are education, health, socio-economic development, and disaster management well within the central focus of MDGs.There is evidence that stakeholders are interested and expressed keenness in using mobiles as service and solution providers, yet there remain vital challenges towards sustaining the pilots and scaling them. The pilot initiatives have highlighted two essential points. One, mobiles have emerged as effective mechanism to derive project impacts in – information dissemination, project monitoring / tracking, training of frontline workers and interpersonal communication practices. Second, mobile projects calls for inclusive agenda among stakeholders in multi-stakeholder partnership mode.

Common themes of focus and role playing among stakeholders include network extension into rural areas, network upgrading (focused on urban areas), innovative applications, content, and services, alongside convergence. Specific focus on providing MVAS calls for applications in mHealth, mEducation, mBanking and other development focus needs to cater to the BoP social market.

Given UNICEF's focus on sustainable and effective communications for development thrust involving the isolated and vulnerable groups, mobile application based services are likely to prove valuable in achieving programming goals. Apart from connectivity and access for the deprived groups and communities, mobiles provide cost effective interventions, enable to overcome bottlenecks to access and deliver services, and enable communities to maximise the impact of available resources.

This draft consultation paper solicits views and opinions from stakeholders as to what specific policy and programme thrust required to maximize the potential of the most democratic medium in mobile to serve development needs. The final consultation paper will emerge as a knowledge guide for stakeholders as to why and how mobiles find increasing presence and relevance to support development efforts as promoted by the government, industry, civil society and others.

1. Mobile Status Overview: Reach, Access, Use & Potential

India is an emerging 'mobile' country. The country has the second-largest mobile phone user in the world with nearly 900 million subscriptions (see Table 1). In 2011 alone, 142 million mobile-cellular subscriptions were added in India, twice as many as in the whole of Africa, and more than in the Arab States, CIS and Europe put together[1]. Total mobile subscription stood at 862 million as on 31st January, 2013[2].

India continues to lead the developing world along with China in mobile reach and usage. While the mobile-cellular subscriptions registered continuous double-digit growth in developing country markets, for a global total of six billion mobile subscriptions by end 2011, both China and India each account for around one billion subscriptions[3]. The natural advantage of geography (size) and population has contributed to this emergence.

The total mobile penetration in India is expected to increase from 51 per cent in 2012 to 72 per cent by the end of 2016[4]. It is believed that high mobile subscriber base in South Asia led by India holds a lot of promise for the growth and development of mobile network and infrastructure along with content and services[5].

The Mobile Trends

Demographic / Network trends

While almost half of all urban Indians are mobile, only 1 in 10 rural Indians are mobile[6]. The 25-35 age group is the single largest mobile user group. However, 19-24 years ones show the highest 'penetration' as well as the highest 'propensity' to own mobile phones. Only 1 in 5 mobile Indian is a woman. While 1 in 3 Indian men are mobile, only 1 in 10 Indian women are mobile. The North zone is the single largest mobile region, though mobile penetration is highest in East zone. Students form the largest occupational group of mobile users, followed by self-employed. The average monthly household income of mobile user is 2.3 times that of mobile non-users. 1 in 5 uses internet on mobile (WAP/GPRS/EDGE). Over half of all 'mobile internet users' go online daily. In majority there is 'male' skew in the user base.Half of the cellular operators have relatively more 'mature' user profiles in age. Half of the operators

[1]http://www.itu.int/ITU-D/ict/statistics/material/pdf/2011%20Statistical%20highlights_June_2012.pdf
[2]http://www.trai.gov.in/WriteReadData/WhatsNew/Documents/PR-TSD-Jan2013.pdf
[3]Measuring the Information Society 2012 report , ITU
[4]http://www.cxotoday.com/story/south-asia-to-witness-massive-mobile-broadband-growth/
[5]http://www.cxotoday.com/story/south-asia-to-witness-massive-mobile-broadband-growth/
[6]Mobile Internet in India, 2012, Internet & Mobile Association of India (IAMAI), New Delhi

have relatively higher proportion of their users coming from smaller 'tier 4' districts. The rest half have relatively more coming from biggest 'tier 1' districts.

Wireless (Mobile) Tele-density

The mobile (wireless) tele-density has seen an increasing trend in recent times (see Figure 1). The overall wireless Tele-density in India as of January 2013 is 70.5[7](TRAI). The total mobile penetration in India stood at 76% with only 26% unique subscriber penetration(GSMA, 2012). The GSMA estimates that India's mobile-subscriber base will grow by more than 23% in next 5 years. Rural Tele-density is at 39.26 as of January, 2013 (TRAI) while the urban density stood at 142.10.

The Urban – Rural Mobile Base

Over the recent years, rural India has been active mobile subscribers. The countryside continues to provide a wide scope in mobile penetration, use and services. As of January 2013, the rural subscribers' base grew by 6.64 million with monthly growth rate of 1.99%[8]. The total rural subscribers' base stood at 333.74 million. During the same period, the urban subscribers base grew at (-4.24 Millions) with monthly growth at (-0.80%). Total mobile urban subscribers stood at 528.88 million. The overall share of urban mobile subscribers to the total mobile subscription stood at 61.31%, while the share of rural subscribers 38.69% as in January 2013.

Table 1: Highlights on Telecom Subscription Data as on 31st January 2013

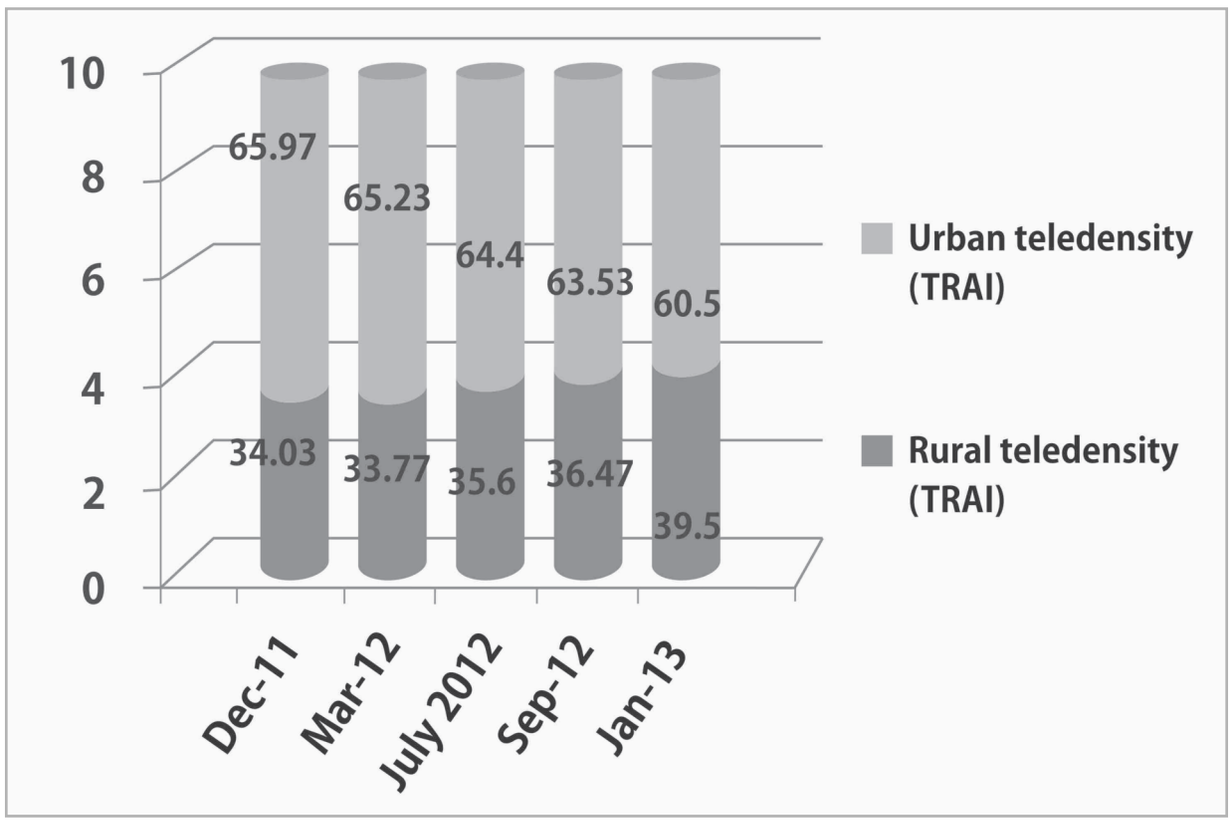
PARTICULARS	WIRELESS	WIRELINE	TOTAL Wireless + Wireline
Total Subscribers (Millions)	862.62	30.52	893.15
Total Net Monthly Additions (Millions)	-2.10	-0.27	-2.36
Monthly Growth (%)	-0.24%	-0.86%	-0.26%
Urban Subscribers (Millions)	528.88	23.66	552.55
Urban Subscribers Net Monthly Additions (Millions)	-4.24	-0.17	-4.41
Monthly Growth (%)	-0.80%	-0.73%	-0.79%
Rural Subscribers (Millions)	333.74	6.86	340.60
Rural Subscribers Net Monthly Additions (Millions)	2.14	-0.09	2.05

[7]TRAI
[8]Highlights on Telecom Subscription Data as on 31st January 2013, TRAI

PARTICULARS	WIRELESS	WIRELINE	TOTAL Wireless + Wireline
Monthly Growth (%)	0.65%	-1.33%	0.61%
Overall Teledensity*	70.57	2.50	73.07
Urban Teledensity*	142.10	6.36	148.46
Rural Teledensity*	39.26	0.81	40.07
Share of Urban Subscribers	61.31%	77.54%	61.87%
Share of Rural Subscribers	38.69%	22.46%	38.13%

Source: TRAI

Figure 1: Wireless telecom tele-density in India (Dec 2011-Jan 2013)



The Mobile Outreach across States

The outreach of mobiles have increased manifold across all the states of India. The three union territories top the list with Daman & Diu having the highest 76% mobile phone households, followed by Andaman & Nicobar Islands with 72.1% and National Capital Territory of Delhi with 68.2% households using mobile phones.

Table 1: Highlights on Telecom Subscription Data as on 31st January 2013

State	Subscribers (January 2013)	Subscribers (February 2013)	Population	Subscribers (%)
Andhra Pradesh	63,774,816	64,119,392	84,655,533	75
Assam	14,274,011	14,290,054	31,169,272	45
Bihar	60,544,688	60,729,012	103,804,637	58
Delhi	39,872,100	40,284,855	11,007,839	365
Gujarat	50,753,613	51,228,805	60,383,628	84
Haryana	19,312,194	19,529,358	25,353,081	77
Himachal Pradesh	6,797,654	6,890,093	6,856,509	100.5
Jammu & Kashmir	6,716,890	6,750,645	12,548,926	54
Karnataka	5,250,6775	52,448,004	61,130,704	86
Kerala	31,003,202	30,698,349	33,387,677	92
Kolkata	22,548,621	21,201,161	4,486,679	472
Madhya Pradesh	50,842,183	51,427,067	72,597,565	70
Maharashtra	66,943,083	67,729,933	112,372,972	60
Mumbai	31,359,550	2,989,9619	12,478,447	239
North East	8,725,595	8,829,898	38,857,769	23
Odisha	24,469,501	24,308,041	41,947,358	58
Punjab	29,014,820	29,278,748	27,704,236	106
Rajasthan	46,957,694	47,828,422	68,621,012	70
Tamil Nadu (including Chennai)	72,173,592	71,811,035	72,138,958	99.5
UP (East)	72,247,564	73,122,951	11,200,000	65
UP (West)	48,474,342	48,481,217	31,000,000	156
West Bengal	43,311,298	40,773,438	91,347,736	45
Total	862,623,786	861,660,097	1,210,193,422	71

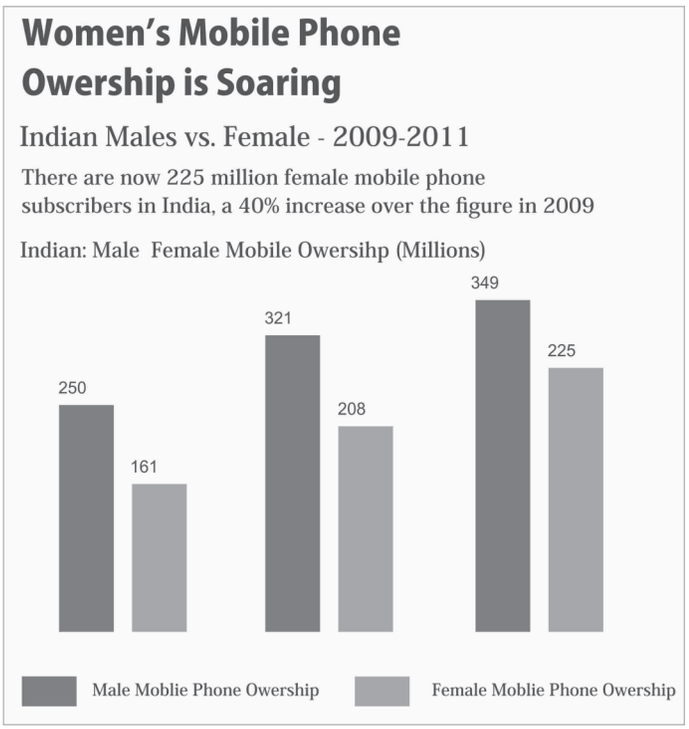
Source: Highlights on Telecom Subscription Data as on 28th February 2013, Telecom Regulatory Authority of India (TRAI)

Digital, Gender Inclusion and Mobiles

The emergence of mobiles is having tremendous impact on digital inclusion in India. Today, it's not just a symbol of urbanization but also it's an integral part of rural India. India today has a total of a massive 333.74 million rural mobile subscribers (January 2013, TRAI). The singular transformation impact brought in by mobiles apart from communication is access provision. Mobile phones have emerged as bridge tools to address perennial issues in reliable connectivity and access in rural India. As of June 2012, there were 3.6 million Mobile Internet Users in India, a growth of 7.2 times from 0.5 million in 2010.Out of 38 Million internet users in Rural India, 12% access internet on their mobile phones[9].

Mobiles have provided platform to transact, trade and exchange in commerce and business. It has raised the social bars of underserved groups and population like women, scheduled castes and tribes largely through information and communication empowerment. Increase in subscribers and penetration of mobiles is expected to boost the government's ambitious project to give broadband connectivity to 250,000 villages under the National Optical Fiber Network (NOFN) plan[10]. This is to boost capacities in information, communication as well as entertainment to millions.

The gender perspective of mobile outreach is an empowering one. As in 2011, there were 225 million subscribers of mobile among women, a jump of 40% from 2009. An average woman mobile subscriber in India sends 30 SMSes per month, uses voice service of 300 minutes per month and about 40% of women subscribers have found employment opportunities with their mobile phones. According to Vital Wave, "The most basic aspects of mobile phone ownership are already empowering Indian women, with over 90% saying they feel "safer and more connected by just owning a mobile phone"[11].



[9]http://www.iamai.in/Upload/Research/9320123264601/ICube_2012_Rural_Internet_Final_62.pdf
[10]Government of India has approved on 25-10-2011 the setting up of National Optical Fiber Network (NOFN) to provide connectivity to all the 2,50,000 Gram Panchayats(GPs) in the country. This would ensure broadband connectivity with adequate bandwidth. This is to be achieved utilizing the existing optical fiber and extending it to the Gram Panchayats; accessed at http://www.bbnl.nic.in/content/faq/national-optical-fibre-network.php
[11]http://www.livemint.com/Opinion/NNuzsaxGowAutg2uVmkSzN/Mobiles-can-save-India8217s-poor-women.html?facet=print

Mobile Market/Economics

The mobile market has been increasing at a rapid pace reflecting surge in demand at a geometrical proportion. The revenues from mobile services stood at Rs.1.1 trillion in 2012. Mobile services market is expected to grow 8% to Rs.1.2 trillion in 2013. Private operators hold 87.73% of the wireless market share (based on subscriber base) where as BSNL and MTNL, the two PSU operators hold only 12.27% market share. While this rise reflects the growing customer base, the factors that led to this expansion has played its contributory role. The mobile tariffs in India have become among the lowest in the world. A new mobile connection can be activated with a monthly commitment of 15 cents only! Average price of mobile device in India among users who access Internet using mobile devices is Rs. 8,250. The increase in Mobile Value Added Services (MVAS) has contributed in increasing the mobile base. Currently valued at over US$5 billion, Indian MVAS industry is expected to reach well over US$6 billion by 2013.

The changing dynamics of mobiles including features that are user friendly have led to surge in demand for the hand phone and services. Mobile phones have metamorphosed into an all-in-one gadget. A gadget, that plays music, takes high-resolution pictures, offers services to access internet instantly, and many more. For young ones, a mobile phone has helped them to socialize, and share thoughts through a fast, efficient and common platform. Women consider mobile as a personalised asset to serve their information communication needs. In addition to voice communication, mobile phones have allowed the transfer of data, which can be particularly useful for delivering educational and health content and imparting learning / training over long distances.

What it indicates

The mobile 'culture' has breezed into India. With rising mobile subscribers and users of mobiles, India provides a wider scope to expand connectivity, access, usage and impact. With substantive number of operators, service providers, the mobile space today is more competitive than before benefiting the end users with fall in access and user cost. With continuous innovative subscription plan, service innovations, the density and inclusivity of mobile users is expanding. The promising nature of mobiles to provide innovative services in mEducation, mHealth and mFinance apart from already sought demand for entertainment and SMS services is expected to spur this demand curve. The exploding numbers of mobiles provides stakeholders in India an unprecedented opportunity to intervene and serve the social and economic market needs judiciously and responsibly.

2. The Widening Mobile Space: Unlimited Opportunity at hand

The mobile phone has moved beyond being a mere device to become a Key "social object" present in every aspect of our daily lives" → ITU, 2004

I. Mobile as Social 'Object'

The numerical dimension of mobiles as reflected in millions of subscriptions and access has immense social connotation that defines the larger cultural, economic, institutional and governance relevance. Increasingly the mobile phone has moved beyond being a mere technical device to becoming a key "social object" in every aspect of daily life in India. Always-on connectivity and mobility is defining not only the technological landscape, but equally the socio-political-economic processes. With the spread of "anywhere, anytime" communication infrastructures, mobile have increased convenience, better access to information and streamlined access to social and economic entitlements.

The expanded mobile networks have triggered a new sense of social identity for various groups of people, e.g. youth and women. The highly personalized nature of the mobile phone has meant that its form and use have become important aspects of the individuality of a phone user. The effects of mobile phones on cultural and political identity, which are sub-sets of collective identity, are equally profound.

Mobile phones have flattened traditional hierarchical structures, including the information architecture, and enhanced the accessibility to social and political institutions, allowing individuals to register grievance or to lodge complaints with authorities directly. The layman in India has been empowered manifold.

Having access to mobile platform have increased relevance in improved social and economic living conditions especially in rural areas by improving access to family, education, health and financial services and by enabling development of agricultural and non-agricultural economic activity. Small holder farmers in Uttar Pradesh and Haryana have been empowered financially through the timely use of mobile phones for providing information andadvice on agriculture. Women victims in Kutch district of Gujarat are getting legal aid services to deal with physical, mental stress and abusive situations through a helpline 'Hello Sakhi' that provisions usage of mobile to register grievance and receive legal guidance.

II. The Mobile Thrust

The multiple advantages from the mobile 'social' object has accelerated the process of infrastructure development, deployment, increasing network, more and better services, and widening the basket of service delivery. While the customer, rev-

enue and commercial thrust has already reached a higher level of achievement, there is the new found policy and programme relevance in exploring the unlimited scope and opportunity provided by the mobile platform to meet development needs. The focus has shifted to serve the bottom of pyramid (BoP) segments.

Rapid expansion in deployment, penetration and subscribers for mobiles and absence of other sustainable information and communication technology media have prompted the public, private and the social sector to exploit mobile communication in India. At governance level, the mobile as a platform, as a tool, is seen to promote direct interaction between governments and citizens; empower citizens to influence local governance. Mobile as an 'm-powering' tool is encouraged to work as an effective channel to achieve key development goals in areas of women empowerment, education, health, and disaster management.

The Government Focus

The few efforts of the government towards mobile based initiatives have been at two levels – Central and State levels. At central level, there are few pilot initiatives to explore the utility and relevance of mobiles in achieving departmental and programme objectives. The Mother and Child Tracking System (MCTS) programme launched by the Ministry of Health and Family Welfare in 2010 is one such specific intervention (see Box 1). The United Progressive Alliance (UPA) II government during the 65th Independence Day on August 15 (2012) announced a new *Har Hath Mein* Phone (HHMP) (Mobile in Every Hand) scheme.It is expected that if implemented, this scheme will enable 28 million poor people (6 million families) across India to have access to free connectivity. The Transparent Targeted Public Distribution System (TTPDS) initiative launched by the Department of Food and Civil Supplies in Uttar Pradesh in 2009-10 have provisions for mobile phone usage to deliver information services pertaining to food grains delivery via SMS services. The pilot in 2 districts of Bahraich and Jalaun has been completed in 2012 (see box).

Box 1: Mother and Child Tracking System (MCTS), Ministry of H&FW, India

A name, address and telephone based Mother and Child Tracking System (MCTS) is a new initiative of the Ministry of Health and Family Welfare since 2010, and is seen as an effective example of leveraging Information Technology for ensuring delivery of full spectrum of healthcare and immunization services to pregnant women and children up to 5 years of age. The system employs mobile-based SMS technology to communicate with grass roots level health care services providers, health and family welfare policy makers, health managers and health administrators at different tiers of the health care delivery system.

The m-Governance Framework

This is the singular most focused approach towards mobile enabled service delivery to citizens. The m-Governance focus under National e-Governance Plan (NeGP) launched by Department of Electronics & IT (Ministry of Communications & IT) in 2012, is an extension to NeGP vision and in cognizance of the vast mobile subscriber base in the country. The framework intends to introduce pro-

vision for access of public services through mobiles. It provisions that the websites of all government departments and agencies be made mobile compliant. Open standards shall be adopted for mobile applications for ensuring the interoperability of applications across various operating systems and devices. Uniform/ single pre-designated numbers (long and short codes) shall be used for mobile-based services to ensure convenience. With the government's e-governance plans making little headway, the shift towards mobile governance (m-governance) is expected to deliver results in view of larger penetration of mobiles across the country.

SWITCHING TO M-GOVERNANCE

- Framework for mobile governance noticed in The Gazette of India, Feb 2012
- Uniform/single long and short codes - 51969 and 166 - obtained for M-governance
- All goverment websites to be made mobile-com-plaint
- Huge potential to reach out to voters in rural areas through m-governance
- Broadband penetration is 15.1 million while mobile reaches 906.6 million (36.9% in rural areas). Mobile phone subscription to grow to 1 billion by dec 2013

It is proposed to integrate at least 125 Government Departments with Mobile Services Delivery Gateway (MSDG) for deployment and delivery of mobile-based services by end of FY 2012-13. Depending on the thrust and genuineness of efforts, this ambition could very well serve critical services needs pertaining to vital ministries like Ministry of Human Resource Development, Ministry of Health, Ministry of Women and Child Development, Ministry of Environment and Forests and special agencies like National Disaster Management Authority (NDMA).

The Private Sector Thrust

The role of the mobile operators, service providers and software developers has seen an increasing presence in India over the past one decade and more. One singular role of the cellular operators in India has been its contribution to extend the network of mobile reach in all 640 districts in India reaching out to more than 800 million subscribers. As in January 2013, the thirteen major operators including the two government owned BSNL and MTNL has reached out to 862.6 millionwireless subscribers in both urban and rural India. This volume in mobile users' highlights the increasing capacity of the country to provide connectivity and access for the vast millions.

Box 2: BSNL's increases reach in Connectivity & Access

Increasing its reach to tap the youth and rural India, the state owned Bharat Sanchar Nigam Limited (BSNL) has increased its subscription base for wireless telecom service from 100240893 in January 2013 to 100670567 in February 2013. This is significant given the competitive regime to provide mobile network and access with more than half a dozen private operators.

Helped by rising penetration of handsets, India's Mobile Value Added Solution (MVAS) service providers have expanded the innovation basket to provide services

Box 3: Freedom HIV/AIDS

Mobile innovations determine the demand for devise and services. Freedom HIV/AIDS is an India based initiative on HIV/AIDS awareness using mobile phone games, and is considered as first ever-social initiative on the mobile devices. Launched in 2005 Freedom HIV/AIDS, launched by ZMQ, comprises of four mobile games targeting different mind-sets and psychology of mobile users. In a span of 15 months, there have been a download of 10.3 million game sessions.

catering to high and low income user segments. Content and VAS technology are focusing on the consumer experience and developing personalised content. Equipment manufacturers are innovating with lost cost smartphones and mobile devices to drive penetration and demand for services in urban and rural India. The focus has shifted to mEducation, mEntertainment, mFinance and mHealth application areas. mEducation can play a key role in expanding the reach and quality of education in India, through interactive englishlanguage learning services and other methods. mHealth has the potential to improve healthcare access and affordability in India, especially through remote diagnostics, chronic disease management and maternal care.The emphasis is on the collaborative effort across mobile network operators, telecom equipment vendors and mobile service content providers[12].

The role of the mobile software developers in innovations enabling solutions to development objectives has seen expansion of late. The contribution is seen towards innovative ICT solutions, software, and applications for empowering people and enabling sustainable development. Specialisations have emerged in developing solutions in the areas of public health, education, skills development and training, enterprise development and livelihood generation, environment, disaster management and agriculture (see Box 3). The new found thrust is seen in developing social ICT products for new markets of the world at the Bottom-of-the-Pyramid (BOP) by successfully reaching out to grass-root, under-privileged, and marginalized communities; based on viable and self-sustaining business models in support of the social cause.

The Social Sector Thrust

The role of Non-Governmental Organisations (NGOs) assumes significance in view of their wider engagement in civic and development initiatives. The growing importance of NGOs in India can be attributed to the realization that neither the state nor the market alone can fully

Box 4: Project Mahila Shakti

The project 'Mahila Shakti' is a programme of women empowerment through education initiative with effective communication mechanism. The project is facilitated by local NGO Human Welfare Association (HWA) in Varanasi District of Uttar Pradesh. The programme provisions use of mobile phone to train women for their day to day conversation, increase business and improve their personality. Additionally, the mobile phone is used to enable the illiterate women to recognise the digits and alphabets depicted on the key pad.

[12]'Future Thought of Business (FTOB): MVAS', 2012, a joint report by Wipro Technologies, the global IT consulting and outsourcing arm of Wipro Ltd, and Internet and Mobile Association of India (IAMAI)

address enormous development and governancechallenges. Over last few decades, NGOs have become important players in the development process engaged in wide ranging activities starting with community development to training, policy research, and advocacy. Of late, the social sector has seen increasing use of ICTs to deliver solutions and service serving underserved groups and communities. The widening mobile space is being explored to provide low cost and innovative solutions to address old and new service delivery challenges in areas like education, health and women empowerment (see Box 4).

III. Exploring Mobile Utility in Development

Mobile interventions have been stepped up in the country to meet set development goals and bridge the gaps in governance and service delivery. Priority areas have been identified by stakeholders to innovate and deploy solutions and methods in mobile applications. Mobiles have been explored as a medium, tool, and platform in project implementation and outcome.

The effective usage of mobiles in India has found specialisations in key intervention methods. Stakeholders have adopted these multiple ways either in single or multiple modes of interventions in chosen areas of experimentation – education, health, gender empowerment, and disaster management. The priority measures included – information dissemination, monitoring & tracking, training, and interpersonal communication purposes (see figure).

Figure 2: Mobile: Multiple Options in Development

A. Information Dissemination

The empowering role of mobiles through critical information dissemination for women has been realized with experimentations. Features unique to mobile phones, such as portability, text messaging and data downloading, has allowed women to participate in the social and economic processes by giving them more timely and accurate information and greater flexibility of communication. Mobile based learning has increased access for education content dissemination for those who are mobile or cannot physically attend learning institutions due to the constraints of work, household activities, or other time and demand constraints.

The portable devise has empowered communities to address their health needs especially catering to women and child health care more so in rural India. In Sheikhpura district in Bihar, the basic "voice "functionality of the mobile phone has made a significant impact on the efficacy of the ASHAs (Accredited Social Health Activist). The simple and easily navigable mobile handset has empowered ASHAs interact with their supervisors as needed, help colleagues, and most importantly, communicate with the mother and their families – providing information on nurse visits, reminders on immunization schedules, etc.

The natural vulnerability of this country has prompted citizens and encouraged stakeholders led by the government to promote use of the mobile device to reduce impacts from natural calamities. The Gujarat earthquake in 2001 and the 2009 Tsunami in India's South had visibly demonstrated the utility of the mobile devise to inform and communicate in emergency hours and save precious lives and resources.

B. Monitoring & Tracking

Pilot programmes have aptly demonstrated the desired impact of using mobile devises in project monitoring and tracking and achieve the 'unthinkable'. It has been piloted how mobiles can deliver benefits to women in their family or community constituency by keeping a check on programmes being implemented related to education and health. With adequate training, women programme managers can use mobiles for project monitoring / tracking of programmes and ensuring that desired outputs and outcomes are attained. The mid-day meal scheme is a national intervention to ensure school attendance and stop drop outs through free meal provisions in school. To ensure smooth delivery of meals, women are trained as managers to monitor the programme effectively.

The capacity of mobile platforms to monitor and track educational schemes / programmes has found quiet but sustainable acceptance in managing the life cycle of a project in educational programmes. The capacity of the mobile as a tool to track class attendance, presence of teaching staff, maintaining time table, sending progress updates have been demonstrated. Further, the expanding health sector interventions find a critical place for mobiles to play a supplementing role in sustaining health programmes through adequate monitoring / tracking of programmes. The technology astuteness in mobiles has come as a great relief in monitoring and timely observation of health services delivery programmes and tracking of progress.

C. Training of Front Line Workers

In recent times, the mobile device has been experimented to serve training needs in front end service delivery. This is especially found relevant in flagship programmes like National Rural Health Mission (NRHM) in health domain. There are estimated more than 3 million front line health workers in India. This work force is spread across more than 250 districts, more than 250,000 Primary Health Centres (PHCs). Equipping each worker with a mobile phone and adequate training (healthphone) serves vast unmet needs of health information dissemination, tracking of progress of health schemes, and solves so many health issues on the spot through interpersonal communication support services.

D. Interpersonal Communication

The essence of interpersonal communication to meet personalised and peer group needs is identified for long. This is especially in health related matters. Providing an effective communication platform which is democratic, decentralized, personalized and two-way powerful medium is what matters significantly to deal with varied types of health issues. The advantage in health care cost reduction through interpersonal mobile communication is a possibility today through promotion and advocacy on preventive measures. Such communication practices have enhanced the safety measures during natural disasters and contributed in greater preparedness during calamities. This communication practice has supported manifold to solve gender issues and youth concerns (adolescents especially) which are otherwise difficult to address in a physical or group setting.

3. Learning from Experience

Mobile innovations are delivering home-grown solutions worldwide and have shown promising results in India, transforming connectivity and access scenario, social and business processes and driving inclusive development and economic growth. The mobile access is quickly changing lives, driving governance and service delivery, fuelled in part by collaborative efforts, and delivering innovation and localisations in solutions. Together with Internet, mobile phones are transforming the development landscape, injecting new dynamism in key sectors as exemplified by various pilot efforts. The challenge is to scale up these innovations and success stories for greater social and economic impacts across length and breadth of India by 2020. The challenge going forward is to ensure that mobile practices and innovations benefit all Indians, including the poor and vulnerable, and those living in inaccessible areas.

I. Learning from Experiences I: Use of Mobiles for Information Dissemination and Programme Monitoring / Tracking

A. Mobiles for Information Dissemination

Information dissemination is a proactive information service designed to educate and inform focused groups of users on social, economic and educational issues, problems, and opportunities of interest to them[13]. It requires systematic planning, collection, organization, and storage of information for its delivery to the target audience using different media and communication means. The importance of information dissemination is in raising the social and economic status of focused groups including their survival and self-development through need based technical skills and educational programmes.

Mobiles for Education

Project Name: Let us go to school; By: Radio Namaskar; Location: Konark, Odisha

"ChalaSkul Ku Jiba" (Let us go to school) is an initiative of Radio Namaskar, a community radio FM station. The project, initiated in 4 blocks and surrounding areas in Puri District, Odisha, seeks to enroll dropouts' students back to school. During situation analysis and listeners survey Radio Namaskar got regular feedbacks on massive dropout of school students especially girl students. To stop this trend, Radio Namaskar decided to start a

[13]http://www.unesco.org/education/aladin/paldin/pdf/course02/unit_05.pdf

new radio programme to bring back all dropout students to their respective schools. The first initiative was taken in July, 2010.

To this effect, jingle was produced, broadcasted to motivate the parents to send their children to school. In the first month, the response was poor and not encouraging. Subsequently, a dedicated mobile number was announced dedicated to the purpose. Interestingly, the response of listeners started growing each day. But it was one way communication. Respondents were informing the studio regarding the dropout students of their locality which was broadcasted through the community radio. Subsequently, software was integrated with radio programme through which a listener can ring anytime to the dedicated mobile number and can tell her/his view. Through this software and GSM gateway the dedicated mobile number (9040904904) for the listeners was spread. Now, when any listener rings the mobile number an automatic voice command goes to the dialler with request to inform regarding dropout students in their village/locality if available and send them back to school.

In this process the initiative took shape of a campaign and it started broadcasting a special radio programme package of 30 minutes twice a week. Listeners started informing regarding dropout students from their mobile phones to the dedicated mobile number (through call and sms). The Radio team used to send sms to the mobile numbers belonging to the village and Gram Panchayat members, Women Self Help Group leaders, Sarpanches, Ward members, teachers, community leaders, radio volunteers etc.

The recorded and sms information were broadcasted through Radio Namaskar in special episodes. Further, live tele-conference was conducted with listener, local school teacher/headmaster, school authority, local PRI representative, School management committee members/leaders etc. When the dropout student/s returned to school thanks giving sms were dispatched to all the mobile numbers in the database of the Radio. The reason is to spread the good news with other listeners and citizens on the impact of a phone call/sms which gives life (education is life) to a child. So far with these process 165 schools in 4 blocks (Gop, Nimapara, Astarang and Kakatpur blocks) in Puri District declared as ZERO DROPOUT SCHOOL by the local administration.

Mobiles for Health

Project Name: MHSM SMS Toolkit; By: Datamation Foundation; Location: Kanpur, UP

The project MATERNAL HEALTH SERVICES ON MOBILE (SMS TOOL-Kit) – MHSM, aims at providing critical Reproductive and Child Health related information services to the pregnant and lactating women apart from their families and health workers through mobile phones, using localized SMSs in Hindi. Two messages per week have been created for 40 weeks of the pregnancy (norms as per government programmes). Along with more general, reinforcement messages on nutrition, specific messages pertaining to the week of pregnancy like ante natalcheckup, vaccines, Iron folic supplements and movement of baby are sent to the registered women.

The project is currently being implemented at 4 primary and 5 other neighbouring villages which are some of the most backward villages of the Katari cluster in the Ghatampur block of Uttar Pradesh Kanpur Dehat (Rural) District of Northern Indian state Uttar Pradesh. Over 1000 beneficiary pregnant and lactating women apart from their families and health care workers are impacted so far.

The SMS toolkit allows direct sending and receiving SMS from an ordinary PC or laptop at a very low cost. The project is implemented by Datamation Foundation Trust, a Community Organization working in the domains of Health Care, Livelihoods and Education. One World South Asia (OWSA) and Microsoft are technical partners in this project. The content was provided by ZMQ technologies.

Mobiles for Environmental Sustainability

Project Name: Kisan Sanchar; By: Kisan Sanchar; Location: Rohtak, Haryana

Kisan Sanchar is an interactive platform for scientists, agricultural experts, institutions for sharing their technology & knowledge with the registered subscribers i.e. farmers who have willingly opted for the service. The knowledge is shared in their local language in text as well as voice format. Kisan Sanchar is an enterprise-class communication platform to broadcast text and voice messages on the mobile phones of individual farmers. Kisan Sanchar enables its users (which are mainly agricultural experts and institutions) to send personalized and interactive outbound Text & Voice messages at the touch of a button. www.kisansanchar.com is a product of Innovations Promotion Company.

Approximately 33066 farmers from seven states of India (J&K, Himachal Pradesh, Punjab, Haryana, Delhi, and Rajasthan & Gujarat) have voluntarily opted for the services of Kisan Sanchar through various KrishiVigyan Kendras and are being benefitted from free of cost the services of Kisan Sanchar.

Kisan Sanchar delivers free of cost knowledge content developed by KrishiVigyan Kendras and various Agricultural Universities in form of Text & Voice Messages to the member farmers registered with Kisan Sanchar through KrishiVigyan Kendras. Launched with full effect on 1st September, 2010, the project since then is achieving new mile stones every day and have broadcasted almost 1500 messages to approximately 33066 farmers in 7states (J&K, HP, Haryana, Punjab, Delhi, Rajasthan & Gujarat). Kisan Sanchar launched its Voice Messaging on 19-2-2011 in the state of Gujarat.

B. Mobiles for Programme Monitoring / Tracking

Mobile-based technology, and its associated benefits of real-time data sharing and data analysis including SMS based system have enabled organisations and agencies to use monitoring and evaluation (M&E) data for better project implementation, output and outcomes. There are instances wherein mobile-based monitoring and data collection tools have helped to manage projects better with pre-loading of data, skips, validations, location (Graphic Information Systems –

GIS), media (photos). The mobile based data collection service providers have rolled out software and systems to support M&E instruments. Services being offered and benefited from includes better control of field staff in M&E, access to the surveys and data; access collected-data in real-time. The choice of using a normal phone or using smart mobile devises has allowed for Mobile Apps with 'form-based interfaces' for data entry, location (GPS) tracking, and media (photos) and bio-metric data capture. The data collected through these Mobile-App based systems can provide strong audit controls because of the location and visual evidence that is electronically captured. Mobile-based monitoring activities have enabled to collect data and feedback from beneficiaries directly. Having access to ongoing data, instead of one-time annual report, allows understanding the real impact a particular support is having at the field level. Also, by requesting 'anytime and anywhere' access to project monitoring data, agencies can introduce a higher degree of transparency and accountability, at each level, within its beneficiary NGO. To facilitate beneficiary participation provisions for toll-free IVRS (Voice) or SMS services are integrated. This has called for qualified technical skills among staff,

Mobiles for Education

Project Name: The IVRS based Daily Monitoring System (DMS); By: Mid-Day Meal Authority; Location: Uttar Pradesh

The IVRS (Interactive Voice Response System) based Daily Monitoring System (DMS) of the Mid-Day Meal Scheme is an initiative of the Mid-Day Meal Authority of Government of Uttar Pradesh. The IVRS based DMS envisages an automated MIS where data of children availing mid-day meal would be available on daily basis. In view of the developments in the field of internet based technologies and onrush of mobile telephony in the rural area, the system is conceived on the basis of an interface between computer and mobile phone. The major challenges in getting real time data from almost 1.5 lac schools of the State were mainly two: getting data through 'pull' method and second, facilitating teachers for giving data without spending a single penny so that reimbursement/accounting/auditing exercise is not required. The system which came handy, in view of above, was IVRS based one. It gives school-wise information access on real time basis through an out bound dialing solution wherein calls are placed to all the teachers from a virtual number using PRI lines. The system generated compilation of the data of number of children who availed MDM would be keyed-in by the teachers and will be displayed on web the same day. Moreover, transmission of real time data do not leave scope for data manipulation/distortion and availability of exception reports would improve efficacy and transparency of the system.

As regards milestones, the major objective was to make it live since academic year beginning in July'10. The Project was assigned in Mar'2010 and since then codification of about 1.5 lac schools, trainers-training, preparation, design and printing of about six lac operational manual and its distribution before onsite demo, onsite/ on-line demo/teachers' training in about 820 blocks and town

areas of the State, collection of teachers' personal phone numbers (as neither phones nor SIM cards have been given by the Government to the teachers), convincing the teachers about the benefits of the System and making them so aware as to own the System, development of the data-base and purging it, devising mechanism of call system and call escalation, on-line verification of the mobile numbers of almost 4.5 lac teachers, devising mechanism of updating of database in case of change of teachers' place of posting or mobile numbers, establishing call-centre for personalized attention to teachers query etc have been major landmarks of the System.

Mobiles for Health

Project Name: E-Mamta – Mother & Child Tracking System; By: State Rural Health Mission (SRHM), Department of Health & Family Welfare; Location: Gujarat

As a major initiative towards reduction of Infant Mortality Rate (IMR) and Maternal Mortality Ratio (MMR), the State Rural Health Mission, Gujarat, introduced the 'E-Mamta'-Mother & Child Tracking System. E Mamta is uniquely designed management tool being executed in Govt. health facility across Gujarat to accommodate for gaps in ensuring comprehensive Maternal and child health services in rural as well urban areas. Rural health challenges such as high dropout rates, high left out rates, quality of services, inability to track beneficiary pregnant women and children leading to high Maternal Mortality Rate (MMR) &IMR (Infant mortality Rate) are targeted through the e-mamta. E-Mamta is accessed through user id and password for in-department employees. Conceptualized by the State Rural Health Mission of the Health and Family Welfare Department of Gujarat, in January 2010, the program was developed through NIC Gujarat.

The application is being implemented in all 26 districts of Gujarat, all 172 health blocks comprising of 1147 Primary Health Centres, 318 Community Health centres, 26 Sub District Hospitals and 26 District Hospitals who are major public health care facilities of the state. Along with major trust and grant in aid hospitals and many private health providers. Currently the application stores family health records of 95 lakh families, health details of 4.5 crore population (80%) of Gujarat Population. E-mamta has registered 21,95,028 pregnant women andtotal families entered is 9842467,total children registered is 725279 for MCH services. Value added features under E-Mamta included SMS service, Graphical analysis on Dashboard, UID compatibility Notice board, Online Immunization record, Online Growth chart, Online Hb., weight chart for Pregnant woman.

Mobiles for Environmental Sustainability

Project Name: Nano Ganesh; By: Ossian Agro Automation Pvt. Ltd.; Location: Pune, Maharashtra

Nano Ganesh, first launched in 2008, is a mobile based wireless remote control and alarm system for the water pumps, appropriately designed taking into consideration the unfavorable conditions in the irrigation zone. These are different systems used individually or in combina-

tion: 1. Remote control for the water pumps : Nano Ganesh (Pumps): A farmer or an irrigation operator can monitor and check availability of the power at the pump, can switch the pump on/off, and acknowledge the on/off status of water pump from any place. 2. Wireless Alarm of tank water levels on the mobile phones:Nano Ganesh (Alarm): A Wireless alarm of water level is being used by an irrigation operator where a message of "Water Tank Full" or "Water Tank Empty" is displayed on his mobile phone when he is busy at his work. This helps him instantly control the pumps as soon as the tanks are full and avoid a huge wastage of water and electricity.

Nano Ganesh is specially designed to be robust to perform efficiently in the rural atmosphere where problems like voltage fluctuations, shock hazards, open wiring and marshy terrain are common. To make this system more accessible to the farmer fraternity, Ossian Agro deploys basic phones. All that Nano Ganesh needs is a low-cost wireless connectivity with voice transmission and DTMF transmission available in most handsets. So far, 10,000 remote controllers are in use and have improved the livelihoods of 40,000 people with 1,000 rural technicians getting an additional source of income; 180,000 m3 of water, 1080 MWh of electricity,180 m3 of fuel, and 18 m3 of soil saved in the year 2010 by installing 2,000 Nano Ganesh sets ; $720,000 in saved labor costs in the year 2010. The solution is developed by Ossian Agro Automation Pvt. Ltd.

II. Learning from Experiences II: Use of Mobiles for Training of Frontline Workers and Inter personal Communication

A. Mobiles for Training of Frontline Workers

The frontline workers are an important part of the bottom-line, in project delivery outcome and impacting beneficiaries in desired way. The frontline staffs works as the essential link in the citizen-provider interactions. This essentially calls for efficient selecting of workers and their training. With increased resources currently becoming available for project delivery and to achieve results, it is important to impart context-specific training to this work force. Training of workers is an important strategy for improving workers' productivity in allocated work field. Use of mobile technology has emerged as relevant and efficient tool to train the work force and achieve desirable project impact. For instance, frontline health workers with mobile phones capturing complex data on pregnant women and children, women receiving SMS text reminders before their 'due' dates, mobile phone based training courses for health workers can streamline and enhance the quality of maternal and child health services[14]. In Haiti adolescent mappers collect preliminary data using mobile phones to map locations of identified risks related to HIV and AIDS[15].

[14]http://frontlinehealthworkers.org/icts-in-maternal-and-child-health-poised-for-scale-up-in-uttar-pradesh-india/
[15]http://www.unicef.org/cbsc/index_42347.html?p=printme

Mobiles for Education

Project Name: BridgeIt India, By: EZ Vidya Pvt Ltd.; Location: Chennai, Tamil Nadu

BridgeIt India uses a standard mobile phone to improve the quality of teaching. The project is a partnership between Indian schools, NOKIA, The Pearson Foundation, and EZ Vidya. It was was started in March 2011. The objectives of BridgeIt India were: - DIGITAL TEACHERS: To integrate the mobile platform into teaching and evaluate its effectiveness through teachersexperience of using it in the classroom - ENGAGED STUDENTS: To evaluate learning improvements due to the integration of new technology, content, and methodologies into the teaching processes - SCALABLE MODELS: To broaden impact of technology in education, evaluate sustainable models, and identify how to scale at low increment cost.

In BridgeIt, teachers receive a TV-out cable and C7 mobile phone pre-loaded with NOKIA Education Delivery (NED). Teachers get training, suggested lesson plans, classroom visits and remote support. The school provides a TV or LCD projector. The teacher uses NED and the TV-out cable to display content in class. The results are on ground: post-tests from show a sharp increase in learning compared with control (Control: Pre-test avg. 58% to Post-test avg. 60% vs. NED: Pre-test avg. 49%, Post-test 64%). Teachers have changed the way they teach, away from lecture style and towards more student-centred, hands-on methods. 57% of lessons were "High" quality post-NED vs. 24% pre-, using objective criteria. NED classrooms had less teacher talk timeand more student collaboration than non-NED classes. Teachers and students are enthusiastic to participate for year 2. Most importantly, schools have increased their financial support to almost triple the number of schools.

Mobiles for Health

Project Name: CommCare; By: Dimagi Health Solutions, NEEDS; Location: Jharkhand

CommCare is a job aid tool. This application contains illustrations and audio messages covering need-to-know topics in antenatal care which an ASHA/ Sahiya can use to educated pregnant women in her village, regardless of their level of literacy. A client management interface provides the ASHA/ Sahiya with a list of her clients and the ability to review previously discussed topics, ensuring that nothing is missed. Real-time data submission to a central server allows close monitoring and supervision of the ASHA's / Sahiya's work.

CommCare begins with the illiterate user. It leverages multimedia capabilities of common phones to deliver educational information to anyone, regardless of their level of literacy or education. Audio messages can be recorded in any dialect and easily integrated into the existing application. Its multimedia draws attention and is easily understood. Corresponding with loading and sharing of music and videos for entertainment via mobile phones, prevalent even in rural areas, CommCare follows this trend and uses mobile technology in a familiar and positively accepted way to normal mobile users.

Mobiles for Health

Project Name: Nokia-ArogyamDiabetes; By: Arogya World;

mDiabetes was launched by Arogya World in partnership with Nokia Life across India in January 2012. The objective of this initiative was to disseminate vital information about Type 2 Diabetes and what life style changes one should make to prevent diabetes through alerts in 12 languages to 1 million consumers throughout India. Nokia phone users, who subscribed to Nokia Life services, were sent these carefully designed alerts which would be useful reminders for adults about healthy living as a way to prevent diabetes. Users receive content twice a week on their Nokia Phones. mDiabetes is an ongoing Clinton Global Initiative from Arogya World.

The diabetes awareness and prevention content has been developed with strong emphasis on science and behavior change. These have been reviewed for cultural relevancy, technical accuracy, translated and transmitted to mobile phone consumers throughout India. The program's effectiveness in increasing the adoption of healthy lifestyles, known to prevent diabetes, is being periodically measured. The user subscribes to the service by browsing the Health menu on Nokia Life or opting in to a service offer alert that they have received.

mDiabetes is the largest mobile based program in an emerging market to-date for diabetes prevention. The uniqueness of this program also lies in the ecosystem of partners built for the initiative. This effort is new and is one of the first nationwide diabetes education mHealth initiatives in a large developing country and can provide much data of interest to the public health world. The effort includes several public-private partnerships in which every partner has a valuable role.

Mobiles for Environmental Sustainability

Project Name: Hello Sakhi; By: Kutch Mahila Vikas Sangathan; Location: Gujarat

The project "Hello sakhi" (Hello Friend) is a helpline, situated at the women police station in Bhuj city of Kutch district in Gujarat. The helpline has been initiated as a joint effort between Kutch Mahila Vikash Sangathan (KMVS) and Kutch police department, conceived and launched in the year 2010. The project aims at responding directly to the victims at 3 levels: 1. Listening to their problems and try to provide counseling 2. Refer them to nearest counseling centre run by KMVS for meeting with counselors 3. Advise the callers on legal matters surrounding their issues 4. Facilitate the callers for filing FIRs, court cases and further legal action. The project uses mobile applications like portals, voice SMSes, conference facilities to connect with the callers to send information and receive feedbacks.

This is the first initiative, where the helpline goes beyond conventional helplines- which usually counsels the callers, while "Hello Sakhi" provides immediate services to the police stations and counselingcenters spread across the district. The helpline has been launched for more than 1.5 years, and has started

becoming unique platform that connects women members instantly to the legal awareness and education. The project has aimed at addressing singularly important issue surrounding life of women-awareness on their entitlement and educating them about their human rights.
The helpline covers 10 blocks and 940 villages of Kutch. It is spread around more than 11,000 women members of KMVS and other women of entire region. Since the launch, more than 800 women have availed the help directly through call and another 300 women have visited the counselingcenters through helpline.

B. Mobiles for Inter Personal Communication

Interpersonal communication involves one on one conversation or individuals interacting with many people within a group, community or society helps to construct and negotiate a social reality. Such communication in the development space helps to communicate ideas, thoughts, and feelings pertaining to project areas to determine impacts. Tools and opportunities for interpersonal communication improves project outcomes through sharing of knowledge, practice, feedback, and reflections. Mobiles as one the most personalized tool has emerged as an effective medium for interpersonal communication assisting in sending and receiving messages, listening, asserting, sharing feedbacks and reactions. This has transformed both individual and group centric interaction. Successful interpersonal mobile based communication depends on ability of message senders and the message receivers to interpret and understand the specific subject and project thematic messages being sent on a level of understood meanings and implications. For instance in Madagascar, community health workers have provided critical services in times of acute socio-economic crisis impacting availability of health services[16]. The health workers conducted essential outreach to families on issues such as proper hand washing, not defecating in the open and vaccinating children.

Mobiles for Education

Project Name: HealthPhone; By: The Mother and Child Health and Education Trust; Location: Mumbai, Maharashtra

HealthPhone was launched the Mother and Child Health and Education Trust, a not-for-profit initiative. It provides families with their own personal reference library and guide to better health practices. Available in real time, right to those who need it, when they need it and when a health problem is about to strike, where they are, and as they are.HealthPhone's health and nutrition content is scripted on knowledge prepared jointly by UNICEF, WHO, UNESCO, UNFPA, UNDP,UNAIDS, WFP and The World Bank. It addresses the main areas of concern; Timing Births, Safe Motherhood and Newborn Health, Child Development and Early Learning, Breastfeeding, Nutrition and Growth, Immunization, Diarrhoea, Coughs Colds and More Serious Illnesses, Hygiene, Malaria, HIV, Child Protection, Injury Prevention, Emergencies: pre-

[16]http://www.unicef.org/infobycountry/madagascar_65169.html

paredness and response. This content are pre-loaded on popular low-cost models of mobile phones – no signal is required, nor cost and knowledge to download videos and other media. Users choose what they want to watch and when, wherever they happen to be. The content have already translated into 215 languages, over 15 million copies are already in circulation and an update has just been released. Illiterate friendly video, audio and image fileshighlighting over 125 key health messages in English and 15 Indian languages have been issued as well.

Mobiles for Health

Project Name: Mobile KunjiBy: BBC Media Action; Location: Bihar

The community health worker is crucial human resource to promote maternal health and reduce maternal and infant mortality in a state like Bihar in India. The basic problems faced by the workers across the State in their functions until now included lack of proper tools through which they could convince the rural families on health prevention and treatment issues. In order to help frontline health workers function better in the state in health care services delivery, they are now provided with an innovative job aid called 'Mobile Kunji'. The project considered first-of-its kind initiative in the country, is being taken up in eight districts of Bihar, including Patna, under a partnership forged between the Bihar government, Bill and Melinda Gates Foundation (BMGF) and BBC Media Action (India).

With the aid of Mobile Kunji, workers with adequate training use mobile tools to effectively disperse health messages and increases the demand of health services provided by service delivery partners under the newly launched Ananya programme that was started as a part of Memorandum of Cooperation between BMGF and Bihar government in May 2010.

'Mobile Kunji' is a pack of 40 well-illustrated cards on a ring that communicates important health messages to rural families with the help of graffiti and text. Each card has a unique toll-free short code that when dialled by the health worker from his/her mobile phone, takes the listener (or the audience) to free audio recording that further elaborates the health message that the particular card carries. Each card has its own unique code. The audio message is delivered by a fictional doctor character, Dr Anita. This unique 'Kunji' was introduced in May 2012 and more than 44,000 community health workers are already using it. They have accessed over 1 lakh minutes of audio content. This 'Kunji' can be carried all the times and doesn't require reams of paper or very improved technology, but just a normal mobile handset that has a speaker. This is seen as a low-end technology for high-end gains. The major challenge in the project has been to train about two lakh health workers with the least possible cost involved. For the purpose, a 'Mobile Academy' was designed. From 2013, the projects will be implemented in all 38 districts of the state.

4. Expanding the Mobile Horizon: Stakeholders, Partnerships & Way Forward

"Mobile communication has arguably had a bigger impact on humankind in a shorter period of time than any other invention in human history," The World Bank[17].

Undoubtedly, mobile innovations have revolutionised the global information and communication landscape and transformed the social, economic, cultural and economic processes. In this transformative process India's position is and going to be noteworthy due to its geographical and population advantage. By now, the country has remarkably advanced to an active mobile state with 70 mobile subscriptions per 100 people. 53% of households own a mobile phone. Mobile phone networks currently cover 83% of Indians. With 69% of population being rural and rural mobile teledensity at 39 per 100, there is considerable scope in this country for mobile deployment in promoting development and stimulating social and economic indicators besides bridging connectivity and access divide. Mobile phones are expected to be "the game changer" in development landscape in India in next decade. Towards this, the challenges observed and identified will require specific and generic interventions to address the gap areas.

I. Challenges Identified

The adoption and use of mobiles for development has structural, functional, operational and deployment limitations. The realisation of the full potential of the cell phone depends on policy, infrastructural, technological, service related and other challenges. There are still bottomline challenges of access, anonymity, cost, etc., to be addressed. Professionals and workers in mobile project implementation list range of challenges while working on mobile solutions at community level. The various pilot programmes have led to outlining key challenges under technical, environmental and institutional heads which are outlined below:

Environmental Challenges

- Provisioning mobile access and services to underserved target groups is a persisting challenge. The wider gender gap in low- and middle-income groups, in having access to this potentially life-enhancing tool is a social, cultural and economic challenge.
- The patterns of mobile phone use by the poor to access information are very low (de Silva, 2008; Ashraf et al., 2005). While this is somewhat perplexing, the largely informal nature of the social and economic relations in India and the value attached to face-to-face interactions may partly explain this phenome-

[17]'Information and Communications for Development 2012: Maximizing Mobile' The World Bank

non. The challenge is to supplement as well as complement mobiles with this informal process.

- There exist wide differences in infrastructure provisions among regions and communities in India. Due to unclear and multiple regulatory or policy measures, variety of telecommunication providers, different price scales, and pricing scales service penetration and results vary across regions and communities.
- Local variations in infrastructure and cultural norms are manifested in very different usage patterns of mobile usage from community to community[18]. Usage patterns of women in a minority community differ from those women from upward mobile community. Further variation in literacy and exposure to technology restricts outcome from successful mobile based programs.
- While mobile phone penetration is progressing at rapid space, obstacles remain to universal mobile access, and beyond to internet access on mobile. The lack of reliable access to electricity in some is an obstacle, making it difficult and costly for people to charge their phones, especially in rural areas. Support systems may also be lacking if a subscriber in a remote area runs in technological hurdles.
- The question is whether mobiles can compensate the lack of basic ICT facilities like PCs and Internet in remote locations, in a government run school in a village where there is no power, connectivity and access. Any strategic mobile intervention is ought to consider such challenge and possibilities.
- Mobile phones are still relatively expensive for the poor (Frempong et al., 2007). In addition to the cost of the phone itself, maintenance factors (e.g. - cost of recharging the phone) are also important considerations (Ashraf et al. (2005)) in regions such as rural India. While mobile calls are cheaper than the cost of travel, the extent to which these savings offset the total costs of owning a mobile still remains to be determined.

Technical Challenges

- Despite the promises with data collection using mobile devices, the experiments are yet to conclusively establish the acceptance and feasibility of this method for large scale deployment. In particular, a sizeable number of ASHA health workers are reported in northern India to have shown limited acceptance of data collection using SMS and mobile forms. There are technological challenges in input, display, transfer and processing of data in English and Indic languages (especially for people with different levels of literacy), security and integration with devices.
- There are operational issues including usability and the limitations of mobile phones (small screens, short messages, and complicated commands), regulations and legal aspects of mobile applications, costs, payment, revenue sharing, etc. Some services are also tied to a specific operator, creating challenges of interoperability between operators and roaming between districts, states and countries.
- Issues of privacy, anonymity and security need to be considered in contexts where mobile phones could be

[18]http://www.w3.org/2008/02/MS4D_WS/papers/unicef-w3c-presentation.html

tapped or where there is insufficient privacy and safety protection (Hellström, J., 2010).

- Though several of the pilot projects are undertaken by organizations but scaling up of successful projects is challenging due to wider and higher level of involvement, investment, technology and manpower requirements. The limiting factors are logistical and localization challenges due to diverse social settings in India.
- The development interventions involving mobile apps and services include largely SMS and voice based solutions. The possibility of mobile technologies blended with web-applications embedded with simple mobile phone interfaces is a possibility. Integration of MVAS in mobile development strategies is a felt necessity more frequently.
- Lack of resource to invest restricts innovation and scale. Custom requirements raise expenses and impede development of a single, configurable product that might scale for broad deployment.
- The challenge is in continuous experimentation and innovation to fix problems. Single prototype application fails to work in a specific context. This calls for multimodal integrated approach wherein integration of SMS, IVR (interactive voice prompts), TTS (text-to-speech), and audio messages becomes necessity. Mobile based convergence is a technical, resource and scalability challenge.

Institutional Challenges

- Traditional institutions in India lack capacity to develop mobile interventions that require multidisciplinary approaches. For instance, in m-Health initiatives health institutions lack capacity to involve behavioral, medical, business and computer sciences features. The public health departments in central and state governments also lack capacity to design and implement mHealth on the ground.

II. Stakeholders & Role Expectations

This mobile thrust in India requires identifying key policy initiatives and adding value to the existing programmes and projects. This can be done by facilitating synergies and joint efforts in order to maximize coordinated action, coherence and effectiveness towards implementing successful mobile based projects. To address emerging issues stakeholders including the private sector, governments, bilateral agencies and civil society discuss and debate, collaborate and arrive at points and areas of convergence and agreement to collaborate and contribute in specific areas of relevance and importance. Prior to this, each of the stakeholders' areas of strength needs strong assertion. Role expectation, assignment and fulfilment will follow logically.

Government

- The government of India (represented by the Department of Telecom within Ministry of Communications & IT) constitutes the most potent role player in determining the mobile landscape. The government constitutes the force behind the mobile infrastructure backbone. Policy consolidation is called for. The role of the Department of Electronics & IT is looked forward in pushing the mGovernance framework in actually achieving 'm' based services delivery until the last mile.

- Spectrum allocation (2 G and 3 G allocation already executed) is linked to number of operators (more than 10 by now) in 22 geographical license areas. The high cost of acquiring spectrum is feared to slow down competition and hit prices with increasing cost of capital for operators. Increased competition has led to price war hit margins and benefits the citizen users. In a situation where telcos are uncomfortably indebted it is to hurt competition due to withdrawal and consumers shall suffer. India's spectrum regime requires much expected dynamism and efficient on vital issues: rationalisation in fees on existing spectrum, the terms on which old licences are renewed and corruptly awarded ones relinquished (if at all), new spectrum grants and the rules on mergers and acquisitions. The spectrum policies require boosting investment and not divesting investors.
- Regulatory mechanism requires more teeth and specification. Absence of a policy framework in dispute resolution authority has been jeopardising the contractual arrangement between the operator and the MVAS content owner/ aggregator.
- Policy consolidation is called for. By allowing unviable firms and their spectrum to be acquired, a scarce resource could be allocated more efficiently and customers could be saved the annoyance of having their carrier go bust. The industry cannot rationalise by itself. The state controls the supply of licences and spectrum. It must enact sensible changes.

Bilateral Agencies

- Agencies are desired to continue to ideate and innovate approaches for developing mobile based solutions and knowledge bank to support development efforts in backward districts and regions of India.
- Agencies must explore and expand private and public sector partnerships through a Mobile Alliance in India. This calls for engagement with critical ministries like Ministry of Health & Family Welfare, Ministry of Women & Child Development and Ministry of Communications & IT. For instance, a robust public-private partnership will enable to provide health information to new and expectant mothers through mobile phones effectively.

Mobile Operators

- Operators rolling out network services in remote and underserved regions are called for. Cost effective and reliable network services will determine the actual utility of owning mobile phones and exploit its advantages in development. There is still short of “anytime, anywhere” service. All these will determine users to explore new frontiers of services and push other mobile players like MVAS providers in bringing services to the masses, from mobile banking to accurate crop prices.
- Hyper-competition is good for subscribers and users and help in achieving development and service delivery efforts of the government. Method

innovations like sharing radio towers and compress traffic will enable optimum utilization of infrastructure and bring down unsolicited cost of delivery and deliver advantages to users.

MVAS / Content developers

- The future of mobile value-added services (MVAS) in India is wide and so their role in empowering the masses. The growth drives in key m-services such as m-banking, m-education, m-governance, m-health and m-agriculture, needs innovation and promotion. Data services is expected to be the key growth driver for mobile service demand pushed by introduction of 3G services and likely launch of BWA services.
- The MVAS providers are expected to work towards meeting the growing uptake for high-end entertainment and communication services in urban areas and utility-driven data services and applications in rural areas. A different type of VAS, mobile internet (both through handsets as well as dongles), will rapidly gain traction, driven by more affordable access to faster networks. These services are expected to change the dynamics of the Indian telecom sector by empowering users and providing major commercial opportunities for all service providers.
- Growth drivers for MVAS are increasing penetration and spending power; advancement in handset/devices; innovative data offerings; introduction of 3G.
- For the MVAS providers there is need to address lack of compelling applications and localised content. They need to go beyond the urban areas and cover semi-urban and rural areas as well. At present, the number of utility-based applications is limited. A related constraint is the lack of localised content and content in vernacular languages.
- The MVAS providers are require to work closely with stakeholders in the MVAS ecosystem including content providers (content owners and aggregators), Technology enablers (Platform providers and application service providers), Content delivery companies (Carriers and handset vendors), to innovate continuously to serve the Content consumers (Subscribers of such services).

Manufacturers / App Developers

- There exists design challenge to make it easier for women to use smartphones. Manufactures and developers role seeks to simplify smartphone user screens and help overcome technical and literacy barriers that many women face.
- Manufactures require providing users with more airtime, battery management widgets, and inexpensive phone-sharing and emergency SMS features. There exist limitation for users in terms of possessing a darker screen to prolong battery life and an easy-to-use interface. Rural India requires designers to develop simplified grayscale power efficient interface in mobiles that employs visual icons for users with low literacy.
- For the rural users, handset manufacturers need to scale up in designing phones that not only offer all basic functionalities, but also have certain additional and customised features

Civil Society

- Effective and optimum usage of mobiles for development purpose hinges

on pro-active role of the civil society agencies. Having the natural advantage of working at the grassroots, together with democratic and empowering reach of mobiles in almost every hand in India, civil society bodies are seen to play a transformative role in exploiting the mobile space to achieve development objectives in education, health, gender empowerment and livelihood.

- More than 60 % of mobile subscribers and users still lack awareness on basic usage of mobiles including awareness about VAS offerings. Agencies are supposed to play a facility role in developing capacities of users.
- The role of agencies are seen in delivery of information services, in training and skill development, monitoring and tracking of development programmes with the assistive service of mobiles while reaching out to the ultimate stakeholders (citizens).
- The role of agencies are found to be critical in implementing pilots having mobile significance in areas such as education and health, sharing pilot outcome and scaling up pilot to newer locations and target stakeholder.
- Agencies are and can be playing a significant role in policy and programme advocacy in determining specific trend and path to adopt mobile to realize key policy and programme objectives. The role of agencies in enabling women to use mobiles for Self Help Group (SHG) activities have triggered the new found focus in m-Banking in India.

III. Way Forward: Multi stakeholder Partnership

The mobile space in India is broad and expanding. This space provides immense scope to realize key development and governance objectives including MDGs. This calls for a robust, working partnership among stakeholders. This involves the technology and infrastructure players, MVAS providers and others. In other words, there is a need to work towards creating an ecosystem comprising all stakeholders – regulators, industry players and end users. There is no exclusive role playing for single or group of players to serve the mobile based service needs. The equipment manufacturing and infrastructure developers play the driving force in enabling the MVAS providers to provide critical services such as mHealth and mEducation. It is expected that the government of India's Mobile Governance Framework will provide the required fillip to multi-stakeholder partnership in making the mobile handset the preferred platform for promoting socio-economic development of the country.

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