Digital Bh@rat

Learning from 50 digital footprints

Edited by
Saleema Razvi
Syed S. Kazi

Digital
Bh@rat

Digital Bh@rat
Learning from 50 digital footprints

Copyright 2014-15, Digital Empowerment Foundation
All Rights Reserved

Disclaimer: All rights reserved. No part of this publication may be utilized, reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, recording or otherwise, without the prior written permission of the publisher.

Published by
INOMY Media Pvt. Ltd.

Editors
Saleema Razvi
Syed S. Kazi

Cover Design & Layout: Jaspreet Singh & Sapna Subba

The content of the book can also be seen at www.digitalknowledgecenter.in

Edition: 2014
ISBN: 978 - 81 - 927717 - 3 - 1
Price: Rs. 500; $25; €20

Printed in India by Shree Jee Enterprises

Contacts:
Digital Empowerment Foundation
Tel: 91-11-26532786
def@defindia.net
www.defindia.net

Content

Introduction	8
aAqua	12
Reuters Market Light	18
MouthShut	24
Eko	30
Grassroutes	36
Panjab Digital Library	42
Pratibadh	48
Gramin Radio Inter Networking System (GRINS)	54
Vasundhara Krishi Vahini 90.4 MHz	60
Radio Active	66
Farm ERP	72
Mango Technologies	78
DigitALly	84
Kissan Krishideepam	90
School Report Cards (DISE)	96
Bookbox	102
Drona	108
Kisan Sanchar	114
Mobile Antakshari	120
ToeHold	126
DesiCrew	132
Common Service Centre	138
NREGAsoft	144
SWHITS	150
Old Age Pensioners' Payment and Monitoring System	156
Fishnet ReALCraft	162
Akshaya	168

IPaidABribe 174
Prison Management System (PRISMS) 180
The Public Distribution System, Chhattisgarh 190
Empowering India 196
Rajiv Aarogyasri Community Health Insurance Scheme 202
104 HMRI 208
Wireless for Communities (W4C) 214
AirJaldi 220
EGMM 226
Online Hearing Screening Project 232
HarVa 238
FINO 244
Panini Keypad 250
Raftaar 256
HindiWordNet 262
Infochange India 268
India Water Portal 274
Peer Water Exchange 280
BIOTIK (Biodiversity Informatics and Co-Operation in Taxonomy for Interactive Shared Knowledge Base) 286
AWATAR 292
Barefoot College 298
Chanderiyaan 304
SMSOne 310

Introduction

The existing developmental and governance challenges and the continued search for means and channels to improvise and scale up performance and delivery of services brings in the relevance and significance of how Information Communication Technologies (ICTs) can play a wider facilitative role. In the last decade this focus has found increasing place in policy, programme, research and implementation domains. The advent of ICTs powered by the World Wide Web has given a new insight, meaning and significance to plug the gaps in development divide and bring the majority of the periphery population to the mainstream. Pilots and experiments have been rolled out nationwide in India covering all 35 States and Union Territories. There have been illustrations on the ground of how innovative deployment of ICTs have brought in transformations for the end beneficiaries and helped to streamline processes and mechanisms to serve the citizens. This is being documented in the 50 case practices brought out in this publication.

In the midst of so many ICT interventions, concerns and apprehensions have time and again been pointed questioning of longevity of pilot projects is valid. Sustainability and overcoming duplicity are concerns still being raised. And there are other genuine concerns well known. Attempts are and ought to be continued to infuse long term insights and meaning and substance to various ICT programmes at both national and state level.

The Greater Developmental Challenges

There are multiple facets to the challenges in inclusive, holistic and decentralised development and governance framework in India. The challenges are split into – vision, mission, method, processes, mechanisms, platforms, will power and what not. The development lag has been attributed to the poor vision and achievement rates in UN Millennium Development Goals (MDGs) that this country has been a key party to the visibility of a missing network of knowledge and experiments on ground has denied sharing of ideas and examples within this country. The missing element also lies in absence of a fool proof mechanism till date to provide grievance redress provisions for the millions who deserves to be heard all the time.

The capability of the human resource to manage and run the system and institutions has been another wider manifestation of a 'wrong man in the right place' or 'right man in the wrong place' phenomena. The meaning and significance of social investment has lacked continued upgraded interpretations and actions there upon. The lack of the technology component to better social outcomes has lacked holistic consideration until now. The insight of technological exclusion and social inclusion has lacked a smooth relationship.

The real meaning and experimentation of community participation in development and governance processes has still not ensured a meaningful engagement of the millions to determine their own needs and solutions supported by the social welfare mandate of the governments of the day. The sectoral area of development that continues to hog policy-programme priority maintains a slow progress rate be in health, education, livelihood and women empowerment domains.

At procedural level the challenges continues to be in enabling transparency and accountability in services delivery. The limitations in affordability and accessibility of services for the end citizen users poses a wider question mark on the increasing capacity of the government systems to absorb pressures and challenges even after 60 years of country's independence.

One of the most critical development needs, perhaps the most fundamental inputs required, that continued to be ignored is information dissemination of citizen entitlement based schemes and services. This 'information poverty' holds the key in continued alienation of the silent majority from the mainstream development and growth process as well as denial of the fundamental civic right to good governance.

Another notable hindrance is identified in centralized nature of services delivery that has caused a gigantic road block towards decentralised and democratized services delivery involving grassroots agencies. And there are other hindrances highlighted time and again.

The Positive e-Vibes

The advent of ICTs has been a democratic boon to meet some of our major development and service delivery limitations. The utility of ICT devises, platforms and applications have found relevance in health, education, livelihood, good governance, entertainment, culture and heritage promotion, environmental sustainability, connectivity and access, agriculture development, language promotion, natural resource management, social inclusion of excluded groups, and women empowerment.

A few examples are – Project 104, HMRI in health sector that provides information, consultancy, and counselling services to more than 80 million people in Andhra Pradesh; project DigitALLY that caters to enhanced teaching and learning in government schools in rural India; project TOEHOLD that uses the web to promote famous Kolhapuri chappals in Karnataka made by poor women collective; project Panjab Digital Library that has digitized more than 4000 periodicals, over 80000 books and over 9000 rare photographs in Punjab; project RAFTAAR that has been credited to bring out world's first Hindi language search engine for the 300 million plus Hindi speaking citizens; project Wireless for Communities (W4C) considered as India's one of the first wireless solution for rural communities; project KISAN SANCHAR that caters to agricultural information services needs of lakhs of farmers in North India; and project EKO that has been instrumental in financial inclusion practices for rural customers.

The diversity in deployment of ICTs is notable. The use of the Internet has been widespread in all ICT interventions as front end delivery channel especially for information services delivery. Customized solutions in terms of automated decision support system, monitoring and tracking system, work flow process management and others are notable. Wireless technology and solutions with low carbon footprint has been on ground. The usage of the mobile platform has seen tremendous expansion with more than 800 million mobile subscriber bases in India. The new found relevance in community radio and social media are the latest entrants in development sector having wider development and governance ramifications across the country.

The digital interventions and experiments in development and governance have enhanced the effectiveness and transparency in services delivery until

last mile. The delivery rate has increased with affordability and accessibility concern removals. The vast opening of knowledge networks and sharing has been proven on ground with many pilots and few sustainable interventions. An alternative and yet complimentary mechanism for grievance redress has been found out with neutral support of ICTs. There is a new pool of IT talented manpower that has redefined a new 'Digital Bharat'. Social investment in the country has found new meaning in ICT inclusion element. Social and digital inclusiveness has found a common ground. Community participation has found a new meaning and interpretation with ICT facilitated set ups. Political will and administrative support has a new significance with positive waves nationwide.

The relevance in ICTs deployment has found substantive impact in information dissemination, training of front line workers, interpersonal communication, and monitoring and tracking of service delivery measures. The multitude of digital solutions has offered dynamic platforms to seek remedies to development needs – Internet, mobile, social media, and community radio. The development partnership has discovered a new found significance and necessity in Public Private Partnership (PPPs) and Public Private NGO Partnership (PPNPs).

The processing, use and sharing of knowledge and resources have found alternative channels in ICT mediums like never before. Information sharing and dissemination has seen a new revolution in terms of time, speed, and accessibility. The concern of knowledge repositories has found its solution in so many digital reservoirs including knowledge portals. Cultural specific needs of communities are being addressed through measures like local language specifications.

The digital revolution is for sure in this country after success of its very own Green and White Revolutions. Decision making and implementation mandate has its added value added inputs and quality support with ICT usages. The adoption of newer methods in services delivery facilitated by ICTs has redefined implementation and delivery. Efforts at giving a new meaning to public trust in capability and dedication of service providers is on the ground. There is new found professionalism in services delivery especially at Government to Citizen (G2C) level which has proved cost effective, reliable, trustworthy and transparent. The traditional meaning of demand-supply of services delivery has a new focus and acceptance with ICTs.

Digital inclusion has found wider acceptance in the country at all levels – policy, implementation and community. The development impact has been counted on – more employability, income generation, promotion of entrepreneurship, timely receiving of entitlements, decentralization of services delivery, accessibility and affordability enhancement, more informed citizenry and responsible service delivery channels, and government closer to the citizens till the last mile. There is more and more deployment and promotion of good practices in diverse development strategies and programmes. Community resource management has a renewed focus and enhanced thrust.

The Very Many 'e' Challenges

The ICT challenges are equally issues of major concern. Local language support in ICT solutions remains a both technical and financial obstacle. Longevity of ICT programmes has baffled development practitioners and policy and

programme executioners for long. The 'golden' period of ICT interventions in the pilot phases and quick transition to the 'sunset' phases has been worry in financial, technical and manpower investments. While the PPP model has fitted well with the stakeholders, what has walled much of its outcome is lesser inclusion of the NGOs in the wider PPNP. Local language specification needs is still an operational and implementation hurdle. The biggest challenge is independency and sustainability of the 'e' programmes. The question that is raised is on the efficacy of the 'e' models which may need a critical look. The larger sociological concern is how much technology enabled programmes are decentralised and actually democratized in the world's largest democracy.

About the Case Practices

This compendium gives an overview of the 50 identified digital case practices which will give a perspective of how insightful deployment of Information Communication Technology (ICT) tools and applications, including hardware and software, can to a wider extent mitigate or bridge the gulf in expectations and delivery from both users and delivery point of view. The selection of the case practices has been based on innovation in methods, devises, deployment, sectors and outcome.

It is hoped that readers will find enough inputs to think and throw newer insights in their area of expertise and experimentations. Any errors in the compendium may be ignored as human errors!

Editors

Saleema Razvi
Syed S. Kazi

aAqua

aAqua is a multi-platform problem-solving service that synergistically connects farmers to agricultural experts for the purpose of solving the real, day-to-day problems of the Indian farmer in a timely manner.

Category
e-Agriculture

Organization
Agrocom Pvt. Ltd., in partnership with IIT Mumbai

Platform of product
Internet

Website
www.aAqua.org

Achievements

- Provides access to expert information for a rural agricultural communities that have not benefited from India's technological revolution and economic boom
- Uses multiple platforms for accessibility and flexibility (Internet, SMS/text, voice, offline computers)
- Provides an accessible database of the collective wisdom of over 22,260 members from across India
- Operates in four languages (Hindi, English, Marathi and Kannada)

Summary

Traditionally disadvantaged when it comes to access to information technologies, India's rural agricultural sector also lags behind the rest of the country when it comes to productivity, economic development and standard of living. aAqua is an multi-platform ICT service designed to improve the living standards of the rural farmer through timely access to expert agri-information.

aAqua was launched in 2003 and, since then, has seen a growing membership across the country thanks to its comprehensive database and accessible interface. It can be accessed by Internet, SMS/text or phone and is in four different languages.

Practise Background

According to the Planning Commission, in 2005 more than half of India's workforce was employed in the agricultural sector, which contributed only 20% of the country's GDP. Furthermore, more than half of the agricultural workforce was illiterate and only 5% had a higher secondary education. Additionally, there were more than 170 million rural poor in the country.

According to the Telecom Regulatory Authority of India (TRAI), in 2010 less than 1.5% of the country's telecom subscriptions came from rural areas. Furthermore, the tele-density, or number of telecom subscriptions per 100 citizens, and mobile subscription rates in rural areas were only one half and one third, respectively, of those in urban areas.

As long as rural poverty persists, rural-to-urban migration will continue to contribute to urban poverty and over-stress city resources. Given these conditions, the challenge was to harness the power of information and communication technologies (ICTs) to help:

- Improve the productivity of the agricultural sector so that it can contribute more to the overall economy of the country
- Raise the standard of living of the rural poor
- Overcome the obstacles in the way of rural development: small farms, remote and isolated locations and lack of infrastructure, education and economic opportunities
- Let rural areas enjoy the benefits of the technological revolution and economic boom that other areas of the country are experiencing, rather than get left behind
- Give the small farmer access to the same useful and timely information that larger, connected farms have

A number of other public and private ICT initiatives have recently been launched specifically targeted to the agricultural sector. For example, the Ministry of Agriculture launched Agricoop (www.agricoop.nic.in) to provide information about its services, crops etc. and Agmarknet (www.agmarknet.ap.nic.in) to assist with agricultural marketing and pricing. In the private sector, Tata launched mKrishi (www.tcs.com/offerings/technology-products/mKRISHI/Pages/default.aspx) and

Reuters launched Reuters Market Light (www.reutersmarketlight.com), both of which are mobile phone aps.

Presently, a range of agricultural services are available through Internet and mobile-based ICT platforms, including agricultural certification, warehousing, sales, education, finance and credit, insurance, consulting services and marketing.

Implementation Process

Initially a 2003 student project at the Developmental Infomatics Lab of IIT, Mumbai in conjunction with Vigyan Ashram and Krishi Vigyan Kendras (KVK) in Baramati, Maharashtra, the project was launched under the leadership of Anil Bahuman, Managing Director, Professor Krithi Ramamritham, Chair of the Board, Bishnu Pradhan, Advisor to the Board, Dr. Kadarbhai, Advisor to the Board and Dr. Yogesh Kulkarni, Advisor to the Board.

Today, the aAqua team also includes the International Crops Research Institute for Semi-Arid Tropics (ICRISAT), the Universities of Agricultural Sciences at Dharwad and Raichur in Karnataka, the G.B. Pant University of Agriculture and Technology in Pantnagar, Uttarakhand as well as KVKs at Dharwad and Gulbarga, in Karnataka.

Taking a bottom-up approach, the first thing the team did was to poll farmers for their needs and priorities.

Project Features

Technology Platform

aAqua enables direct communication between farmers and agricultural experts using the Internet platform for timely problem-solving. It is a synergistic process that takes advantage of both top-down and bottom-up information to the mutual benefit of the farmer and the aAqua team. Here's how it works:

- The farmer goes online to post a question in one of the four languages currently supported (Hindi, English, Marathi and Kannada)
- The farmer receives an answer prepared one of the aAqua team of experts within one to three days
- Questions and answers are posted online and available to all
- As the process is repeated hundreds and thousands of times, a comprehensive database of Indian farmers' real day-to-day issues is established

Queries are organized into 22 forums organized in six main categories: Agricultural Q&A from KVKs, SMS text messages, the National Agricultural Innovation Project (NAIP) farmers' queries, email, aAqua project information and general information. As of May 2012, there have been over 39,000 posts in over 15,000 topics by 22,620 members.

Queries can be made via the Internet, voice and text/SMS. The advantage of the Internet and smart phones is that photographs can be included with queries and, therefore, added to the database for future reference. This has proved to be both a useful and popular feature with users.

Accessibility & Inclusiveness

One of the current accessibility challenges has to do with rural access to the Internet and, specifically, use of the Internet to access information on farming. According to a study by the Internet and Mobile Association of India (IAMAI) only 13% of rural Internet users use it to find information about farm techniques and only 8% about fertilizers. Recognizing the limitations of rural Internet access (low levels of Internet penetration, limited infrastructure, electricity shortages, and slow dial-up service) aAqua has been designed to operate on a number of different platforms for the sake of accessibility.

First, the website is largely text-base and has been designed to function on slow Internet connections. Second, Agrocom has developed a PC-based application called "aAqua Offline" that requires only occasional Internet connection. aAqua Offline terminals are available at a number of State agricultural universities and could be rolled out to more locations. Third, aAqua is available via voice and SMS service. Because 80% of farmer queries are presently made via SMS text service, aAqua developed tools for GPRS enabled mobile phones and traditional push messaging for low cost handsets.

The aAqua interface is designed for flexibility and accessibility. Users can communicate in one of four languages (Hindi, English, Marathi and Kannada) and use the keyboard that they are most comfortable with. Presently, the principal languages of the Internet are English and Hindi. According to a 2009 IAMAI report on vernacular content, only 25% of Internet users are aware that there is vernacular content online. aAqua therefore, is structured to fill a real need for expanded language options.

Compared to traditional offline services, the aAqua online service has a number of advantages and disadvantages and serves a different goal. Offline services are typically local, personal and community-based, while online services collect and distribute information from a wider demographic. Offline services often require staff and an office but can provide face-to-face service including hands-on demonstrations and agricultural workshops, while online services require an investment in computer hardware and software in order to communicate.

Offline services are often only available during certain business hours, while online services are available twenty-four hours a day, seven days a week and, therefore, whenever the farmer wants them. Offline services often provide immediate feedback and a personal experience but are limited to the expertise of the staff present, while it can be necessary to wait up to three days for a response from aAqua 's online service but the user has access to a much broader range of expertise.

Presently, aAqua members come from 26 states and 3 union territories and have used all four of aAqua's supported languages. aAqua experiences approximately one question per hour, mostly from farmers. There have been over 4.3 lakh website views. In 2009, the average user posted 2.6 questions and visited the site 33 times. aAqua's pilot phone project sent over 9.9 lakh voice messages to over 26,000 farmers every three days in two languages.

Community Participation

aAqua provides a communication channel between farmers and experts and also a peer-to-peer farmers' network. In this way, farmers

can also answer questions, share their experiences with techniques that they have already tried in the field and build relationships with each other. This social networking feature has proved very popular with members. Farmer's input was sought from the first stage of the project. Taking a bottom-up approach, the first thing the team did was to poll farmers for what they needed and what their priorities were. aAqua also solicits feedback from its users in order to learn from real user-experience..

Replication & Scalability

In order to better serve it's demographic and attract more members, aAqua's tools and software can be scaled up in a number of ways. For example, the number of supported languages and dialects can be increased, marketing efforts can be improved to improve the visibility of the service, and marketing can be expanded to reach beyond the Internet (for example, using radio and television). Also offline applications that are not dependent on net-connectivity can be provided such as dedicated aAqua computers at agricultural centres and fairs or even aAqua kiosks in villages where there is currently no Internet kiosk.

Also, since members have requested a live-chat feature to better enable social networking, adding that feature could attract new members to the service. The database content could be used in future for a range of agricultural and non-agricultural purposes. An example of the latter might be using the content for a rural-based television show.

Conclusions

The aAqua experiment has been a success and its prospects are encouraging. However, moving forward it needs to respond to user feedback, address the issue of low Internet penetration in rural areas and capitalize more on its name and brand.

Lessons Drawn From The Practise

aAqua solicits feedback from its users in order to learn from user-experience. A random sampling of 43 farmers from the states of Andhra Pradesh, Maharashtra, Tamil Nadu and Karnataka revealed the following trends:

- aAqua has had the most penetration in Maharashtra
- The most popular website features besides Q&A are 'crop doctor,' a service that allows users to upload photos for diagnosis, and information about the market and government schemes
- A surprising diversity of crops, concerns and interests, including wheat, mango, rise, sugarcane, cotton, turmeric, tomatoes and others, even within any one given region
- Many users happened to come across the site while browsing the web rather than by being aware of it beforehand or looking for it specifically

Website usage has also revealed the following trends:

- The website is not just being used

by farmers, but also by students, agricultural consultants and agri-companies
- The average farm user has a landholding of at least 10 acres, which suggests that more mid-sized farmers are using the service than small, subsistence farmers

Another lesson learned was that larger farmers can be more entrepreneurial and more willing to experiment with technology and new techniques than small farmers. Nevertheless, it is important that any benefits and lessons learned are disseminated down to small farmers as well. For example, in 2007, aAqua was able to save grape farmers in Nagpur Rs. 12 crore. However, those involved typically had 200 acres of land and could invest on average Rs. 10,000 per acre.

User feedback indicates that issues such as providing more detailed answers, providing a function to ensure all questions are answered, providing more up-to-date information regarding bank loans and organic farming and providing an online chat room need to be addressed for going forward.

Reuters Market Light

Reuters Market Light (RML) is a pioneering mobile phone-based highly-personalized professional information service specially designed to support the Indian farmer community.

Category
m-Agriculture & Livlihood

Organization
Thomson Reuters

Platform of product
Mobile

Website
www.reutersmarketlight.com

Achievements

- Personalizes the needs of the individual farmer as per the individual preferences of crops, markets, and location of each farmer in his local language
- Provides daily spot crop prices from 1000+ mandis across more than 250 crop varieties
- Provides localized-level weather detail for more than 2000 talukas
- Delivers crop advisory with updated and personalized information sourced from experts
- Delivers commodity news with timely and accurate information covering a range of issues such as subsidy information & price trends

Summary

RML was launched in India in the state of Maharashtra in October 2007, as a pioneering transformative service that brings transparency and fairness to an underserved world market, followed by its launch in punjab in 2008. Today RML operates in 13 states in India and covers over 250 crops and more than 1000 markets and 2800 weather locations across these states.

Practise Background

The population of India is over 1.1 billion, and increasing every minute. In 2005, the Planning Commission estimated that there are 238.5 million poor people in India, of which 170.3 million reside in rural areas. Overall, about more than half the total workforce – 58.4% -- remains employed in agriculture, which contributes only one fifth of India Gross Domestic Product.

Given these figures, it is obvious that an overwhelming amount of farmers in rural areas are poor and do not significantly contribute to the economy of the country. The Planning Commission also reports that half of those engaged in agriculture are still illiterate and just 5% have completed Higher Secondary education.

The reasons for the backwardness of farmers in India are many. Most farmers live in remote areas on small farms and are disconnected from the rest of the country, in terms of infrastructure, education and opportunities. Reflection of this concern can be seen in the budgetary allocations the government of India reserves for rural India: Rs 42,874 crore in the 9th Plan, which was raised to Rs 76, 774 crore in the 10th Plan.

Another indicator of the backwardness of rural India can be seen by its position in the technology revolution the country is experiencing. The Telecom Regulatory Authority of India (TRAI), in its Quarterly Report of June 2010 revealed that the total number of telecom subscribers (wireless and wire-line) in India is 671.69 million, of which only 9.46 million are from rural areas.

The total internet subscribers in the country are 16.72 million, and broadband subscribers are 9.47 million. This put the overall tele-density of the country at 56.83%. However, the tele-density in rural India is 26.43. Even in mobile phone coverage, rural India lags behind. While there are 635.51million subscribers to wireless operators, only 33% are from rural areas, as of June 2010.

As India looks towards becoming a superpower, it becomes glaringly obvious that rural India – and farmers – are not yet part of this boom. As a result, there is significant migration from rural areas to urban pockets, thereby increasing urban poverty. The solution, then, is to make investments in rural India, curtailing migration and increasing their standard of life.

Farmers suffer because they do not have access to information about new farming techniques, which include fertilizers and products. Bigger farmers who have connectivity

are able to take advantage of these developments, but the small farmers get left behind.

It has become obvious to many invested in the agricultural sector that technology is an effective medium to address these issues. The challenge remains in improving connectivity and developing ICT based solutions that farmers can use.

Implementation Process

RML is a pioneering transformative service that brings transparency and fairness to an underserved world market. For the first time, decision-critical content is delivered as per the individual preferences of crops, markets, and location of each farmer, in his local language, aligned tightly with his daily work schedule, in a mix of relevant local and international content, as per the stage of his individual crop cycle, in a highly simple user-experience for the farmer, across all handsets and telecom operators, and can be easily purchased over the counter in a variety of rural outlets.

This has resulted in RML having a financial and emotional impact on the farming community by helping them achieve better yields, secure better prices, and feel empowered vis-a-vis the strong middlemen community. The information enables farmers to take informed decisions and reduces their production and marketing risk thereby directly enhancing their livelihood.

The two biggest changes RML has brought about in society are building a social innovation ecosystem, which fosters sustainable business practices, economic development, and corporate responsibility, and the empowerment of the farmer leading to direct financial benefit to their incomes.

The key innovations include:

- Product Innovation: Launch of the information card (RML direct card) and delivery of the service via all handset models and on all operators
- Process innovation: Sourcing process for news and market data has been continually improved from the widely fragmented market but also provide local news that helps save farmer transportation costs or better plan their operations based on availability of power
- Business model innovation: RML has built its entire operating model from scratch, from content sourcing through to delivery and customer support. This industry sector - personalized professional information services for farmers – did not exist until RML launched the business in 2007.

Many new companies are trying to replicate the business that will only help take this service to millions of farmers thereby multiplying the empowerment as well as the financial benefit. The two biggest changes RML has brought about in society are empowerment of the farmer in the truest sense and direct financial benefit that is already raising their incomes.

Technology Platform
The farmer has to go through the following three simple steps to subscribe to RML services. The first is buying the RML scratch card from agri input shops, local banks and other sources. Then he/she needs to call the toll free number given on the card (1800-2-708090) and activate the service which starts with weather and market info, news about crops etc getting delivered to the farmers' phone.

There is no technical action expected of the farmer, thus keeping the process free from any technological complication at the farmer's end, and the service is available across all handsets and operators.

Accessibility & Inclusiveness
The delivery of messages from Reuters Market Light is over the mobile phone, without the consumer having to use any messaging function on his own. In order to facilitate constant interaction with both the existing and potential consumers, RML has a toll free number where the farmer can call (Monday to Saturday, 10 AM to 7 PM). The numbers supports any problems such as initial activation, registration of queries, suggestions etc.

All calls are attended by trained personnel to ensure all that farmers (despite varying degrees of literacy levels) can enjoy the service equally. Also, the famer has a number of languages to choose from, and therefore will be able to speak to customer care with ease.

Community Participation
RML provides personalized professional information service to the farming community via mobile phones. Farmers access 'seed to sales' information in local language through sms, including spot crop prices on a daily basis, localized zilla weather forecast, crop advisory for a selected crop, other agri information.

It has been noted that farmers will share that information with those closest to them and thereby, RML can indirectly help entire farming communities. Also, the fact that RML is offered in a few Indian languages has helped build up its community base around the country.

Further the RML Board has signed a Memorandum of Understanding (MoU) with over 15 agriculture research institutes and agriculture universities. Their content is processed, aggregated and then delivered to farmers in a personalized manner in the local language at the right time of the crop cycle.

In addition, RML has signed MoUs with the agriculture marketing boards of several state governments in India. Regular input is taken from the government through formal and informal interactions (e.g. one to one meetings with the government officers in the agriculture ministry and through conferences organized by the industry and government bodies) to ensure the efforts of RML are also aligned with the wider priorities of the government to help the under-served farming community.

Sustainability & Cost Effectiveness
RML board plans to take the business to other emerging economies wherever farmers suffer information asymmetry. This progress is being tracked like any other operating business within Thomson Reuters to ensure full visibility on operational and financial progress. The project was investment heavy – it was started

with an initial investment of $100,000 in 2007, and has yet to break even.

Replication & Scalability

While there are other ICT based agri projects which aim to help farmers get better yields through timely information, many of them do not have the solid financial support that RML has. Other projects have included online help portals, tele-centers where farmers can call up, TV shows especially for farmers, farm management systems software and so on. RML's simple information delivery system has a greater reach than many of these projects that are restricted to certain geographical areas. However, even RML has not covered all the states of India, and in that capacity has potential to scale up even more.

Conclusions

Reuters Market Light is changing the face of rural India. In a country where conditions are harsh and farm yields lessen amid mounting loans, there is a welcome spotlight on how technology can be used to help the farmers. Using Information and Communication Technology (ICT), Thomson Reuters is providing analogous services to farmers in rural India, where nearly 60 percent of the working population makes their living from agriculture.

The project is to help the millions of farmers who do not have timely and affordable access to relevant decision-critical information. A farmer in India gets only 20-25% price of their final produce vis-a-vis 40-50% in the developed world.

The lack of timely and reliable information on spot prices of their crops in different markets prevents them from getting a fair rate. The same can be said of timely and localized weather forecast, information on government schemes or sources of finance and timely tips that help improve their productivity. Reuters Market Light (RML) can bridge that gap with a wide range of decision-critical content via mobile phones.

Lessons Drawn From The Practise

Previously farmers did not have access to timely, relevant, accurate & unbiased information being largely dependent on middlemen. RML provides power to the farmer allowing them to negotiate better, decide when and at which market to sell, take precautions based on localized forecasts, and improve their sowing & cultivation practices and access timely support offered through various government schemes.

However, when looking at the service, one must also ask the basic question: is this information which the farmer cannot get from his local krishi centers? To that end, RML is making access easier, but not adding very fresh, dynamic content in the famer's hand. However, this should not be a criticism because some farmers are unable to collect timely information from these sources and a

message on the mobile phone adds greatly to their convenience. This is another example of how ICT can make people's lives easier, especially in the rural areas.

MouthShut

MouthShut is India's largest and most comprehensive Person to Person (P2P) Consumer Information Exchange – an online community where India's most vocal and influential consumers gather to exchange ideas that impact the purchasing decisions of millions every day.

Category
e-Business

Organization
MouthShut.com (I) Pvt Ltd

Platform of product
Online/Broadband

Website
www.MouthShut.com

Achievements

- Provides a comprehensive database of authentic product reviews across various categories
- Organizes the collection, comparison and summation of consumer generated content
- Provides key resource material to help consumers make informed decisions related to product comparisons and finally purchase
- Offers a platform where corporates and consumers can actually interact with each other for mutual benefit

Summary

An ironic name, since the website asks its users to do exactly the opposite, MouthShut is a hugely popular Indian website dedicated to product reviews written by consumers. MouthShut organizes the collection and collation of user-generated, rated content to fundamentally influence the word-of-mouth concept. MouthShut.com capitalizes on the diminishing role of professional reviews in influencing consumer decisions.

Empowered by the Internet, the average consumer ascribes greater credibility to the views of another similar consumer than that of professional reviewers who are increasingly deemed as marketing mouthpieces of large organizations. Millions of such consumers gather online every day and speak their mind on their real-life experiences with products and services. The passion with which they rant and rave, the sincerity in these reviews is captured one review at a time.

Reviews of hundreds of thousands of products provide MouthShut a rare repository of the most critical end-result of all the product development and marketing – the final and uncensored take of consumers, the customers who are the target audience of products and marketing messages.

Practise Background

India has 100 million internet users, the majority of which are in the cities. This might be only 8% of the Indian population; however, one thing is obvious: even online, the Indian retains his/her talkative nature. Indians have long laughed about the typically Indian habit of talking about everything and everyone, and often, ignoring personal space of others. On top of that, often they fancy themselves experts on a range of subjects, and word of mouth carries a lot of weight.

When it comes to blogging, social networking and other interactive aspects of the internet, online Indians have adapted to them very quickly. Facebook and Orkut are extremely popular in India.

At the other end of the spectrum is how these online habits can be channeled into understanding the psyche of the Indian consumer, and at the same time, giving that consumer a voice. MouthShut's experience has seen very rapid results with a huge increase in membership rather quickly. This tied into a Neilson global survey which revealed that 87% of Indians accessing the internet trusted user reviews more than any other kind of advertising.

Through its robust online community, MouthShut has become a very vital source of information for the average online consumer in India, and it has forced many companies to look at these reviews and respond to them, in order to retain their customers. It has been a dynamic shift in the corporate-consumer relationship, and ICT was directly a factor for this.

Implementation Process

MouthShut was started as a website in the year 2000, India's first and largest Person-to-Person Information Exchange. Hundreds of sub-categories and thousands of products were listed for consumers to write their candid and unbiased opinion. Soon after starting MS-Points™ for writing a review, MouthShut introduced a similar scheme for review rating. Members now gained points for rating a review. The next year, MouthShut began its innovative SORT Technology™. They also launched the innovate 'Dial-the-CEO™', whereby the members of MouthShut get to speak to the CEO.

MouthShut displaced its sole Indian competitor to become the only consumer portal this part of the world. It popularity was obvious: It had to launch a member support cell due to an increasing number of support issues. It even went in for a redesign.

The following years saw a lot of activity from MouthShut. It launched its own survey tool and also tied up with Zarca Interactive, a pioneering online research company. They began competitions to attract more people such as the exclusive Fly Free to Dubai contest. At the same time, MouthShut also empowered organizations in the banking sector with direct consumer feedback.

Over time, the company also launched marketing initiatives. 2003 was the year of contests. One contest after another succeeds in keeping all the members of MouthShut coming back to the site. All through the year the response of the members has been enormous and the contests are well competed and thrilling. MouthShut also went in for a redesign, decided after more than 34,600 MouthShut members were surveyed with the help of Zarca Interactive to obtain feedback on the redesigned website. The relaunch also came with many new categories.

To further enhance the site, MouthShut developed 'MouthShut Shopping', a unique and comprehensive platform where consumers can compare prices, features, reviews and ratings of products that they want to purchase. It is an innovative way of making consumers take a prudent decision.

On the design front, MouthShut launched its seasonal logos with the idea of celebrating the spirit of changing seasons. The company also kept up contests to keep its users engaged. 'Design Your MouthShut Logo' invited members to come up with their own interpretations of the existing MouthShut logo. The endeavor was a huge success. MouthShut also connected the 'Trusted Circle™' to the email boxes of its members.

MouthShut has also spread its net offline. It has crafted partnerships with major multiplexes, bookstores, media houses and airlines to make a great start.

On popular demand, MouthShut added new sub-categories -- bookstores, keyboards, and cigarettes. In 2006, MouthShut decided to ask its users to come up with a reference plan for its redesign. The redesign process began in full throttle. The MouthShut user interface design experts used the member suggestions that were generated through an online survey in its new redesign. MouthShut also started video reviews. Now consumers do not necessarily have to key in reviews but can video blog their opinions and

reviews via a cellphone or camcorder.

The redesign included a completely new cool look, a popular intelligent search feature for all three type of searches for getting instant and accurate results, the ability to write reviews from Facebook and Google Chrome, a Blog editor which made it easier to write reviews, a completely new business page, a comparison page which helped compare products of different brands and get the updated specifications, recommendations, overview and details of the product. It also introduced a discussion forum where members could discuss and debate on products leading to more informed decisions being taken.

In 2007, MouthShut launched its pioneering service: MouthShut Corporate Blogs. Service providers now have a platform to interact with their target audience, resolve issues, plot strategies and win over customers by simply showing to them that they actually listen and respond to them. This feature also brings in the bulk of the company's revenues.

Project Features

Technology Platform
Anyone who knows how to use the internet can use MouthShut. It is based on user-friendly design and architecture. The site is also not loaded with heavy videos or images which makes it easier for those with slower internet connections to log on and post comments on.

Accessibility & Inclusiveness
At MouthShut there are as many as 67,000 products and services listed on the site, which by any standards, is an impressive amount of sub sections. MouthShut really holds the monopoly as a consumer review site in India. This lack of any real competition has enabled MouthShut to be known as a champion of the consumer cause and helped it emerge as the sole brand. The company insists that 'when one thinks consumer one thinks MouthShut, when one thinks unbiased consumer opinions, one thinks MouthShut'.

Community Participation
Consumer empowerment is at the fore of all businesses. Yet, no one had come up with a comprehensive platform that belonged only to the consumers. And the reason of coming up with MouthShut was precisely this – to give a voice to the consumer who is supposedly the king.

At the same time, MouthShut has also regularly actively engaged its users by asking them to help with redesign ideas or hosting competitions. User feedback is positive because based on the number of reviews one writes, they get star treatment on the site. Those profiles get popular, and it gives users a reason to keep coming back.

Sustainability & Cost Effectiveness
MouthShut is a profitable business. It makes money from online advertisers and also from businesses that pay to host their corporate blogs on the site. It is highly sustainable. While it needs to watch out for competition, it also has the first mover advantage in the market.

Replication & Scalability
MouthShut is easily replicable, and as the site is in English, it would be very successful in local languages.

At the same time, MouthShut has many scalable possibilities, much as experimentry with mobile applications and offer shopping information on the go. It can also further explore tie ups with businesses in the non-virtual world!

Conclusions

MouthShut is a platform for consumers to voice their opinions on thousands of products and services that are manufactured by and sold to India's 250 million consumers. It is also a repository of critical data for manufacturers to improve customer satisfaction, marketing strategies and product development. MouthShut's goal is to empower the consumer. Fanciful advertising and marketing strategies cannot be a substitute for quality.

The American political activist, Wendell Phillips once said, "Revolutions are not made; they come". In India, the consumerist culture witnessed a revolution of sorts with the advent of MouthShut. In fact, MouthShut has even advertised on the back of local rickshaws indicating how inclusive and down to grassroots level the website wants to be. It has been cited in various newspapers and journals for its innovative marketing campaign behind the backs of auto rickshaws in India, being the first to use autorickshaws as a medium for marketing campaigns since 2001.

MouthShut painted the URL of its website behind the backs of thousands of rickshaws in Mumbai, Delhi, Chennai, Kolkata etc. Portals have reported that this rickshaw advertising concept has been so successful that other large companies have imitated this idea in India. Popular blogs have cited the MouthShut rickshaw campaign as the most creative original innovation in startup advertising. The site wants to ensure that the average consumer can write about his experience about any and every product, and this need not be the domain of a richer clientele.

Lessons Drawn From The Practise

There's an addage which says the 'consumer is king' but when one has no choice but to believe what the market is telling you, it can't possibly hold true. However, with the advent of the Internet and proliferation of free speech online, people are absolutely free to express their opinions about the products they use. While many people have personal blogs and social networking pages where they offer opinions about their user experiences, MouthShut has effectively given Indian consumers a formal platform where they can talk about the same things.

The key change that MouthShut has been able to bring by organizing opinion into neat sections is that companies now know where to come to understand the market reaction to their products. While some have threatened to sue MouthShut because of unfavorable

reviews, others have instead chosen to engage with the customers and understand their gripe. This interaction is also heralding a new phase between corporates and consumers, and it is a welcome change.

Eko

Eko is India's first financial inclusion project - a cloud based core banking system with a mobile phone front-end aimed at helping people in the lower income group to do banking.

Category
m-Business & Commerce / Banking

Organization
Eko India Financial Services (P) Ltd

Platform of product
mobile

Website
www.eko.co.in

Achievements

- Uses the mobile phone as an enabling tool for small value financial transactions
- Developed a distribution network and a multi-modal technology platform capable of profitably handling millions of consumers, across different geo-locations
- Helps access a variety of product offerings starting from a 'no-frills' savings account to mass payment solutions.
- Provides customer service points (CSPs) in different parts of Delhi/ NCR, Bihar and Jharkhand which in turn serve as the "banks"

Summary

On one hand there are banks offering more and more specialized services to their customers while on the other there is a large population – especially in developing countries – that is completely left out of this phenomenon. They typically remain under-served either because they themselves are illiterate or semi-literate or the value of their transactions is financially nonviable for financial services companies to service them. Eko targets these individuals working on the fundamental premise of giving everyone a bank account. Its entire functioning complements the financial services infrastructure, powered by innovation and technology.

Today Eko has over 150,000 customers and over 1500 retailers across the country. Eko leverages existing distribution networks; existing behavior and interaction mechanisms to ensure that barriers for adoption are very low. The endeavor is to build a rapidly scalable model by addressing the challenges of the existing models and by using mobile technology to help bring the network cost down significantly.

Practise Background

Fewer than 360 million of India's 1.2 billion population have bank accounts. In contrast, there are 800 million mobile connections in the country. For the millions of unbanked customers in India, they weren't many ways of saving or sending money across the country to relatives. That is, until e-banking projects began cropping up, helping foster financial inclusion.

Eko is one such solution that helps users to make financial transactions at any time to anywhere, using the mobile phone as a medium. In fact, using the mobile phone and encouraging small value transactions – as low as Rs 20 – has been a hugely profitable business for Eko.

Implementation Process

Eko delivers financial services like savings, cash deposit/withdrawal, money transfers and over-the-counter payments. The workflow of Eko is simple. The prospective customer has to visit the next-door retailer termed as CSP (Customer Service Point), and fill out a form. A savings account is created and mapped to the number of the customer instantly. The customer and the CSP both receive an SMS as an acknowledgement of the successful transaction. Users can further use the service by dialing a number based string and giving a missed call. There is no application installed, no SMS and no GPRS connectivity required. The service works even on the cheapest handsets.

The Eko transaction initiates a USSD (Unstructured Supplementary Service Data) message that works on all handsets including ultra-low

cost handsets and all GSM networks without requiring any special downloads, internet connectivity or provisioning. On CDMA networks, the transaction is sent as a missed call. Based on the short-code 543, dialed numbers are securely forwarded to Eko's SimpliBank by the telecom provider. SimpliBank then debits the transaction initiator, crediting the recipient with money, after checking the defined limits and rules for both the customers and the 'authorization token'.

This authorization token is another patent filed innovation by Eko. Every customer who enrolls is provided with a "signature booklet" - a printed collection of 50 OTPs - uniquely identified by a serial number. Each OTP consists of 6-digits interspersed randomly with 4 blanks to be replaces by a 4 digit PIN number. The following could be a list of 'signatures' in one's registered signature booklet: 84_9_4_2_3.

Let's assume that the user's PIN is 1234. The user then replaces the blank placeholders with the PIN that only user knows. Now, it will become 8419243243. This system works as a one-time use, and the next transaction will have a new pin, making this entire system less susceptible to fraud. Therefore, security is ensured by three factors: a registered mobile number, a valid signature from the 'signature book' which is registered along with the users account and the PIN.

This solution also does not require any additional installations, downloads or point-of-sale devices for smart-cards or biometrics. These also make the solution rapidly and immensely scalable, making this a choice platform for universal financial access and micro-transactions in developing countries like India that have a growing mobile penetration.

Eko's innovation lies in the user interface that enables financial transactions by simply number dialing, using a mobile phone. It leverages the fact that a user's 10-digit mobile number can be used as a unique identifier and thus as a personal bank account number. Therefore, every account number is mapped to the corresponding mobile number of the user. Since masses are number literate and comfortable with dialing a phone number, hence, this system is better for them as SMSs can be too complicated. For simplicity, the only transaction syntax on Eko's platform 'SimpliBank' is as follows: *543***#

Let's say that the person 'A' (with signature 8419243243) wants to transfer Rs. 200/- to person 'B' (with mobile number 9876543210). The person A performs the following two steps:

1. Dials the following string: *543*9876543210*200*8419243243#
2. Presses the call button on phone.

To either deposit or withdraw the money, the user visits the next-door retailer. The experience is similar to the experience in recharging the prepaid mobile account balance. By this basic system, Eko believes it has tuned into the needs of the target segment of providing secure, simple and convenient financial services in a cost - effective and scalable manner.

Project Features

Technology Platform
Eko has been able to leverage mobile phone technology, to the point that the most basic handsets can be used to make financial transactions. In doing so, it has allowed many people, ordinarily left out of banking, to use numbered passwords to make small value transactions, and thereby savings and so on.

The use of mobile technology – in its most basic form (SMS, with no internet needed) has truly allowed Eko to be a bottom of the pyramid banking solution. The project leverages existing behaviors and education extended by the telecom service providers: requirement of only numeric literacy, comfort with the missed call behavior, and existing behaviors for SIM purchase, balance enquiry over USSD and balance recharge process. Therefore, Eko does not ask its customers to stray too far from their established behavior patterns and has become an easy fit for them.

Accessibility & Inclusiveness
Eko's basic working model is both accessible and inclusive because of its sms based mobile banking. However, beyond the basic framework, users can find following information anywhere, anytime and any number of times: account balance, mini statement, insurance premium, specific transaction details, and acknowledgement on every deposit/ withdrawal. There is also a toll-free helpline available for the customer to interact and resolve their queries, as well as 'Eko Counters' (retailers), who act as the "always available" interface to talk, discuss and learn more about the service.

Community Participation
Small value transactions through a banking infrastructure bring opportunities for the consumer. Saving money safely, ability to transfer money coupled by speed and affordability of premium services over small value transactions, have opened up a new world for many of the consumers. Most customer interviews have a common thread running through them – they feel their money is safe and structured savings are possible. Due to this very tangible benefit, the Eko community is growing.

Sustainability & Cost effectiveness
Eko is profitable on every transaction basis and hence absolutely sustainable on its own. It has a wafer-thin margin of 0.025 per cent - 25 paise on Rs. 1,000. EKO needs to keep scaling up for its profits to increase. In 2010/11, it had transactions of around Rs. 1,200 crore.

Scalability is a function of two important elements (i) Mobile Networks and (ii) Retail channels. Since there is no discrimination on the mobile service and retailer's availability in the country, the project is a high growth business opportunity.

Conclusions

Eko has pioneered a low-cost solution to secure USSD channel and hence extends banking service over mobile as a missed call behavior to large unbanked population in India, which makes it a unique project globally.

It enables 800,000 clients, many of them migrant laborers in Delhi, Bihar and Jharkhand, to carry out millions of transactions daily. Since financial services are inaccessible to a majority of India's population, Eko makes banking possible with its simple, instant, and safe banking and money-transfer services known as mini-savings accounts — with transactions handled via mobile phone.

Clients highlighted on Eko's Web site include individuals such as Salim, a fruit seller with three children who is now saving Rs. 20-30 a day in his first-ever bank account. The organization works with the State Bank of India along with small-business partners in India, and is funded in part by investments from the Chicago-based Creation Investments Social Ventures Fund.

Founded by Abhishek Sinha and Abhinav Sinha, both graduates of the Birla Institute of Technology, Mesra, Ranchi, Eko has opened a world of financial possibilities for many of India's poorest.

Lessons Drawn From The Practise

Mobile is a medium through which everyone on the planet remains connected and as the delivery device (handsets) becomes cheaper and intelligent, this will make intelligent applications, meaningful content available and most utility services will have find their value in being delivered only through the mobile device. However, India does have some time before it can truly realize the potential of banking through the mobile.

India, which has 600 million active mobile phone connections, according to the Telecom Regulatory Authority of India (TRAI), has one of the highest mobile penetrations in the world. However, mobile banking as a concept is yet to take off in a big way even among the educated masses, with some projects serving the poorer sections of the population. The comfort with which people use internet banking to perform various banking transactions is yet to be seen in using a mobile as a tool for banking.

Mobile banking as a concept is largely used for two purposes, fund transfer (transfer of funds from one bank account to another) and merchant transactions (purchase of travel and movie tickets, among others). The Reserve Bank of India (RBI) has allowed only a bank-led model for mobile banking and not a telecom-operator-led model for mobile banking to avoid situations like money laundering or terror financing. Hence, the pace in which mobile banking grows in India depends on the pace in which banks prepare themselves to adapt to mobile banking technology.

Most large banks offer mobile banking services and applications to their users through tie-ups with mobile application developers. State Bank of India's (SBI) mobile banking service is called SBI Freedom, while ICICI Bank's service is named iMobile

and HDFC Bank offers customers mobile applications like 'ngpay' and 'mChek'. Most of these services allow users to conduct all basic banking transactions.

However the volume of transactions through these channels is very difficult to find out. Since most of the mobile transactions happen through the internet, they would all be clubbed under the figures of internet funds transfer. According to RBI figures, the volume and value of funds transferred through national electronic funds transfer (Neft) has been doubling almost every year. In 2010-11, the volume of funds transferred through Neft doubled to 13.23 crore and the value of transactions too doubled to Rs 9,39,149 crore.

As banks allow more banking opportunities through mobiles, even the services of Eko and other such m-banking projects will expand to incorporate various other functions.

Grassroutes

Grassroutes is a fellowship program that enables young people to become change agents through social journalism and experiential learning.

Category
e-Culture & Entertainment

Organization
Grassroutes

Platform of product
Social Media Based

Website
www.Grassroutes.in

Achievements

- Creates platforms for urban communities to experience authentic village experiences and reconnect with their roots
- Helps village communities to access and avail of sustainable livelihood opportunities
- Helps in conservation & promotion of local lifestyles, cultures, traditions, bio diversities and economies

Summary

The program encourages youth to go on a road-trip where they travel over a fortnight across rural India to places where organizations are creating significant impact at the grassroots level, meet the people involved, experience first-hand the impact of their work and finally, bring to fore these stories of change through new and social media. These stories of change are packaged into online/ offline activities through media channels aimed at inspiring more youth into social action.

The program is designed to achieve two objectives, firstly to bring the amazing stories of change from the grassroots to the mainstream and secondly to inspire a large section of Indian urban youth into social action, using social media. These objectives are achieved through a special emphasis on internet and social media tools; to disseminate rich and inspiring digital content from the grassroots in the form of travelogue videos, photos, interviews, photo essays, blogs, stories which originate from the trips.

Practise Background

Today, India's population is growing. Figures indicate that over 35% of our population is below the age of 20. By 2020, it is expected that 325 million people in India will reach working age, which will be the largest in the world. However, these figures are not without their challenges: 5 million children are out of school in India, out of a total of 100 million out of school children in the world. More than 25% of our urban population lives without sanitation and 24% lives without access to tap water. We need 66,000 primary schools and 3000 new health centres every year to cater to our population growth. Food production also has to be increased by 3% every year to meet their needs.

For those born in urban settings and attending good schools and college, these figures might be alarming, yet, they do not directly affect them. However, going forward, India cannot afford for the richer classes to be disconnected or apathetic to the problems of rural India. The crux of Grassroutes is that it takes fellows out of their comfort zones by taking them to unknown territories where place, people and set-up is new – and rural.

Implementation Process

In 2008, four young engineers founded Grassroutes, using their own funds. They made an announcement in October 2008 about the programme, and asked people to apply. By the end of the year, they had 3 teams and 14 fellows starting out on road trips, ready to bring back various media content from their journey.

Soon after, Grassroutes started to distribute this media through various channels, and won a second prize at the India Habitat Young Visionary Award 2009 for being one of India's best solutions to

tap the youth energy of India for good/development. Encouraged, they began their second edition, which had 3 teams and 11 fellows. In a year, they had 550 people on their Facebook group, 480 youth/ journalists/change-makers following updates and 280 active subscribers to the newsletter.

The Grassroutes fellowship involves travelling across India, meeting change-makers, working with grassroots organizations, learning developmental issues and living on less than $1 a day! During all of it, the fellows are required to capture their experiences via social journalism and experimental learning. These stories are then used to drive campaigns and the fellows become change-agents themselves.

However, in order to successful achieve all these goals, Grassroutes puts the fellows through a month-long mentoring process by social entrepreneurs and leaders from diverse sectors prior to the road-trip. This includes skill-training in using social media tools to drive action for good. This process is meant to enable the fellows to have a structured perspective of the program, the road-trip and its objectives, and the process culminates with a day-long gathering of all the fellows and mentors.

During the road-trip, the teams travel to a pre-decided location and spend a week there trying to research and understand the on-ground reality – the problem at hand, the non-profits, the change-makers and their actions, the community and the local government. They play the role of social journalists and capture the stories of all the people involved in community development, and on their return, share them with the rest of the country. By lending a helping hand to the change-makers and using their skill-set to help the local community in their own little ways, the fellows make the transition to social activists as well.

After the road-trip, the fellows serve as an ambassador for the non-profit, they design and run campaigns to benefit the NGO (and its community) and engage more people in their efforts to support its activities. They do this by using social media tools to bring to fore the stories and experiences from their trip, and screen travelogue videos of their trips in various colleges, conferences and festivals to inspire more youth into social action.

The focus of the Grassroutes program is to help youth realize and develop two vital values; social entrepreneurship as a way of thought to identify grassroots level problems and develop solutions to address them, and social journalism, an approach of observing social issues like development, rights, access to information etc at the grassroots, and presenting it to a larger audience using media tools in a compelling manner and to spark conversations in communities which can solve the issues at hand.

Grassroutes seeks to achieve the above objectives through a special emphasis on using internet and social media to drive youth population to action. Some of the key instances where these technologies are used as part of the program include using new-age social media tools like Twitter to engage a large youth audience real-time with conversations on developmental issues, opportunities to drive social change, crowd-sourcing ideas (using social networks and contests to engage youth in ideating for grassroots solutions, fundraising,

volunteering), and creating rich, interesting digital media content from the grassroots which appeals to youth. Grassroutes saves costs and at the same time delivers a service which enables them to create positive social impact.

Since its inception in August 2008, Grassroutes has spawned 40 fellows. Today the organization works from 7 different locations in 3 countries to make the fellowship run smoothly. The average age of the team is 23!

Project Features

Technology Platform
The entire objective of Grassroutes revolves around capturing information at the grassroots level and then transferring it to an urban audience via all available media tools. In fact, the intended audience for Grassroutes is urban, and they need to be connected to social media including Facebook, twitter, blogs, YouTube and so on to fully participate with the programme.

Accessibility & Inclusiveness
The Grassroutes fellowship and experience is all about access and inclusiveness. Its ultimate aim is to sensitize urban pockets about rural NGOs. The first point of access is the road trip for fellows, many of whom would never be able to travel through villages if it was not for this program. Inversely, for the villagers, there is increased access to the cities via the fellows.

Since the experiences of the fellows are packaged into interesting and inspiring travelogue videos/ photo-essays/blogs and other media which is dispersed to a larger youth population by means of social networks, blogs and digital media channels, urban youth have increased access to them. This experience is critical for the fellows to translate change into action, and it allows other young people to involve themselves with Grassroutes.

Community Participation
One of the central pillars of Grassroutes is interacting with youth on a continuous basis at all stages of the program, including the road-trips. A team-builder webpage prior to the road-trips help fellows find team-mates from different parts of the country and build a strong team with complementary skills. The Grassroutes Blog (both from the organization and the fellows) has showed impressive participation from the community in the form of constructive and insightful comments.

The Grassroutes road-trip platform (www.netvibes.com/Grassroutes) provides a one-stop showcase of all the media that fellows gather/ create during their road-trips. The system allows for commenting from registered Netvibes users. The Grassroutes Facebook page engages youth in discussions on road-trips for social change, exchanging excellent video/audio/text resources. Apart from the above, Grassroutes hosts contests on social networks for youth on areas relating to using internet (and social media) for social change – thereby interacting with a larger audience.

Sustainability & Cost effectiveness
In the first 2 editions (2008 & 2009), Grassroutes had been self-funded by the founding team owing to the small costs involved. However, the structure of the program has proven

to have a very good potential to be self-sustaining. The program itself is not capital-intensive, with the only costs being the road-trip expenses, administrative expenses and costs incurred in developing a sound 'social media for social change' curriculum.

Grassroutes has since then positioned itself as a paid program that requires fellows to pay a nominal fee for the fellowship. This cost is subsidized on a needs-basis through scholarships for which funds is raised from donors. In effect, Grassroutes is functioning easily as a non-profit sustainable venture.

Replication & Scalability

Grassroutes is the first and only fellowship program for youth that actively engages in enabling youth to use social (and new) media for social change. Grassroutes requires fellows to use their road-trip experience to create measurable positive social change through follow-up projects. Most of these projects involve extensive use of social media. Therefore, while other programs can come up to do similar work, Grassroutes has certainly proven itself the trail blazer in this regard.

At the same time, the potential to scale is strikingly huge in Grassroutes. With its easily demonstrated sustainability and growing interest in the youth community, Grassroutes has aims to scale to a larger fellowship program with more than 100 youth selected as fellows in each edition and trained to use social media for change. With each young fellow reaching out to his/her local community and inspiring more youth to engage in social action, the social impact will be very significant. The impact of the scale will be clearly felt as the program will aid in social media maturing as a platform for driving development in India.

Conclusions

The urban-rural divide in India is a simple reality. Many city born children may have visited villages or small towns, but often they do not have a real connection. As much as they might 'know' about the problems in rural India, most of them will never truly experience it. However, in every generation, there are socially minded people who are eager to make that connection, and to find a way to contribute to the larger causes at hand.

Grassroutes has tapped into that feeling, to the extent, that today 'fellows' are happy to pay for the experience. However, at the same time, keeping social journalism central to the experience, the fellowship forces these students to engage with what they see much beyond being simple spectators. It is indeed an innovative solution to bring together the two Indias.

Lessons Drawn From The Practise

Digital content and channels hold a strong role in development. The low-cost distribution channels that digital technology is bringing into play will play an important part in penetrating the urban-rural divide and bring development to the masses. Grassroutes firmly believes that the

current generation of youth, being more ICT conversant than previous generations by order of magnitude, can take a strong leadership role in using digital content/channels for development. Digital content is the cheapest and easiest way to reach this audience, especially those in urban centers, and engage them in making a positive impact to the society.

Panjab Digital Library

The Panjab Digital Library (PDL) locates, digitizes, preserves and makes accessible the 'accumulated wisdom' of the Panjab region, without distinction as to script, language, religion, nationality, or other physical condition through the portal: www.PanjabDigiLib.org.

Category
e-Culture & Heritage

Organization
Panjab Digital Library

Platform of product
Web

Website
www.PanjabDigiLab.org

Achievements

- Panjab Digital Library is India's first digital library, which is free for users after they register on the site, funded by private citizens and a number of institutions
- Offers over six million pages about Panjab's history in the form of manuscripts, books, newspapers etc. for research for users
- Provides a digitized compilation of over 4000 periodicals and over 8000 books including the Guru Granth Sahib (from 1653), inscriptions of Guru Gobind Singh ji, Guru Tegh Bahadur Sahib, Bhagvat Puran in Gurmukhi & Sanskrit, Bhagvat Gita printed in 1866, and many Persian works, which include beautiful manuscripts of Koran Sharif
- Provides over 168 hours of historical interviews and over 9000 rare photographs online
- Allows users to create accounts where they can save files, make notes and also participate in forums

Summary

Panjab Digital Library was started in 2003 by the Nanakshahi Trust with the mission to digitize as many historical documents pertaining to the greater Panjab region as possible. Many of the documents being digitized are over 300 years old, and will physically not survive the next 50-100 years. In order to preserve the information they carry, PDL has been carefully been scanning and digitizing these works. Over time, their method and equipment for digitizing has reached international standards, and they are able to comply with international benchmarks.

Panjab Digital Library, on average, digitizes 5000 pages a day, spending around Rs 5 lakh per month. Very aware of how invaluable works are lost to history by accident, or worse, destroyed by those forces who are trying to conquer a region, PDL decided they did not want to risk losing Panjab's literature and heritage in the future. With the idea that the first knowledge transfer was oral, the second written, and the third wave digital; PDL has taken the lead in preserving precious works of its history and culture.

PDL as an online research source will is also helping scholars and researchers around the world access documentation from the Panjab region. By making available so much data, PDL is, in a way, fuelling interest in the history of this region. It is only a matter of time that other states, cultures, religions follow suit and painstakingly digitize all their precious historical works.

Practise Background

The destruction of books, sadly, has become a powerful political tool over the centuries. Ch'in emperor Shih Huand-ti ordered the first recorded "official" burning of books in 213 BC. Since then censorship and destruction have been used to make history bend to present sensibilities. There are, of course, terrible accidents that result in the loss of invaluable books. The Sikh Reference Library was destroyed in a fire on June 7, 1984, destroying a majority of the rare documents. Many old documents don't have duplicates, so when they get destroyed, or even fade over time, there really is no way to recover what is lost.

At the same time, the process of preservation is not an easy one as handling originals means keeping them in appropriate storage conditions so that they don't disintegrate. Often, even universities do not know how to house these materials, or do not have the budgets to keep them well. However, preserving these old materials has been made so much easier with the onset of the digital age where these works can be easily scanned, digitized and archived for future generations.

The project itself has also had an added benefit for researchers and historians. As part of the process, PDL has been acquiring previously undocumented, uncatalogued, or simply unknown works that talk of the history of the Panjab region. It will help any future works on the history of the region immensely. At the same time, PDL is paving the way for preservation and digitization in India.

In this way, the PDL project aims

to improve expertise in the field and establish common grounds for future collaborative work by specialists from the global community. Digital technology and integration to reference tools have revolutionized the ability to create electronic replicas of print materials.

Implementation Process

PDL started as an extremely small organization, with one desk and one employee. Today, the office has grown and shifted into a new building. From three employees, they now have 30. And from scanning 5000 pages a month, they now document 5000 pages a day. Expensive equipment has been bought to properly scan the pages of old documents.

There is a workflow that is followed: the relevant documents are first identified, and then an overhanging high definition camera captures a still of each one of those pages. Next, the pictures are 'fixed' or edited, on the computer. The materials are then put together, and verified for any mistakes or missing pages, and are finally made accessible online. There are 35 installed work-stations and a very high data processing power.

As it has grown, PDL has also instated a number of policies for smooth functioning. Due to licensing issues, some material is only available to participating members and institutions. Even for casual visitors, unless they log into the site, they can only access the first 5 pages of books. PDL also does not allow users to download either entire books or manuscripts or attempt to download its entire database.

Because many people have come forward to gift PDL old newspapers and materials they have had with them, the NGO has come up with a policy regarding gifts. Once received, PDL owns the right to use the gift as it wishes. However, donated material needs to be cleared with PDL and there is a separate policy for rare books and archives. At this time, PDL only accepts material in 5 languages: English, Hindi, Urdu, Persian and Punjabi.

Obviously, the volume of material PDL has managed to put together is significant, and therefore equal care is taken to ensure that it is backed up properly and cannot be lost. The PDL IBM server is currently stored and maintained by the Nanakshahi Trust in SAS Nagar, Panjab. The data on this server is backed-up regularly and the back-up information is stored off-site on multiple Tape Drives and DVDs. The Nanakshahi Trust does not use any of the PDL or project images for their own purposes unless given express permission.

PDL has also taken great care to ensure they back up their data. To this end, PDL back-ups are kept in more than one media. One copy of backup is always online. For offline backups PDL employs DVDs (three copies), LTO4 Tapes (2), IBM Storage Servers (1) and SATA hard disks (1), to store its data, apart from the online storage server.

Copies of these backup articles are further stored at two separate locations to avoid complete and instant loss in case of a calamity or war. Earlier all backups were on two DVDs and one hard disk, but the organization decided to change the strategy to ensure greater safety.

To remain professional, PDL has also instituted working groups, such as PDL Content Selection Working Group, PDL Copyright & IPR Issues Working Group and PDL Digital Data Management Working Group. Group members consist of programmers, professionals and researchers who work and collaborate at an interdisciplinary basis to complete a given project. The functions of a working group also include reviewing existing applications, evaluating goals, effectiveness, usability and design in order to provide feedback for further improving presentation and functionality.

Project Features

Technology Platform
PDL itself uses a lot of equipment, including scanners and storage hard drives, but for the user it is a simple web experience where they can read/access historical literature from the Panjab region. The site also gives users a personal account where they can save pages, make notes and participate in forums.

Accessibility & Inclusiveness
The aim behind the project is to increase accessibility and thereby interest in the history of the greater Panjab region. The service is free to use for ordinary citizens, as long as they register. However, the materials are available in their original form, and therefore are in English, Hindi, Punjabi, Persian and Urdu. Those who cannot read these languages do not have the options of translations as yet.

Community Participation
The broader community in Punjab has rallied around this project and many people have offered materials from their personal collections to help enhance the project.

Sustainability & Cost Effectiveness
PDL has grown on donations, but is actively working out a strategy whereby it can generate some revenue as well. It is keenly working on sustainability models, which allow it to keep its core value of providing free and accessible digital services to the citizens. To generate revenue PDL has initiated many corporate services focused on digitization and digital content management. These include: digital imaging solutions, data mining services, digitization training and digital image management solutions.

Because PDL has successfully acquired hardware and manpower and properly trained employees, the software of the digital library and its implementation scheme is such that it can be customized any which way, making enough room to add new fields, categories and genres as per the project needs.

Replication & Scalability
While digital libraries exist the world over, and in India, PDL is a very unique project from many points of view. It is the only project that is completely focused on Panjab's heritage as there is no other institution in the world focusing solely on Panjab's heritage. It is run as a non-profit NGO providing free services in digital preservation of heritage, and providing access to the digital data through internet, which also happened to be at no cost to the user.

Apart from these PDL plans to soon launch sections on thesis/paper, articles, political/historical

documents, poster/painting, maps, murals, numismatics, multimedia (audio visuals), and personal diaries, memoir and correspondence.

Conclusions

Panjab Digital Library has chosen a unique mission for its project; to source and preserve historical information about the greater Panjab region for posterity. It is not an academic venture in the strictest sense; it chooses to highlight a community and its achievements. But to the end that it has been successful, there is no doubt that many smaller academic institutions could stand to learn from the single minded and professional manner in which PDL has approached its work.

Today, scholars and interested parties from all over the world can simply log into the simple-to-use website and navigate to the section there their interest lies. It can only be hoped that other groups also learn to leverage ICTs in such a healthy and positive manner.

Lessons Drawn From The Practise

Some of PDL's material has been drawn from the Panjab Languages Department; there are items from the Government Museum and Art Gallery of Chandigarh, Jawaharlal Library of the Kurukshetra University and Chief Khalsa Diwan. In a sense, many of their collections might have perished or not been accessible to ordinary citizens – especially those who could not physically visit their facilities – had it not been for PDL's clever and passionate use of technology to preserve their cultural heritage.

Another factor to note in the manner in which PDL has operated is that as it has expanded, it has adhered to professional and international trends in digitizing and storing materials. Additionally, texts were included without distinction as to script, language, religion, nationality, or other human condition. This means that while the focus stayed in Panjab, texts written by all kinds of people have been included in the collection instead of myopically only including works by Punjabis. In that sense, this project has shown others how to use ICTs for both preservation of culture, and inclusion.

Pratibadh

Pratibadh is a 13-year-old publication distributed in 53 districts across Bihar, Punjab and Haryana, bringing about an information revolution in villages.

Category
e-Culture & Heritage

Organization
Panjab Digital Library

Platform of product
Web

Website
www.PanjabDigiLab.org

Achievements

- Acts as a tool of empowerment, rights, and access to information for its rural readers
- Uses information and communication technology tools such as mobile phones, digital cameras, email and cyber cafes to communicate between reporters, subscribers and readers
- Reports on success stories, photographs, issues related to local governance, village sanitation, right to information,
- Provides suggestions to improve rural living, tackle corruption in various government scheme
- Helps disperse information and advice related to agriculture and dairy innovation
- Uses rural reporters as potent agents of information, knowledge, advocacy, investigation and surveys

Summary

Pratibadh is known as the 'wall' newspaper because it is put up at village council offices, offices of milk societies, agriculture offices and other places where the right audience reads its stories, many of which have an agricultural theme. From its humble beginnings in 1996 with just 1,000 copies, the fortnightly is now read in Hindi or Gurmukhi by more than 800,000 people in over 35,000 villages.

The publication's efforts to use information and communication technology tools such as mobile phones, digital cameras, email and cyber cafes to communicate between reporters, subscribers and readers has allowed its network to spread successfully. Pratibadh has a network of at least 600 reporters also known as rural communicators cum rural reporters in villages, who are provided intense three-day trainings to understand the nuances of reporting, use of modern gadgets, and writing for print, mobile phones and e-newsletters.

As a development newspaper targeting rural and low literate with their participation, this product is a very progressive effort. The development newspaper, published fortnightly, is pasted on the walls of milk cooperatives and Panchayat buildings in three states, covering around 40,000 villages. This community newspaper uses the strong network of milk cooperatives to ensure that it reaches villages which would otherwise be difficult to reach. It has been influencing the lives of over 600,000 milk cooperative farmers. It is a perfect two way channel as the van that delivers the newspaper is also used by farmer to send feedback.

Practise Background

India, especially the rural pockets, suffers from an information gap. Areas like health, agricultural productivity and education have long suffered from the lack of relevant advice and new information reaching the right people at the right time. Over the years, many initiatives have been implemented to get information across, like workers in the field, community radio, SMS based projects, and newspapers, like Pratibadh.

The newspaper gets reports on success stories, photographs, issues related to local governance, village sanitation, right to information, suggestions to improve rural living, corruption in various government scheme, agriculture and dairy innovation. What sets this apart from many other initiatives is that local reports from rural communities sniff out important stories which need to be covered, instead of news emanating from national studies/ sources which often are unable to find resonance with a local audience.

Further, by using ICT tools to help in story collection, the scope of the news has increased. In fact, in dealing with rural matters, the use of technology has repeatedly shown that ICT can help populations bridge both the information and digital divide in a very effective and efficient manner.

Implementation Process

In 1996, Anupam Shrivastava started the Hindi wall newspaper Pratibadh in collaboration with an international aid organization and the Patna dairy project in Bihar to create awareness among the rural populace about their surroundings and issues directly connected to their livelihood such as farming and animal husbandry. The success of Pratibadh can be gauged not only from its financial sustainability but also because it is a tool of empowerment, rights, and access to information for its rural readers.

The central idea behind Pratibadh was to develop a short term solution to disseminate information to rural and low literate populations. However, as with all community media, the central theme was to do it with the participation of the people themselves. Using ICT tools and 'rural communicators' and 'rural reporters', Pratibadh was a method in which to bridge these two channels to create something apt for the target population.

There is a long way to go however in bridging the digital divide, and the same can be said for the information divide, and there was a thought that by creating a transfer of information, the process could be sped up. The ICT tools used for this knowledge transfer are basic in nature; SMS, LCD projectors, computer based communication and software and so on.

The end product, Pratibadh, published as a fortnightly developmental newspaper is pasted on walls of milk cooperative and Panchayat buildings in three states in over 40,000 villages. This community newspaper uses the strong network of milk cooperatives to make sure that it reaches villages and pasted on the walls of milk collection centers to influence the lives of over 6,00,000 milk cooperative farmers.

It was piloted in 1996 in around 1000 villages of Bihar (Patna, Bhojpur and Vaishali districts) with Patna Dairy Project and replicated in in over 64 Milk Cooperative Unions around the country. In 2001, Pratibadh launched its Bangla edition with Bengal Milk Federation, 2002 in Punjabi with Punjab Milk Union, 2003 in Haryana, 2003 in Maharashtra and 2005 in Uttaranchal. It has been accepted by the ministry of Panchayati Raj as a viable alternative media to reach rural areas and is being piloted in 10,000 panchayats in Bihar by the ministry and by the National Food Security Mission in 3601 panchayats of Haryana.

Pratibadh has its own style of collection information for stories. Often, readers send letters by post to Pratibadh, which are then followed up by their reporters via mobile. Photos are scanned and emailed, and now that digital cameras are available in villages, soft copies are also posted to the paper. The rural reporters are paid for their work, and many of them are able to find additional reportage work through their association with the paper.

The reporters are potent agents of information, knowledge, advocacy, investigation and surveys. They also collect data and other related information for Pratibadh at rural events and so on. In this manner, the paper is evolving and growing as it gets older.

Lack of information on scope of development is one of the reasons for underdevelopment of the third world. A vast chunk of rural population has

been out of domain of commercial interest of media houses. The Pratibadh initiative is trying to change the scenario. It is simply put a thick broadsheet based wall newspaper since 1996 reaching 40,000 villages in three states of Bihar, Punjab and Haryana through its network of 600 rural reporters.

Lately, Pratibadh has enabled all its reporters with ICT training and tools for not only collecting information news and reports but also use ICT tools like Emails, PDF, LCD projectors, PPTs to reach out to rural masses in groups and communities. With the introduction of some more business modules like Rural Communication, Rural Research and Rural Market Pratibadh is now growing fast.

This just goes to show that rural development cannot be achieved without using the traditional means of communication through the new means of communication .The success of the projects depend on the integration and incorporation of the existing systems of knowledge into the new ones created by the ICTs. The participation invoked by ICTs should not run contrary to the community norms.

It is important that the new media is used as a tool to enhance the traditional means. New media should be used as a catalyst for bringing change, revival and development. New media is the potent force for the revival of traditional media because of its penetration, personalisation and effectiveness. It is the traditional media which further makes the new media acceptable, applicable and effective.

Project Features

Technology Platform
Pratibadh uses technology in collecting information for the paper and then in preparing the paper itself. ICT tools such as SMS, emails, digital photographs and so on are used in collecting and sharing information. In designing and sharing the paper, computers, LCD projectors, as well as software such as PageMaker, Corel draw and other similar programs.

Accessibility & Inclusiveness
The wall newspaper is typically put up on village council offices, offices of milk societies, agriculture offices and agriculture technology management agencies, and on the walls of the premises of some influential non-governmental organizations and individuals.

It is affordable as well. Its subscription rate varies between Rs 5 and Rs 8, depending on the circulation of each edition and the regions it is subscribed from. Although the subscription is paid by the concerned societies and village councils, each local agency collects it from villagers associated with them. However, because it is pinned up at locations convenient to villagers, it is highly accessible.

Community Participation
This is a paper based on community participation and relies heavily on community reporters to help run it. To that end, Pratibadh is deeply rooted in local communities.

Sustainability & Cost Effectiveness
Although the operational geographical domain is rural India, Pratibadh is very much a profit-making venture, with approximately Rs 60 lakh annual turnover. At least 90% of the revenue comes from

subscriptions. As mentioned, the subscription rate varies between Rs 5 and Rs 8, depending on the circulation of each edition and the regions it is subscribed from. However, the subscription is paid by the concerned societies and village councils; each local agency then collecting it from villagers associated with them.

Pratibadh has also started the process of incentivizing rural reporters by using them as investigators for quantitative data collection for rural research and deploying them in rural communicative events.

Replication & Scalability

Pratibadh has survived and grown over 10 years without any funding or support. It has sustained itself on its commercial viability. It has the potential to grow even more with the introduction of some more coverage of business modules like rural communication, rural research and rural markets. At the same time, it has a model which can be extended beyond its agricultural focus and replicated by other groups.

Conclusions

There are many ways to get information to people in rural India, which includes programs on the national broadcaster, leaflets and so on. Pratibadh's method, by using local reporters to pick up on local stories, has been effective because of its targeted reach. By focusing on agricultural matters, and providing the paper to people (and at places) where it will have the most impact, it has managed to create a ripple effect. It reaches over 800,000 people which is no small feat.

At the same time, it has encouraged journalism at the local level, which is a happy by product of the initial idea. Ventures like Pratibadh, which focus on the 'bottom of the pyramid', are made stronger because their approach is not necessarily top down, but instead treats its rural clientele as perfectly capable of providing for themselves. And even more impressive is the fact that it can pay for itself and has not built itself as a business model based on donations.

Lessons Drawn From The Practise

Pratibadh has kept a focus on what and how it wishes to deliver news. The paper carries no political news, and no high selling stories of scandal. Instead, it focuses on its subject matter. It also gives useful information such as job adverts, announcements for recruits for the army and railway and other such nuggets that have the maximum impact at the local level. The simple workflow followed by its sensible pricing has allowed it to grow exponentially over the past few years.

As it expands, Pratibadh could experiment with digital editions (for eg, SMS newsletter) or expand the scope of its subject matter. However, of prime importance is the fact that it has highlighted community issues outside of radio and television.

Gramin Radio Inter Networking System (GRINS)

GRINS, or Gramin Radio Inter Networking System, is an enhanced automation system for community radio stations. It is also expanding its offerings to video and content distribution systems, to enable distributed applications for agriculture, healthcare and education in rural areas.

Category
Community Broadcasting

Organization
Gram Vaani Community Media

Platform of product
Radio

Website
www.gramvaani.org

Achievements

- The current release of GRINS allows radio station operators to schedule broadcasts; preview programs, record live transmissions
- Maintains an extensive semantically searchable library
- In future releases, GRINS will be enhanced to handle telephony calls, sending and receiving SMS messages and Internet connectivity to share and stream content with other GRINS deployments

Summary

Built on Gram Vaani's MINP platform, GRINS was piloted successfully at Radio Bundelkhand, one of the first community radio stations to start broadcasting in India. Today, GRINS is used to improve technology and processes at community radio stations by providing technological systems to non-profit organizations who want to set up community radio stations in India and elsewhere.

Practise Background

GRINS is the flagship product of Gram Vaani. Gram Vaani is an initiative to enable participatory media services for rural India. Media is an important agency to provide information that inspires people, empowers communities, brings knowledge and awareness for equitable development, and streamlines the interaction of villages with governments and external agencies to enforce responsible politics.

However, currently the effectiveness of media services in rural areas is limited because local communities are not involved in the media delivery process, low-cost and appropriate technological tools are not available, and organized information delivery systems are absent in most rural areas. Both community participation and information delivery systems are critical to enable media effectiveness and provide contextual information to people.

Community Radio aims at covering an area of 5-10km radius, and through that, cover stories specific to the community. Local stakeholders, often through the local university, NGOs or agricultural institutions, normally start these radio stations. Depending on the equipment used, the station can cost anywhere from Rs. 3.5 lakh to Rs. 16 lakh.

Gram Vaani aspires to build an eco-system consisting of information production and consumption by bringing together rural communities, development NGOs, regional and local government agencies, national and vernacular news agencies, and customer-centric corporates. Through GRINS, the cost of running the station and the technological aspects of the radio station can be improved.

Implementation Process

The GRINS system is a plug-n-play server to run a community radio station. It enables radio station operators to schedule broadcasts, preview programs, make and receive phone calls, record live transmissions, and maintain an extensive semantically searchable library, all through a single user-interface. GRINS has been designed specifically for community radio stations in remote and rural areas, to keep costs low, provide extremely robust functioning, and enable rich features for greater community interaction.

Some of the key features of GRINS that distinguish it from other radio

broadcast platforms are as follows:

- Commodity Hardware: GRINS does most processing in-software to eliminate the need of buying expensive audio hardware, and yet imposes very low processing overhead on the system. For this reason, GRINS can be run off commodity PCs and single board computers, significantly reducing the costs of setting up community radio stations.
- Service oriented Design: All functionality provided by GRINS is handled by different services, such as the audio service for play out, archive service for recording, library service for storage, etc. Each of these services can be run either on a single machine, or off multiple machines. This makes the deployment of GRINS extremely flexible to be able to fit into any kind of a radio station setup.
- Application Development Platform: The open API of GRINS allows third party developers to build their own radio applications using the various underlying services that GRINS provides. For example, you can build specific applications for the broadcast of educational programs or health programs, which allow quick search and playback features for the respective topics. In the future, once GRINS begins to support the telephone, video, and Internet planes, these applications can even be multi planar in nature.
- Easy to use Interface: The GRINS user interface has been especially designed keeping in mind the target population of rural areas in India and other developing countries. The use of large icons and simple navigation makes GRINS easy to use even for radio operators who are new to computerized systems.
- Diagnostics: A key feature of GRINS, the system can actually detect any network faults or audio cable errors or poor audio quality through Digital Signal Processing (DSP), and guide the operators on how to fix the problem locally. This reduces the downtime of the system so that radio stations located in remote rural areas do not have to wait for a technician to visit them and fix small problems.

GRINS is already being used by 68 community radio stations across India and in order to improve its reach, is experimenting with introducing sms-based services to improve interactivity. The innovativeness lies in eliminating expensive pieces of audio and telephony hardware that are used in commercial radio stations, and substituting them through audio processing in software.

This enables GRINS to run off commodity hardware and considerably reduces the cost of setting up community radio stations. In addition, integration with telephony and the Internet adds considerable flexibility to design novel application the radio platform. This is a unique way of combining the broadcast nature of radio with the bi-directionality provided by telephones and cellphones.

Technology Platform

The GRINS system has been designed specifically keeping the rural environment in mind. It rarely uses textual interfaces – most operations are performed through the use of easily memorable picture icons. It also recognizes the fact that community radio setups can be complicated with lots of network and audio cable connections. A careless movement or misconfiguration can easily bring the station off air. Therefore they have designed a diagnostics test that automatically checks all connections using Digital Signal Processing.

Sine waves are synthesized and a Fourier Transform is done at the other end to check the audio quality being delivered -- as soon as any flaws are detected, the radio station operator is guided on how to resolve the problem locally without having to wait for external technical help.

Accessibility & Inclusiveness

Keeping in mind the different types of stations, from all over the country that could use this system, GRINS has been designed to be easily installable. It is available freely online. The installation procedure consists of the following steps:

- Define the configuration for your radio station using the online wizard. GRINS is flexible in its deployment model – it can be deployed to run off one computer or multiple computers, depending upon the existing setup and scalability requirements.
- Download all relevant installation packages on to a USB stick, save the configuration on to the same USB stick, and insert it one at a time in each machine that is to form a part of the GRINS setup. Installation files and detailed instructions are available online. Its platform supports Windows and Linux (Ubuntu).

With GRINS, stations do not need a telephony hybrid, or make changes to mixer settings to record calls or to put calls on air. GRINS makes it as simple as clicking a button. One can preview audio over headphones even while another program is playing. The same headphones can be used also for monitoring what audio goes on air, and to listen and talk to phone callers. GRINS supports Internet streaming to Icecast and Shoutcast servers. Anybody over the Internet can tune in to the station!

A content library is integrated with GRINS. All programs can be stored with GRINS and a playlist made later. One does not need to keep content partitioned in different folders on the computer. Additionally, a caller database of listeners can be maintained, and within that one can track villages and the communities to which they belong.

Community Participation

GRINS is currently in use at 68 community radio stations across India, some of which are mentioned below:

- Radio Bundelkhand, Orcha: Development Alternatives
- Gurgaon ki Avaaz, Gurgaon: The Restoring Force
- Tashi Delek Radio, Dharamshala: Tibetan Children's Village
- Kumaon Vaani, Mukteshwar: TERI
- Jago Mumbai Radio, Khar, Mumbai: Union Park Residents Association
- Sangam Radio, Pastapur, AP: Deccan Development Society
- University of Hyderabad, Hyderabad

- Radio Namaskar, Konark, Orissa: Young India
- Radio Nagar, Ahmednagar, Maharashtra: Snehalay

Sustainability & Cost effectiveness

Using GRINS could significantly reduce the cost of setting up community radio stations since the community radio stations have to face economic constraints and cannot afford to splurge on audio hardware. GRINS is appropriate for them as most processing is software based and it eliminates the need of buying expensive audio hardware.

GRINS will encourage rural community radio stations to flourish because it provides the technical support they so need. Moreover, financial stability being the key issue for community radio stations, GRINS also provides revenue streams. With telephony support for community radio stations, the callers can record a 30 second advertisement which can be aired and the revenues can flow at a local level. Apart from that, a list of CRs in India will be listed on Gram Vaani's website and advertisers wanting to reach the grass roots can advertise on the community radio they wish to target.

The USP of GRINS is it is user friendly and easy for radio operators who are new to computerized systems. The technology is targeted towards the rural areas, and it has been made user friendly with use of easy to memorize icons and would be introducing changes in the interface to keep it simple.

GRINS is developing business models to help not only the project to sustain itself, but also help community radio stations and other media outlets in rural areas to sustain themselves.

Replication & Scalability

There is only one alternative to GRINS in the market, which is a US based software priced at about $5000, and no Indian community radio station uses it. GRINS, even though it is open source, charges Rs 55,000 for its black box that includes a markup, although stations have the option of buying their own hardware and then simply installing GRINS. With no competitor in sight at the moment, GRINS is aiming to expand its reach to 4000 community radio stations.

Conclusions

GRINS is not a content producer, it only provides the technology to broadcast this content and share it with other radio stations. And the company is always innovating. GRINS can help integrate different content services in the future and the company is planning to work in this issue.

To turn a profit, it plans to introduce a voice-SMS application, one that runs both on GRINS and independently. A caller dials a number and leaves a message, and other callers can dial the number and listen to the message, as well as leave their own messages, creating a question-answer forum. Radio stations can potentially use the app to conduct polls. In a way, GRINS is helping shaping the course of community radio stations themselves.

Lessons Drawn From The Practise

We have a strong belief that information asymmetry is responsible for many evils in the world. This information asymmetry is present often because of a lack of information access tools in rural environments, or if access is available then because non contextual and incomplete information is provided by news agencies or media companies.

The new forms of Internet based participatory media such as blogs and wikis can bridge the "context" and "completeness" gap, but rural and marginalized communities do not have access to them, and the current services provided by Google, Youtube, etc. do not do a great job in searching and recommending relevant content to rural communities. We think that appropriate technological systems carefully tailored for the bottom-of-the-pyramid populations are necessary to enable participatory media services in rural environments.

Vasundhara Krishi Vahini 90.4 MHz

Vasundhara Krishi Vahini (90.4 MHz) is a first of its kind local agriculture development radio channel hosted in Baramati, providing inputs to farmers on agricultural issues and concerns as well as bringing the community together.

Category
Community Broadcasting

Organization
Vidya Pratishthan's Institute of Information Technology (VIIT) Baramati

Platform of product
Radio

Website
www.radiovasundhara.com

Achievements

- Provides timely inputs to the local farming community on issues related to agriculture
- Provides a unique and focused tool on disseminating pertinent information in rural areas

Summary

Community radio is a broadcasting organization established to provide communication support for the social, economic and cultural development of community on a non-profit basis. Based on that principle, the Baramati based Vidya Pratishthan's Institute of Information Technology (VIIT) has launched a community radio channel, Vasundhara Krishi Vahini 90.4 MHz, run out of the university. The basic aim of the radio station is to satisfy the community's needs for information: in this case because it is based in an agrarian community, its major programs discuss agricultural issues. However, the station also focuses on environmental, health, and other vital issues.

Vasundhara Vahini -90.4 MHz, run by Vidhya Pratishthan's Institute of Information and Technology, Baramati was launched in April 2004. The area covered by the Vasundhara Vahini CR radio station is around 35-40kms surrounding the college campus.

The radio station has its own broadcast and recording studio, transmission tower and equipment for outdoor recordings. It is a state of the art radio station, which has standard recording, editing and transmission facilities. The service is run and managed by local people addressing issues relating to the community in the local language, Marathi. The broadcasting time is in the morning 6.00 am to 10.00 am and 4.00 pm to 8.00 pm.

The main objective of the Vasundhara Vahini community radio is to provide the information to the farmers, weaker sections of the society and other communities in rural areas.

Practise Background

Radio serves as an important development tool for creating awareness, spreading information and facilitating communication, despite (in some cases) the absence of policy support and government aid. It is extremely effective for geographically bound communities in areas with poor infrastructure where people do not have access to the mainstream national and regional media.

With Vasundhara Vahini in particular, special attention is paid to the farmers in the area. Agriculture has been in mainstay of the Indian's economy and over 70% of its population lives in rural areas as much as 49% of the land area is cultivable. Timely availability of reliable information on climate, plant nutrition, production seeds, fertilizers, new trends and water information, integrated with infrastructure and socio-economic factors is essential for land users to exercise the best choice among options in using these resources to achieve sustainable level of food production and developing in an increasingly complex environment.

Most of these farmers will probably not have internet access in their lifetime, and don't even have regular access to a telephone. Although an increasing number of communities have access to a television, there is a shortage of content that is locally determined, relevant, appropriate and accessible in local languages.

Printed materials though available in local languages, do not help the farmers who are illiterate-that is more than 70 percent of the population. This is where radio can be of yeoman service.

Implementation Process

Vasundhara Krishi Vahini was started in April, 2004 at Baramati, with dissemination of agricultural information in mind. The station operates twice a day, in shifts four hours, both in the morning (6am-10am) and evening (4pm-8pm). There are over 2000 hours of the agricultural related programs ready for broadcasting. It covers around 30,000 farmers.

Their main focus is the farming and also the student community. The role of the community radio is in order to empower local communities and encourage local participation and address local issues specially relating to the farmers and weaker section of society. Through this project, the users get important and useful information on various agri-related aspects like-new varieties of seeds, updated commodity rates, weather forecasts, various pesticide and medicines, animal dieses etc. and recent research done by the scientist from various agricultural universities.

Doctors are invited to talk about various diseases and give expert advice on treatment, and on a lighter note, local music is broadcast. The programme content includes: folk songs, dramas, skits, conversations, debates, stories, poems, lectures of specific subjects, celebrations of various festivals, career guidance programs, inter college competitions and so on. The station also offers training in community radio for interested parties, and occasionally, an agro-study tour.

A sample of programs on air:

- Santvani: This program gives brief and descriptive information of the Abhangas from the Saints of Maharashtra. This program is narrated and given by Dr. Sandip Tapkir professor from T.C.College Baramati. Santvani is broadcasted daily morning at 6.10 am and evening at 4.10 pm.
- Bhutkalat Aaj Kay Ghadala: This program gives information of particular days in the past such as Birth, Death or Awards to the great individuals in history. The program is broadcasted daily at 7 am and 5 pm on Vasundhara CR.
- Ayushya Ghadavinari Manasa: This program is to introduce the people who have overcome tough situations by working hard, fighting against poverty, uncultured, illiterate family backgrounds and inadequate facilities of education and betterment of life. This program is broadcasted on Monday, Tuesday and Wednesday at 8.20 am and 6.20 pm on Vasundhara CR.
- Goan Gada: This program gives the detailed information of villages in Baramati and other towns which include historical, political, geographical structure and agricultural information of the villages. This program helps to discuss the current happenings in the particular village or town. This program is broadcasted every Friday at 8.20 am and 6.20 pm on Vasundhara CR.

- Agri based programme: A few programs called Krushi Sandesh, Sheti Pathashala, Pashudhan, Bhumiputra, Shashandarbar & Hello Sheti Prashna Manjusha are aimed at the farming community in Baramati. The majority of farmers there are sugarcane cultivators, as there are a few factories in the region. The same farmers also practice multi cropping and vegetable farming. Tips are given via the shows, weather reports from the Indian Metrological Department and advice from experts from the College of Agriculture, Pune.

While students help in running the station, they have also found inventive ways of engaging with the community. For example, a feature called "Black Box" allows farmers/ housewives to call in from their homes, without having to pay for the call. A mobile phone is attached inside a box and taken around the community. People can press a button, connect with the station, and talk to the RJ.

This has been done keeping in mind the cost constraints of making frequent calls. Another feature is to highlight successful members of the community, be it farmers who have done well or women who have contributed to the neighborhood. Inspirational stories help community bonding.

Project Features

Technology Platform
Radio is possibly the best and cheapest technology available in rural areas. Radio is a medium that does not presuppose that people can read, therefore people listen to radio because they can understand the language or dialect it the programs are broadcast in.

Because of its unrivalled access and its low production costs, radio is the technology that best meets the information and communication needs of rural pockets of the country. Unlike television, it is not expensive. Radio can reach communities at the very end of the development road-people who live in areas with no phone and no electricity. This is why it has been chosen and also why it has been successful.

Accessibility & Inclusiveness
The radio station is free to access, and can be done so by anyone with a radio set. Since mobile phones double up as radio sets today, the station has further accessibility. At the same time, the hours of the radio station are kept with people's needs in mind.

For example, in the early hours, the station plays music, both local and religious, which many housewives appreciate as they can start the day with some calming sounds. The heavier discussions take place around tea time when people can sit down and focus. In fact, there has been much thought into the exact programming of the station so that everyone can listen to shows that they like.

Community Participation
Community radio is a social process or event in which members of the community associate together to design programs and produce and air them. It is a medium through which community helps the community. The station is independent of government, donors or other institutions. Agricultural information

varies after every 40-45 kms, due to environmental changes, climate crop pattern soil conditions etc. Therefore, the information, available to a 30 km radius is very apt.

At the same time, the community is very involved in the making of the programmes. To begin with all radio station management and radio jockeys are from Baramati, and they regularly go to the field to produce programming. This includes interviews with community members, feedback, and live calls and so on. The idea of community radio is to involve the whole community, and Vasundhara Vahini makes sure it does that.

Vasundhara Vahini has tried various novel approaches to getting information to farmers. For example, it arranged near-simultaneous on-air translation into the local Marathi language of an international conference on grapes in Baramati, which was attended by over 2,000 delegates. There was one hitch though. Key speakers were from Israel and the organizers wanted the farmers of Baramati to benefit from this conference. Vasundhara Vahini decided to give out radios (costing Rs 40 each) to the delegates with earphones in their kits, which allowed them to follow the conference.

Sustainability & Cost Effectiveness

While Vasundhara Vahini is hosted at VIIT, however, it has been able to earn money through local advertising. As Baramati town is reasonably well off, and has chains such as Bata shoes present there, the station has been able to get them to advertise on radio. They claim to be able to make around Rs 40-50,000 per month that can cover salaries and other basic costs.

Replication & Scalability

Community radio is very popular all over the country, and to that end, is already replicated across India. However, Vasundhara Vahini can help set up local stations outside their specific geographical reach

Conclusions

It has been observed that farmers believe farmers. When they can be brought face to face with success stories in their own communities, they are most likely to follow suit. This same principle applies to other aspects of life, termed at times 'word of mouth advertising'. Community radio does not simply disseminate information but it personalizes it, and that is why it has such a deep impact.

The listener has a choice to change the channel from Vasundhara Vahini to another radio station; they can hear Bollywood songs instead of local singers and so on. However, when asked during a survey as to why they do not do that, the answer was emotional: "because it is ours".

Lessons Drawn From The Practise

Community radio has been popular over the country. The main advantage is that it offers localized content, allows illiterate people to engage with it, and also can be on in the background while people go about

their daily chores. UNESCO calls it a mouthpiece for voiceless people, giving an indication of how important it is to local communities.

However, the question one needs to ask about community radio is that despite many stations coming up, can they thrive? Technical issues and financial insecurity cast a cloud over the future of many of these ventures; however, it seems that Vasundhara Vahini in particular is one of the more successful examples, with a strong backing.

Radio Active

Radio Active is an urban community radio catering to heterogeneous and diverse groups, where people from different communities are encouraged to make use of the station for their development.

Category
Community Broadcasting

Organization
RADIO ACTIVE CR 90.4MHz

Platform of product
Radio

Website
www.jgi.ac.in

Achievements

- Drives social change
- Educates communities and the public towards socially responsive behaviour
- Shares skills, knowledge, insights and promotes initiative in individuals
- Helps preserve, protect, promote and popularize Indian heritage, art and culture
- Acts as a catalyst in meaningful social transformation and development
- Sensitizes and spreads awareness on vital issues confronting the community.

Summary

Radio Active CR 90.4 MHz was launched on 25th June 2007, by the Jain Group of Institutions, as part of its social outreach program. The radio station located in central Bangalore caters to different groups by interest such as the LGBT community, disabled groups, people living with HIV/AIDS, auto-drivers, senior citizens, and by geographical locations. Radio Active was launched with the aim of providing a medium to the marginalized community whose voices are often lost given the routine of an urban life.

In addition to that, the station also wanted to involve students in understanding the problems of the community. It fosters community participation through:

- Participation through contribution- giving out ideas, voicing an opinion, call back etc
- Participation through attendance -being present while recording in the field, participating in a survey, participating in eye camps etc
- Participation through Consultation process- Focus Group meetings, listening committee meetings etc
- Involvement in the delivery of a service as partners- RJs, Program Producer etc
- Involvement as implementers
- Participation in the real decision making at every stage- planning, implementation and evaluation

Practise Background

While mainstream media helps in disseminating information about national-level news, it is up to regional and local news channels and papers to focus on the smaller issues facing communities. However, very often, not all stories can be covered. Also to a large extent, despite call-ins and letters to the editors (or tweets, today) they cannot have the same interactive value that radio does. Radio sets are on in the background as people drive their cars, cook food, do physical labour and even exercise! Radio also reaches numerous people who cannot read or do not own a TV. Radio's popularity in India is well grounded.

It has been often been noted that community radio, which covers a radius of 5-10kms, is able to generate the kind of local content that people want to hear. It is personal and about their local neighbourhood and therefore of far greater interest and involvement.

Acknowledging this means of creating meaningful, relevant and quality content, Radio Active is in the process of bettering its content through constant and innovative methods so that it is well received by the public, relevant consumer and concerned citizens. The radio station hopes to bridge this gap by taking constant feedback from public; monitoring reactions which come via telephone, working with focused groups during workshops and making its participants evaluate content that is jointly generated through its radio station. Radio Active is still working to improve its quality of transmission and refine its delivery through technological innovation and physically mapping the area where transmission is received.

Implementation Process

The community radio station that began with a transmission of 8 hours, now has started to broadcast for 15 hours, with programs produced by local community members which includes:

- Residents from Srirampura
- LGBT Groups
- The disabled community
- Senior citizens
- Animal activists
- Environment groups
- Auto drivers
- NGOs and other institutions

With the backing of Jain Group of Institutions, it has been able to grow successfully, and has an interesting team of people working there. Radio Active staff members are all residents of the neighbourhood, many of them with colorful backgrounds themselves. Some are social workers. They coordinate with the community members in program production and outreach activities.

RJ Jaydev, is visually impaired and in a position to switch on the station by himself, without any assistance. He co-ordinates programs on all disability related issues and is presently working on the production of a Radio Serial on sensitizing people on disability issues called Beyond Affliction.

The radio station also works with sexual minorities. RJ Priyanka from the LGBT Community (Transgender) helps in broadcasting programmes to contribute towards the development of her community and society. She is instrumental in coordinating capacity building workshops in radio production and feedback collection. Priyanka's main motive is to use the radio station to air views and address issues faced by the LGBT community. Priyanka and her team of volunteers use the radio to highlight common issues faced by them in terms of sexual harassment, unemployment, lack of housing, etc.

Due to the passions of some workers, many different kinds of projects have been launched via the station, for example, "Prerna", Empowering Community Members in Business Skills. This was done in association with ACCION International and seeks to work with potential micro- entrepreneurs. The program is a business training module developed for adult learning based on the knowledge and experience of entrepreneurs.

Radio Active has been actively working in the areas of health, literacy, civic issues, animal welfare, human rights, environment, care for the elderly etc. An interesting campaign launched by Radio Active is the "Story Hour"- with the main aim of inculcating reading habits among children living in the slums. Radio Active respects diversity and promotes inclusion, following a partnership approach and therefore is able to network very well with different groups like the Government, NGOs, and institutions, social workers and students, thereby ensuring participation.

Technology Platform
This is a community radio station that is broadcasted on FM airwaves. The technical setup includes a 50 watt transmitter (1+1 mode), a PC, recorders, microphone and a tower of 30 meters height. The user experience has been positive, as the technology is very easy to use, operate and run, with a little training. Even the illiterate and visually impaired people can comfortably make use of the station.

Accessibility & Inclusiveness
Radio Active is a medium for different community groups to converge and discuss issues of relevance, to find solutions, to look at empowerment, and to encourage participation in community issues. Radio Active respects diversity and promotes inclusion, thereby engaging the community. The station is working on providing behavioral change through radio serial dramas - in HIV/AIDS and LGBT related issues, thereby reducing the and stigma and discrimination.

In addition through community-based projects, Radio Active looks at livelihood solutions from the members. In fact, it is overwhelmingly focused on aspects of a community that make it inclusive. And being a radio station, it can be accessed by all community members with a radio set.

Community Participation
Radio Active consists of a vibrant and active community of people. For example, RJ Shiv Kumar is an auto driver by profession but also is a social activist and a philanthropist who appears frequently on news channels for being the country's first auto driver to be a radio jockey on a community radio station. He hosts a live radio program called 'Mukha Mukhi- Face Off' made by general public, on issues ranging from power cuts, water shortage, garbage issues, street dog management, transport or general civic and social issues. There are many more personalities like him who entertain and educate their listeners on a regular basis.

Radio Active is also very interactive. It has live radio programs wherein listeners can call in to air their views, problems and so on. With community radio, the focus is on dialogue, on finding solutions collectively without any coercion or influence and the station is a perfect ground to bring together all stake holders to discuss and debate and look at workable solutions. The station also welcomes all members of the community and no restriction is placed. It is interactive as well; all the listeners need is a mobile phone to air their views.

Sustainability & Cost Effectiveness
Radio Active needs about Rs 2 lakhs to run per month. This revenue cannot be earned though radio advertisements alone, and so, the station has come up with some innovative ways to raise revenue. Radio Active has launched a number of community projects which makes the station viable and sustainable such as:

- Spotless Bangalore: A community based environment restoration project, spread over 2010-15, which looks at recycling dry waste like paper, and plastic and composting wet waste for manure to cultivate kitchen gardens and mini nursery. This project works with community members, institutions, NGOs and governmental organizations. Through this project, apart from the money generated through

recycling, community members are empowered as their livelihoods improve, in addition to their local surroundings.

- Street Animal Welfare and Management: A humane project that works on encouraging people to adopt community (street) dogs. The main objective is to create awareness and mass education among the public on street dog management and welfare. It aims to involve communities in adopting street dogs, and also to have mass sterilization and vaccination drives. They help treat dogs that are malnourished, injured, diseased. Through this project, money is generated from adoption camps, street animal arts, and dog related merchandise.
- Radio Active Life Skills Program: Radio Active Life Skills Program is a highly flexible and interactive program for the young minds. The program attempts to help children to increase self- confidence and self-esteem, develop health attitudes, and equip them with the knowledge of essential like skills to encourage positive personal development. Through this project, income is generated through training programs and workshops.
- Memberships: Radio Active collects membership fees, thereby ensuring that the audiences have a sense of vested ownership in the station. Each member is charged Rs. 2 per month or Rs. 24 annually.
- Other Activities: Other activities that ensure constant financial aid are competitions, community events, promotional items like calendars, books T-shirts, composting.

Replication & Scalability

Radio Active is the model of an urban community radio station located in a campus, with community participation in a heterogeneous environment. As a model it is highly replicable, and is intended to be so. Community radio, on the whole, is not a very scalable project as it is limited by a geographical reach. However, as Radio Active programs have demonstrated, by starting various programmes it can scale its impact.

Conclusions

Radio Active has engaged with the community to a deep level. Even when discussing the station, emphasis is given to the RJs who have day jobs in the community. It is an impactful project which has strived to involve the community as fully as it can. Radio Active has also demonstrated how a radio station can take on multiple campaigns not just to build awareness about issues, but to financially sustain it when advertising is not enough. It is a great lesson for projects, which immediately turn to funders because they cannot think of any other sustainability model.

Lessons Drawn From The Practise

Community radio has proven to be a very successful form of local media in India. This is because much of India's population is still battling with misinformation, age old prejudices and social stigma. While some radio stations are set up in more rural settings with the aim to educate farmers and so on, sometimes the focus on cities can be lost. In this context, Radio Active is a welcome example of the kind of communities that crop up in cities and the amount of attention they need to start living together as one unit. At the same time, by inviting community members to start their own shows, it also allows rickshaw drivers and other people with rather mundane jobs, to show off their creative side. Projects like these must be encouraged.

Farm ERP

FarmERP is a multi-user, multi-location farm resource planning software suite. It is a comprehensive farm management software developed for growers, agricultural institutions, agricultural universities, grower associations, exporters, consultants and government depts. It helps in generating reports compatible to the formats prescribed for GlobalGAP and other Quality Certifications.

Category
m-Content

Organization
Shivrai Technologies Pvt Ltd

Platform of product
Mobile/PDA

Website
www.farmerp.com

Achievements

- Brings together an output of rigorous efforts put in by agriculture, procurement and IT experts.
- Provides centralized data management for huge amount data at various levels like farm, grading and pack houses etc
- Secures personified access to every module at every level.
- Helps in systematically managing farm related data
- Runs on secured Internet server with security certificate
- Can be tailored as per your business requirements providing procurement planning and scheduling for season and year
- Helps in successful management of agribusiness, demonstration or research plots.

Summary

FarmERP is a multi-user, internet based solution being used by agri-business companies, contract farming companies and exporters. This solution help minimize data management worries at various levels of business operations. A strong reports module provides to be an excellent tool for decision making. Anytime, anywhere secured access to the data is possible as it is internet based and data resides on Central server. It also consists of comprehensive set of farm data management modules.

One can manage farmer grower information with reference to contract farming, procurement, supply of agriculture inputs etc. Task allotments for field level staff, SMS communication to staff and farmers, procurement scheduling, easy but secured access and strong reports module are some more features of FarmERP Online. Data from multiple farms located at different geographical locations, can also efficiently managed using this solution.

For farmers with access to smartphones and/or internet connections, this can be a real boon. Users can access their utilities and content on handheld gadgets and mobile phones. While FarmERP is gearing towards richer farmers because of its technological nature, however, it has been noted that smaller farmers are getting its benefit through farmer collectives. Therefore, the trickle-down effect is resulting in better – and more professional -- farm management by farmers with various sizes of land holdings.

Benefits of FarmERP include:

- Useful in macro level crop planning, scheduling, procurement and supply
- Improves operational efficiency & staff performance levels.
- Saves on fertilizer, pesticide, equipment, inventory costs using stock management module.
- Strong reports module which helps in decision making based on analysis of real time data
- Complete production to marketing cycle management.

Practise Background

The population of India is over 1.21 billion, and increasing every minute. In 2011-12, the Planning Commission estimated that there are 269.3 million poor people in India, of which 216.5 million reside in rural areas. Overall, about more than half the total workforce – 58.4% -- remains employed in agriculture, which contributes only about one fifth of our Gross Domestic Product. The numbers clearly indicate that there is a discrepancy between how many people are engaged in agriculture and the contribution of this sector towards the Indian economy.

There are many reasons for this poor contribution including small land holdings, lack of proper irrigation facilities, poor cold storage chains, and also (but not limited to) the lack of professionally run farms. FarmERP tackles the last problem.

Farming has been the backbone of India, with the farmer gaining an iconic image as the son of the soil.

However, due to the complete lack of family planning, each family had multiple children between whom the family land would eventually be distributed. In fact, land distribution led to the mushrooming of small farms in so many places across India.

Over time, it was noted that many modern agricultural practises eluded these farmers. For example, many of them did not know about multi cropping (growing different crops at different times of the year), or the latest fertilizers and pesticides. Many of these farms did not have a professional system to manage their daily wage labourers, and finally, some did not understand the demands of the market. For example, if a farmer knew that the demand in the cities was for apples and not oranges, he could ensure a profit by choosing to grow apples, should his soil permit.

In the same vein, many projects began to sprout around the use of ICTs, encouraging farmers to adopt modern practises by embracing the latest technologies. For that, mobile phones have been a great help, since the Indian population has adapted to mobile phones in a fast and effective manner. This allows information to be delivered right to the farmer's hands.

FarmERP was developed as a farm management software, and to that end, has tried to inject some degree of management and professionalism into what has traditionally been a family owned enterprise.

Implementation Process

FarmERP was born when the founders, Sanjay Borkar, and his partner Santosh Shinde, both computer engineers, wanted to use their skills to modernize the agricultural sector. The business was started in 1996, but they firmly focused on agriculture only in 2000, and by 2003-4 they had made in-roads into farm management. Their first big experiment was with the grape growers of Nasik, who have traditionally been known as progressive farmers due to the nature of their produce. Grapes are also used in creating wine, besides being eaten as they are.

The software was then designed so that farmers, right from those who had 5 acres to those who had 100 acres, could use the product for activities such as record keeping, scheduling their crops, then maintaining their financial accounts and getting their reports in the consolidated manner.

However, once the software design was complete, the challenge was to find farmers willing to adopt their offering. FarmERP has sales people on the ground who meet government officials to find out names of progressive farmers in the area. Once armed with a list of names, these sales people meet with them and demonstrate the software, to convince them to try the product. Over time, the product has also gained a buzz over the internet, with inquires coming in from Maharashtra, Punjab, Madhya Pradesh and even Karnataka.

Outside of presenting software to manage the field, FarmERP also offers farmers an interactive platform through which they can support decisions regarding pest and disease management. This was piloted with grape farmers who needed to ensure that their grapes adhered to the

food safety regulations of European countries where they exported their produce. The farmer can, after installation of the software, search very quickly to retrieve agrochemical name and dose details based on pest or disease.

FarmERP is an easy-to-use, user-friendly GAP (Good Agricultural Practices) compliant computer software system, which helps to manage and plan entire processes of farm production, post production and sales, marketing and accounting. It also helps to improve the farm producer's operational efficiency and profits by optimizing resources, allowing him to maintain quality and improve staff performance levels.

Project Features

Technology Platform
The FarmERP mobile utility can be directly downloaded from the company website www.farmerp.com/mobile. The user can complete a one-step registration process in about 1-2 minutes. Users simply download a 67 kb client -- once -- to their entry-level handsets or download to PC/laptop and transfer it to mobile though cable or Bluetooth.

Accessibility & Inclusiveness
The company has tried to make FarmERP simple and interactive so that farmers have no trouble using it. It is available in local languages, not just English, and has incorporated pie charts and other visual aids to help farmers understand the information they are putting in. It can be customized to the understanding of the farmer. By putting in their information on a regular basis, they can track the growth of their produce and also identify why the crop fails. At the same time, options like identifying pesticides for grapes are an easy solution for on-the-spot troubleshooting.

For the company, they feel that there is a greater effort to educate farmers about the uses of an ICT based system than there is an effort in actually building the software. This is because the concept is alien to many people, and awareness needs to created and ultimately, the software needs to be sold to them.

Community Participation
While the product is available to any farmer who wishes to use it, the reality is that many farmers are illiterate and cannot use such complicated software. However, that does not mean that they cannot take advantage of the farm management system. Farmers club/cooperatives have started to use FarmERP and through the software hand out individual advice to smaller farmers. This is very effective, especially when the farmers are growing the same crops to be sent to the same market.

In many places, farmers have begun to grow 'exotic' produce such as bell peppers, strawberries, broccoli and so on, and need guidance as to how to best grow them. The software has allowed them to work together, as a farming community, and take advantage of the ICT revolution in agriculture.

Sustainability & Cost effectiveness
The FarmERP subscription rate starts at Rs 15,000 for the year. The packages increase in price as the demand of the farmer, and to that end it is an expensive product. Small and marginal farmers would be

unable to directly buy the software, but could take advantage of it through a corporate, if possible.

While FarmERP has been operating in the Indian agricultural sector for a few years, it has not captured the market. For that, it will have to be more aggressive in its sales strategies, and perhaps come out with a low cost version for small land-owners. Since technology is not yet keeping pace with ICT enabed ideas in India, only time will tell how the majority of farmers will react to FarmERP once they are connected to the internet/ mobile phones and are faced with the choice of taking a subscription.

Replication & Scalability

Various robust, user friendly and interactive mobile utilities, calculators and applications for agriculture domain, which will help farmers, to support their critical on farm decisions, are being built in India. FarmERP offers mobile-based solutions as well as a full-fledged software solution. The visible difference between FarmERP and many of these agricultural initiatives is that while many of them focus on providing the farmer with information (weather, crop pricing etc.) FarmERP offers an entire management system.

Even its grape-focused pesticide solution system was well received. Encouraged with the response they are coming up with similar utilities for other crops like, pomegranate, mango, cotton, maize, soyabean, sugarcane etc. In that end, the company has a lot of space to grow and adapt to the needs of the modern farmer.

Conclusions

For any business to grow, the businessman has to organize himself professionally, keep a track of his activities and track his profits and losses. Using the same logic, FarmERP offers an easy management solution to farmers, customized to their needs, which can help them increase their profitability. The backbone of this product is based in ICT, which can be used very effectively in the agricultural sector.

The problem so far has been not in creating applications to help farmers but in creating awareness within the farming community for the need for such applications. However, FarmERP's experience has shown that there is a great potential in this sector, and that through ICTs, big changes can be brought about.

Lessons Drawn From The Practise

Practitioners from the field have discovered the direct impact that ICT solutions can have on the ground, including in the field of agriculture. This is the reason it is crucial that the government incorporates and encourages ICT based initiatives into its official policies. ICT can help farmers leapfrog into the 21st century and complete on an international playing field. The agricultural sector is too vast and varied for any one

technology solution to change the landscape and therefore, many more projects such as FarmERP need to be encouraged so that agriculture in India can undergo an overhaul!

Mango Technologies

Mango Technologies is a dynamic company that is a complete software solutions provider for all connected devices like low cost 2G to 3G phones, netbooks, MIDs and has developed the world's thinnest and most lightweight operating system for mobile phones, and in-house tools to develop mobile applications.

Category
m-Content

Organization
Mango Technologies

Platform of product
Mobile Based

Website
www.mangotechno.com

Achievements

- Plays a pivotal role in the convergence of the factors in the development in communication infrastructure
- Provides availability of connected devices at increasingly lower price points
- Helps drive towards technology adoption in multiple areas such as agriculture, e-governance, healthcare, education, social sector

Summary

Mango Technologies is a leading developer of software for mobile phones. They develop complete solutions for handsets and work across the entire spectrum of devices-from low cost handsets to smart-phones. They have developed an entire application framework that could be ported onto mobile phones, and which was specifically targeted at harnessing the entire potential of low cost 2G to 3G phones.

Subsequently Mango Technologies have also developed PC-based tools to develop applications and UI for this platform, in an extremely short duration of time. These tools have helped the customers to retain their edge over their competitors, in the fiercely competitive mobile phone market. This is extremely important in emerging economies, where it is believed the maximum growth in connected devices is expected to happen. Mango Technologies understands the requirements of the end users in these emerging economies, and this is why their products have always been fine-tuned to cater to their needs.

Mango Application Framework is the application & UI framework that has been developed by Mango Technologies for use on low to mid cost handsets. This platform enables these phones to acquire functionality that would otherwise not be supported in this segment of phones and enables them with "Application on Demand" scenario for this segment. This results in additional benefits for their customers as they can develop applications which suit their specific needs.

Practise Background

With urban markets stuttering under the effects of the downturn, rural India has become more important than ever before for mobile handset makers who are racing against time to make inexpensive handsets with high-end functionalities. Powering them is Mango Technologies, which has set its sights firmly on this segment not just in India but other countries as well.

Initially Mango Technologies was part of the incubation centre at IIM Bangalore. The startup's dream of conquering the price barrier was pegged on its key innovation—the software that drives a mobile phone. Mango's team had developed an application framework with smaller feature modules that can perform in low-end handsets in spite of their limited processing capability, memory, screen size and data download speeds.

The motivation to develop this project was the huge gap in aspiration of the consumers and what is given to them by the current set of devices. The company also considered the opportunity that existed in the market for this product. Primarily, in the low cost handset segments, most handsets were shipped from China. There, the OEMs do not have the time to concentrate on the UI aspects, and it was felt that the company could help differentiate the low-cost market by providing the user a different experience on his low-cost phone.

Also, the market for developing applications is huge, since it is the emerging markets that have the demand for unique applications-in healthcare, education etc., and it was felt that this framework would help bridge the gap that exists in this segment.

Implementation Process

The Mango Application Framework is designed specifically for terminal devices with limited memory and processing capabilities. It brings along a rich set of PC-based tools that assist in the following tasks: User Interface design Application development Complete testing as a virtue of the above, the time-to-market is significantly reduced.

Key features include:

- "Application on Demand" for the end user in this segment
- Advanced, Component-based architecture
- Lowest Memory Footprint in the low-mid cost handset segment
- Ensured Portability as 80% of development and testing is performed on the PC environment
- Multiple Language support
- Lower power consumption with 30 to 50% faster handset software development & test
- OTA Application download and execution
- High Performance on single-chip based platforms

The firm was launched ago by Sunil Maheshwari, 34 and Lekh Joshi, 32, who met while working for a startup company, Quasar Communications (it was later bought over by Sasken). They were designing the hardware and software for mobile handsets, which got them thinking about the addressable gaps in the market. They found there was no one to address this huge inexpensive mobile market.

Initially they funded the company with an initial corpus of Rs 10-12 lakh pooled in from their own savings and borrowings from friends and relatives. In 2006 the company received a "small funding" from Ojas Ventures that helped scale operations faster. Now the company employs a large number of people and has leading manufacturers like Qualcomm and Texas Instruments—which has since abandoned its low-cost handsets foray—as its customers.

Mango's application framework comes with a designer tool and a phone simulator, which allows handset makers to perform much of their user interface development on a personal computer. This software comes at one-tenth of the cost and a huge advantage is that whereas normally the time to market is nine months to the year, Mango takes only 3-4 months.

The software can also be adapted to suit various regions of India speaking different dialects, and also across other geographies that the company is targeting, like China and the East European market. The development time has been reduced by addressing activities that took up maximum time during the phone development cycle.

Their first product was slated for launch in China in alliance with China Telecom. The same software was launched in all Indian languages. The Indian market sells around 150 million handsets a year while China sells around 200 million. In the next three years, the company plans to power

handsets in Latin America, parts of Africa and Eastern Europe.

With very ambitious plans, the founders expect sales to zoom to Rs 20 crore in a year's time as its software reaches more handsets. By 2013, Maheshwari estimates the company will touch Rs 500 crore. That will happen when revenues start coming from innovative services that Mango will provide to the handset users, in collaboration with the local operators.

Project Features

Technology Platform

The framework, as well as the standard/customized applications, is provided as part of the handset which the user receives. The software and the User Interface are generally installed into the chip at the OEM stage of the phone development cycle. Once the device in end user's hand Mango product allows them to change the user interface as per their requirement and download their own script to be run on these low to mid cost emerging market devices.

Mobile phone base hardware requirement meant that the end user would require a mobile phone of any type (though the product is primarily ported on low-cost to mid cost handsets-<$ 200 segment).

Accessibility & Inclusiveness

Using the framework, end-users of low-cost phones are provided an entirely new experience. Apart from the User Interface, which is greatly enhanced, the overall phone also becomes more powerful. This is enabled by the framework, which permits the presence of applications that help the user with applications that simplify life.

Even direct customers-the chipset vendors, the OEMs and Telecom operators benefit from the product. The framework has the least memory footprint, thus reducing the BOM costs for Chipset vendors. Phones with this product have the least time-to-market, thus helping the OEMs in coming out with phones as and when user requirements change. Also the applications result in increased data service usage, thus generating more revenues for our Telco customers.

The unique applications that Mango Technologies has developed are built specifically keeping in mind the gap between the supply and demand for content. One of the applications that the company has developed has an 'intelligent-sensing' mechanism, by which it understands user preferences and stores these preferences for further use by the user. This helps in specific and targeted content being displayed to the user. Other such applications are in the pipeline for future launches.

Community Participation

The UI solutions help increase the interactivity quotient of users with their phones. Though the framework makes the low-cost phones more powerful this is not at the cost of usability. Also the framework has several new applications apart from the standard telephony and non-telephony apps that one would find on a standard mobile phone. This results in increased usage of the phone to access data, which results in simplifying the user's life.

Sustainability & Cost Effectiveness

The application framework is sustainable in that it works with the

entire mobile phone ecosystem, to build value for every player in the mobile phone value chain. Additionally it helps build revenues through two avenues:

- By licensing the framework out, Mango gets revenues for every phone that the framework is implemented on
- By selling the framework, Mango gets a lump-sum for the framework that has been developed

In both cases the framework will also have applications that are compatible with the framework. This makes the products scalable. Once an initial set of phones is shipped out with the software in the chipsets, the company will also work towards setting up the developer community, which would be enabled by providing SDKs to work on the platform to this community. This would lead to an app-store where the developer community works specifically on apps for mobile phones with the framework, thus producing value for Mango, for the developers and more importantly the users as well.

Replication & Scalability

The product is unique in that it makes the simple low-cost handsets more powerful than they ever were previously. In the past, it was believed that some applications would run only on high-end smartphones, and also that it was only these expensive phones that could have brilliant UIs. However, this is available even on the phones that Mango Technologies work on, and this is made possible through tools that they have developed in-house. Also, the framework provides almost the entire functionality that is available on high end phones on phones that cost approximately 1/10th the price of these advanced phones.

Conclusions

Digital content is very important in today's context, as well as in the overall scheme of things for India and all other emerging markets. The information available in the world can be accessed at a moment's notice by harnessing the power of today's technologies - PC and mobile phones to be more specific. It is the role of ICT tools to enable that the immense reservoir of information is made available to the people who need it the most, as this is what would lead to inclusive development for all, i.e. development in its truest sense.`

Lessons Drawn From The Practise

There is no questioning the transformative powers of the mobile phone as a vehicle of social change and social outreach. From simple communication and messaging to advanced agricultural and medical applications, the mobile phone is taking technology to people in pockets which were inaccessible before. But what if these phones, the very instruments of transformation themselves, were inaccessible?

The Mango Application Framework is designed specifically

for terminal devices with limited memory and processing capabilities. It brings along a rich set of PC-based tools that assist in user interface design and application development. This platform enables these phones to acquire functionality that would otherwise not be supported in this segment of phones.

Mango's idea is simple. Create an interface for mobile phones that gives even the cheapest handsets the ability to function like pricier top of the line multimedia enabled phones. It is an idea which has huge implication for digital inclusion. A phone with Mango suddenly has the ability to give even the poorest user a digital window of opportunity.

DigitALly

DigitALly is a patented multi-media-enabled teaching tool, developed by the Pearson Education Trust, which helps teachers manage an open repository of learning objects, which are multimedia-enabled and syllabus-specific.

Category
e-Education & Learning

Organization
Pearson Education Services

Platform of product
Offline

Website
www.digiclass.in

Achievements

- Provides thousands of learning elements such as animations, diagrams, simulations, videos, 3D interactivity, worksheets etc., which are all designed to ensure superior teaching / learning practices. The learning objects are mapped to various Indian syllabi.
- The attractive TIC (Teacher In Class) mode of DigitALly allows teachers to access the pre-loaded content in the classroom. Also, they can leverage a powerful collaborative assessment environment called "Group Quiz".
- The user-friendly PFC (Prepare For Class) mode of DigitALly allows teachers to customise lesson plans by adding/editing/deleting learning objects. They can use the comprehensive "Search" option to find desired objects in the vast repository.
- Schools can track the effectiveness of the solution with a powerful reporting dashboard.
- The easy-to-use features of the application are constantly upgraded, in response to teachers' feedback and their changing needs.
- DigiClass solution offers Teacher Training, Certification and Assessment programmes to ensure the effective use of the solution.

Summary

DigitALly™ is a patented and award-winning multimedia-enabled teaching tool that empowers teachers to customise their teaching sessions, keeping the learners' pace in mind. This preloaded repository has several thousands of animations, self-explanatory diagrams, 3D interactive animations, worksheets, quizzes, e-books and several hours of experiments – all designed to make the classroom session more engaging. DigitALly is constantly upgraded with new features and content.

DigitALly has syllabus-specific content for CBSE, ICSE, HSEB, IGCSE-I, IGSCE-M, and AP, Karnataka, Gujarat and Maharashtra State Boards. It covers Kindergarten to class 12 and encompasses the following subjects: English, Hindi, Mathematics, Social Sciences, Environmental Science, Basic Mathematics, Business Studies, Statistics, Accountancy, Physics, Chemistry and Biology.

The multimedia content helps in making the classroom learning more engaging, resulting in better understanding and retention of concepts. It also empowers teachers to customize their teaching sessions, keeping the students pace in mind. In 2011, Pearson's introduced DigitALly 3.3.0, an updated version with new easy-to-use features. DigitALly has over 7,000 animations, 10,000 self-explanatory diagrams, 3D interactivity, worksheets, quizzes, e-books and several hours of experiments all of which are regularly updated.

Practise Background

There are a huge number of people who believe that education in India is simply a matter of learning by rote. Children are simply memorizing their syllabus instead of actually engaging with it. In fact, students have a large number of subjects and a huge information download, and unless there is a similar intervention in teaching methods, there can be a danger that they will not be able to imbibe all this information. This is where ICT tools can help, both the teaching and the spread of good education.

Digital content has the power to reach places that books cannot. So given the great economic diversity of our country, it is the perfect way to disseminate knowledge and create sustainable development. Effective digital content can only be created if the needs of the audience are kept in mind during the creation process.

For any technology to affect development on a large scale, it must be easily accessible, easy-to-use, scalable, cost-effective and sustainable. And ICT offers all these features; and with its reliance on telephones and computers, commodities abundantly available in India, it reaches a larger audience. Hence, any technology-based solution or service that utilizes the available basic resources and is easy to use and implement can be easily replicated and adapted in any environment.

Pearson Education Services has attempted to go beyond the traditional chalk-and-talk teaching method that often creates a non-engaging, non-interactive

classroom. Sensing a need for a more comprehensive and engaging model of knowledge delivery, which would result in better understanding and retention of concepts, they created DigitALly. It is a vibrant and engaging multimedia content ensures an interactive classroom and easy understanding of difficult concepts.

Also, they wanted to create a tool that empowers teachers to customize their lesson plans and vary their teaching method to suit each student's learning requirement and pace. DigitALly helps teachers do just that. They can edit the preloaded content to suit their requirements and also add new subjects and content. They can also edit content created by other teachers and users.

Implementation Process

Simply put, DigitALly, takes the traditional blackboard and through the use of technology, elevates it into a dynamic learning center. Teachers can use interactive tools to show and teach students multiple aspects of their coursework, making it more fun for everyone. Since 2003 -2004, DigitALly has undergone regular updations in technology. It has ensured that DigitALly has the latest content and information which is current.

The application offers two modes of usage:

- Teach In Class (TIC): It is an easy-to-use and attractive interface through which teachers can access the preloaded content in the classroom. Teachers can leverage a powerful collaborative assessment environment called Group Quiz. Teachers can view objects added by other teachers/users.
- Prepare For Class (PFC): It is a user-friendly mode through which teachers can add/edit/delete learning objects/teaching slides. Teachers can use the 'search' option to find and add desired objects to the teaching slides. Teachers can search and create question papers and print them for classroom usage. Teachers can add subjects, chapters and create courses. They have available to them, videos, animations, e-books, 3D objects, images, teaching slides, lesson plans and many more. Teachers can create/edit question papers from the repository of questions.
- Schools can add new subjects/chapters, which appear in a different color. It also supports many more file formats for the new files that teachers might want to upload. In the PFC mode, teachers can also select a few objects and add them to their favorites. It contains: Edutainment contains collaborative games, interactive games, print games, try it yourself), Infozone (contains pictionary, timelines, personalities, did you know, spell check), poems and rhymes, atlas contains interactive maps and quizzes), 3D Anatomy and entrance prep.

With the 'My Links' feature, teachers can access the edited/new learning objects that were created under the PFC mode. They can also access objects uploaded by other teachers/users. The preloaded content is regularly updated.

In the latest DigitALly 3.3.0 version, the TIC mode interface has been completely changed for easier navigation and to accommodate

the new features. The new table of contents is more detailed with chapters and units clearly demarcated. The comprehensive search tool allows teachers to search for specific objects by typing in the keywords. The tool also suggests words after a minimum of 3 letters have been typed in. The search results are displayed under the various object type headings, making it easier to locate the desired object.

DigitALly is currently being used in 2000+ schools in India, Nepal, UAE, Maldives and other countries. It has made teaching simpler are learning more interesting and engaging. Since DigitALly functions on the cognitive learning approach, it makes it easier for students to understand and retain information.

Project Features

Technology Platform
DigitALly needs to be installed by individual teachers. The installation itself compromises of two parts, the first is the installation of the DigitALly server followed by installation of the DigitALly client. The server comes on a hard disk which requires about 80 GB free space to install. Once a validation number is entered, the machine is registered. The rest of the files are then installed manually, and need a Windows operating system to work.

Accessibility & Inclusiveness
DigitALly requires a computer, internet connection and PowerPoint, all of which are available in most schools today. It is easy-to-use and can be easily integrated into the school life. DigitALly's content is customized for the various Indian syllabi and is created using an Indian accent. Teachers can edit content added by other teachers/users also. The Light Box feature allows teachers to create image libraries and also access libraries created by others. However, it cannot yet be used in rural schools which do not have basic infrastructure like computers; electricity etc. This problem can be overcome with state led infrastructure investment in education.

Community Participation
DigitALly has received positive feedback from teachers and students. Some teachers have said that it has increased student interaction, interest and curiosity. Children are eager to attend the classes in computer- aided classrooms. The most important thing for the schools is that the content is mapped to the syllabus used in the school such as the CBSE board. Students as well as teachers have gained tremendously from this smart introduction in the field of education, keeping them abreast with the changing times.

Sustainability & Cost effectiveness
The product is priced as per the number of classrooms in which it is implemented. All the content and mapping to the syllabus/units/ chapters in DigitALly are available for institution to modify and update. This feature is available to pre-bundled objects as well as institution content objects.

The dependence on Pearson Education Services with regard to content is only for newer content and bug-fixes if any. However, what this means is that as long as the content can be updated and modified, the sustainability of the software is not an issue. It would be very problematic if

the software could not adjust to any changes in the syllabus.

Replication & Scalability
The architecture used in the school premises is similar to a web based offering. It has the capability to service hundreds of classrooms / clients. The institutions have the option to add as much as of content objects depending on the free disk space. There is no limitation on the number of content objects. The other area in which DigitALly is scalable is in the amount of languages in which it is offered.

Conclusions

DigitALly challenges the current teaching practises in thousands of schools across India, by simply making use of the ICT tools available today. Children in urban settings are used to technology; they watch television, they play on computers and some even have mobile phones. Given this techno-inclusive lifestyle, it was a glaring omission that technology had not been used in their learning. On the other end, teachers have found that using audio-visual tools with syllabus content loaded into them have also helped in helping children learn.

Innovative and progressive methods will help elevate India's teaching methods to greater heights as students. Already, DigitALly offers content, based on a range of syllabi of different state Boards such as Karnataka, Andhra Pradesh, Maharashtra, Tamil Nadu and West Bengal as well as CBSE and ICSE. In the future, it can expand to cover more boards, states, languages and perhaps, even elementary courses or college level courses.

Lessons Drawn From The Practise

DigitALly has shown that students and teachers both benefit from incorporating technology into learning. While it has been running successfully in urban schools, this experiment also suggests that perhaps ICT tools for the act of teaching can be used, both to close the digital divide and to help students learn better.

This experiment is already underway in many states. Some state governments have begun to install computer labs with DigitALly technology and with help from Edurite, have begun to train teachers in its usage. In Rajasthan, Edurite has provided ICT solution to over 450 remote schools in Jodhpur and Kota (covering 5 districts in each). They set up a computer lab with at least 10 computers in the schools, and a server with our multimedia content.

In another initiative, Edurite reached more than 10,000 government schools in Goa, Karnataka and Orissa that have implemented the technology solution in these schools so that no child is left behind and rural India has easy access to educational technology.

One can only hope that in the future, all of India's school children can benefit directly from the use of technology in

education. DigitALly helps create comprehensive educational content that can be delivered through a series of innovative mechanisms, thus removing physical and cultural barriers in knowledge dissemination.

Kissan Krishideepam

Karshaka Information Systems Services and Networking (KISSAN) is an integrated, multi-modal delivery of agricultural information system, which hosts Kissan Krishideepam: A weekly agriculture television program - in Malayalam, that provides selective information dissemination of best practices, success stories, departmental news, news on various schemes, market analysis, cultivation methods, analysis of current issues, etc.

Category
e-Education & Learning

Organization
Indian Institute of Information Technology and Management (IIITM-K)

Platform of product
Online/Phone

Website
www.kissankerala.net

Achievements

- Translates the rich academic and practical agricultural information aggregated through the KISSAN-Kerala Network into viewer friendly video/multimedia content
- Provides the farmers with right information of regional relevance regarding best farming practices, soil and water management, forecast and precautions on pest and disease incidences, weather and market information etc.
- Develops and sustains a platform for interaction between farmers and experts in a more appealing and acceptable form
- Initiates a system for healthy feedback from the beneficiaries of various developmental activities initiated by the government
- Influences a positive change in the agriculture scenario by empowering the farmers with latest information; hence enhancing the total agricultural productivity.

Summary

KISSAN is a farmer centric ICT enabled information system. It is an e-Govt. project providing information to the farmers on time. It has within it an agricultural portal – kisankerala.net, a mobile platform, a dedicated video channel on you tube, tele-call center (real time advisory services) and its flagship program, Kissan Krishideepam (KKD) -a television based agricultural information dissemination system. KKD is produced by the Indian Institute of Information Technology and Management Kerala (IIITM-K) and targets the entire farming community of Kerala.

The television program also has a toll-free telephone call center for interaction between viewers (farmers). It reaches out to farmers across the state making them aware of current news, schemes, promoting sharing of best practices through success stories etc. The serial provides opportunities for all agriculture related organizations and the government to reach out to interested farmers and agri-enterprises. Its reporters go out extensively into the field so as to cover agricultural issues in depth. It also has agricultural scientists helping write the show scripts, and therefore, instead of being a generic program on agriculture, the insights and tips are very helpful to farmers.

Practise Background

Kerala is a beautiful state at the southernmost tip of the Indian peninsula with an economy focused on agriculture. The abundance of water due to the 34 lakes and other small streamlets, innumerable backwaters and water bodies and 44 rain-fed rivers flowing over the terrain of the state and also the adequate annual rainfall of 3000mm received by this state facilitates agriculture to a great extent.

The staple crop is rice or paddy. About 600 varieties of rice are grown in the sprawling paddy fields of Kerala. In fact the Kuttanad region of the district of Kerala is known as the 'rice bowl of the state' and enjoys a significant status because of this. Next to rice is tapioca which is cultivated mainly in the drier regions. Tapioca is a major food of the Keralites. Besides production of the main crop, Kerala is also a major producer of spices that form the cash crops of the state. Kerala produces 96% of the country's national output of pepper. Other important spices are cardamom, cinnamon, clove, turmeric, nutmeg and vanilla.

Other cash crops that constitute the agricultural sector include tea, coffee, pulses, coconut, cashew, areca nut, and ginger. However, over the years the contribution of agriculture to the economy has declined, from 17.48% in 2004-5 to 11.54% in 2009-10. A number of reasons have caused the decline, and the state has taken it upon itself to engage with the farmers, hear about their problems and offer them advice as to how to increase productivity.

Implementation Process

Kissan Krishideepam is broadcast in the local language. It provides selective information dissemination of best practices, success stories, news on various schemes, market analysis, cultivation methods, and analysis of current issues and so on. Care has been taken to ensure that the show is authentic and totally produced in-house by agriculture experts.

The team has completed production and telecast unbroken weekly episodes over the last five years through Asianet, the leading commercial satellite channel in Kerala. It attracts more than 65 lakh viewers across the state and outside. The program maintains high quality with the best TAM rating in similar programs category. The key feature of KKD is the services delivery model that allows agriculture experts from any organization to offer timely and effective assistance to farmers anywhere in the state. The KISSAN project is a role model for IT facilitated or e-extension services delivery in agriculture.

The project was officially launched on 1st November 2003 (which is also Kerala day). The KKD episodes are conceptualized, produced and developed at IIITM-K along with the agricultural officers and scientists from the Department of Agriculture. The project has developed very rich media content as part of the KKD program. The same videos are available on KISSAN's you tube channel. The content is viewed regularly there and farmers also access the online portal to submit questions. The farmers can post a question and seek expert answers for the same. More than 10,000 questions have been answered and archived under specific categories.

An in-house team at KKD handles the entire production cycle, and this includes post-production work. KKD has its own camera crew as well as a studio from where anchors host the weekly show. Most of the material comes from the people themselves. Once they receive a tip off from local panchayats and krishi bhavans, the team is off to cover the story – good or bad. They can do a success story, interview, or showcase how an agricultural project can go bad if care is not taken.

This means a very exhaustive production cycle as well. The team works all week, travelling up and down Kerala, shooting from sunrise to sunset! The TV show itself has been on for over 8 years, seen by over 65 lakh people and is broadcast in 66 countries. The entire project has cost about 1.9 crores over the past 8 years.

Project Features

Technology Platform

The project uses various technology platforms like internet/ broadband for aggregation and dissemination of web content. The media production uses SONY (DSR 400 series) digital camcorders and accessories for field and indoor production. The post production is done by using video and audio editing tools like Apple's Final Cut Studio (FCP), Adobe Premiere, Avid Express etc. The call centre team uses ordinary telephone lines which are available toll-free for

landline users. The calls are landed on BSNL switch and diverted to the Kissan call centre at Technopark.

Accessibility & Inclusiveness
The contents are highly interactive. The video content is mounted online in collaboration with Google YouTube - www.youtube.com/kisssankerala. Farmers can post any question though the portal - www.kissankerala.net and seek expert advice on the same () The farmers can also take expert advice through the toll free call centre (1800-425-1661) The KKD program is telecast through a satellite channel (three times per week) and at the end of the program, the toll free numbers are advertised to ensure the interaction. DVD`s and CDS are also available for the farmers to view the program as part of continuous learning.

Community Participation
The project is unique in many ways. This is the only project that has integrated multi-modal delivery of information services for the farming community. Krishideepam is the first television program directly produced and telecast by a State agricultural department as part of e-governance, and it has been well received by the farming community in Kerala.

The integrated model of the project ensures the speedy aggregation of relevant information from various sources, and dissemination through cross media platforms. The project is supported with an agri-data center with fully professional management to cater to various information requirements of the farming community in Kerala. Use of multi-pronged technology to both view the show, and send its message across, invites community participation from within Kerala and often from viewers outside it.

Sustainability & Cost Effectiveness
The project is sustainable. The television program generates some income through advertisements from agriculture related and allied agencies. The portal also runs on a sustainable mode.

Replication & Scalability
The integrated delivery model is highly scalable. The dynamic portal based services are highly scalable and easily replicable in any other place. The entire application has been developed using open source technology.

Conclusions

The project solves the problem of content gaps by providing authentic agricultural information through various methods -- television, web, telephone etc. The farmers can choose any medium to seek the relevant information. Apart from this, information is also delivered through Akshaya, Information Centers (CSC) in Kerala, where the farmers seek information through these kiosks.

Each village has got a minimum of 3-4 kiosks, which provide information and e-governance services to the public. There have been cases of farmers who have been featured for new practises, only to become celebrities because people want to learn from them. With the good being highlighted and the bad being discussed, agriculture in Kerala has a strong support line.

The KKD team has a few guidelines in terms of producing a successful

program which include the following:

- Content should addresses issues of relevance to each target customer group.
- There must be systems to support authentic and validated dynamic content and advisories of value to users, available on demand. In KISSAN this authentication and validation are provided by agricultural officers and scientists in existing government organizations, university and research institutions.
- Dynamic information systems and services in open community context like agriculture need effective feedback driven combination of mass media like TV and information delivery and knowledge empowerment services through portal and call center. KISSAN-Kerala shows how such a feedback driven information and extension system is possible and effectively implemented by using a portal as meeting ground of different agencies, smart use of TV mass media for selective dissemination of practices, schemes and opportunities with a telephone call center that reaches the services even to those without access to Internet or IT literacy.
- A user like the farmer needs much more than an answer to a query. The system must further help direct him/her to relevant agencies in the relevant geographic location, or, assist in taking the experts to the farm under consideration. Hence information services have to be integrated with field level services supported by a diversity of organizations. KISSAN-Kerala shows how to build such services integration.
- The services team has to be agile and responsive to the information requests and feedback received and to generate alerts for concerned agencies to act appropriately.

KISSAN-Kerala is an altogether new generation ICT driven services delivery and knowledge empowerment system that takes an inclusive approach of diverse stakeholders coming together to enhance the services provided to farmers more effectively than they were earlier able to. This has been made possible by the coming together of institutions over the KISSAN platform as an integrated services delivery model that uses advanced knowledge managed information, interaction and collaboration portal, mass media and telephone call center.

Lessons Drawn From The Practise

There have been many initiatives in the sector of e-Agriculture, using mobile phones and video to disseminate information. The KISSAN project has used a multi-pronged strategy to this end. Further, the KKD show has made sure it has used experts and not simply scriptwriters to produce agricultural shows, which is the crucial element in its continued success.

The show is also planning ahead and trying to target those farmers who might not be watching TV shows or reading text messages. It is felt that voice content has more acceptability than the text based content, especially when it comes

to the local language. KISSAN has initiated certain voice based content services, and is planning to expand it for providing crop management services, crop information, crop diseases, weather information and news and announcements.

School Report Cards (DISE)

School Report Cards is an online system to track elementary government school progress across India. This unique software gives a uniform format to national level information and can be easily read.

Category
e-Education & Learning

Organization
National University of Educational Planning and Administration (NUEPA) & Department of School Education

Platform of product
Web

Website
www.schoolreportcards.in

Achievements

- Provide users comprehensive information on all the vital parameters, be it student, teacher or school related variables
- Displays concise, accurate information about each school in a standard format which is easy to understand
- Allows meaningful comparisons to be made among schools across the nation
- Allows the use of these reports in constructive conversations, which lead to improved education for all children across the country

Summary

The government's flagship education programme, Sarva Shiksha Abhiyan (SSA), is implemented by a state/union territory officer on the ground. It is his/her job to ensure that basic elementary education is provided to all children between the ages of 6-14. To assist with running the programme, the District Information System for Education (DISE), has developed a software called 'School Report Cards' which helps collect data from all schools in India's 633 districts.

Once collected and computerized, the data is verified at the office of the State Project Director, and then submitted to the national level authorities, that is, the Department of School Education and Literacy, MHRD and the National University of Educational Planning and Administration (NUEPA), New Delhi.

A few states have even decentralized the data entry to the block level. Once the data is received from all the states, it is thoroughly checked at the national level and each state is provided detailed district-wise analysis, and then the same is immediately put on the website in the form of School Report Cards in a user-friendly and hassle free manner. In addition to quantitative information, the School Report Cards website, www.schoolreportcards.in, also provides qualitative information and a descriptive report about individual schools. All that can be accessed freely, with the click of a mouse.

Practise Background

India has long suffered from inadequate data collection and tracking of its many programs. In the recent years, ICT solutions have helped create meaningful ways for collection and analysis of this data. There are around 1.3 million elementary schools in India, and about 80% of them are run by the government. This is a huge amount of human resource which the government can directly guide into becoming educated and upright citizens.

However, infrastructure often fails us. It is a fact that more than 1.20 lakh schools are single-teacher schools and about 70 thousand schools are being managed by part time-teachers. Only 16 percent of schools have electricity and only 10 percent schools have computers. Given these dismal figures, there is a desperate need to have a monitoring system which can report the progress of schools. Further, when the government implements any new infrastructure and schemes on the ground, monitoring is crucial to avoid wastage. This is where ICT tools come into play.

Data by units and schools was simply not available from any sources in India. A few years ago, sitting at the Ministry of Education, it would have been tough to ascertain details about a school in a small district in Madhya Pradesh in a matter of minutes. This is the change that DISE sought to implement, and it is the reason NUEPA and MHRD backed the project.

The data collected at each school is shared at the school, cluster, block, district, state and national level. Each school covered under DISE is provided with the 'School Report Card' unique ID and the concerned officer at the cluster level is supposed to discuss it with the school headmaster/teacher along with the other stockholders at the grassroots level. Therefore, through www.schoolreportcards.in the reverse flow of information has been ensured and the data of all schools (1.25 million schools) is made available under the public domain to bring in more transparency.

Finally, 'School Report Cards' is made into a tabulated report that presents data of an individual school on a variety of variables concerning different aspects of universalization of elementary education (UEE), which is one of the main objectives of the Sarva Shiksha Abhiyan programme.

Another short report known as 'Descriptive Report' is also generated for all the 1.25 million schools imparting elementary education. It is descriptive in nature and also presents strengths and weakness of an individual school. Both these reports are unique in nature, as no other country has put such huge school-specific information in the public domain.

Other than the valuable information this scheme generates, for both the government and the public, it has some other vital features. NUEPA has developed it in-house and it has come at no extra cost. The data is collected by machinery already in place, namely the district education officer, block resource coordinator, cluster resource coordinator, village education committee and school headmaster, which are all already under the Sarva Shiksha Abhiyan Programme.

There is a process adopted to make the data authentic and correct. At the district level, 10 percent of the filled-in formats are checked thoroughly and at the block level, 25 percent are. All the cluster resource coordinators (70,000) across the country are made accountable to ensure that the coverage of schools is 100 percent and data is consistent and there are no missing values in the filled-in formats. Similarly, the district project coordinator of SSA and MIS/DISE in-charge in each district issues a certificate to the state project director, certifying that the data is free from errors.

In its final step, while submitting the data, the state project directors have to certify that data is free from errors and inconsistencies and hence may be merged into the national database maintained at NUEPA, New Delhi. Before uploading the information on the website, data is thoroughly checked by NUEPA and TSG of the MHRD. The data has been put into the public domain and nothing is hidden from the citizens/users. The certification in terms of authenticity of data has shown significant improvement in the quality of data.

Provisions have been made in www.schoolreportcards.in so that users can report inconsistency in data, if observed and NUEPA is committed to take up the issue with the concerned state project director. The project has strengthened MIS across the country. Initially, in 1994-5, it was implemented in 42 districts across 7 states. By 2001, it was implemented in 272 districts across 18 states, and finally by 2005-06, the entire country was covered under DISE.

www.schoolreportcards.in was formally launched in November 2006 by the Union Minister of human resource development, Government of India. Report Cards in regional languages were provided in 2008, and the downloading of raw data facility to users was provided in 2009.

Project Features

Technology Platform
The website can be accessed via any web browser, and does as require a username/password for access to data. However, to download data, it is needed. The software was built using Oracle for the backend and PowerBuilder for the front end work. The website was developed by using both HTML and ASP.

Accessibility & Inclusiveness
The information about individual school on every aspect of elementary education is made available in the form of 'School Report Card'. The application is freely accessible to everyone and from anywhere in the world.

The database has different search features and options.

- Locate schools: A drill down approach to reach a school and view/print the data.
- Basic search: Search can be made on key variables such as school management, category, area etc.
- Advanced search: This feature is used by the advanced users who would like to see the set of schools meeting particular criteria.
- Download Raw Data: Unit-wise data can be downloaded through the advanced search by providing user-id and password details. (The complete portal is accessible free of cost)

In addition to Hindi and English, the School Report Cards have also been made available in several regional languages. A 'Download Raw Data' facility has also been provided so that apart from viewing the School Report Cards, users can also download the school-wise raw rata in Microsoft Excel format for every school in a district/state so that further empirical studies exclusively based on DISE data can be undertaken. About a thousand users have registered for downloading this raw data, which has been encouraging.

Community Participation
Community participation in this project is encouraged by the fact that it is available various Indian languages (Hindi, Kannada, Malayalam, Tamil, Telugu, Marathi and Gujarati). The report cards are also made available in English. Efforts are being made to provide report cards in other regional languages.

Sustainability & Cost Effectiveness
The software has not been a great expense for NUEPA because it was developed in-house. Its indirect expenses are about Rs. 2 lakh per

annum, towards the hosting and domain registration charges. The data collection is done through officials already in the field, and as such did not add any expense to the project.

There has been training on the ground so that officials understand how to use software, and to that end, DISE is responsible. The National level team at NUEPA, New Delhi in collaboration with the technical support group of SSA under MHRD imparts training to the State level officers (System Analysts and Programmers) who in turn train the District level MIS staff, such as Computer Programmer and Data Entry Operators to feed data by using the DISE software (developed by NUEPA) and then check the internal consistency of data provision of which has been made in the software itself.

The National level capacity building workshops are conducted from time-to-time. DISE software under implementation in more than 600 districts is time-tested, user-friendly and menu-driven which has no scope for manipulation. The software has got very 'strong report module' which has helped widely in ensuring data usage at all disaggregated levels.

Replication & Scalability

Before, www.schoolreportcards.in practically nothing was available to public in terms of the specifics about government school operations. Now many factors concerning these schools have been made available to users and are in the public domain. The project could be scaled up to include primary and secondary schools in the future, and finally, government run colleges.

Conclusions

The DISE database is known to be one of the largest school education databases in the world (1.25 million schools and a comprehensive profile of more than 5.62 million teachers). The www.schoolreportcards.in portal has the data for the past years (since 2006) and that too made available for all the 70,000 clusters, 7,000 blocks that are spread over 633 districts in 35 States and UTs of the country.

A single transaction through the portal could process approximately 65,000 school records. The database has been optimized to produce results quickly using various indexes. As the transactions/queries run on the database are real-time, the accuracy of the transaction is ensured. If the criterion to fetch the schools is correctly opted, then there is no delay in getting the requisite information depending upon the internet speed. This project has immediately shown that government can worked very well, imbibing the spirit of both technology and transparency to involve the public in its undertakings.

Lessons Drawn From The Practise

ICT tools have, once again, been employed to track government programs successfully. Through this software, there is data on the workings of schools that is being shared with the public. The officials

from NUEPA have new ideas on how to extend this program. One of them is having schools give data on the free lunches provided by government.

This kind of real time data will also help problem solve, not just tabulate how the funds are being spent. In the same light, many other aspects of education can be tracked for maximum value. This experiment proves, once again, that ICT and MIS can help elevate government, if done correctly.

Bookbox

Bookbox is a social enterprise that has innovated the use of 'Ani-books' (animated books), which use SLS – same language subtitling – to support emergent literature and literacy skills. These are animated stories for children with the narration appearing on screen as same language subtitling, helping them read and pronounce words correctly.

Category
e-Education & Learning

Organization
Bookbox India Pvt Ltd

Platform of product
Offline

Website
www.Bookbox.com

Achievements

- Provides animated audio-visual products for children that are ready for mass distribution in any format: TV, DVD/VCD, mobile phones, handheld, internet and print
- Offers user-friendly Ani-movies with a few educational features such as multilingual stories, where instead of SLS, translations in other languages appear on screen
- Allows a recording option that helps practice pronunciation
- Produced over 30 Ani-videos in 30 languages

Summary

Bookbox's vision is a "book" for every child in his/her language. The company defines a book as a reading experience that can travel in print and other audio-visual media. This is because Bookbox feels that although print media is highly desirable for children, it cannot reach all children in India's 640,000 villages.

The country has 22 official languages and numerous dialects, and due to rampant poverty, the added problem of illiteracy. The solution to this, in that case, is making audio-visual educational content available for children, in the form of Ani-books. With technology rapidly expanding and DVD players and smart phones becoming cheaper, this might be a better way of reaching India's untapped masses.

Same language subtitling (SLS) was innovated and pioneered by Planet Read, now a partner NGO for Bookbox. SLS is a pedagogically sound and proven technique, with known application in early literacy and second language learning. Taking children's love for watching cartoons, these Ani-books help them retain language skills while at play.

Bookbox produces original stories, and also reproduces public domain stories and published children's books. Bookbox commissions original stories as well. All the Ani-books are first produced in English, and then translations are added.

Practise Background

There are about 127 million children below the age of 6 in India, likely to enter primary school. For many, pre-school preparation, socialization into reading and reading exposure will not be very high. Additionally, of 130 million children in India's primary schools (Grade 1-5), 40% are likely to leave schooling before even completing Grade 5. Further, most of the 257 million pre-school and in-school children below 14 in India will rarely ever experience reading children's books, as opposed to textbooks.

Given these startling numbers, it should be no surprise that half the children who finish grade 5 cannot even properly read a newspaper. Keeping these figures in mind, a creative way to foster reading skills is a welcome addition to the market.

Ani-books cater to all those children who need to begin learning or brush up on their language skills. They can especially help weak-learners and language learners, although adults who need to brush up on their language skills can also benefit from the Ani-books. However, keeping in mind the fast paced technological changes at the ground level, Bookbox has chosen to make the Ani-books available in a number of formats, including ipods, ipads, smart phones, VCD/DVD players, outside of the traditional printed books. In fact, Bookbox's youtube channel launched with a response of over 1800 per day.

SLS not only shows children the spelling of the word being narrated on screen, but also allows them to learn the proper pronunciation of words. In fact, because of disparity between the qualities of teachers across the board, children from different schools often learn terrible

pronunciation and have weak spellings. With quality control over Bookbox 's Ani-books, it has proven to be a good opportunity to be an equalizer when it comes to reading and speaking a particular language.

Implementation Process

Bookbox was founded in 2004, after winning a business plan competition at Stanford University, called the Social e-challenge. Bookbox has produced over 30 Ani-books in 30 languages, and eventually, proposes to mount TV programs.

Bookbox started animating stories in 2004, and by mid-2005, it had produced a collection of 10 stories in a mix of 12 Indian and foreign languages. The company launched its website and started selling internet downloads. In 2005 it received a special mention at the Manthan Award for E-learning. In the next year, Bookbox produced 5 more CDs/DVDs with various language combinations like English & Spanish, English & Hindi, English & Mandarin, etc, and explored partnerships with potential distributors and marketing companies.

In late 2006, with a partnership with Shemaroo Entertainment Pvt Ltd, Bookbox began to retail physical products in the market. In 2007, the company entered a distribution and marketing agreement with Orient BlackSwan and produced two new series called Storytellers 1 & 2. These 'Storyteller' boxes contained 5 Ani-books on a CD and VCD, along with 5 printed books of the same stories. Both box sets had Ani-books based on public domain stories. The collection won Best DVD ROM Content in 2007, at the DVD Awards by Studio systems.

In 2008, the Storytellers series was launched in Mumbai by actor Aamir Khan. The same year, in a partnership with Star India Pvt Ltd, Bookbox released 'Storytellers 3 – Gattu Tales', 5 stories based on a popular character licensed from Start TV. Print books and CDs were/are being marketed by Orient Blackswan. A hybrid CD/VCD version is being marketed by Times Multimedia, and a version released for phones is being marketed and distributed by Mauj.

By 2010, Bookbox had tied up with Master's Communications, a children's content distributor in the United States. Over 30 DVDs were available in the American market.

In 2011, a brand new series called 'Legendary Lives' was marketed under the Storytellers banner. This is a collection of stories from a famous person's childhood, showing qualities for children to emulate. The first two persons on whom the Legendary Lives stories were made were India's ex-President Dr. Kalaam and noted police officer, Dr. Kiran Bedi. Marketed and distributed by Orient Blackswan, the series is available all over India.

Newer iphone applications, new 'Legendary Lives' (commissioned by Planet Read) and applications for Android phones are also on the cards as Bookbox continues to expand and grow.

Technology Platform
Bookbox is available for reading right from its print version to various multimedia formats – DVD, CD, VCDs and as downloadable book files online. Bookbox has sold about 50,000 books over various platforms, reaching an estimated 200,000 children. What this technologically inclusive strategy does is ensure that children can consume Bookbox in a way that is most familiar to them. Also, since Bookbox is looking to build an international clientele as well, it is good that it has adopted an online strategy early on.

Accessibility & Inclusiveness
While users need to have access Bookbox, in many ways, is the ideal product for an urban child. This is because outside of the printed book, the child will need to have access to either a TV & DVD/CD player, or then an ipad/smartphone etc. Also, many of its English to foreign language translations are aimed at either children who are learning foreign languages, or then foreigners learning English.

Essentially, Bookbox products are first conceived in English, and then translated into other languages. This makes it an English-language product at its core. However, another factor plays into it being a more urban product right now, and that is pricing. For example, downloads price animated stories and mobile videos at $3 which is about Rs 170. The same remains for the print books. Therefore, buying a collection of Legendary Lives (5 Ani-books) can be close to $15 or Rs 840. In Indian terms, this would be an expensive product, out of the reach for many poor families.

Community Participation
Bookbox has successfully managed to build a community around itself. The fact that the company welcomes readers and interested parties in suggesting new languages and helping with translations and narrations has created some enthusiasm for it. At the same time, many children's writers and teachers have also submitted original stories for consideration to the company. However, arguably, its greatest community participation has come from the children who have met the product with a very enthusiastic response. By bringing in beloved TV characters (like Star's Gattu) or a cartoon version of leaders like Dr Kalaam, Bookbox has increased its audience.

Sustainability & Cost effectiveness
Bookbox has, over the years, put in place partnerships that have increased its market reach. Once an Ani-book is produced, providing narration and SLS in multiple languages is not a big cost. However, for it to remain not just cost effective but grow long term, Bookbox needs to increase sales. They propose to do this by increasing visibility, as they did by tying up with Star TV. In the long run, they want to produce a TV program.

By their estimates, they have content for about 8 episodes (2011) and will need to produce additional content to be able to air a show of 52 episodes. They estimate this will cost $1 million, and the company would break even in 3-4 years.

Replication & Scalability
Brands such as Disney offer similar products, however, what makes Bookbox stand apart is the

educational value that its products offer. Following its lead, a company called 'Karadi Tales' now offers children's stories on VCD/DVD, however, the market has more than enough space for multiple players. Bookbox, in particular, has demonstrated that it is scalable across various multimedia platforms.

Conclusions

For children to watch cartoons is hardly a novel concept. Entire industries have been built around the same ideas, and children, the world over, have enjoyed them thoroughly. However, keeping in mind the need for some children to brush up on their language skills, be it reading, spelling or pronunciation, Bookbox has very effectively filled this gap. By using a mixture of public domain stories and original stories, the company has built up a nice collection of Ani-books for children to choose from.

By incorporating tribal stories in the future, and hopefully more regional folk tales, it will become a wonderful way to teach children the culture of other people and places. At this moment, children's stories from other countries are available to Indian children as well, and vice-versa, through Bookbox .

The biggest challenge for Bookbox will be to produce enough content for a television show, as that will be the best way to reach the maximum number of children. Using some already established cartoon characters, but this time with SLS in tow, Bookbox will certainly be able to have the desired impact.

Lessons Drawn From The Practise

Bookbox might be looking at an established business space – children's books – but it is managing to innovate with it to keep up with modern times. The fact that it has integrated technology into its very product, and not just in the way it makes the product, is commendable. Using Ani-books with SLS is an interesting concept, and furthering its reach by multi-platform versions of the books is truly embracing the digital world.

Presently, children's books market share is about $4 Billion USD and increasing by 15% every year. The online and mobile downloads market is about $3 Billion USD, and growing by 100% annually. Finally, the DVD player market too is enormous, with 175 million DVD players sold in 2010, and the industry seeing a 10-20% rise annually. Given the huge potential in online and technology markets, it makes sense to try and integrate the concept of a children's bookstore into the digital marketplace.

Unfortunately, this means that in a developing country like India, where the majority of children would not be able to access online stores, access to e-books and mobile content would be limited. However, the good news for Bookbox is that there is a huge untapped market that can afford its product, and with its strategy of trying to produce a TV show, it will be able to reach the masses.

Drona

Drona is a new age tool to cover 360 degrees of the learning feedback cycle - Authoring (mobile and desktop), Delivering, Testing, Scoring and Analytics. Drona is designed to cater to multiple segments of audience and enables organizations to author mobile as well as desktop applications in their own infrastructure.

Category
m-Education & Learning

Organization
Deltecs InfoTech

Platform of product
Mobile

Website
www.deltecs.com

Achievements

- Enables learning and training, corporate communication,
- Provides senior management with continuous learning and development
- Provides rich content delivery channel exclusively for specific top management
- Reduces third party dependency
- Increases return on investment on learning and training and on enterprise phones investments

Summary

Drona is an m-Learning platform developed by the Mumbai based organization, Deltecs. It empowers users to send and access personalized content on their mobiles phone. Drona's specific value lies in the fact that this content is useful for employers, employees and students, to help them perform better.

Drona is an engagement platform that helps to "engage customers and employees on mobile". Enterprises uses this mobile platform to deliver various types of communication modules (Video, Survey, Assessment, Events, Newsletter, PPT) to interact with prospects, employees, partners and customers. Drona allows the company to create campaigns, schedule or instant push on smartphones (BlackBerry, iPhone, Android) and helps in real-time tracking and analysis.

Drona comes in two broad formats. The product 'Drona V-Cast' empowers organizations to create their own mobile courses or curriculum and distribute it to their employees. Further, they can also use the application to track and analyze their employee's usage and performance. This information is then sent back to the web-server for further analysis.

The technology is an enterprise mobile software. It consists of a video casting mechanism for leadership development training. This helps broadcast training videos on blackberry phones of leaders in any organization using which they can be training round the year. It also has a technology for taking assessments as well as feedback etc. Since the employees are time pressed, Drona VCast works as one of the best mediums to train them even when on the move.

Drona's 'M-Cast', on the other hand, is a platform where individuals such as students and entrepreneurs can choose to have videos delivered to them which offer sales skills, educational tests and so on. These videos are ideal for when they have some idle time, or even for those who set time aside for accessing this content. These applications explore the full potential of mobile video content.

Practise Background

According to ITU, two of three people in the developing world have mobile phones. The encouraging trend behind these numbers is that mobile usage is not restricted to adults alone, but teenagers are also quick to use the phone for both communication and entertainment.

In the cities, mobile phones are a way of life with many people carrying more than one with them at all times. Many big companies give smart phones with email capabilities to their employees so that they can stay connected even when they are out of the office. All these trends point to the fact that mobiles are constantly in the hands of people and can be used as a medium to impart education.

While most of Drona's content can be accessed on regular handsets, they are also looking to the future. M-Cast, which is video based content, can only be accessed on smartphones. This strategy is quite interesting as it only focuses on a relatively small

population. However, while the density of smartphones is not very high in India, there is consensus that the market potential is very high.

India has always been a price conscious country, and as these phones become more affordable, there is no doubt that consumers will buy them. Another factor is the cost of data transfer, and finally relevant, local material. In fact, content can be the driver for technology upgrades (for example, you need the internet today as email has become a part of work life), and mobile phones can potentially fill this place. Projects like Drona will have the first mover advantage if they continue to tap and grow their markets.

Implementation Process

First time entrepreneurs Divyesh Kharade and Jinen Dedhia started Drona after they realized that "idle time" spent by students travelling in buses and trains could be put to use if there was a mobile application which catered to them. They started Deltecs, and with a young team of 8 employees, started the Drona application. Drona's focus is on learning and training that is happening across mobile devices. Their product has two broad components: the delivery platform and the content itself, which they believe will add value to the end user.

The Drona platform consists of three main components: Drona Authoring, Drona Distribution and Drona Analytics.

- Drona Authoring: This comes as a desktop-based tool with a highly intuitive user interface specially designed for trainers and teachers alike. It allows one to author Level 2 type of content that is text, images, audio, and video. These tools enable one to create different types of courses that include learning slides, multiple-choice questions, multiple response questions, true/false type assessment, survey, and feedbacks.

  The authoring tool allows various settings for course, mobile interface, themes, & results. Course description, organization details, mode of data transfer, number of allowed views etc. can be set while authoring. The course can then be previewed on phone emulators to re-check the apps created. This is also a way to form and maintain a mobile content repository, using which one can edit or use existing apps. Drona authoring also supports various functionalities including bug reporting and tracking. There is also an option for auto upgrade.
- Drona Distributor: This comes in 2 versions; Web Distributor for GPRS/EDGE based distribution and Bluetooth Distributor for Close Proximity Distribution. The Web Distributor lets one upload Drona mobile apps and send out bulk SMSes/emails with the download links of the same. The Bluetooth Distributor lets one upload Drona mobile apps and bluecast (bluetooth broadcast) the files to a closed proximity audience. Once downloaded, apps get installed on the click of a button. To access the apps, the user authentication is checked. Different courses are displayed in the menu.
- Drona Analytics: This feature involves web logins with different

permissions for administrators, managers, trainers, and end-users. It tracks and reports different parameters like average usage times, average learning bursts, learning completion reports, phone capabilities and so on to generate required ROI reports. It also gives critical scoring and analysis with regard to scores, percentages and appropriate graphical analysis.

Also with different logins there are different reports available. For example, the manager of a company will get to analyze the performances of trainers, as well as generate reports over a period of time. The end-user gets to see his performance and usage of particular modules as well as comparison between his performance and the average performance for particular models.

With the SaaS model (software as a service/managed service) the hardware, resource and maintenance requirements are taken care by Drona and a downloadable Drona Authoring tool resides with the client. The Distribution, Tracking, Analysis is hosted on Drona's servers. Further the in-house hosted model, Drona Tracking, Distribution and Analysis, along with Authoring, is hosted at the client end.

Project Features

Technology Platform
The hardware required to create the applications is a laptop/computer, and servers are needed to host analysis and distribution. Drona works on microsoft.net framework platform, and can be accessed with a java-enabled handset. For the consumer, Drona works on both simple phones and smartphones, but the video content is available on the smartphones.

Accessibility & Inclusiveness
The mobile application is created to be compact and ubiquitous in nature. Hence it is easily downloaded on a large range of phones using GPRS/EDGE technology. The solution supports more than 500 different types of phones. The application can work on java enabled phones with MIDP 2.0 and above, starting from Nokia, Sony Ericsson, Samsung, Motorola, HTC, BlackBerry, etc.

At the same time only smart phones with video capabilities can access some of the Drona applications (M-Cast), which means that the section of the population that is using basic mobile phones cannot watch videos. However, since the focus is more on companies and students studying for the competitive exams, it seems the population targeted has the phones required to access the product.

Community Participation
Drona's success lies in its specific designs for two categories of users. Students and entrepreneurs who get content delivered to them using M-Cast, and corporate clients who need to deliver tips to their employees in a timely manner. For this, they use Drona's V-cast platform. Ready-to-use courses are also offered such as competitive exams preparation courses for CAT/GRE/GMAT/UPSC. Leadership and management development courses like sales, negotiation, soft skills training courses are also offered.

As companies can create their own curriculum and track the progress of employees, effectively Drona has created its own user community. At the same time, engaging with Drona products requires the user to have access (membership) to its products.

Sustainability & Cost effectiveness
Drona is based on a subscription model and therefore has a financial sustainability plan. User reviews have been favourable. As Drona cuts the cost of holding/attending seminars, and allows users to experience the same material at their own time, the response has been positive. The company has not disclosed financial details; however, they are confident that the company will continue to succeed as a market leader.

Replication & Scalability
From the technological point of view, other companies can replicate Drona. Improvements in the speed of mobile internet and mobile phone operating systems will allow people to use Drona's features even more effectively. As smartphones become cheaper, more people will be able to access mobile content. Drona can also expand its content to include school curriculum quizzes and even start pushing entertainment related videos for greater mileage. As far as scaling possibilities go, Drona has a lot of potential.

Conclusions

Deltec's products aim at providing not just an m-learning environment but also help the client create their own mobile applications as and when required. Drona is a 360-degree mobile solution provider that will enable institutes, universities, colleges, training centres, market research companies, and any other industry to author, publish and distribute their own courses on mobile phones.

As penetration of broadband is poor in India, mobile phones surface as a better mechanism for learning and collection of information. The offering doesn't stop at delivering the learning and tests but also extends to collating scores and results, and generation of reports to help analyze the performances. It also helps to apply analysis and make more informed decisions and thus help improve overall delivery standards. Also one can add multi-media type of content, making it more interactive.

It also offers options to customize each application, mode of data transfer and themes etc. This solution works for more than 500+ types of phones. Special plug-ins are available for BlackBerry Enterprise Server to have this solution placed within a corporate enterprise.

Lessons Drawn From The Practise

The international trend, as can be seen through various applications offered to smartphone users, is to make life as convenient as possible. Applications to keep check on health, money etc have very popular, as are entertainment applications. Drona enters in a different segment, one that offers to make education easily accessible. This trend will

undoubtedly catch on, due to its obvious benefits.

At the same time, the specific benefit of Drona for clients is clear: through Drona videos, corporates can skip the hassle of arranging workshops for their employees but instead make direct use of the smartphones the company gives them. Work related videos can be watched, after which the company can offer a questionnaire that the employee answers through the phone. This ensures that they have understood the latest message. The same can be said for individual subscribers who can get tips/quizzes through their cellphones, avoiding actual classes etc.

Kisan Sanchar

Kisan Sanchar is an interactive platform for scientists, agricultural experts, and institutions for sharing their knowledge and technology with registered subscribers of the service, who are mainly farmers. It is, essentially, agricultural knowledge dissemination over mobile phones supported by Sristi Gyaan Kendra, a Rohtak based NGO.

Category
m-Education & Learning

Organization
Kisan Sanchar

Platform of product
Mobile

Website
www.kisansanchar.com

Achievements

- Kisan Sanchar is a web portal designed to collect knowledge and know-how to educate farmers on agricultural issues, with the service being available in Delhi, Gujarat, Himachal Pradesh, Haryana, Jammu & Kashmir, Punjab, and Rajasthan
- Provides registered farmers automatic text and voice messages, based on knowledge collected, in their local language, free of cost
- Ensures automatic SMSes go at a scheduled time to farmers' mobile phones with voice calls also being made to numbers and delivery reports showing if these messages have reached the intended party
- Allows farmers to check their subscriptions on the website, which is also a database for all collected knowledge, with the service being available in Hindi, Punjabi, Gujarati and English
- Ensures technical support is available 24/7
- Shares information in local language in text and voice format
- Partners with agricultural universities, agriculture departments of colleges, Kisan Vigyan Kendras (KVKs) and various NGOs to provide timely and useful information to farmers

Summary

Kisan Sanchar is a multi-utility platform that connects farmers with the very people who spend time researching and working on agricultural issues. Agricultural experts are now able to collate their information onto the Kisan Sanchar portal, which then sends its subscribers – farmers from multiple states of India – information on topics that affect them.

The information is derived from news sources, professional bodies and experts. There are agricultural statistics, district wise weather information, market rates and analysis, online chat, agricultural archives, information on state wise call centers for support services, and career counseling available through the service. Kisan Sanchar also plans to host other features such as a video database on agricultural practices, latest market surveys, film-making and poster making facilities, networking opportunities, and home delivery of best agricultural outputs to farmers.

Kisan Sanchar is completely self-sustained by as KVKs and some NGOs pay an annual membership fee to participate. They also pay the bills against the messaging service that Kisan Sanchar provides to farmers. It has two functional units of operation, at Rohtak and Panchkula.

By making the service free for the farmers, Kisan Sanchar has taken the extra financial burden and barrier to entry to the beneficiary away from its business model. At the same time, realizing that not all farmers were able to read messages, Kisan Sanchar started the voice messaging service as to become even more inclusive in nature. Overall, while the service has made small in-roads among farmers in the country, it is poised for expansion. It is definitely helping solve the problem of marginal information to small farmers about various agricultural conditions.

Practise Background

The population of India is over 1.1 billion, and increasing every minute. In 2011-12, the Planning Commission estimated that there are 269.3 million poor people in India, of which 216.5 million reside in rural areas. Overall, about more than half the total workforce – 58.4% -- remains employed in agriculture, which contributes only about one fifth of our Gross Domestic Product.

Given these figures, it is obvious that an overwhelming amount of farmers in rural areas are poor and do not significantly contribute to the economy of the country. The Planning Commission also reports that half of those engaged in agriculture are still illiterate and only 5% have completed Higher Secondary education. Various projects have come about which try and provide farmers with the information they need – in the medium they can access it in – to help them have a better understand of farming methods, market conditions and productivity.

Kisan Sanchar too, began because of perceived problems with one of Haryana's contract farming programs under HAFED (Haryana State Cooperative Supply and Marketing Federation Limited). An SMS program

initiated by them to inform farmers of Basmati rice prices failed because many farmers did not know how to read. Additionally, the text was not sent in Unicode and was not easily read on all mobile phones. Kisan Sanchar was then launched as a pilot project in the districts of Kurukshetra, Karnal and Kaithal in the 2008 Kharif season. Over 2000 farmers signed up within the fortnight.

The idea of getting farmers connected to markets to create a more efficient delivery chain has taken root in India. Kisan Sanchar stands apart from many of the other ones because the burden of cost is not put on the farmer. Instead experts are made part of the process, and with membership fees, become stakeholders. Using ICT in agriculture, and especially making use of the mobile phone, the Indian farmer is slowly becoming empowered.

Implementation Process

After Kisan Sanchar was piloted in 3 districts of India in 2008, it was noted that many farmers were having difficulty reading the messages delivered to their mobile phones. The reasons were either incompatibility of the message script with the phone, or illiteracy because of which the farmer could not understand the message being delivered to him. Over time, the team fixed these problems.

A computer-based application and online management system was implemented so that the right messages could be delivered to the farmer at the right time. Texts were sent in unicode, so that they could be read on any handset, and voice messages were introduced. Kisan Sanchar was officially launched in September 2010, and its voice messaging service launced in Febuary 2011.

As the expert agencies bear the cost in Kisan Sanchar, farmers get these messages for free. These universities, NGO, KVKs etc pay around Rs 3000 per annum. This way, the extensive research they do and knowledge they collect can actually make it from universities and papers to the person on the ground – the farmer – who needs the information in real time. At the same time, keeping in mind that farmers needed help to understand how to use the system, many trainings were implemented and awareness workshops held.

A major problem to overcome was that farmers did not pay attention to SMSes on their phones as they were constantly bombarded with junk messages from service providers. The second problem was to come up with a bulk messaging service that kept costs low for Kisan Sanchar. When they first contacted mobile service providers, they were quoted about 10-20 paise per SMS. Therefore a low cost solution needed to be found.

Overtime 'Green SIMs' were distributed to farmers which enabled them to receive voice messages, which they consented to use after they were also given additional benefits of extra talk time etc. The messages also had an interactive service whereby the farmer could call Kisan Sanchar's call centers simply by pressing the green button after reading/listening to the messages. This way the farmers were able to clarify issues early on. Many stored Kisan Sanchar's number and put a different ringtone/alert for it, so that they knew to check this message instead of letting it pile up with other unread messages. With help from friends, the team began to use a SMS

broadcasting application that could send to many users at the same time.

Kisan Sanchar received funding from government funded Punjab Agricultural University, and from there approached various KVKs around the country. These KVKs have, in turn, helped build the subscriber based for Kisan Sanchar. With active help from various agencies, Kisan Sanchar has demonstrated how mobile phones can disseminate information to farmers.

Project Features

Technology Platform
Kisan Sanchar is both a web and mobile-based platform. While the content managers have unique login IDs to access the site and also send messages to the thousands of subscribers, the farmers who receive the messages predominantly use their mobile phones to access the service. They can, however, go online to www.kisansanchar.com to look for information as well.

Accessibility & Inclusiveness
Kisan Sanchar has been built with accessibility in mind. In fact, its very existence is because the team behind it wanted to develop new ways of getting information to farmers. Because of this, its content is available as both text and voices messages, and it is (at the moment) available in four different languages. However, there is great potential for increasing the number of languages the service is available in and also content partnerships that would make the same information available over different mediums, for example, radio and TV.

Community Participation
Kisan Sanchar has essentially built a partnership with many agricultural institutions such as agricultural colleges and KVKs to provide information to farmers. Each of these is given their own IDs to log in and fill in information, which is later broadcast to farmers at a scheduled time. Content is updated on a daily basis, and its inherent usefulness has helped build the Kisan Sanchar community.

Sustainability & Cost Effectiveness
Kisan Sanchar does not pass on any of its costs to the end consumer – the farmer but instead relies on membership payments from KVKs, NGOs etc for its financial sustainability. At present, due to this arrangement, it is 100% sustainable and cost effective for the user. However, some preliminary survey has shown that some farmers might be ready to pay nominal amounts for this service, something to keep in mind for the future.

Replication & Scalability
Kisan Sanchar is not alone in the space of using ICTs for agriculture, especially in terms of providing information to farmers. However, other projects, most notably Reuters Market Lite, offers the same service but with a charge to the farmer. To that end Kisan Sanchar has a very different business model. It can be replicated in the states in which it is not present; however, it can be scaled up in those states by forging new partnerships with KVKs and NGOs in untapped states.

Its 24/7call center is also a nice touch for farmers who might otherwise be unable to use their mobile phones for the service. The project was also chosen as

the recipient for the 2011 'Mobiles for Good' an award initiated by Vodafone India Foundation and Digital Empowerment Foundation and has received a further Rs 4 lakh in funding.

Conclusions

The farming community of India has been in dire need of timely interventions from the social sector, in helping them get better access to information that not only increases their yields but also helps them secure a better rate in the market. It is part of a welcome trend of applying ICTs in the agricultural sector, to increase the country's knowledge base. In fact, this service is rather unique, especially because it is free information coming straight from agricultural experts, with a premium being put on it.

Lessons Drawn From The Practise

Interventions, in whichever space they may be – education, health, agriculture – are modeled according to the purpose they are to serve. Therefore, if a business starts an agricultural service for a farmer, its main aim will be to make a profit in the end. In the case of a social sector enterprise like Kisan Sanchar, linked so closely with government agencies, it has kept in mind that the project costs must not be transferred to the end user, the farmer. Therefore, to that end, the project is most impressive and should be scaled up across India.

Outside of the text/voice messages filled with timely information is the added advantage of a call center, where the farmer can call up and ask pertinent questions about his crops and how to take care of them. Traditionally Indian agriculture has suffered because farmers did not even have knowledge of the most simple practices like newer methods of irrigation or multi-cropping. This project aims to change all that.

It can only be hoped that similar interventions can be made in more parts of the country, in areas over and above agriculture.

Mobile Antakshari

Mobile Antakshari is the first ever multilingual speech recognition technology mobile game that is based on the classic Indian music game of Antakshari, where the player or team sing songs that start with last consonant letter of the song sung by the previous player or team.

Category
m-Entertainment

Organization
Hexolabs Media and Technology Pvt. Ltd.

Platform of product
Mobile Based

Website
www.hexolabs.com

Achievements

- Uses the mobile platform and a classic Indian music game to provide a unique gaming experience
- Pits the consumers musical wits against his/her mobile challenging their musical senses with various genres of musical challenges in regional languages
- Provides wholesome entertainment at a low cost

Summary

In the furthest reaches of India's rural heartland, the cellphone is bringing something that television, radio and even newspapers couldn't deliver - instant access to music, information, entertainment, news and even worship. Hexolabs is a provider of products, platforms and hosted-on-demand services for mobile VAS services on the mobile phone to Enterprises, Media Companies and Wireless Carriers. The company was founded in collaboration with the Indian Institute of Technology, Kanpur, India. Its innovation in Mobile Antakshari is in adding right usability and technology elements.

Antakshari is an extremely widespread music game, where two or more players or teams sing songs which start with last consonant letter of the song sung by previous player or team. When a team sings a song they earn points. Mobile Antakshari actively engages users to participate and play Antakshari with the system giving them a unique experience to compete with an artificial system through mobile platform.

Mobile Antakshari uses complex algorithms to match users input with over 10,000 songs and evaluates whether it is the right song. The complexity increases manifold when one has to create a database of songs in four major languages -- Hindi, Tamil, Telugu, and Malayalam. Each of the four languages has in excess of 1,500 songs and required a grammar code that needed to be written to give the system points of comparison with what players were singing. Though Mobile Antakshari employs a complex algorithm in the back end, it has created a simple and accessible voice interface.

Mobile Antakshari can be played either against the artificial intelligence or against friends. In the former, a player is presented with four modes of play. All four modes expect players to recognize a song and sing it back, although the clues in each differ. It is now working on a mobile semantic search product to help non-data consumers discover Web contents over simple voice call. This allows user to search by using a voice input and results would be delivered over the voice output or SMS.

Overtime, Mobile Antakshari has developed more interactive features as well. Players can play against the system; assorted film trivia has been included as well. The game falls right into the mobile entertainment category, one which is very popular with people. At the beginning of 2011, Mobile Antakshari had about 1 lakh users, per month, with a single operator which included old users returning to play more games. An average game lasts about 10-15mins per user.

Practise Background

VAS stands for Value Added Services, which are the add-ons a mobile subscriber can opt for. This includes (and by far, the most popular), cricket updates, horoscopes and Bollywood news. As more and more people use mobile phones through the day, it doubles up as an entertainment device where songs, games, scores and conversations meet each other.

There are other kinds of services as well, many of which focus on

social causes. With the increasing penetration of mobile services, especially in multilingual rural India, Hexolabs strongly believes that voice based mobile technology solution holds the key to the future of healthcare, governance and entertainment information services.

Reaching out to the rural masses, offering services in Indian languages, a clear need to differ from SMS based services and offering real value to the users, bringing the mobile edition of popular Indian game were the motivational factors behind the development of Mobile Antakshari. In the future, Hexolabs wants to develop voice based services other than games.

Implementation Process

Mobile Antakshari was conceptualized around 2009. Building the game required both a technical component, such as building the menu and fine tuning speech recognition, and a media component, which included aggregating, collating and labeling film songs. The music labels needed to be licensed as well.

Traditionally the game can be played by two or more people and is popular as a group activity during commutes, bus rides etc. The starting singer has to sing two complete lines and then s/he may stop at the end of those or following lines. The last Hindi letter of the last word sung is then used by the next singer to sing another song, starting with that letter. Once a song has been used in a round of the game, it cannot be used again by any contestant. The winner or winning team is decided by a process of elimination. The person or team that cannot come up with a song with the right consonant is eliminated if their opponents can produce such a song.

It took 6 developers to build the single player antakshari and another 4 months for them for the multiplayer antakshari. Since an entire menu needs to be developed to give the choice of songs, understand what the player sings/guesses and respond to the voice accordingly, fine tuning the menus took a fair amount of time. Mobile Antakshari has 500 songs per language and about 2000 songs overall.

The game is designed in a unique and entertaining way so as to alleviate boredom. The automated voice (called prompts) has different reactions to when the player gets a song correct/incorrect so as not to make it tedious or predictable. In developing the game, voice testing also took a long time as the game was available pan-India. This meant that different regions and different states and their different accents needed to be recognized. Also, people would be singing answers, so accuracy in speech recognition is essential. The software used for this is On Mobile's proprietary software called Talisma.

When it came to selection of songs , trials revealed that while people in South India loved playing antakshari with peppy songs, north Indians favored slower, sadder songs on the whole. The average playing time would be 15 minutes, which could be the time during a break, waiting for something or even while in the car. Accordingly, music was licensed from various labels to fit the mood and duration of the game.

Mobile Antakshari can be played either against the computer or

against friends. In the former, a player is presented with four modes of play. All four modes expect players to recognize a song and sing it back, although the clues in each differ. The games offered under antakshari are: Karoke, Antara, Bollygyan and Mix Masala round and a multi-player podium for Antakshari Ustads.

The multiplayer mode, for "Antakshari Ustads", allows players to key in the telephone numbers of their friends, inviting them to join in. These friends-turned-competitors now buzz in every time they recognize the song, to get first shot at singing the lyrics. Winners redeem their points for prizes such as caller tunes or more apps.

The work on Mobile Antakshari continues apace. Every quarter, around 100-150 new songs are added in each language. A massive back-end system logs every single song a particular player has heard, so that songs aren't repeated. The system also logs language preferences: A player who plays in Hindi three times consecutively will then be taken directly to the Hindi version the fourth time around.

Mobile Antakshari actively encourages the user to participate and compete with the system providing a unique experience to compete with an artificial system through the mobile platform. The interesting way the platform is designed results in greater participation and user attentiveness as also a large volume of repeat consumers.

Project Features

Technology Platform
There is no installation required as Mobile Antakshari is a network based VAS application. A number needs to be called after which the user can start playing immediately.

Accessibility & Inclusiveness
Mobile Antakshari's intuitive interface provides a fascinating experience of a voice recognition technology. Voice recognition offers a great user experience eliminating language barrier and hence, brings effective user interaction. Mobile Antakshari is the first ever multilingual speech recognition technology mobile game that offers great value VAS services for everyone (both urban and rural India).

Community Participation
One user of Mobile Antakshari told the team that: "I have a very basic phone with no quality entertainment on it. All I could do was receiving SMSs in English that I couldn't read. I loved listening to Bollywood songs and playing antakshari. It is nostalgic when I play antakshari on my basic phone, it is so simple!" Other users were trying to find out where the "any" key is because the prompt says, 'press any key to continue'. The anecdotes are to serve as a reminder that a large rural population can only use mobile features through voice because they are illiterate and struggle with messages etc. Since the product is available in Hindi, Tamil, Telugu and Malayalam, it allows a diverse stretch of people to play it.

Sustainability & Cost Effectiveness
The game cost Hexolabs around Rs 30-40 lakhs to make. Immediately popular, within the first three months, it had already attracted 110,000 customers. Mobile Antakshari is used through the telecom operator and not a directly downloadable game. Therefore, its profits for the company are based on the agreement with the telecom operator.

A monthly subscription to the game is Rs 49, and normal call charges apply while playing the game. At the same time, you could play the game without a subscription and it would cost Rs 3 per minute to play. The telecom operator keeps on average 60-70% and then labels and intermediaries are paid, and the remaining amount is the profit for Mobile Antakshari.

Replication & Scalability

The game can yet be scaled up to include many other Indian languages. In some of the options, the prompts suggest dialogues and hints to let the user guess the movie. Hexolabs is planning to expand this to visual clues that can be played over the internet via video. The basic framework of the game offered, including the variations, can be replicated quite easily.

Conclusions

Falling into the mobile entertainment category, games like Mobile Antakshari have captured people's love for film songs and trivia, as well as given them a release from boredom via their cellphones. Hexolab's main driver – that there is a lot more potential in voice-based applications due to illiteracy – has been proved correct. In India, specifically, if any mobile applications include Bollywood, cricket or astrology, it is said to be sure to be successful! At the same time, adapting a beloved Indian game to today's technology is a simple but smart idea that works. The same could be done for other favorite Indian games, thereby expanding the mobile entertainment industry.

Lessons Drawn From The Practise

India has about 840 million mobile connections of which only about 15% are smartphone users, which means the overwhelming majority of users are still using basic phones. At the same time, the number of internet users in India is growing sluggishly, caused by a range of reasons including lack of infrastructure, illiteracy, and lack of information about the use of the internet.

However, slowly but surely, VAS are gaining ground because they can be accessed via basic mobile phones. They are easier to use and often available in the vernacular language. These trends certainly indicate that voice based applications and services are a good way to access the rural populations of the country, not just for entertainment purposes but also for other projects which involve development goals such as health, education and so on.

ToeHold

ToeHold Artisans Collaborative (TAC) is an export-oriented group enterprise, owned and governed by the artisans through their eleven women's Self Help Groups (SHGs) aiming to take the generic but popular Kolhapuri footwear to branded 'couture' status in international markets.

Category
e-Enterprise

Organization
Asian Centre for Entrepreneurial Initiatives (ASCENT)

Platform of product
Mobile

Website
www.ToeHold india.com

Achievements

- Produces over 400 designs of Kolhapuri slippers, which are shipped to countries as far and wide as America, Europe, Korea and Japan
- Brings together a collective of 10-11 Self Help Groups with 10-12 women in each, and all business decisions are taken in a democratic manner
- Reaches new and varied clients, who then either choose existing fashions or give new designs to be produced
- Provides financial stability as of the net profit, 40% goes to the company, 40% to artisans and 20% to SHGs to develop the business and fund new income activities

Summary

ToeHold Artisans Collaborative (TAC), with their website www. ToeHold india.com, essentially helps artisans become entrepreneurs using the internet for financial gain. The website is designed to enable the artisans to gain access to international and national B2B footwear markets. The website has a product catalogue with more than 400 designs on display at a time. It also has a webpage about the people who make these exquisite Kolhapuri fashion footwear.

The philosophy behind the project is the enterprise approach: to empower people to make choices based on informed decision making and the process of ownership and consequent reward and risk. In a manner of speaking, this approach can breathe new life into the lives of smaller artisans who feel that mass-producing corporations are taking their livelihood away, as it has been seen with many commodities including footwear. TAC, by using the internet, has connected the artisans with a new clientele abroad, and also saved the artisans the cost of building and maintaining showrooms.

TAC has an English speaking person appointed to communicate with clients via the internet. The website, aimed at B2B markets, is one of the key drivers of business for the artisan enterprise. All the market interactions happen through e-mail and a marketing coordinator takes care of the communications in English.

Customized designs are made for clients and in this process exchange of ideas / designs happen through digital images by e-mail – this is a boon to the largely illiterate and vernacular-speaking artisans. This unique model of Grassroots Group Enterprise, the front end of TAC is a market-focused, customer-centric and profit-driven business enterprise while the back end is an innovative social enterprise striving for improvement in the quality of life of about 400 artisan families.

The artisans become profit sharers, not wage earners by using the internet to their advantage. The exposure and learning opportunities awarded to the artisans through their website are many, affording them a certain level of dignity as entrepreneurs as well. Through this internet based strategy, the producers of these Kolhapuri slippers are also empowered, not just the retailer/middleman. Also, since new avenues of sales have opened up via the internet, these artisans are no longer looking at falling incomes or giving up their jobs.

The annual turnover of TAC is around Rs 40 lakhs. TAC has won excellence awards from Federation of Karnataka Chambers of Commerce, the Barefoot College of Footwear Craft & Enterprise and the Digital Empowerment Foundation. TAC has given presentations at the Indian School of Business and at the Tata Institute of Social Sciences.

Practise Background

It is no secret that globalization and trade policies, while on the one hand benefiting countries, do on the other hand, adversely affect certain segments of the population. This is the case with little groups of artisans, who often unsuccessfully compete with mass produced, low cost, generic goods. This was certainly the case with the women entrepreneurs who made the famous Kolhapuri slippers, as they were struggling to make ends meet, as the exports of Indian handcrafted leather began to decline.

There were additional social problems. Many artisans in India have struggling with their dying crafts; however, it can often be even tougher for female artisans who are the "lowest stratosphere of society" according to some. These women are taken advantage of by local traders and not given a fair price for their products. Traditionally, traders lend these women's husbands money and often tie them to exclusive contracts and ay them very low wages. They remain indebted and impoverished. These traders do not allow them to sell their products to anyone else.

Kolhapuri footwear is a traditional product from Athani and Nippani in Karnataka. Many of the women involved in this dying art either switched jobs or bore the burden of lower sales as people assumed they were producing 'inferior' quality products. The lack of demand and a lack of originality in their designs were slowing them down. Worse, many of the skills training focused on men, and not women.

Implementation Process

The Leather Technology Mission, a program launched in January 1995 by the Government of India – mainly targeting the small and unorganized leather producing units --- aimed at improving artisan's skills and providing them artisan skills and sustainable links with the markets. Following this development, in 1998, with the help of the NGO Ascent, around 200 Kolhapuri artisans decided to pool their resources and form their own business to free themselves from this form of bonded labor.

With funds from the United Nations Development Programme and India's National Leather Development Programme, the ToeHold Artisans Collaborative was launched as a collection of 11 separate Self-Help Groups. Each SHG has about 10-12 members in it.

Ascent helped the women artisans to get training in design and business skills, and through a carefully executed strategy, managed to quickly grow their business. While working mainly from home, the women found a building to share for more technical, craft making processes and were able to gain access to high-grade raw materials. In the beginning the women wanted a showroom, but did not realize how expensive that would be. Madhura Chatrapathy, a trustee of Ascent, suggested they have a "showroom in the sky".

TAC has majority of its buyers from America and Europe, but the base was not so simple to build. People

did not have the confidence that the products would be good, and this is where the website helped. There were over 400 designs on the site, and along with TAC's image, this served to build the confidence of the buyer as well.

The business model plays out through direct interaction between the artisans and the buyers, facilitated by a coordinator or an export catalyst who takes care of the English communications, which the vernacular speaking artisans cannot. The buyer either picks the design from the 400 displayed on the website or sends specific designs to the coordinator through an email in the form of images or sketches.

These images are then emailed to the local manager with the internet connection in the village who then shows them to the artisans. This is followed by artisans taking decisions collectively and in consultation with the coordinator on the costing and pricing of the product, thus ensuring a fair price accrues to them while volumes can divided according to specific skills.

The orders are discussed openly at TAC. The women decide if the buyer is offering a fair price and if the order should be taken. To that end, the women really do own and govern TAC through their Self Help Groups.

Project Features

Technology Platform
ICT tools were introduced in the production chain and in the selling of the footwear products. Computers were equipped with Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM) software capable of creating, transforming, and combining designs to fit the demand. Of course, the entire marketing design on TAC requires the internet, right from showcasing products to communicating with clients on orders.

Accessibility & Inclusiveness
TAC is structured in such a way that unfamiliarity with the internet and even the English language is not a barrier for the women. An appointed person not only coordinates with clients but helps the ladies use the design software on the computers, if they are unable to.

Community Participation
ToeHold is a community-centered project where the artisans own and run the business and are directly responsible for the decisions. The SHGs have empowered local communities, strengthened the links among them, and given them a new business approach. With the enhanced adoption of technology, these women have been able to extend the TAC community to an international one. They have reached a high degree of entrepreneurship.

Sustainability & Cost Effectiveness
Of the net profit, 40% goes to the company, 40% to artisans and 20% to SHGs to develop the business and fund new income activities. Over the years, through technology and standardization, the artisans have gained a competitive edge and now produce over 450 varieties of Kolhapuri slippers and have reduced the tanning and production process from 35 to 15 days. They have also been linked with new markets abroad thanks to their digital catalogue. At an individual level, the women's livelihood has increased by over 300%

while the company earns over Rs. 40 lakh per annum.

Replication & Scalability

There are 2.5 million leather workers in India, most of them small and organized sector workers. ToeHold can be replicated across the villages of India where these workers live, especially today, with increased internet penetration in rural areas.

Conclusions

ToeHold has shown that in light of challenges like globalization, standardization and the loss of market share, even the smallest community of leather makers can bounce back from near extinction if they apply the same principles to themselves. Therefore, by wholeheartedly using the internet to attract international clients, and taking cognizance of international designs, ToeHold has managed to stay in the market and even increase its productivity as a group.

Further, through a very democratic process, it has shown that it is not just the blind application of ICTs that help business flourish in these modern times, but it is also the applications of ethics and a sense of fairness that works. The spirit of entrepreneurship has allowed the TAC to help its women earn better, but also, develop a sense of confidence in themselves.

The social implications of a dignified income cannot be understated. Many of the women are able to keep their children in school longer, while 80% of them now have gas connections and improved stoves. Some of them even interacted with MBA students at a business school in Hyderabad. They are able to shed some of the hierarchy that Indian society traps them in.

Lessons Drawn From The Practise

The TAC experiment has demonstrated that ICT tools can be incorporated even into the artisanal sphere to improve quality, design and market reach. However, as is the case with many projects, the introduction of technology needs to be done in a smooth, phased manner, so that the proposed beneficiaries do not feel intimidated by it. For the TAC artisans, trainings were arranged, and above that, a post has been created to interface between them and the technology. In time, perhaps, they might be able to handle it themselves.

Also, involving the community in the implementation process also helps ensure that the project becomes a long-term venture, with no party feeling left out or helpless. As the TAC has demonstrated, not only have the women profited personally, but by funneling in money into their businesses and SHGs, they have been able to grow it.

The access to new markets is also a huge benefit of adopting ICTs into the business plan. While the traditional way of getting new clients for TAC is going to trade fairs and leather fairs, using the internet

immediately cuts down time and cost. With new innovations to the website, and making use of social media etc, TAC can potentially increase its market share even further.

DesiCrew

DesiCrew Solutions is a rural BPO, providing a complete back office solution for clients through a network of franchised offices in rural India with a competent rural workforce. DesiCrew provides significant scope for maximizing business value through cost management, operational efficiency and innovation. All of this is made possible through a rural service delivery model, leveraging processes and technology to deliver global service standards across various verticals - Insurance, Market Research, Internet & Mobile, E-Governance, and the Social Sector.

Category
e-Enterprise & Livelihood

Organization
DesiCrew Solutions Pvt. Ltd

Platform of product
Online

Website
www.DesiCrew.in

Achievements

- Generates, populates and moderates content through digitization, scanning and data entry
- Provides live chat responses and mailroom activities
- Helps in new business set-up and project management
- Provides transcription and translation services
- Provides website monitoring

Summary

DesiCrew Solutions takes the BPO model from cities and satellite towns of cities to rural parts of the country, thus bringing down costs and creating white collar employment at the village level. It is a socially motivated business aiding financial and social development.

Led by Saloni Malhotra, DesiCrew was incubated by Dr. Ashok Jhunjhunwala's Rural Technology and Business Incubator at IIT Madras, in February 2007. DesiCrew's innovative outsourcing model has two key stakeholders – the community that runs the DesiCrew delivery centers and the clients that outsource their jobs. The benefits include a focus on quality, secure locations, a more stable workforce, better margins and corporate social responsibility at no extra cost.

Practise Background

India is known as an outsourcing destination because of the cost savings the country affords its international clientele. Its salaries are lower than those abroad, as are rentals and incidentals. However, though the BPO industry saw impressive growth as a sector, salaries became higher as did infrastructure costs. What seemed like a competitive option soon was seen as losing its edge.

At the same time, Indian companies also saw the wisdom in outsourcing basic data entry jobs. Backend offices, away from the center of town make basic financial sense. However, even satellite towns such as Gurgaon have become big cities which are rather expensive to operate out of. Therefore, a new trend has arisen, which is to establish these backend BPOs in small towns and villages.

Different BPOs have followed versions of the model: some only employ women, and need only a minimum educational qualification while others have stricter standards. Some do not mind working off data cards, while others, such as DesiCrew, chose their location based on the quality of infrastructure available in the hinterland. However, the end result is the same.

The wage for a person from a village means much more than the same amount to a city person for obvious reasons: they need not migrate to cities in search of jobs, and because they continue to live at home, they need not spend on travel, rent and so on. As far as the company is concerned, it was found that the quality of human resources is the same, if not more dependable, at the small town/village level because of the base the company is able to build. However, establishing itself is a larger challenge, but as the trend has shown, it is a welcome challenge.

Implementation Process

DesiCrew Solutions is a Rural BPO initiative that provides high volume data related services at an affordable cost. DesiCrew has its delivery centers located in rural areas, which provide a cost advantage to the clients with no compromise on quality. DesiCrew has 10 functional delivery centers – each equipped with PCs, connectivity and power back up. Each center is staffed with a supervisor and 3-10 associates. The centers run in one or two shifts of 8 working hours.

The delivery centers specialize in one or more of the following:

- Data entry: Digitization of manuscripts and forms from insurance companies, telecom providers, directories amongst others. Services are available in English and Indian languages such as Tamil, Hindi and Gujarati.
- Maintaining and updating the sales lead database: Creating, maintaining and updating the client sales lead database, language independent.
- Data Conversion: Converting data from one format to another such as image, word, excel, pdf etc. Services are available in English and Indian languages.
- Proof Reading: A final proofing of the manuscript, focused on cleaning up any typographical errors before the manuscript is typeset. Services are available only in Tamil.
- Type-Setting: Arranging typed manuscript into a book as per requirements from publishers. Services are available in English and Indian languages.
- Data translation: Translation of textual content from English to regional Indian languages i.e. Tamil, Hindi, Gujarati.
- Data Transcription: providing typewritten version of dictation, speech, or interview. Services are available only in Tamil.

DesiCrew employs unemployed rural youth to work on back office jobs. The rural graduates require training to increase their productivity and quality levels. The training given by DesiCrew consists of basics of the BPO industry; general skills required to be part of the industry; client specific skills; importance of productivity, quality and deadlines. The training program is between 3-6 weeks depending on the batch and clients requirements.

DesiCrew has also developed 2 web-based applications to organize its distributed workforce. These have been briefly described below:

- Click 2.0: An automated workflow application that acts as a virtual office for the rural delivery centers. Click 2.0 helps manage and monitor a distributed workforce for seamless delivery of outsourced projects.
- Pegasus: This data entry software is used to enable remote workers to convert handwritten data to digital format. The application uses field validation and double data entry techniques to ensure quality is built into the process rather than be dependent on individuals working in the system. Based on feedback from the clients in the BPO industry, features have been added to ensure data security and confidentiality.

Over the last 2 years, DesiCrew has delivered over 25 projects with 12 clients in 2 cities. A few significant events are explained below:

- January 2005: Began research on the Rural BPO model

- August 2005: Delivered the first project on English and Tamil Digitization
- October 2005: Introduced an automated workflow application - Click 1.0
- 2006: One of India's large BPO companies expressed interest to collaboratively work on the model
- August 2006: Released a data entry software – Pegasus
- October 2006: Partnered with the Common Services Program of the Government of India to pilot the Rural BPO concept in 10 locations in Mayiladhurai, Tamil Nadu, India
- January 2007: Felicitated in the presence of The President of India
- February 2007: Registered DesiCrew as a Private Limited Company
- April 2007: Featured in Business Today as 'Indian's 20 Most Wired Companies'
- May 2007: 3 of India's largest BPO companies express interest in partnering
- June 2007: Pilot test for a back office Finance and Insurance company

Project Features

Technology Platform
Using basic PCs and a specific set of software, DesiCrew offers services from transcription, whip management, cross browser testing, HR processing, and so on. They feel the company is only limited by client opportunities and what they are able to bring to the table.

Accessibility & Inclusiveness
The idea behind DesiCrew was to counter the attrition in the BPO industry. Primarily the attrition rate was due to the low level of salaries in the industry which mean that people ended up living at lower salaries in the cities where expenses were higher. It was felt that if jobs could be taken back to where people are coming from it would become more meaningful for them and therefore more meaningful for the company that was employing them as well.

Community Participation
The community benefits in the following ways:

- Income: Through outsourced work, DesiCrew adds Rs. 5000+ per person that works with them.
- Encourages women & entrepreneurship: Individuals who cannot move out of their geographic areas because of social commitments especially women are encouraged to work in DesiCrew centers. Also the centers are set up with local entrepreneurs who are responsible for the infrastructure and daily operation at that center.
- Exposure to the global IT enabled services and BPO industry
- Self Confidence: According to the government statistics 70% graduates are underemployed or unemployed for the first 3 working years due to lack of confidence and poor communication skills. In smaller centers youngsters gain confidence and skills, before joining the mainstream workforce.

Sustainability & Cost effectiveness
For the clients DesiCrew adds value by addressing 2 main points:

- Attrition: With attrition rates as high as 80% in the BPO industry, there is a demand for alternate locations and pools of trained workforce.

- Costs: Lower rentals and salaries help bring down cost of operations

Replication & Scalability

The rural BPO has become a popular model across India, with small outfits cropping up everywhere. While different companies choose where to start rural BPOs – some close to the cities while others deeper into rural India, it is clear the concept has caught on. However, limiting factors include availability of electricity (which is a very big problem in some states), language (especially if the BPO wants to offer voice based services in the future, dialect becomes very important) and finally, the willingness of a client to let his work be processed in a rural area.

Conclusions

DesiCrew has proven that basic outsourcing work can be done from the villages and smaller towns of India, thereby offering a solution to the problem of rising costs in the current metro-bound BPO industry. At the same time, as companies grow within the country, there is now a new way for them to save costs, by availing of rural BPOs much in the manner that foreign companies avail of BPOs in India.

Moving forward, data entry will not be a problem as DesiCrew has demonstrated, but there will be added costs in rural BPOs which need to take on the jobs of call centers which involve voice based services such as conversation. Already, those in cities complain about the lack of understanding call center employees have, and there is all possibility that this problem will increase as the BPO industry moves geographically inwards. However, a solution is to offer regional language voice services from the heartland, leaving any English services to urban BPOs.

In the end, the rural BPO has proven itself to be a high potential industry and if infrastructure can keep pace with growing demands, it is poised to change the landscape of small town India.

Lessons Drawn From The Practise

The state of education has improved in India and as a result there are many qualified young people who move to cities in search for a job. Many of them end up with small salaries that have to pay for their rent, living expenses and some money back home. As a result, most of them jump from job to job, courting salary hikes, but at the same time making it impossible for the industry to hire people at lower salaries any longer. This has been the case in the BPO sector.

The trend for urban migration has long existed all over the world, but overcrowding of cities and urban slums have also made it quite obvious that even big cities run out of space. This means, quite simply, we need more cities. The way to start is to take these white collar jobs to where the educated youth are: to smaller towns, to villages, and over time, let them become centers of progress too.

As has been seen by DesiCrew's

experiments, people are ecstatic to be able to find well-paying jobs in their own towns. At the same time, women, who often are not allowed out of their houses/small towns, are able to make use of their degree and work in the neighborhood. This allows them to have their own savings too. What is good for the community is good for business, and it makes for a great combination! The success of the rural BPO also encourages other sectors to think about out of the box solutions to remain successful and profitable.

Common Service Centre

The Common Service Centre (CSC) program is a public private partnership (PPP) that makes e-government services available at the village level, thus dramatically reducing the time and trouble it takes for villagers to pay utility bills, apply for government certificates and carry out other administrative tasks thereby narrowing the digital divide that exists in rural India.

Category
e-Government

Organization
Department of Information Technology, Government of India

Platform of product
Internet

Website
www.csc.gov.in

Achievements

- Uses ICT tools and internet connectivity to improve efficiency, transparency and accountability.
- Established an extensive network of over 85,500 CSCs registered
- Provides business opportunities for village level entrepreneurs
- Allows augmentation of e-government services with complementary commercial services for increased financial viability

Summary

The Government of India's National e-Governance Plan has a broad vision: to deliver, and make accessible all Government, Social and Private Sector services in the areas of agriculture, health, education, entertainment, FMCG products, banking and financial services, utility payments, etc. to the citizens at an affordable cost. With this intent, the Common Services Centres (CSCs) were conceptualized, as the front end service delivery outlets enabling smooth and transparent governance at the village level.

CSCs are envisioned as the front-end delivery points for government, private and social sector services to citizens of India. Further, CSCs will deliver services in the areas of telecom, agriculture, health, education, entertainment, FMCG products, banking and financial services, utility payments, etc. Each CSC is expected to serve a cluster of 6-7 villages, thereby covering more than six lakh villages across India.

Under the project, the idea is to facilitate a platform that will enable government, private and social sector organizations to integrate their social and commercial goals and take the benefits of information and communication tools (ICT) to the remotest corners of the country for the delivery of government, social and business services at the village level. ICTs and internet communications were critical for the proper functioning of the new centres and for delivering services to remote locations.

Other key partners in the scheme include: a village entrepreneur who staffs the office, a technology partner that differs from state to state and the state government.

Practise Background

In India, as in much of the rest of the world, the digital divide prevents millions of people from participating in the growth of ICTs and digital innovations or accessing electronic media and technologies. It is possible, though, for Governments and businesses to use information technologies and the knowledge economy to help bridge that divide.

In India, the digital divide is large. According to the Telecom Regulatory Authority of India's (TRAI) Quarterly Report for June 10th, the total number of telecom subscribers (both hard-wired and wireless) in the country was over 671 million, which put the overall tele-density (the number of subscribers per 100 citizens) at 57. However, of that total, only 9.5 million came from rural areas, which puts the rural tele-density substantially lower. Additionally, only 16.7 million were Internet subscribers and only 9.5 million had access to broadband. The urban/rural divide was also reflected in mobile phone numbers. Of the 635 million wireless users in 2010, only 33% came from rural areas.

The aim of the Government of India's National e-Governance Plan (NeGP) is to ensure 'last-mile' connectivity, that is, to "make all public services accessible to the common man in his locality, through common service delivery outlets and (to) ensure efficiency, transparency

and reliability of such services at affordable costs to realize the basic needs of the common man." Created originally by the Departments of Information Technology (DIT) and Administrative Reforms and Public Grievances (DAR&PG), the NeGP was approved by the Union Government in 2006, in order to boost e-governance initiatives in India.

Implementation Process

Part of the National Common Minimum Program, the national government implemented its e-governance program, as a 3-tier public private partnership (PPP) consisting of the CSC operator, called the Village Level Entrepreneur (VLE), the Service Centre Agency (SCA) that is responsible for a Division of 500 to 1,000 CSCs and a State-Designated Agency (SDA). By including local entrepreneurs and businesses, the program expands the scope of its benefits by creating employment and entrepreneurship opportunities.

Online CSC e-governance services include online application forms, certificates and payments of utility bills (electricity, phone, water). The intention is also to provide high quality and cost-effective audio-visual and text content and services on the web platform in order to provide information and services in areas of education, health, telemedicine, entertainment amongst other.

In theory, the CSCs offer a wide range of government services as well as some private services. In reality, not all intended services have come on stream. In addition to that, the necessary link between the CSCs and the state-level government agencies has not been established in all places.

Project Features

Technology Platform
The CSC system relies on desktop computers and associated peripherals at CSC centres, connected to the regional and national network via the Internet. CSC operations are monitored by proprietary software.

Accessibility & Inclusiveness
The CSC program was rolled out nationwide, to all states and union territories. Operating at the village level makes e-government services more readily available to all rural residents in the country. At the village level, CSCs are operated by Village Level Entrepreneurs, thus creating business and employment opportunities for locals.

Community Participation
The CSC program was rolled out nationwide, to all states and union territories. Operating at the village level makes e-government services more readily available to all rural residents in the country. At the village level, CSCs are operated by Village Level Entrepreneurs, thus creating business and employment opportunities for locals.

For the digitally illiterate in rural areas, the CSCs may be their first exposure to the capabilities of digital technologies and the Internet.

Replication & Scalability
There is a huge potential to augment businesses with complementary

computer services and to substantially scale up e-literacy in rural areas. Not only do the beneficiaries of CSC services save time and expense paying bills, recharging phones etc., but they are also exposed to computers, the Internet and software, many for the first time. This could help scale-up the country's overall e-literacy rate.

The National e-Governance Plan is large and complex. In 2010, it consisted of 20 central departments, 360 departments across 35 states and Union Territories and 500 implementation agencies. To effectively operate such a broad network, it will be necessary to employ more experts, develop more skills and provide more training.

Three specific capacity gaps at the state level that need to be filled are hiring more personnel with appropriate background and aptitude, training existing personnel who have inadequate skill sets and the organization of appropriate institutional frameworks to handle the specific program. This kind of capacity building at the scale of the CSC program would have a nationwide impact.

Initially, the target for the CSC program was to have one lakh centres located in one lakh villages with each centre serving approximately six villages. Since then, however, the Indian President has revised the mandate, requiring 2.5 lakh CSCs with each serving two to three villages. While increasing the accessibility of the centres, this would also reduce the customer base of each one and could negatively impact the financial viability of each centre.

In order to expand, CSCs will have to commercialize their offerings so that villagers can monetize their experience and have the means to purchase more products and services from the CSCs. e-choupal gave farmers a way to sell their produce to new markets. Similarly, CSCs could provide an avenue for farmers to sell their produce and wares to earn money. In this way, the CSCs could scale up their operations.

Conclusions

The impact of village-level CSCs was studied in two villages: Thane District, Maharashtra and Karmnagar, Andhra Pradesh. The following results were found.

For rural villagers, access to essential commodities and services has always been difficult. Even where there is electricity and other infrastructure, simply paying a utility bill or lodging a service quality grievance can be very difficult and require travelling to the District headquarters or a larger town or city.

The CSC in Birwari, Taluka Shahpur in the Thane District was started in May of 2009 by Bherevishnu, a primary teacher, and his wife, Vishaka. Its operating hours are 6am to 10pm and it serves their village of 1,200 as well as twenty other nearby villages. As a result of this one CSC, services have become much more accessible for thousands of villages, who previously had to travel two hours by bus to Taluka Shahpur, the nearest centre.

In Choppandi, Karimnagar, Andhra Pradesh, Santosh Reddy, a 25 year-old entrepreneur, opened his CSC in 2009 and also installed additional computer equipment. Serving 15,000

people in his mandal, it stays open all day and doubles as the local internet café.

Anecdotal feedback from both Thane and Karimnagar indicate that the CSCs have saved villagers significant time and travel expenses related to paying utility bills and other errands. For example, previously it could four to six hours or up to a full day and Rs. 50 to travel to the nearest large town to pay bills. Alternatively, villagers would be forced to pay bills on a given day of the month when the electricity department representative came to the village to collect. Otherwise, it would mean the long journey to town. With CSCs and online services, villagers have a lot more flexibility to pay at their convenience and according to their cash flow.

Lessons Drawn From The Practise

Effective roll-out of nationwide CSCs requires an understanding of e-governance. In general, however, this is not the case equally across the country. By and large, the program has been more successful in states such as Andhra Pradesh than the BIMARU states (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh).

Though the potential for providing much-needed government services to rural areas is huge and the prospects are encouraging, the effectiveness of the CSC program has not been even across the country. While some CSCs, such as in Thane District and Karimnagar, do offer government services, other areas are not so well served.

The strategy has been evolving with time, and taking into its fold new approaches such as participatory local governance, community development, technology diffusion and rural entrepreneurship. While the participatory local governance and community development approaches have been well absorbed and adopted by the Government agencies; the induction of ICT and 'rural entrepreneurship' into the rural development domain by NGOs at the grassroot level, has been more or less unorganized (despite the promising growth in ICT infrastructure and information system in urban areas).

The work on ambitious CSC project is in progress and currently implementation is going on in 35 States and UTs. The CSCs are being set up by private franchisees called the Service Center Agencies (SCA) – have already been appointed in most of the States. The SCAs further appoint Village Level Entrepreneurs (VLE) to run and manage the CSCs in pre-defined locations. The Scheme is being implemented in a Public Private Partnership (PPP) framework with a focus on rural entrepreneurship & market mechanisms.

The CSCs focus on content customization and multi- lingual delivery of end-to- end services for income enhancement in the rural areas. As previously mentioned, there is a low awareness level amongst villagers about the services offered at CSC centres. On the other hand, there is a demand for services that may not actually be offered, such as vehicular service tax in Andhra Pradesh. Therefore, additional advertising and outreach and coordination with local Panchayats may be necessary to improve the

effectiveness of the scheme.

A CSC is positioned as a Change Agent as it - promotes rural entrepreneurship, builds rural capacities and livelihoods, enables community participation and effects collective action for social change - through a bottom-up approach having a key focus on the rural citizen. Awareness-raising at the district level and entrepreneur selection and training at the village level is critical to the success of the CSC.

NREGAsoft

NREGAsoft involves the application of a number of ICT technologies at the Panchayat, Block, District and State levels of the system and resulted in reduced cost and corruption, increased efficiency and improved transparency, accountability and trust.

Category
e-Government

Organization
Ministry of Rural Development, Government of India through the State Government of Jharkhand

Platform of product
Internet

Website
www.nrega.nic.in

Achievements

- Uses a centralized Management Information System, smart cards, biometrics, GPS and broadband Internet service to streamline the employment insurance program and minimize waste and corruption
- Ensures that core banks make zero-balance bank accounts available to the rural poor, who previously would not have qualified
- Involves State, District, Block and Panchayat level governments

Summary

A number of ICT initiatives were introduced at both the State and national levels in order to ensure the effective implementation of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA, or NREGA). This case study examines the impact of the NREGAsoft initiative in the Ranchi District of the State of Jharkhand. Smart cards, hand-held mobile biometric identification devices and a wireless Internet platform, in combination with a centralized Management Information System, helped the scheme function efficiently, with reduced corruption and increased transparency and accountability.

Practise Background

The aim of the MGNREGA, passed by the Indian Parliament in August of 2005, was to enhance the livelihood and security of people in rural India by guaranteeing a minimum of 100 days of paid employment per year to any rural household whose adult members would voluntarily do unskilled manual work. This work, in turn, would be part of other projects directed directly at issues that contribute to rural poverty: drought, deforestation, soil erosion, etc.

Thus, the act was intended to create a win-win situation, simultaneously addressing both unemployment and rural development issues. Initially implemented in 200 of the most backward Districts in 2006, it had been rolled out across the country by April of 2008.

Key stakeholders were the Central and State Governments, the Panchayats and local communities. Wages and a portion of the material and administrative costs are covered by the Central Government; Unemployment allowance and the balance of material and administrative costs come from State Governments; implementation is managed primarily at the Panchayat and levels; and coordination is handled at the and District levels.

Any adult member of a rural household could apply to the Gram Panchayat for a job card by providing the necessary details. The job card would contain the photographs of all the members of the household who were willing and able to work. With the card in hand, the candidate could then apply in writing to the Gram Panchayat for work and would be given a dated receipt. The person was guaranteed an offer of work within fifteen days of the date of application or, failing that, would be eligible to receive unemployment allowance. Wages would be paid on a weekly basis starting a maximum of two weeks later.

Although MGNREGA was hailed as breakthrough legislation, there are genuine concerns that corruption and substandard service delivery mechanisms nullified any potential benefits for the poor. Complaints were received of the widespread existence of ghost workers, discrimination in awarding work, delays in preparation of muster rolls and delayed payments.

There were also widespread allegations that Panchayats were

floating bogus companies and furnishing fake bills in order to skim huge amounts of program funds from the higher levels of government.

The scope of the problems with the implementation of NREGA in general, and with payment of wages in particular was widely acknowledged.

Implementation Process

To address these implementation problems, the Ranchi District pilot project was launched using Information and Communication Technologies (ICTs), Internet connectivity, mobile biometric devices, Smart Cards and GPS. Prior to that, ICT interventions had been introduced at the central government level in order to improve transparency, accountability and efficiency, in particular, a web-based Management Information System (MIS) called NREGAsoft.

NREGAsoft captures all MGNREGA functions and transactions in a publicly accessible online database (www.nrega.nic.in) that makes near-real time record-keeping and easy tracking possible. The website contains data on 2,50,000 Gram Panchayats, 6,465 s, 619 Districts and 34 States and union territories. Being in the public domain, the information can be accessed by bureaucrats and citizens alike, thus improving accountability. NREGAsoft also includes a Grievance Redressal System for residents to make and trace complaints.

Project Features

Technology Platform

NREGAsoft is a workflow-based management information system (MIS) with built-in checks to verify data entry and minimize errors and deliberate misuse of the system. It utilizes the Internet for all data entries and at all government levels, from the top right down to the Panchayat level. Data entry is handled by computer operators and Rozgaar Sevaks. In Jharkhand, the State Internet service, JharNet, is mainly available at the Block and District levels. As a result, when there are connectivity problems at the Panchayat level, data cards are used temporarily until they can be sent to the for computer entry.

Job cards, worker data (eg. their output, location of work and work hours) and muster roles, or job-site attendance records, have also been digitized.

Pragya Kendras, or Common Service Centres, situated in many Panchayats help implement the computerised NREGA system, thus providing a system of e-governance through e-nagrik seva kendras where citizens can access information about government schemes and official forms such as certificates of birth, death, income and caste. These CSCs are often situated in villages, thus eliminating the need to travel to larger centres to conduct government business.

Smart cards containing workers' biometric data (finger/thumb prints and iris scans) and personal information (name, address, date of

birth, gender, spouse) were issued to all workers registered under MGNREGA. Starting in 2008, they also became mandatory for wage distribution, which would only be done through post offices and banks. At the time, the majority of workers, however, did not have access to bank accounts, more than 60% of the adult population in rural Jharkhand were not served by banks and more than 80% had never used formal credit or financial services.

Consequently, in July of 2010, as part of a pilot financial inclusion project launched in three Blocks of Jharkhand a number of national banks, classified as Core Banking Systems and Nodal Banks, permitted beneficiaries to open zero-balance bank accounts accessed via smart cards. To process payment, bank personnel travel to remote areas and use mobile hand-held devices to verify a workers' identity using fingerprint information, then transfer payment to the workers' bank accounts and issue receipts. This system reduces, if not eliminates, the time and cost of travel for the worker.

An e-knowledge network was also created by the Ministry of Rural Development in association with the United Nations Development Program (UNDP) to support State and District level NREGA officials and help them address common problems by sharing questions, experiences, best practices and proven practical solutions.

Accessibility & Inclusiveness

Publicly accessible online information about applications, transactions and payments makes the system easier to track and monitor for beneficiaries and human rights organizations. NREGAsoft's grievance redressal system gives citizens a regulated channel to lodge complaints and voice frustrations.

Prior to the pilot program, it was not possible for the poor to open zero-balance bank accounts. As a result of NREGA, all participants were able to open zero-balance accounts through the Core Banking System. This improved their financial agency and made it easier and more practical to save money.

Community Participation

The pilot project is available to all people in the test area. Community participation was enhanced in a number of ways: the automatic payment system made it easier for citizens to participate, eliminated the need to travel long distance to receive payment and assured that they received all the benefits they were entitled to. Also, as the new system eliminated some of the frustrations that people had experienced with the old one (delays, middle-men, opaqueness), it naturally fostered trust between beneficiaries and the government and boosted participation.

Replication and Scalability

The current initiative is a pilot project in one District in the State of Jharkhand. In order to expand it across the State and the entire country, will take a substantial investment from the central government. Additionally, in order to function across the country, additional Internet service infrastructure will be required where it hasn't been set up yet or where it isn't dependable or fast enough yet.

There are plans to expand the use of biometrics to take worksite attendance, sometimes more than once a day, and transmit it to the central MIS via wireless broadband Internet, or offline if the Internet system happens to be down. This

would improve abuses by ghost workers and absenteeism. The added cost of smart cards relative to job cards could pose an obstacle to expansion of the system.

Conclusions

Because all records were publicly accessible and easily traceable, the ICT technologies introduced to the MGNREGA program resulted in reduced corruption and financial leakage associated with ghost workers, ghost firms and fake material orders, increased transparency and cost-savings for the system and increased financial agency for the beneficiaries. Furthermore, biometric verification and direct payment to beneficiaries prevented wages being diverted by payment officials or middlemen.

In addition to on-time and predictable payment of wages, the pilot system also made it easier for beneficiaries to keep track of expenses and manage their savings, thus providing improved financial stability and rainy-day funds for emergencies. Previously, beneficiaries tended to receive lump sums in cash. The pilot banking program means they can withdraw what they require when they need it.

The automatic payment system also reduced the cost of participation for the beneficiaries. Previously, the typical rural person in Jharkhand had to travel an average of 20km to access a bank and then queue for up to 3 hours to reach a teller for payment. Effectively, this wasted a full day of their time. After the implementation of the pilot project, however, payment officials come to them to process payment, effectively eliminating the time and expense of travel. Similarly, the ready availability of Pragya Kendras at the Panchayat level increases the accessibility and reduces the travel time for beneficiaries.

NREGAsoft makes all information regarding muster rolls, worksites, job cards, vouchers, bank account numbers etc. available online, thus improving efficiency and transparency and reducing corruption and delays. At the same time, it increases the credibility of the government, welfare agencies and beneficiaries. Furthermore, because records are created in real time, data is available immediately and processing times are reduced. For example, if a bank delays payment transfer after the transaction is approved, the records will clearly show it.

The use of ICTs improves access to information, efficiency and information dissemination. The system is virtually paperless, saving both time and resources. Public access to information via the website eliminates Right to Information (RTI) applications. Data compilation and analytics can be useful for future projects or for improving the current one. Inputting information to the MIS directly from the Panchayat level eliminates the need to transfer paper records to the offices as well as the associated delays.

NREGAsoft assists government agencies implementing the project at several levels: at the Panchayat level, by tracking the employment, households and benefits and generating documentation; and for program officers and administrators,

by making information about funds and location-specific information such as number of workers, work applied for and positions offered immediately accessible.

Lessons Drawn From The Practise

Reliable connectivity is problematic in Jharkhand and, as a result, many tasks are conducted offline with data entry taking place at a later time when the Internet is up and running again. This results in delays, errors and duplicated work. Connectivity is also required at worksites to verify attendance and generate payment slips online using the National Portal. Therefore, an extensive Internet system is required to fully implement the system, as envisioned.

Not all stakeholders have equal access to information and, therefore, they don't all have the same ability to use and monitor the system.

SWHITS

"Students Health Information Tracking System (SWHITS) is an ICT and mobile driven application using a widely accessed form of simple technology, to bridge the gap of information between the administration and the grass root level institutions.

Category
e-Government

Organization
Centre for Good Governance

Platform of product
online/mobile

Website
www.swhits.cgg.gov.in

Achievements

- Monitors the health information of the students on a daily basis, especially the outgoing students like S.S.C. students, final inter and final year degree students
- Develops MIS reports in various formats including tabular, graphical charts and Google maps

Summary

The Andhra Pradesh Social Welfare Residential Educational Institutions Society (APSWREIS) has 353 residential educational institutions with total student strength of 1.54 lakh. It is funded by the state government and administered by an IAS officer. The monitoring of the health of these students using manual methods proved strenuous, expensive and not always yielding the expected results. SWHITS was developed to overcome this problem.

Using SWHITS the Principals/ Medical Officers of the residential schools send the daily status of the general health of children as an SMS to the centralized office. A simple software (J2ME application) using templates to furnish these basic details is installed and used on the mobile phones of the school authorities to simplify the process of sending the SMS. The administrator is alerted with a blinking signal on the Google map when an institution reports more than 10 pupils suffering from a single category of disease. A tool in the application shows the direction on the Google map from an institution to the nearest Primary Health Centre (PHC).

Practise Background

Healthcare, especially at the rural level has always suffered because lack of adequate prevention and treatment especially in the case of children. More than half of Indian children under the age of five do not get the health care they need, according to a report by Save the Children, released in 2011. The report also suggests that there are not enough primary healthcare workers to tend to the needs of young children.

It is in the backdrop of these revelations that the state needs to think of other ways to monitor children's health. Tracking their health in school is one such option especially when that data can be monitored. SWHITS is an innovative scheme initiated by the government, aided by technology, so as to ensure no delays in the transfer of information.

Implementation Process

To monitor the health of students in all 353 residential schools under APSWREIS, an ICT driven application came into existence called, "Students Health Information Tracking System" – SWHITS. This aimed to fill the gap witnessed in dissemination of information from the institute to the head office. Its primary objective is to provide a better monitoring mechanism of the health of the school children, in increasing transparency and reviewing of the hygiene environment maintained at these residential institutes.

This project is an innovative scheme in monitoring the health status of poor children from disadvantaged sections of the society enrolled in these residential schools.

- The Principals/Medical Officers of the residential schools send daily status of the general health of children (including cases requiring minimum treatment) as an SMS to the centralized office.
- A simple software (J2ME application) using templates to furnish these basic details is installed and used on the mobile phones of the school authorities to simplify the process of sending the SMS.
- The server side software application captures the SMS using a GSM modem and the database is updated with the appropriate interpretation of the text message.
- This application also checks the format of the text message and alerts the sender with a reply message in case the text is not sent in the desired format.
- The concerned authority is required to resend the SMS in the desired format until its receipt is acknowledged with a confirmation message.
- Utility of the J2ME application at the client end, rules out this problem, but it is limited by the fact that the clients' phones are not always capable of accommodating the J2ME application.

MIS reports are developed and made available to the administrators in various formats including tabular, graphical charts and Google maps. The administrator is alerted with a blinking signal on the Google map when an institution reports more than 10 pupils suffering from a single category of disease (irrespective of its strength).

Time series based reports are developed for the purpose of review by the administrators in the form of graphic charts and pie charts demonstrating the spread of diseases at various administrative levels viz. state, zone, district and institution level. Department officials can initiate action to mitigate the situation and take preventive measures based on these reports. The reports both on Google map and in tabular formats depict the status of messages (received with errors, without errors) and institutions that reported no incidence of sickness.

Google map reports show the geographical presence of the institution with its health status. Density of the institutions at district level or zonal level which require medical attention over a period of time indicate that the officer at that level has to pay more attention in improving the health situation in the institutions under his/her jurisdiction. Another facility integrated in the application shows the direction on the Google map from an institution to the nearest Primary Health Centre (PHC) or the one selected from the available PHCs in the district.

Any third person visiting the home page of the project also has access to all this information. This facility enables any NGO, media, volunteers or government department to be aware of the situation and help the institute. Administrators are also facilitated with automated SMS alerts daily at 10:30 AM and 12:00 noon providing information regarding the number of institutions that have reported already, the institutions yet to report and the number of institutes with a problem. This facility keeps the administrators attentive to the problems and principals/medical officers to be cautious in sending the SMS updates on time.

For the purpose of setting an SMS format, the students were divided into two categories. Students passing

out from the institute in the present year and writing their board exams (such as S.S.C. or Final Intermediate, Final Degree) make up the first category and all the remaining students make up the second.

Health and attendance status are received in a single statement of SMS separating this information with a space from the first category to the second category for the specified code of the sickness. The first category, i.e. outgoing students, are observed more keenly to help them in being healthy while facing the competitive exams, thereby helping in a successful career path.

Though there was some initial resistance from the principals/ medical officers in sending the SMS daily, gradually its importance was accepted. The scheme's success lay in the fact that the programme effectively helped in the review of the attendance and health status of the schools regularly by the administrators. This resulted in initiation of appropriate measures of action to improve the situation of the affected institutes. The efficiency in response and administration further encouraged the principals/medical officers to keep the project ongoing.

The benefits of this programme were witnessed when, for the first time, the secretary of the department called on the district collector to conduct medical camps at the schools where the situation was being alerted continuously over a period of time. A health score calculation is also done based on the information available, giving weightage to various types of sicknesses and the incidence of such sicknesses in institutions. The institution that maintains good health through the year is adjudged the best, and those at the bottom are paid more attention to in the following year.

The innovation here in the project is the use of a widely accessed form of simple technology, in bridging the gap of information between the administration and the grass root level institutions. It is a monitoring system that builds up an extensive database with commonly used technology.

Project Features

Technology Platform
The technology platform has been kept very simple so as to ensure all principals and medical officers participate in SWHITS day. Therefore messages can be easily sent from both simple mobile phones and conversely, smartphones. The data is crunched together and put on the website so that all those visiting the website – officials/media/parents alike – can understand what the numbers mean.

Accessibility & Inclusiveness
The scheme is successful is because of its technology design which has led to its accessibility. Since there is no manual collection of data and a defined time period within which to send the message, it has been easy to convince the schools to participate. At the same time, the website which houses the data is freely accessible to all who wish to see it.

Community Participation
Most of the information is made available on the web without any user id and password to bring in transparency in the process of governance. Information like total

number of institutions, how many are sending sick details through SMS, total strength, the day's attendance, alarming institutions (institute which have more than ten students in one category of sickness), students suffering with particular disease, graphical representation using charts can be accessed without authentication.

Sustainability & Cost Effectiveness
The project is not totally sustainable on its own. Though the recurring costs are not heavy, they need to be supported by the concerned departments. However, all open source technologies are used.

Replication & Scalability
The project is indeed replicable and scalable. Right now it only looks at a very specific number of schools. It could well be expanded to include regular government schools (outside of these boarding schools) and finally even private schools. The health data could be officially shared with the health department in order to track health and also outbreaks of any diseases, water contaminations and so on.

Conclusions

Health is important for any performance, and to that end, needs to be tracked. This is why tracking health and collecting data is both sensible and imperative. In order to bridge the gap between data collection and decision making, the SWHITS application was developed and has been launched successfully for the Social Welfare Residential Educational Institutions. By using this application, the concerned officers can monitor the health details and attendance of students on regular basis. In addition they can send email and SMS alerts to particular institutions to take appropriate measures.

The essence of the entire programme lies in the simple functionality of the Principal/Medical Officer as the medium of input to provide the health and attendance information of the students which results in outputs easily understood by the administrators. With its continued use, as problem areas are attended to swiftly and comprehensively, efficiency of the whole system could be brought about. This project clearly illustrates that a simple gadget like the mobile phone need not be limited in its utility, but can prove to be useful for the general good of the society.

Lessons Drawn From The Practise

Designing programs, which help deliver very important needs – such as tracking children's health – need not be very expensive or complicated. SWHITS uses SMS and open course software in achieving this. This project has helped track and improve the lives of many little girls studying in these residential schools. That the data is going to a central server also forces accountability on the teachers who need to then explain what actions they took to help the girls' condition improve.

Further, it is a tool in the hands of the school staff to get timely help from the PHC or larger hospital because the central command can help them by making calls. This is possible because now the two facets are constantly in touch on a daily basis. Far too many times different government departments function in isolation when they should be talking and sharing data, and this program is a very good example of how to introduce that dynamic elsewhere.

Old Age Pensioners' Payment and Monitoring System

Old Age Pensioners Payment & Monitoring System is a web based software program supported by UNICODE which has been developed and implemented for the payment & monitoring of the national old age pensioner beneficiaries scheme like Indira Gandhi Pension, State Pension and Widow Pension. It is a pilot program to automatically, efficiently and transparently distribute pensions to rural pensioners living below the poverty line and eliminate the corruption experienced with previous manual systems.

Category
e-Government

Organization
Old Age Pensioners' Payment and Monitoring System (OAPPMS)

Platform of product
Web Based

Website
www.dhanbad.nic.in
http://164.100.150.4/pensioner/index.aspx

Achievements

» Develops an efficient, transparent, accountable system by simplifying process of pension payment

» Developed a mechanism for selection of new beneficiary

» Ensures delivery of services through bank/post offices using CBS & Non-CBS mode in optimally shortest possible time

» Eliminate intermediaries

» Removes burden of movement of the Beneficiary to district/block offices

» Ensures proper monitoring and supervision

» Encourages the poor to manage bank accounts and long-term savings

» Streamlines the bureaucracy associated with processing pension applications and distributing social benefits

» Protects against fraud and corruption

Summary

The Old Age Pensioners' Payment and Monitoring System (OAPPMS) was a pilot project based in the town of Dhanbad, Jharkhand that was set up to improve the flow of pension benefits to the elderly and those with disabilities and reduce the inefficient bureaucracy of the existing manual system. It was started as a pilot project in Dhanbad, Jharkhand disbursing up to Rs. 400 per month for the area's approximately 50,000 senior citizens over 65 years of age living below the poverty line, credited to a bank account wherever possible.

The need of an ICT application in National Social Assistance Programme (NSAP) was felt during inspection of blocks and after meeting a number of old age pensioners where it was found that existing pension disbursal administration is marred by delay, uncertainty and non-transparency.

In order to achieve the defined vision and to meet the stated objectives a task force was constituted at the district level in the chairmanship of the Deputy Commissioner which involved all stake holders. It was thought to establish simple, accountable and transparent system for sanction, monthly payment, record keeping, flow of funds and information cutting down through the several layers of governance. The innovative approach was adopted taking leverage of ICT to develop and implement Old Age Pensioners Payment & Monitoring System, based on an end user approach.

The broad steps involved in the project were:

- Opening of accounts of all pensioners in banks and post offices
- Development of web based software namely Old Age Pension Payment Monitoring System with integration with CBS and Nodal Banks and post offices
- Pension amount disbursed in beneficiary's bank or post office account in two ways, either through treasury banks or through nodal banks through RTGS
- Digitization of information and uploading of data on centralized database system

The Old Age Pensioner's Payment and Monitoring System pilot project has brought about much-required reforms in a system marred by graft, fraud, frustratingly long delays and complete lack of transparency. Now connectivity to beneficiaries is provided through kiosks, with biometric recognition and an RFID card for recognition. The pension is now credited directly into a post office or bank account, and payments are dispersed within five days of the transfer of funds. In the past, getting pensions could take up to six months, and obviously large sums as bribes.

Benefits of the web based system Government to Citizen (G2C) include:

- Timely and regular payment of pension
- Cost and Time saving for beneficiary
- No need to wait for any announcement of camps for the payment on a date fixed by the block administration.
- Elimination of Middlemen.
- Inculcation of saving tendency amongst beneficiaries
- Introduction of BC model enabled doorstep delivery of the govt. services.
- SMS alerts keep the beneficiary updated about the status of their

bank account

Benefits of the web based system Government to Government (G2G) include:

- CSC, Bank Branches & Post office serving as delivery outlet.
- Bill preparation at one place in one office at District level.
- Only 8 Bills being generated (Comparatively reduced to very few).
- 6 Layers (As many as 5 Layers diminished).
- Financial instrument –Zero.
- Paperless transaction – Environment Friendly.
- Now Detailed Contingent (D.C) Bill in place of Advanced Contingent (A.C.) bill produced at Treasury (AG compliant process).
- Cost of delivery drastically reduced (I.e. 1/10th)

Practise Background

The existing pension system suffered from delays, pensioner uncertainty, a lack of transparency, bribery and fraud. As a result, pensioners often had to wait three to six months to receive their benefits, all the while dealing with a lack of information at the Block/District level. Delays were also caused by the system's inherent red tape and bureaucracy. For example, clarifications on submissions could be very time consuming, taking up to two years to be settled - and not always to the satisfaction of the beneficiary. A survey of the existing manual system indicated further shortcomings: irregular payments, corrupt middle-men and a lack of accountability.

Given these conditions, the challenge for this project was to create a more efficient, timely, convenient, transparent and tamper-proof pension benefit payment system that saved time and money and eliminated the role of the middleman. Other challenges included:

- Opening of accounts of large number of pensioners in Bank/ Post Office
- In-house development of software
- Digitization and authentication of data without having complete record of beneficiary at the district or block level
- Resistance to change 15 years old government process
- Lack of computer skill among employee
- Lack of faith in the ICT at the Block/ Panchayat level
- Breaking the hegemony of intermediary
- Making payment at the doorstep for first time in the district
- Compilation of mobile numbers and enabling SMS alerts system at the Bank level

The application includes features like online monthly advice generation, continuous online updating of data of old age pensioners, online receipt of fresh application forms of pension from kiosks(pragya kendras).

The new pension disbursal system has helped district administrations in tracking every single rupee of over several crore rupees spent for pensioners every month. The web based ICT application has developed an efficient, transparent, and accountable system of pension disbursement through bank/post offices. Meeting its objective, the application facilitates selection of eligible beneficiaries, timely pension disbursal, total financial inclusion, delivering convenience, and finally

achieving the goal of NSAP.

The project has also resulted in improvement of productivity of the block development officer (BDOs), and panchayat sewaks; so as to facilitate usage of the available work force for other work, while leveraging technology to reduce work load of the panchayat sewaks. Its success has ensured that the application is being extended to other programs too.

Implementation Process

The Old Age Pensioners' Payment and Monitoring System is a web-based system that takes care of monthly pension payments through Core Banking System (CBS) and nodal banks, allows continuous online monitoring and updates of pension data and processes new applications.

Here's how it works: monthly payments are distributed within five days of the transfer of funds; if beneficiaries are physically unable to make their way to the Pragya Kendra kiosk or if payment is not collected within three days of its due date, payment is delivered to the beneficiary's home; accurate records are made of beneficiaries and payments and new applications are processed online. As a result, waiting time has been reduced from approximately a year to less than thirty days, and sometimes as little as one week; and duplicate and fraudulent claims are more easily recognized and dealt with than before.

Project Features

Technology Platform
Connectivity to beneficiaries is typically done from Pragya Kendras kiosks. Enhanced biometric recognition provides security. Personal RFID cards are used for identification and a 128 bit SSL secure channel using NIC JSU software is used for encryption.

Accessibility & Inclusiveness
Accessibility and inclusiveness have been improved under the new automated system. Pensioners who can't make it to a kiosk to collect payment for reasons of age, frailty or disability will have their payments delivered to the door. New pensioners don't have to wait as long as they used to to start receiving benefits. More money makes its way into the pensioners' hands and less gets diverted by middlemen.

Community Participation
The program involved all eligible pensioners in Dhanbad.

Replication and Scalability
The project has been replicated in other Districts of Jharkhand and applied to new programs. For example, banks have used the model as a business correspondence model to transact doorstep payments to beneficiaries. The system could also easily be extended to other branches of the National Social Assistance Program (NSAP) including the Indira Gandhi National Widow Pension Scheme (IGNWPS), the Indira Gandhi National Disability Pension Scheme (IGNDPS) and the Swami Vivekanand handicapped Pension Scheme, to

government scholarship schemes or to other social welfare programs. The system could be enhanced with SMS/text alerts and the introduction of Swap Cards for Payment, UID Card along with the doorstep delivery. The database being created can be used for research or other social programs, either by the government or NGOs.

Conclusions

The comparative analysis by the re-engineering and streamlining team identified the following benefits for the 50,000 beneficiaries of the new automated system compared to the previous one:

- Improved governance and transparency and reduced corruption and double-dipping
- Timely and cost-effective disbursement of payment for the aged and for people with disabilities (eg. doorstep delivery)
- Preservation of data for analysis and tracking
- Promoting the cause of financial inclusion and encouraging pensioners to have bank accounts, manage their savings wisely and earn interest rather than collecting their full pension amount all at one time

The Block office has also experienced the following efficiencies and cost savings: they no longer have to handle the lengthy process of distributing money by organizing camps; monthly reports to the Panchayat are no longer necessary because the information is available online; the number of enquiries has reduced significantly; tracking pension payments has been streamlined.

Additionally, pensioners report that the new system has encouraged them to save their money since it is no longer necessary to maintain liquidity due to uncertainty of payments. Since the local kiosk is easily accessible, money remaining in the accounts earns interest, an added benefit for the pensioner.

Lessons Drawn From The Practise

With such a large project, technical difficulties and coordination between departments pose challenges. One key to success is having a motivated team of competent professionals to ensure that the often complex and daunting tasks of software development and large volume data digitization and authentication are handled capably. The National Information Centre found that regular meetings and progress updates were very helpful in resolving some of these challenges.

A system should be devised so as to credit the amount of pension payable to each beneficiary directly into his account either in a Post Office or in a scheduled commercial bank. In compliance of the said directions and also in order to increase the transparency and accountability in the implementation, it had been decided to computerize the data base of the beneficiaries under various schemes of NSAP. NIC has been accordingly entrusted with the project and the software

development. The software captures all the essential processes from identification till termination of the pension. The legacy date of more than 1 crore beneficiaries has been placed on the NSAP website. States have been asked to start operationalizing the software for the districts for which data has been uploaded.

Opening pensioners' bank or post office accounts with a zero balance also proved difficult. Low-staffed rural branches required considerable training to understand and embrace the system and be able to deal with pensioners on a day-to-day basis. Suitable staff with proper computer skills is, therefore, a key challenge to scaling the system up.

Fishnet ReALCraft

'ReALCraft' is a work flow based online application system for Vessel Registration under MS Act and License Certificate under MFR Act to the fishing vessels operating along the Indian coast. It is a national project sanctioned by the Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Govt. of India for implementing in all coastal States and UTs.

Category
e-Government

Organization
NATIONAL INFROMATICS CENTRE, KERALA STATE CENTRE,

Platform of product
Web/Internet

Website
www.Fishnetkerala.gov.in

Achievements

- To prepare a National database for fishing vessels.
- To prevent illegal, unregistered and unreported (IUU) vessels in the territorial waters.
- To facilitate optimum utilization of the fisheries resources.
- To strengthen coastal security.
- To strengthen security of fishermen in the sea

Summary

`Fishnet ReALCraft is an e-Governance portal-cum-web based workflow based application developed by NIC for the Fisheries Department. The project components include a knowledge-based portal with online administration facility, and application system for registration and licensing of fishing vessels.

The major advantage of the system is its role in ensuring coastal security. The application helps to check and track suspicious vessels in Indian waters, and by providing instant information of a specified vessel. It is implemented successfully in all 5 fisheries stations, 9 marine districts and 3 zonal offices of Kerala state. This is the first step towards bringing multiple registration systems to a single registration scheme. After the Mumbai attack GOI decided to rollout the same in all coastal states and UTs with slight modification.

The key features include:

- Work flow-based interface – Provide user-friendly workflow based interface for the approval of applications at various levels (entry of application, verification, approval).
- Facility for comparing original documents with the scanned documents.
- Less Paper Concept - Scanned application forms reduces the need of physical movement of the application form to the higher offices for its approval, making the process much either and faster.
- Keeping the history of vessel applications and vessel attributes – System maintains the record of remarks of the officers at various levels during the processing of the application for different services, changed vessel parameters and details of fee submitted etc.
- Barcode for individual certificates for checking its validity.
- SMS Service which enables vessel owners to get status of their application just by sending application reference number through SMS. Security Agencies can get Vessel information by sending vessel identification number or registration number or license or permit number or communication equipment number.(EPIRB, SART, DAT) through SMS
- Provision for flash news to officers on impounding details and other important activities.
- Online technical support for software users.
- Role Based Dynamic Menu mapping for the individual user.
- Security features provided at Menu level, Function level, Application Level and Application status level.
- System generates automatic registration number, license number, vessel identification number etc.
- Automated fee calculation, based on type of service and vessel attributes.
- Automatic generation of Engine Numbers for assembled engines which have no engine number.
- Online Help Facility
- Defining office wise administrator for managing users, defining roles
- Maintaining master data and Setting alerts.
- Online support for queries.

Practise Background

When the 2008 Mumbai Terror Attacks took place, the country was aghast that there could be an attack through the coast. Further, it brought into focus the haphazard nature in which coastal fishermen took out their boats, often with note made of their being gone or having returned. In fact, because of the small and dingy nature of most fishing vessels, it is a challenge to keep track of them.

The Government of India emphasized the need to register all the fishing vessels and other small non fishing vessels and felt the need to streamline the registration regimes adopted by various Central and State legislations such as MS Act (Merchant Shipping Act), MPEDA (Marine Products Export Development Authority), State MFRA (State Marine Fisheries Regulation Act)

In the future, the plan is to attach GPRS systems to the vessels so as to track them when they are out at sea, and most especially if they go missing in those stormy waters.

Implementation Process

Fishnet ReALCraft is been developed by the National Informatics Center (NIC) for the Fisheries Department using LAPP technology. The project components include knowledge-based portal with online site administration facility, application system for registration and licensing of fishing vessels.

The project has many objectives, the first of which is efficient and transparent administration. The second is an effective monitoring system that can only be developed by a good work flow based interface. The system is designed to be user friendly as well, and especially because vessel registration requires the approval of the application at various levels. Finally, the key point is to make sure the delivery system has improved and it is easy for not just the government official who is registering the vessel, but the fisherman, to get his work done.

The following functions are delivered under Fishnet ReALCraft

- Renewal of license.
- Issuing of duplicate registration certificate/license certificate.
- Change of ownership and crew details.
- Change of vessel attributes (this includes engine, structure, gear, fuel tank, lifesaving equipment, insurance details and so on).
- Impounding of fishing vessels.
- Issue of permit to other state vessels for fishing in Kerala water.
- Fishing license for the vessels registered with other valid agencies.
- Flash news about the impounding of vessels and other important events.
- SMS service to public and marine enforcement (coast guard, navy etc).
- Unique Barcode for individual certificates.

The use of ICT tools for registration of certificates and fishing licenses has completed replaced the manual system. The work flow is also very simple and officials who are not very familiar with computers can

learn it quite easily. The system also prevents multiple registrations of the same vessel, which was the major drawback of the manual system. It also prevents the intrusion of vessels from outside the state. An additional perk of stopping multiple registrations of the same vessel is in the reduced discretionary powers of a local official, who could previously harass a fisherman.

There is also no need for the physical movement of files from officer to officer as data is moved electronically. This means that if a vessel has been impounded, it can be fed into the system and the security agencies will be alerted. The system provides for SMS facility as well, whereby both vessel owners and security agencies benefit.

Many of the features that the project has are meant to simplify the process of vessel registration so that we can keep our coasts safe.

1. Initiatives implemented under G2C:
   - Status of license and registration through portal and SMS
   - Benefit oriented schemes through portal
   - Location of offices through portal
   - Information about Govt. GOs. and orders through portal
   - Down load application forms through portal
   - Providing departmental informatics in local language through portal

2. Initiatives implemented under G2B:
   - Providing departmental informatics in local language through portal
   - Providing MIS reports through portal

3. Initiatives implemented under G2G and G2E:
   - Generation of reports at any level
   - Information about office, vessel
   - Upload guidelines, schemes, G.O. , circulars
   - License, registration status
   - Departmental informatics services in local and in English language through portal
   - Monitoring of system at various levels
   - On line review of officers
   - Electronic movement of data saves government in terms of money
   - Reduces malpractices in the fishing sector using duplicate engine registrations which also saves government in terms of money.
   - System provides instant information on vessel structure, fuel capacity, lifesaving equipment and other crucial information to marine force using centralized database.
   - Online facility to check the validity of the certificate for enforcement agencies.
   - Capacity building at all levels
   - Email account creation to all departmental officers.

Project Features

Technology Platform

ReALCraft is developed in LAPP (Linux, Apache, PostgreSQL,PHP) architecture. It has three layers with e-services at the top, Govt. intranet in the middle and functional applications at the bottom.

- E-Services layer is the front-end

layer, which interacts with citizens and offers services to the citizens. There are several methods, such as touch screen kiosks, Internet, SMS and front end counters by which the citizens can interact with system.
- Intranet layer is the Intranet Services layer, which offers lot of collaboration services and tools such as E-Mail, Messaging, bulletin boards etc..
- Back Office layer is the key functional area comprising of all the functional modules with which the Government staff will work and carry out the backend operations.

The registration is done through a computer in a reasonable time span. At the end, the fisherman is presented a laminated registration card which he must keep with him and show to officers when asked.

The system can be accessed either by Intranet or Internet. All the servers (Web / Appl. Server, DB Server, Replication Server) are installed at the National Data Centre with maximum security. Audited version of the application has been hosted. SMS queries are directed to the SMS Server

Accessibility & Inclusiveness
The system has been designed to make life easier for the fishermen of Kerala, especially as tighter security is the need of the hour. A unique barcode for individual certificates is generated for each fisherman who applies. The local officers are, in any case, situated close to fisherman covers and therefore it is highly accessible. Local languages are used, making the project inclusive.

Community Participation
The fisherman community has been able to register their vessels with ease through this scheme. In the next stages, they will really benefit from Fishnet ReALCraft, when fishermen crews get IDs and later, GPS can track them in the ocean.

Sustainability & Cost effectiveness
This project has been implemented in the nine marine districts of Kerala. Over 21,000 fishing vessels have already been registered, and since the fishing license is issued for a period of one year, the renewal option is also being used regularly. A well-designed data base on fishing vessels has been developed and maintained. Based on this, the Ministry of Agriculture, Government of India, decided to roll out the project to other maritime states and UTs of India, based on the Kerala model. Since all of these will be state-funded, the project is sustainable.

Replication & Scalability
As mentioned, the project is being replicated. Its scale and powers will also be increased over time, but using it not just as an identification system but an ICT enabled system which helps keep track of the vessels.

Conclusions

Fishnet ReALCraft is an e-governance portal-cum-web based workflow application developed by NIC Kerala for the Fisheries Department using LAPP technology. This project has been started to improve the coastal security in a big way, by helping avoid infiltration by the sea, provided all sea going fishing vessels and boats are registered.

Fishnet ReALCraft has been successfully implemented in all the

marine districts of Kerala. This project will be rolled out in all the remaining coastal states / UTs. Fishnet ReALCraft is facilitating online licensing & registration system for fishing vessels and a database on fishing vessels and their movement in all the coastal states and UTs. The coastal security has become an important issue after the 26/11 incident and this project assumes greater significance because of this.

Lessons Drawn From The Practise

Fishnet ReALCraft's efforts to boost coastal security has come at a time when this is the need of the hour to keep India safe from any harm at its vast coastlines. There is also an increased threat to fishermen, with clashes with other countries and also the changing weather pattern. Ultimately, it is imaginable that fishing vessels do not have a standard registration system that can make it easy to keep track of them.

Infusing ICTs into this management system immediately allows these records to be accessed in different states, thereby saving the fisherman and authorities the headache of double checking. The project is progressive and a welcome addition to India's e-government efforts, but needs to reach its full potential to be truly path breaking.

Akshaya

Akshaya, an innovative and ambitious project initiated by Kerala state IT Mission (KSITM), is aimed at bridging the digital divide, and addressing the issues of ICT access, basic skill sets and availability of relevant content.

Category
e-Government

Organization
Akshaya

Platform of product
Broadband/office

Website
www.akshaya.kerala.gov.in

Achievements

- Creating & expanding economic opportunities in the knowledge economy
- Empowering individuals and communities through enhanced access to information
- Modernising and upgrading skill sets of ordinary citizens
- Integrating communities through creation of e-networks
- Creating awareness of ICT tools and usage
- Generating e-content useful to the common man in local language
- Generation of service delivery points even in the remotest areas
- Generating at least 15,000 job opportunities
- Generating direct investment of over 500 crore rupees

Summary

Akshaya was started as an e-literacy project in 2002 in Malappuram district of Kerala. It started with creating micro entrepreneurs in each panchayat. Though originated as an initiative to address the backwardness of Malappuram district, Akshaya was conceived as a landmark ICT project by the Kerala State Information Technology Mission to bring the benefits of this technology to the entire population of the State. The modus for this was establishment of grass roots level ICT centres at the Panchayat/Municipal ward level.

After a successful pilot it was rolled out in the rest of the state. Since its inception in 2002 for e-literacy in Malappuram, Akshaya has grown many fold. In 2006, Akshaya moved into phase two of the program, starting new G2C and B2C services. Akshaya has to its credit over 200 crore rupees worth transactions besides providing multitude of services through its 2000 Akshaya centers. In everyday parlance, Akshaya would be known as a Citizen Service Center set up through a public-private partnership.

Its specific objectives are to bridge the digital divide (e-literacy to the masses), to bring citizen services to the door step of public, to become a one stop shop for all citizen services, both government (G2C) and business (B2C) and finally, to give a citizen friendly face to the government. The target group for Akshaya is essentially all citizens and there has been an effort to ensure there is an Akshaya center within 2-3 kilometres of every citizen.

Since the control is within the government Akshaya gets the credibility of a government organization while at the delivery level there is a corporate approach of welcoming every citizen with a friendly face. The overall aim of taking the Government to the citizen was thus achieved without any hitch.

Practise Background

Despite having an educated populace, it was felt that only a section of educated among the Kerala population utilized the services of information technology for further economic development. The vast majority did not take to this technology for consolidating and furthering the achievements on the social front. There was a need for removing the digital divide in the society. The population needed to be equipped with the tools of Information and Communication Technology (ICT) to achieve tangible progress.

In fact, as technology becomes more central to the flow of information, and its immense value in bettering and streamlining projects has been understood, it was only a matter of time that a strategy had to be devised to ensure that there was equal access to technology, and conversely, technology was used to reach the common man.

Based on this idea, Kerala State IT Mission launched Akshaya with the aim of bridging the digital divide, address the issues of ICT access, basic skill sets and availability of relevant content. Akshaya was started with

creating the micro entrepreneurs in each panchayat and today runs as a very successful program in Kerala.

Implementation Process

Akshaya has offices in all fourteen districts in Kerala which have been set up under the State Cell, which in turn reports to a State Level Executive Committee which is under the Chief Minister. Therefore, engagement with Akshaya directly reaches the top levels.

However, it is under the district offices, at the local panchayat level, that Akshaya centers truly reach the people on the wrong end of the digital divide. The investment for setting up the e-centres is made by the local entrepreneurs, as this is a public-private partnership.

The list of services provided by Akshaya includes:

- E-Filing of tax returns for commercial taxes by traders.
- E-Payment of selected utility bills, KSEB, regional transport authority, local self-government institutions, welfare fund boards, universities, KSFE etc .
- Online submission of application for ration card.
- Online registration for comprehensive health insurance for APL families on behalf of CHIAK (Comprehensive Health Insurance Agency for Kerala) .
- E-Ticketing for railway, air travel etc.
- E-Content on education, career building, health, agriculture, and law in Malayalam.
- E-learning: multimedia aided training programmes, Intel Learning, IGNOU, DOEACC, Medical Transcription training.
- E-krishi platform for transactions between buyers and sellers through a web portal (www.e-krishi.org).
- Rural e-banking & financial services.

The Akshaya center is manned by the private entrepreneur, and is opened for the majority of the day. Citizens pour in at all times with the intention of paying their bills, buying tickets and so on. The government has provided these services as services which the entrepreneur can offer, and once the transaction is made, the entrepreneur is given a fee. As a result, it incentivizes the entrepreneur to keep his center open so that he can make more transactions.

Since the center is equipped with computers, printers and the like, it only makes sense to utilize them for something beyond simply front end delivery of services. Therefore over time, not only did business services start, but the centers themselves began to be used for computer classes, typing, English and so on. This way, the entrepreneur not only supplements his income but helps spread ICT in his area.

From the government's point of view, the Akshaya centers are well established routes of offering new services to more and more citizens. Therefore it has been decided by the Registrar General of India (RGI) to utilize the Akshaya Network for digitizing the Schedules of National Population Register (NPR) and also capture of biometric images (10 finger prints and both Iris), under the Unique Identification Number.

Similarly, Akshaya centers allow for enrollment and renewal of Rashtriya

Swasthya Bima Yojana (RSBY), and have already of 18 lakh BPL families. It has also enrolled 17 lakh families on behalf of Comprehensive Health Insurance agency of Kerala (CHIAK). These numbers also give a great indication about the reach of Akshaya in Kerala.

Project Features

Technology Platform
Akshaya services can be accessed in person, at an Akshaya center, through a computer and internet connection. Some services, such as computer lessons etc, can be offered offline as well.

Accessibility & Inclusiveness
Services at Akshaya centers – accessible to every citizen geographically -- are available in the local languages, making them highly inclusive. At the same time, with its e-literacy and ICT related service delivery project, it has made the region more digitally inclusive. Through the e-literacy program Akshaya could provide computer training for 30.82 lakh people across the state. The lack of access to government services was solved by Akshaya.

Community Participation
The Akshaya model is very community oriented. Its physical placement focuses on serving the community, as does programs it runs, including e-literacy programs. Often, during the summers, the centers are filled with school children taking computer classes during their holidays. It allows people to easily pay bills, get certificates and tickets without having to go very far from their communities. And finally, the entrepreneur is a local person who ends up becoming important in the local community.

Sustainability & Cost effectiveness
Akshaya project is extremely innovative in its approach. No other project in India or abroad aims at such a mass e-literacy campaign across the entire length and breadth of the state. The very concept of having at least two Akshaya Centre Entrepreneurs (ACE) in each village and being within two to three kms of every family has made the project extremely ambitious. Creating so many micro entrepreneurs (over 2000) with control and guidance through a government-operated setup makes Akshaya a unique model.

Akshaya is also a very sustainable model where each ACE is totally self-sustainable by the income earned through transactions. Thus there is no cost to the government by increasing the number of ACEs on a required basis as the number of services increase, and therefore the profit margin increases too.

Replication & Scalability
The CSC model, called Akshaya in Kerala, operates around the country. CSCs go by different names in different states. However, the exact structure of the CSC design, from top to bottom, differs from state to state as well. As it stands, the Akshaya design is highly replicable.

When it comes to scale, however, there is an Akshaya center for every family within a 2-3 km radius. More Akshaya centers in the same

neighbourhood would only mean fewer profits for each center, unless the demand for the services is continuously growing. Based on that factor, Akshaya can certainly be scaled up.

Conclusions

Under the NeGP (National e-Governance Plan), the government of India has made concrete steps to bring government services and ICT closer to citizens, no matter where they live. Kerala, for its part, has been blessed with an already educated citizenry and good infrastructure such as electricity goes. For those, and the exact structure of the Akshaya model, this version of the CSC has done very well. It goes without saying that other states would do well to draw from Akshaya's strengths.

Lessons Drawn From The Practise

Akshaya is an enormous step towards making the Government accessible to citizens, in ways that can not only save huge costs to the Government but also make it more transparent and efficient in its day-to-day interactions with the common man. To that effect, the role of Akshaya e-centres, envisioned as the front-end delivery network for Government services is remarkable for the strides it has already made.

Akshaya envisages to be a bottom-up model for imparting e-literacy training, delivery of content, services, information and knowledge, that can allow like-minded public and private enterprises - through a collaborative framework - to integrate their goals of profit as well as social objectives, into a sustainable business model for achieving rapid socio-economic change in rural villages of the State.

Today, Akshaya is acting as an instrument in rural empowerment and economic development. The project is a catalyst in creating massive economic growth and creation of direct and indirect employment in the State by focusing on the various facts of e-learning, e-transaction, e- governance etc. Thus, the project is having a long-standing impact on the social, economic and political scenario of the State.

Akshaya's success can be gauged from how effective it is in helping the state reach the average citizen. The identity cards – UIDAI – scheme was administered through Akshaya centers as a natural solution, because of its impressive reach in the state. Other states are keen to follow the model closely and Akshaya experts have gone even to the Lakshadweep islands, to help them set up their own version of Akshaya.

By reaching the remote rural locations of the State on a sustainable basis, and offering a variety of world-class services, the Akshaya e-centres encourage social inclusion of hitherto hereby marginalized communities and under-privileged sections of the rural society. The project opens up immense opportunities for women participation at various levels. The higher level of response from the women sector is due to the factor that the project creates opportunities at their doorsteps.

Outside of e-government and e-business these centers will become centers of learning for ICTs. The ready state infrastructure as a site for learning and engaging with the government at the same time has made it a modern marvel in some ways, and it is highly advised that other states also push to duplicate these efforts to help good governance and the spread of ICT, thereby reducing the digital divide.

IPaidABribe

IPaidABribe is Janaagraha's initiative to tackle corruption by harnessing the collective energy of citizens. Citizens can report on the nature, number, pattern, types, location, frequency and values of actual corrupt acts on this website. The reports, perhaps for the first time, provide a snapshot of bribes being paid (or taken), across Indian cities.

Category
e-Governance

Organization
Janaagraha Centre for Citizenship and Democracy

Platform of product
Web based

Website
www.IPaidABribe.com

Achievements

- Provides a place for citizens to report corruption and corrupt officials
- Analyzes the information and therefore aims to heighten citizen awareness about the nature and spread of bribe-related exchanges
- Helps citizens to recognize, avoid and tackle bribe paying situations, identify and analyze the workflows within corruption prone public services
- Results in suggestions on systemic reform directed at entrenching more transparent processes, and finally, more consistent standards of law enforcement and better vigilance and regulation.

Summary

There have been many ideas on how to tackle corruption, none of which have really worked in a country like India, where corruption is a part of society. The portal, IPaidABribe tries to collect these experiences of corruption, as a window to society by encouraging people to write about their experiences with bribes. The website does not encourage people to give names/dates – it is not interested in pointing fingers – however, it does collect the nature, number, pattern, types, locations and frequency of actual corrupt acts and values of bribes.

This information, it is hoped, will add up to a valuable knowledge bank that will contribute to a reduction in bribe payments. www.IPaidABribe.com believes in systemic change and hence their solution lies more on taking the processes online and terminating human interface and thereby reducing corruption. Simply put, technology can put an end to the discretionary aspect of government, which often leads to corrupt practices.

The portal is a way to bring together the citizen and the government by allowing a safe place where bribes can be put on the (digital) table and government authorities can decide on how to improve certain services and systems which are prone to corruption.

Ultimately, the website essentially serves as a one-stop-shop for corruption. While the platform allows the user to report bribes paid, resisted and situations where he encountered honest officials who streamlined processes for him, it also serves as a platform for users to learn about how not to pay bribes through the various FAQs on the platform. The website also looks at educating people about government processes. From corruption news, advice column and a forum to discuss various corruption-related topics, IPaidABribe is a platform for anyone and everyone who has faced corruption wants to know about it and who wants to fight it.

Practise Background

India has been plagued by corruption for decades. The 'license raj', when the government had to give an impossible number of licenses for simple businesses led to many arbitrary authorities asking for a bribe. Corruption has not slowed down even after liberalization. In 2011, the Political and Economic Risk Consultancy Ltd rated India at 8.67 on a scale of zero to 10 with the high end being the worst case of corruption scenario and ahead of the Philippines (8.9 points), Indonesia (9.25 points) and Cambodia (9.27 points).

In fact, ordinary Indians have been so agitated by corrupt government officials that in 2011 a movement called 'India Against Corruption' became one of the biggest civil society movements in India's modern history, and forced Parliament to deliberate on a Bill that would put in place an anti-corruption body to look at the workings of the government.

However, smaller civil society groups have been campaigning against corruption from time to time. This portal is an example of that. The idea of IPaidABribe has emerged

and evolved over time. It began due to a discussion between members of the NGO Janaagraha, as a simple means of tracking the market price of corruption. Over time, more ideas were added. It was decided that the portal had to be a multifaceted site, providing a variety of services to people.

Implementation Process

The website, available to the public since 2010, has very well defined sections with specific aims. It is meant to heighten citizen awareness about the nature and spread of corruption, and start a public debate about the issue.

www.IPaidABribe.com follows a four-step cycle:

- First, citizens are encouraged to report their corruption related experiences; where they paid bribes, successfully resisted bribes or were not pressurized to bribe because of a responsive process or an honest government official.
- Second, citizen reports are analyzed to ascertain patterns and trends of corrupt practices. Work processes are dissected to pinpoint corruption prone steps and bottlenecks in process workflows. Based on these, IPaidABribe makes recommendations on process reforms that reduce red tape and opportunities for corruption. These might be a simpler and more transparent procedure, a better designed website, or more long-term reforms requiring policy and legal changes.
- The third stage comprises of two facets. It engages with the government and presents its findings and recommendations to them on how processes can be streamlined to reduce corruption. It also simultaneously alerts citizens about these matters and exhort them to resist corruption at their level, when transacting with the department concerned through the FAQs, citizen-charter directory, forum and blogs.
- Fourth, www.IPaidABribe.com works with the government in implementing process reforms. It also proposes to highlight successful examples of government having improved processes and spread the knowledge of such reforms amongst citizens.

www.IPaidABribe.com consists of two facets: The online and the offline. The online display consists of various features. Some of the key features are:

- Bribe Reporting: The raw report, as provided by the individual logging in, can be seen under the headings 'I paid a bribe', 'I didn't pay a bribe' and 'I didn't have to pay a bribe'.
- Ask Raghu: Citizens can post various queries on this space. With 26 years of experience with the Indian Government, Raghu guides citizens through various processes as well as advices on how to avoid and resist this menace of corruption. This section has had well over a thousand questions answered on Ask Raghu and gets about 20-30 questions per day.
- Bribe Analytics: The bribe analytics on www.IPaidABribe.com provide a city-wise and transaction-wise data on the numbers of bribes paid, the amounts paid and averages. It allows the user to

manually as well as automatically look at bribe numbers and amount as per cities and departments.
- Blog: The blog is used as a platform to put out all corruption-related articles as well to bring out the advocacy work of IPaidABribe on to the forefront.
- FAQs/Forum: IPaidABribe believes that corruption also exists because the citizens are unaware about the government processes and the procedure to procure these services. It provides a list of questions and answers, and updates them as frequently as possible. The forum also provides a platform to the citizens to start discussions on various topics and allows people to contribute to the same.

The second facet of IPaidABribe is the offline or the advocacy part of the initiative. The idea is to quickly bring out compiled, but insightful reports for the general public as well as for the government, showing the patterns of corruption and giving suggestions as to the process changes that must be brought about to reduce the opportunities for corruption.

These reports, termed 'Janamahithi' (Jana = people, Mahithi = information) will also contain information on how citizens can avoid paying bribes by taking some simple precautions, doing their homework and paperwork in advance and adopting certain styles of behavior. IPaidABribe released the first Janamahithi on the Motor Vehicles in November 2010 and the second one on Department of Stamps and Registration.

Project Features

Technology Platform
www.IPaidABribe.com is easily accessible on any computer with an internet connection. The site was developed using drupal based technology, and is updated regularly with new posts and other relevant information.

Accessibility & Inclusiveness
While IPaidABribe may have made its mark online, the team is acutely aware that the site is accessible only to 6% of the Indian population. Its next step is to take the services to larger numbers of people through mobiles. It is also only available in English, and to have more participation from Indians across economic strata, will have to start local language editions.

Community Participation
The website has received around 16000 bribe reports and more than 7.5 lakh have visited the website, as of mid-2011. On the governance front, IPaidABribe has published an analysis report on the bribes paid in the transport department following which its members were invited to make a presentation before the RTO officials as well as to provide recommendations on how to render the services corruption free. In June 2011, they were invited by the Chief Secretary Karnataka to help make reforms in three departments: transport, registration and electricity supply.

Sustainability & Cost Effectiveness
Institutional donors and organizations such as Dell, Microsoft, and Adobe have all contributed to the website

along with other donors.

Replication & Scalability
Crowd-sourcing as a method to fight corruption makes IPaidABribe unique. It idea is replicable, as well as highly scalable, especially since it can be brought about in many languages and on various platforms, such as mobile. It can be developed as an app, or a sms newsletter. There are endless possibilities for the website to evolve.

Conclusions

Getting upset about corruption is not new, but this website allows people to actually "do" something about it. IPaidABribe believes that corruption thrives due to a lack of knowledge of people about how to access government services as a matter if right. It aims to educate people through the FAQ section, and therefore continuously updates it new questions and answers.

The site needs to remain fresh, engaging and informative to ensure that people connect to it and learn from it. This is why plans such as providing information on government services under each department for each state in India are underway. IPaidABribe intends to be a one stop shop on news on corruption, including presenting the most topical information of the day on corruption, informative and entertaining videos explaining complex issues and analysis of current issues.

The IPaidABribe blog serves as an exchange for diverse opinions; perspectives and events related to corruption, be it a newsy piece on the march against corruption in Bangalore or an in-depth analysis of the Lokpal bill in a seven part series, IPaidABribe provides all of it on one platform. With the citizens finding a home on the internet, to both share and react to their experiences with corrupt practices, IPaidABribe hopes to effectively mobilize the government and citizens in working together towards a corruption-free society.

Lessons Drawn From The Practise

Corruption was something most Indians grumbled about, yet accepted as a part of their everyday life. The popular belief was that this was the way business was done in India and a kickback, be it to a government official or a private company, and was just part and parcel of the Indian experience. Over the last few years, things have begun to change with citizens standing up for their rights. While larger movements such as 'India against Corruption' tap into popular sentiments and lobby for laws to be enacted, projects such as IPaidABribe have turned the very nature of corruption on its head.

It has brought corruption into the clear view of the internet, and every harassed citizen can share his/her story about unfair bribes demanded (and paid by) them. Using this information, not for persecuting

individuals, but studying the patterns of corruption and then introducing systemic change is a wonderfully novel concept in the country and can go a long way, if sustained. Crowd sourcing has been around some time, but this is a tangible, positive way to channelize that energy. A project such as this truly highlights the power and untapped potential of ICT tools in helping society make positive transformations.

Prison Management System (PRISMS)

- One stop solution to all the problems related to prison management.
- A replicable model, all over India supporting efficient, time bound, rights based, cost efficient and transparent administration of prisons.

Category
e-Governance

Organization
Goa Electronics Limited

Platform of product
Internet

Website
www.goaelectronics.co.in

Achievements

» Introduction of the Touch Screen Kiosk Application helped prisoners access all information related to their PDR, PPC and the status of their various application, First Fully fledged implemented prison management system in India

» Staffing and posting of jail guards is now totally automated process with facility to generate posting at one click

» Besides the prison officials PRISMS has brought in important stake holders like- Prisoners, Victims and Judiciary.

» An implementation in 2005 today comes as an paperless office, less manual work & centralized operated & managed MIS

» Online court hearing facility available in the project features of PRISMS

Summary

PRISMS is a comprehensive Prison Management e-Governance initiative in Goa, the first of its kind in the country. It is seen as an effective information communication technology enabled prison administration and management system with the objective of providing an easier, effective, and efficient mechanism benefiting the prisoners and the concerned prison department. It is considered as a one stop solution to all the problems related to prison management.

The period prior to implementation of PRISMS was marked by multiple complexities and hurdles. These included manual based time consuming process, human errors, insufficient security due to time consuming record keeping , difficulty in visitor's management, insufficient calculation of correct remission and release dates, delay in application process, negligence of records and so on. The short comings fostered corrupt and inefficient administration and compromised constitutional rights of prisoners and the rule of law.

Post PRISMS implementation the system has worked out to weed out key limitations of prisons management in Goa. The new system has enabled drastic improvements in prison administration and in the lives of the prisoners. A synchronous relationship has emerged between the positive changes and the application of the web based, user friendly, password protected integrated system. The sustainable aspects of the application ensures its replicability all over India supporting efficient, time bound, rights based, cost efficient and transparent administration of prisons.

PRISMS had has its own share of challenges and limitations. The implementation challenges were in motivating the staff in the new system, system design and deployment with 23 diverse modules, network building, and ensuring system foolproof and monitoring.

The objective of the case study is to analyze PRISMS, implemented in jails and judicial lock-ups all over Goa by the Office of the Inspector General of Prisons. The analysis is divided into 5 major sections and focuses on a detailed analysis of the pre-implementation state of the project, the current status with respect to the proper functioning and benefits provided by the system, challenges and lessons learnt during the implementation phase. In terms of methodology secondary as well as primary data was collected, involving interviews with all stakeholders involved, namely the office of the Inspector General of Prisons, agency who designed and implemented the solution, the prison management staff, and the officers working with the system as well as the prisoners. The findings produced in the case study point towards the positive impact of e-governance programs with regard to integrated and holistic prison management.

Practise Background

Prison management is a daunting task and especially when the numbers are too high to handle, resources are minimal to manage and there is lack of trained manpower to manage pressures and crisis situations. Prior to the implementation of the Prisons Management System (PRISMS), Goa's prison management scenario was typified by key challenges on and off. These included "time consuming and human errors prone" administration of "records and registers" in regard to the maintenance of individual characteristics and history of the prison inmates; "management hurdles in compilation and analysis of data"; and challenge in successful implementation of "the rule of law"[1]. For example, the manual visitor's management of the earlier days was not able to track photographs of visitors, fingerprints taken were not recorded, it was difficult to track the previous convictions of the inmates with regard to other trials pending and so on. Remission, release and bail calculations were extremely time consuming and prone to human errors. Sharing of the data available within the department or other stakeholders was a problem.

The system "was all about fraud and malpractices."[2] Many prisoners felt they will never be released from jail though prisoners sentenced for life do have the right to be considered for release after a period of 14 years of prison terms. These aspects were neglected and proved to be difficult for technical reason in cases where remission needs to be calculated. This was seen as against the value of "the concept of freedom".

Another problem occurred was in connection with wages earned by the prisoners. In many instances they were left in the dark about how much money they had earned and "felt cheated". Further, prior to the implementation of PRISMS anyone visiting the jails would be shocked to find that "everything was in shambles, registers were not properly maintained, torn, filled with mistakes which indicated casual behavior and negligence." Thus the manual system left many things to be desired. Manual administration affected the probable date of release of a prisoner representing a violation of the basic rights of prisoners.

Additional problems were related to parole. The delay in parole was a major affair with applications pending for more than a year which makes clear that parole was not being processed in time. This was certainly seen as a major flaw in the system since it represents a right to the prisoner who is entitled to parole and furlough. The parole surrender days were often forgotten within the manual system and there were instances wherein the administration "only after month realized that the guy has run away".3 In addition during the pre implementation period the victim compensation fund was not implemented and "nobody knew about the rules", but in the process of designing the system they learned about it and therefore it was

[1] During the study work conducted in May 2012, Mr. Mihir Vardhan, head of Goa State prison and collector of North Goa and Director General of the Prisons Department Goa, gave his views thus (May 27, 2012)

[2] ,3 Discussion with Mr. Vardhan (May, 2012)

incorporated into the management system.

Thus the issues were no less serious and urgent remedy was required. "We realized that we had to wake up, something was radically wrong and we needed a cure, whole system was going down, hence something radical needed to be done."[3]

Outcome & Benefits (Implementation Process)

The PRISMS practice has entailed the following desirable outcome & benefits:

1. The system is designed as an easy to use and to provide timely delivery of information through real time operation of the system. This actively supports the transformation of the state prison system towards modern administration. This also fosters the process of more transparency within the system through the above described services.
2. The system further enables the Prison department to limit its expenditure as it is fixed by the system. It additionally guarantees timely administration due to the option of the Fast track Module on the one hand as well as through the advantage of making use of the "tightly integrated system with auto data posting between modules". This "avoids redundant data entry and management" emphasizing the importance of a natural data flow without unnecessary repetition. It is securing a severe reduction of paper work fostering speedy and efficient work processes and accuracy, and error free release of data calculation. [3]
3. Another benefit is the "transparent and humane approach to prisoner empowerment" which is safeguarded through the accurate and fast calculation of PDR, instant information on wages earned and PPC as well as the accurate Information of status of parole, furlough, bail and transfer applications.
4. The system further supports the work of the police department by "providing access to all information related to prisoners as well as their visitors and relatives. [4]
5. The new system has provided much relief to the prisoners. Jail touch screen kiosks have been installed, and the prisoner can "operate it himself" in order to find out about the details, such as wages.
6. The other very important advantage is related to the section 436a which is described as "an under trial detection alarm system, where the maximum period of sentences is taken into consideration".[5] Under this section a prisoner is entitled to 436 which is release on bail whereby the system gives an automatic implication that the person has completed half of his sentence. This becomes known to the officer in charge who then informs the advocate and the judge leading to the successful release of prisoners

[3]Discussion with Mr. Vardhan (May, 2012)
[4]Discussion with Mr. Vardhan (May, 2012)
[5]Discussion with Mr. Vardhan (May, 2012)

in relevant cases.

7. The advantage of the system entitles the prisoner to undertake vocational training. This includes acquiring all kind of skills, such as tailoring, carpentry, bakery, and computer courses. These reform based activities leads to maintenance of a profile of each prisoner. This helps administration to connect correctional prisoners with new life and livelihood opportunities post release.
8. Another important step forward under PRISMS is the availability of the medical history of the prisoner through the system. In the central jail there are provisions for a permanent doctor and visiting doctors in the other jails while the system maintains the history of medication prescribed and helps to monitor the prisoner's health status". [6]
9. Overall, PRISMS "it's not just computerization but complete automation and an intelligent system which calculates the sentences, remission, release dates automatically and without human errors" [7].Since the application is web based, there is no need of separate installation at the client end while the application can be accessed using any standard browser over Goa Broadband Network using username and password.
10. The high value of the system was confirmed by feedback collected from jail stuff, prisoners and victims during the study. The prison authorities confirm the "relief from tedious paperwork" saving a "great deal of work". It is further pointed out that "some prisoners have been released on bail who has been found eligible for bail under section 436a through our system". Victims interviewed stated that compensation has been granted to them through the victim compensation fund.

Issues & Challenges in Implementation

1. The deployment and implementation of PRISMS had its own share of challenges and issues. The following challenges were listed during the period of project implementation: [8]
2. Among the main challenges faced include "improper automation and workflow in the application leading to its none usage, while other issues faced relate to a lack of standardization in the application, lack of emphasis on service delivery to the Citizens, lack of enthusiasm from certain sections of the Departments to use the application. [9]
3. There had been absence of proper finalization of the requirements by the department resulting in project over runs and the need to invest more time on capacity building of the nodal officers of the departments to understand the concept of BPR, Change Management, and Software

[6]Discussion with Mr. Vardhan (May, 2012)
[7]CSI Nihilent e-governance award website
[8]Discussion with Mr. Vardhan (May, 2012)
[9]Discussion with Mr. Vardhan (May, 2012)

Development Life Cycle (SDLC).

4. Design and deployment of 23 modules under PRISMS ranging from prisoner information management module to escort management was no less stupendous task. The system took about 6 month, 3 month trial. Making the system inclusive was a holistic challenge along with training of the jail staff to use the system.
5. Additionally "even with the best technology in the world the success of it always depends on people, their mindset, attitude and way of thinking which finally make the difference" a statement which points towards challenges with regard to switching from using the manual system to the ICT induced system. The manual system was in place for 40 years and the officers over time had got used to a certain way of working and thinking, so there was resistance in connection with applying PRISMS.
6. Another challenge which was revealed during the fieldwork is the fact that the PRISMS system is not implemented in the ladies ward. The reason cited is there are only approximately 30 ladies stationed who are engaged in different type of vocational training. It is shared that because of the few numbers personal attention can be given to each and every woman

Project Features

The PRISMS practice offers the following vital services to its stakeholders:

1. According to the prison authorities the centralized database-3 tier-web based system within the framework of its 18 functional modules and 2 MBPS connectivity across all jails and judicial lockups provides a holistic understanding and 100% coverage of all prisoner related processes "across all jails and levels of prison administration" fostering "capacity building with a focus on e-Governance and better manpower utilization" in all prison and judicial facilities in the state of Goa. [10]
2. The 18 module system intents to support the duties and responsibilities of the executive and clerical staff with regard to all aspects of prisoner information management consisting of personal information of the inmate such as registration Number, nationality, age and height, biometric identification, photographs, marks of identity, employment, address or religion and including a list of visitors expected to visit the jail with details of contact and relation to the prisoner.
3. PRISMS further computerizes inmate prisoners' "admission, release and remission processes including the calculation regarding eligibility, remission based conservancy work as well

[10]Interview with prison official of the Prisons Department in Goa (May 26, 2012)
[11]Interview with prison official of the Prisons Department in Goa

as automatic updating" through the maintenance of digitalized registers. [11]

4. PRISMS have provisions of high security standards supported by application of the prisoner movement module recording in and out of jail inmate tracking related to parole, furlough, case hearing or medical reasons; second, the gate management module that keeps track of the exact "date, hour and even minute of the opening or closing of all prison gates accounting for all person's entering or leaving" and; third, the computerized escape and escort management which involves the "maintenance of an escape register, the automated selection of escort in connection with keeping account of actual escort details". [12]
5. PRISMS provide high end security through the transmission of information via SMS to prison department officials and the police as well as the media in case of escape of prisoners. Externalities with regard to the strengthening of the security framework of prisons in Goa entail visitor information management with detailed "lists of visitors" containing information such as "names, phone numbers, address, photo" and status of relation to the inmate as well as "visiting date, begin and end times and the approving authority regarding the visit". It includes victim information management notifying all inmate activity such as "court appearance, release and execution or furlough or parole release" of the victim concerned". [13]
6. PRISMS provide administrational support to victims. The victim is granted administrational support by the prisoner work allotment and monitoring module. This module controls wages by labor allocated in accordance with the Victim's Compensation Fund to which 50% of the earnings will be allocated while the rest of the earning gets automatically transferred to joint saving accounts (15%), legal aid (20%) as well as personal expenses[14] The speedy and smooth judicial and administrational functioning is provided externally by the court information module which keeps track of details such as the court in charge, the authority concerned, parties involved, court hearings and crime and charge sheet information in order to generate a court diary on the one hand as well as fabricating an auto calculation of the sentence period. This gets internally supported by the prisoner management module which administers transfers such as handovers in specific records. Also there is the commissary (canteen) management entity which supports the maintenance of "commissary stock items posting a warning when an item reaches an assigned re-order point" as well as tracking "purchases by inmates and automatically adjusts both the commissary stock and the inmate PPC account". [15]
7. PRISMS provide for the personal

[12]Interview with prison official
[13]Interview with prison official
[14]Discussion with Mr. Vardhan (May, 2012)
[15]Discussion with Mr. Vardhan (May, 2012)

well being within the framework of the rule of law, constitutional provisions as well as basic human rights which are all monitored. Under the system, this is monitored and guaranteed, first, by the application of the parole and furlough management system which keeps a "complete history of all approved and rejected applications and orders as well as a list of the prisoners "expected to surrender after parole and furlough"; and second, by the bail management module, which safeguards a "prevention of release if other cases are pending to be bailed", lists of "all prisoners released on bail, surety bond bails as well as the tracking of all return dates in case of interim bail". [16]

8. The well being of the inmate is further supported by effective prisoner's medical management which contains all "illnesses, checkup details, report listing of all medication to be given to all inmates" to the extent that a "complete medical history can be generated which also supports the process of work allocation".[17] Lastly, the inmate property and cash management module provides the Goa prison authorities with the ability to look after "personal items and clothing" of a prisoner administered through the provision of "a receipt generated at admission" as well as the maintenance of "inmate cash account's such as wages earned and credited according to the work's module".[18] The touch screen kiosk management available to the prisoners guarantees easy access to the inmates to all personal property or account related information and secures access to grievance redress within the administrative structure.

Conclusions

PRISMS is a fully functional system that delivers 100% efficiency in prisons management in Goa. It delivers holistic functionalities in covering all aspects of prison management from the admission to the release of the prisoner and connectivity across jails; administrative efficiency and security; prisoner empowerment and victim compensation; increased efficiency of prison management process and administrational stuff; improved administrational functionality of Inspector General of Prison's Department. To bring in transparency and efficiency in an otherwise secrecy system; the use of technology is supposed to bring about transparency in the system and foster the process of precise implementation of rules and laws, make data easily available to the authorities concerned, to facilitate efficient and accurate decision making, improvement in information communication flow.

[16]Discussion with Mr. Vardhan (May , 2012)
[17]Discussion with Mr. Vardan (May, 2012)
[18]Discussion with Mr. Vardhan (May, 2012)

Lessons Drawn From The Practise

PRISMS has enabled us to draw key lessons that can remain as appropriate guidelines for any similar endeavours:

1. Reform in prison governance is a serious human right matter and its efficient management is possible with right dose of ICT applications in right spirit. However, the desire to bring in reform has to come from within the system itself with integration of soul and mind and technology support system.
2. A critical initiative like PRISMS shall always call for timely and supportive project leadership and enough motivation in the team. This call for participative environment, collaborative spirit, effective coordination mechanism, exceptional support from officers concerned and support from technical team.
3. An overarching practice like PRISMS requires a rigid and efficient project planning, implementation, monitoring, and evaluation mechanism on continuous basis. Otherwise the whole purpose is defeated along with loss of time, energy and valuable resources.
4. Timely and continuous support from the political leadership in sync with administrative spirit of project implementers is the key towards success of technology driven practice. This helps to put in place a mechanism that continuously thinks of reform, scaling up and further advancing the system.

The Public Distribution System, Chhattisgarh

The Public Distribution System, Chhattisgarh has computerized the previously paper-based statewide Public Distribution System for food staples for households living below the poverty line, improved timely access to food for beneficiaries and fair and timely payment to farmers. It has also reduced widespread corruption and abuses of the system, improved overall efficiency and saved the government substantial amounts of public money, so much so that it recouped its investment after one year.

Category
e-Governance

Organization
Public Distribution System, Chhattisgarh

Platform of product
Internet via VSAT

Website
www.cg.nic.in

Achievements

- Performs as a state-wide pilot project linking six different government agencies, 1,532 paddy procurement centres, 50 storage centres, all District offices, 99 Chhattisgarh State Civil Supplies Corporation (CGSCSC) distribution centres and 35 Food Corporation of India (FCI) rice receiving centres
- Provides immense benefits for 3,70,00,000 households living below the poverty line
- Provides basic sustenance with 34,00,000 computerized ration cards issued
- Uses the VSAT Internet system for system-wide communications
- Offers a successful and sustainable business model

Summary

The Public Distribution System (PDS) for the purchase and distribution of paddy, rice, in the state of Chhattisgarh was computerized in 2007 in an effort to address problems of inefficiency, corruption and the diversion of commodities. The new computerized system required the coordination of six different organizations to provide goods to consumers at stipulated prices and, at the same time, guarantee a fair return to the paddy producer.

The Government of Chhattisgarh has initiated a set of reforms to improve its Public Distribution System (PDS) by adopting a unique ICT based module to create a transparent and accountable delivery mechanism.

To address the leakages in PDS, the State of Chhattisgarh implemented an end-to-end information technology solution. Operations at every level of the scheme - from procurement of produce, to storage and transportation to state warehouses and Fair Priced Shops- have been computerised.

There is continuous monitoring of operations at all levels via reports uploaded onto the web in real time. Web management has led to enhanced accountability of operations. The online platform provides an account of commodity stocks which helps decision makers in utilising the inventory of commodities with greater efficiency.

A unique feature of PDS in Chhattisgarh is the innovative citizen interface portal through which citizens can track the movement of PDS commodities and also register their grievances. The ICT solution being used in Chhattisgarh is showing very encouraging results and states like Orissa, Uttar Pradesh and Madhya Pradesh have showed interest in rolling out a similar procedure.

Practise Background

In the state of Chhattisgarh, an estimated 37 million households live below the poverty line (BPL) and qualify for Public Distribution System (PDS) and Minimum Support Price (MSP) benefits, along with an additional 7, 50,000 farm households. The state government spends approximately 40 billion rupees per year on rice procurement and 12 billion rupees annually on subsidies for the poor. Additionally, in 2010, there were more than 10,400 Fair Price Stores (FPS).

However, due to the large amounts of money involved and inadequate staffing levels and resources, the system suffered from leakage and diversion of funds, dubious contracts, delays in payments to farmers and incomplete allotment of commodities to FPSs. To add to the inefficiency, by 2007 the system was still, for the most part, paper-based and had not been computerized, resulting in delays, inefficiencies and a lack of proper monitoring.

The problems affected many aspects of the distribution stream including fake ration cards and delays in attaining ration cards, under-weighing of grains, smuggling and diversion of commodities. For example, a Tata Economic Consultancy Services study reported

that, in 1999, 36% of wheat, 31% of rice and 23% of sugar was diverted at the national level. Similarly, a 2005 report indicated that 39% of rice and 53% of wheat were diverted.

More recent estimates suggested that 35% of kerosene meant for the PDS was diverted, of which 18% is understood to have been used to adulterate diesel fuel.

Regarding kerosene subsidies, the government admitted that "there (was) overwhelming evidence that this policy (was) resulting in waste, leakage, adulteration and inefficiency" and, as a result, set up a task force to revamp the PDS so that cash benefits could be transferred directly into the hands of the intended beneficiaries.

Implementation Process

Launched in Chhattisgarh to modernize the PDS and address some of the problems with the existing system, particularly regarding the distribution of food commodities, the project involved six different organizations involved with grain management, 1,532 paddy procurement centres, 50 storage centres, all District offices, 99 Chhattisgarh State Civil Supplies Corporation (CGSCSC) distribution centres and 35 Food Corporation of India (FCI) rice receiving centres.

Without the Internet to enable connectivity across the various centres and organizations involved, the new system would not be able to function.

Project Features

Technology Platform

A Very Small Aperture Terminal (VSAT) network, with 200 VSATs connecting all paddy storage centres and CGSCSC distribution centres, was implemented to provide dedicated Internet connectivity for the new system. Where possible, other broadband systems were also added as a backup system. All data transmission between the centres and the server are handled by FTP.

Paddy receipts, cheques and delivery memos can be printed in real time at the over 1,500 paddy procurement centres, thus improving turnaround time for the farmers and putting payment in their hands as quickly as possible. From there, the logistics of moving paddy to the procurement centres to Food Corporation of India (FCI) and Market Federation (MARKFED) storage centres is managed by the computer system.

Because Internet service is generally not available in remote villages where the paddy procurement centres tend to be located, an innovative method of data transmission, known as the Runner's Module, was invented. VSAT-based connectivity is available at Block headquarters in the offices of the Janpad Panchayats via the National Informatics Centre Network (NICNET). Then, motorcycle-runners are used to courier encrypted data from the procurement centres to the Block headquarters where it can be entered and uploaded via the Internet. Similarly, software

upgrades etc. can be 'run' back to the procurement centres for near real-time functioning without complete Internet connectivity across the system.

Accessibility & Inclusiveness
This pilot project was rolled out across the state of Chhattisgarh and involved many levels of government.

Community Participation
Feedback from beneficiaries and participants is sought in order to improve the system in Chhattisgarh or future systems in other locations. A citizen interface website has been created for citizen awareness and participation in the smooth functioning of PDS. The portal contains all information related to the scheme including a list of ration card holders, FPSs, and details of transport and sales of PDS commodities. Information on paddy procurement is also made available on the website, which includes farmer-wise data detailing the amount of paddy procured from each farmer and money paid to him.

The citizen interface is a platform for citizens to participate in the monitoring of PDS. Citizens can register as active monitors by submitting their e-mail ids and/or mobile numbers online. As PDS commodities are dispatched to a FPS from a warehouse, an e-mail message and an SMS is sent to all the e-mail Ids and mobile numbers registered for the corresponding FPS. Each message contains the truck number, the quantity of PDS commodities being sent by the truck, and the date and time of dispatch. If commodities do not arrive at the FPS in full within a reasonable time period, citizens can register their complaint on the website.

Replication and Scalability
Proven successful and sustainable, the project should be replicable in other states in India. In Chhattisgarh, the new systems have been fully integrated into the PDS of the state. Clear cost-savings, not to mention a range of other indirect benefits, mean that government support should be automatic anywhere. The National Informatics Centre, the project's ICT partner, furthermore, has committed life time support to the project and, lastly, the system software is modular and scalable. Many of the long-term benefits of the system (real-time computer-generated payments to farmers, database information, treatment of millers etc.) are not reversible, further reinforcing the sustainability of the system.

The Fair Price Stores are currently the only link in the distribution chain that are not computerized or connected to the Internet in Chhattisgarh. Bringing them fully on-stream that way would require a significant investment from the government and, therefore, an SMS/text mobile phone based system will more likely be used to complete the supply chain and improve efficiency even further.

Additional improvements could also be made to PDS system, for example, to expedite processing of temporary ration cards for migrant workers.

Conclusions

The government benefited from the restructuring of the PDS in many ways. It saved Rs. 180 million per annum as a result of reduced corruption. Based on annual operating costs of Rs. 90 million and capital expenditures (CAPEX) of Rs. 50 million depreciated over three years, the direct economic benefit is in the order of 1.69 times investment. In other words, it received a return on its investment in the first year.

Besides costs savings, the government also benefited from improved monitoring, greater transparency and accountability and the elimination of irregularities. For example, 1,00,000 duplicate ration cards were tracked and deleted. The SMS alert system and public-access website also encouraged citizen participation in the monitoring of the Public Distribution System and, thereby, helped cut down on abuses of the system in a cost-effective way.

The PDS beneficiaries also benefited from the new scheme as they would be able to get the foodstuffs they were entitled to, in the right amount and on time. They also played a social auditing role by being the eyes on the ground. Additionally, the farmers, millers and others involved at different stages of the process benefit from standardized forms and procedures that streamline responsibilities and ensure fair treatment.

Combined, the system helped built trust between the various levels of the government and the residents of Chhattisgarh.

Lessons Drawn From The Practise

Internet service at distribution centres, which are primarily located at the sub-District level, is unreliable and posed a significant challenge to the project. Narrow bandwidth and poor service quality also posed problems. VSAT was used but, looking forward, 3G and USB-based Internet connectivity may be a better solution.

Given illiteracy rates amongst the rural poor, millers etc., online registration forms became an obstacle to access as well as an added expense since many millers had to pay Internet café operators to assist with registration forms.

Processing over 34,00,000 computerized ration cards required entry and verification of extremely large volumes of data. However, the skilled manpower needed to accurately and efficiently do this work is not readily available. In fact, case studies show that the shortage of digitally-literate people for both the supply and demand sides of the market, especially in rural India, is commonly as much of an obstacle to success as is access to the Internet. Thus, providing Internet infrastructure is not enough. The government must invest on several levels at once (education, literacy, computer skills, equal access for all castes and genders etc.) for this type of rural development project to be a success.

Overcoming challenges faced in terms of establishing connectivity, uploading reports in Hindi, data transmission to and from remote villages and building a uniform ration

card database, PDS in Chhattisgarh has come a long way. Future plans include the computerisation of FPSs and introduction of smart ration cards.

PDS has often been scrutinised for its high association with corrupt practices and although various state governments have tried to address the issue in several ways like bar-coded food coupons, food stamps, and biometrically coded ration cards, none of them have been entirely successful. The ICT solution being used in Chhattisgarh is showing very encouraging results that indicate strengthening of the delivery mechanism. States like Orissa, Uttar Pradesh and Madhya Pradesh are keen to undertake similar reforms.

Empowering India

Empowering India is an initiative to empower citizens with information about political candidates, constituencies, MLAs and MPs, and political parties, in a simple and comparative manner, so that the voter can make a more informed choice during election.

Category
e-Governance

Organization
Liberty Institute

Platform of product
Broadband/online

Website
www.EmpoweringIndia.org
www.EmpoweringIndia.net

Achievements

- Empowers citizens and grassroots organizations with information about their candidates and constituencies
- Enforces the freedom to choose by presenting different kinds of analyses concerning candidates, elected representative and political parties, which citizens and people's groups will find useful in making their electoral choices at the time of elections
- Fosters a culture of transparency and accountability in the governance of constituencies
- Enhances participation on the part of both, the electorate and the elected, in the everyday political processes

Summary

Empowering India delivers content, in the form of easily accessible, summaries and comparison of candidate information, and election results. The initiative has been able to compile over 90% of the information about the candidates, constituencies and elections for Lok Sabha and Vidhan Sabha held over the past five years. One set of information consists of summaries and details provided by candidates about their assets, liabilities, educational qualification, and details of criminal charges if any.

The other set comprises of information from the election commission regarding the total electors, votes polled, etc. With the help of a partner organization, district level developmental indicators are also available, which are good proxies for the local Lok Sabha constituency. These sets of information organized for every constituency, allows citizens to better inform themselves as they prepare to cast their ballot on polling day.

The goal is to make democracy more meaningful by encouraging participation, introducing greater transparency, assessing performance, and facilitating accountability in the political process. The target is to have information in a manner that would be relevant to every voter in the country in every constituency.

Practise Background

The Liberty Institute is an independent think tank, dedicated to building awareness of the institutional pillars of a free society. It began its journey by advocating economic policy reforms that would harness the power of the market, and empower the consumer with greater range of choices. But in a vibrant democracy, public policy proposals need to be politically acceptable too.

Empowering India was born out of this attempt to explore ways of making sound policy proposals politically viable, by improving our understanding of the political democratic processes. Political democracy and economic markets are two sides of the same coin. In a democracy, the range of political choices empowers the voter, in the open and competitive marketplace; the consumer is empowered by the range of products and services to choose from. Liberty Institute and Empowering India, together nurtures the most fundamental of human aspirations, the freedom to choose.

While the voters are the first target audience for this initiative, it needs to be acknowledged that most voters in India do not have access to computers or internet. Therefore the last mile problem is sought to be overcome by making local information accessible to the local and regional media, who then transmit the information to the citizens in the area. The popularity of the web site during the recent elections testifies to the utility value of this site.

Implementation Process

The concept of the project was borne out of the need for information required for a thriving democracy. India is the world's largest democracy. The 1977 elections that were held following the conclusion of the Emergency period, was an important time for Indian democracy because it became clear that the people cherished their liberty and would not allow despotism to take root in this country. Since then, the participation of the voters, the role played by the Election Commission of India (ECI), and the activism and mobilization of the civil society have all facilitated the democratic process to thrive in India.

In recent times, political competition has increased with the entry of more and more political parties. Political parties have also started to realize the importance of building alliances across different constituencies and presenting viable election manifestoes in order to win elections and gain legitimacy in the eyes of the voters. www.empoweringIndia.org is located in this context. Democracy can be made more meaningful for people, by involving different stakeholders including political parties, candidates, civil society groups, the election commission and the voters, in fostering accountability, transparency and good governance. This involvement will come with transparent information about politics and politicians.

The first version of the website was launched in Sept 2004, during the Maharashtra assembly election, with very basic information about candidates and constituencies. This was on www.IndianElections.org. The conceptual clarity and technical experience gained during that run helped in launching a second version in late 2005, at www.IndianDemocracy.net. This second version had a VB module for easier upload of data to the site. It also had more data content, which was contributed by others working in the similar areas.

The third version was launched in Dec 2007, with a much improved user interface, and enhanced content, at www.EmpoweringIndia.org. The different domains were a reflection of the evolution of Liberty Institute's understanding of the initiative, and the shifts in the focus as the project crystallized. It was also partly necessitated by the technological requirements. Today, all the domains point to the same site – Empowering India.

This third version was further enhanced in May 2008, with the addition of capacity to acquire data through a network of partners in an offline system. By December 2008, an online data entry module was operational, which was used by nearly 100 data entry volunteers spread in over a dozen places across north India, during the six state assembly elections. This was the test run for the upcoming general election in 2009.

During the six weeks of the general election for the 15th Lok Sabha, over 200 volunteers, in over dozen teams, spread across half a dozen states helped compile information of over 12,000 candidates. On 17th April 2009, the site recorded its first 100,000 hits in a day. This was a threefold increase from the average daily hits of over 30,000 in Nov-Dec 2008.

Apart from many media reports, the two most significant outcomes were, a cover story in India Today, 17

Feb 2009, on the richest politicians in the country, based on data from this initiative and the use of the data by Indian Express, in their daily newspaper, and publication of a book assessing the MPs and their constituency released just before the election in April 2009. The real time data gathering during election, also led to a partnership with Google India, which used part of the data from this initiative, along with other partners, in their election 2009 initiative.

Since then the site has been open and free to use for anyone looking for information on their political representatives.

Project Features

Technology Platform
The site is free to use online, and can be accessed on either a computer or a web enabled phone. The search functions and other features will work well depending on the speed of the connection.

Accessibility & Inclusiveness
The information on Empowering India web site is freely available to all visitors. There are two levels of content, firstly constituency level basic information about candidates and elections and secondly a set of analytical tools by which more scholarly visitors could do some analysis. There is also a more advanced Build Query feature, which allows a range of analytical queries to be created as per one's own needs.

Community Participation
The Empowering India platform provides two levels of interactivity. At one level, visitors to the site could opt to just look at their own constituency, or could seek more analytical data at the district, state or national level, for parties, winners and losers, males and females. So there is tremendous flexibility in tailoring the information one wants. At another level, the online data entry form encourages participation by citizens. As more information is compiled locally, the prospect of getting the information disseminated locally will significantly increase, making democracy more meaningful and effective.

Sustainability & Cost effectiveness
The Liberty Institute is a nonprofit organization and to that end the website does not have a revenue model.

Replication & Scalability
There are many initiatives to help voters access information. But most such efforts have a limited focus. For instance the Election Commission of India's primary objective is to organize free and fair elections, and the website reflects their need to manage elections. It is working to provide a service to the voter by providing access to the voter list, but this is not yet a functional and user friendly effort.

There are other websites by mainstream media, who provide election results. Then there are other civil society initiatives that are narrowly focused either to their geographic area, or on their issue of interest. There is no initiative that seeks to empower the citizens with such a comprehensive range of information as being attempted by Empowering India.

The modular nature of the architecture of the Empowering India initiative makes it very eminently

scalable. Currently, this initiative covers the Lok Sabha and Vidhan Sabha elections. Efforts are on to encompass local level elections for municipalities and panchayats, as well as Rajya Sabha elections and then to expand the range of coverage by including additional types of information about political parties, legislative business and performance of legislators. This will further help make democracy more meaningful at the grassroots.

Interests have been expressed by election monitor groups in some other countries in the region, including Bangladesh, Malaysia, and Indonesia, to try and adapt a version of Empowering India for their purpose. Without devoting any significant resources to promote this initiative so far, this has been among the most visited web sites during the election period this year. Now it is exploring possible strategies to promote the initiative, and develop a way to capitalize on the traffic volume. Within a couple of years, with all its features functional, it should be possible to have a revenue stream and take the necessary steps towards financial sustainability.

Conclusions

Empowering India is unique in its conceptualization, scope and coverage. Conventionally, elected leaders and policy makers are lobbied to influence policymaking. Often such efforts are captured by vested interests who seek to profit at the cost of the public. Empowering India believes that the true sovereignty lies with the citizens, and if citizens actively engage and participate in the democratic process, much of the ills plaguing our system would come to an end.

This initiative is unique in its scope, because it has brought on one platform three types of information, candidates, electors and constituency development data (for the Lok Sabha). It is working to enhance the scope by including performance of elected leaders in the legislature, political party information, and political biographies of candidates. Together with the analytical tools, this initiative has the potential to significantly improve our understanding of the democratic process at the popular level.

The coverage of this initiative is also unique, the mainstream media and political analysts, either take the wider macro perspective, or they focus on the VIP candidates and leaders. For most voters this information may be interesting, but not necessarily helpful when they have to choose among the non-VIP candidates in their own constituencies. The attempt to cover almost all the candidates, in every constituency by Empowering India is uniquely relevant for virtually each of the 700+ million voters in the country today. But the uniqueness is not restrictive to the website. The uniqueness lies in its attempt to use ICT in a locally relevant manner to build active citizenship across the country.

Lessons Drawn From The Practise

This project simply uses ICT to impart information to the general public. It is a great example in the manner by which a website can be used to educate and empower people.

It is a lesson in e-democracy more in the pattern of communication and advocacy towards good electoral practices in India. The project is a lesson in correct information collation and dissemination to make the ciitizens aware of electoral rights and duties.

Rajiv Aarogyasri Community Health Insurance Scheme

Aarogyasri covers 80% of the population of Andhra Pradesh offering 942 procedures with end to end cashless delivery of service. e-Office provides a completely paperless, online and transparent electronic office system to handle around 41 departments of this scheme.

Category
e-Health

Organization
Aarogyasri Health Care Trust, Government of Andhra Pradesh

Platform of product
Web/Internet

Website
www.aarogyasri.org

Achievements

- e-Office provides seamless integration among all departments and provides high performance, transparency and effective office management.
- It provides the interdivisional interface through knowledge sharing, efficient interaction, creation, movement, tracking and disposal of files.
- It helps decision making become more transparent by use of checklists, access to precedent cases, acts, rules.
- It contributes significantly to knowledge management among officers by use of knowledge repository consisting of several of circulars, reports, documents.

Summary

The Indian government faces a constant challenge in providing affordable and efficient healthcare to its population especially the rural poor. Even though government hospitals cater to the needs of Below the Poverty Line families (BPL), a large proportion of them need further specialized care that is far too expensive and therefore beyond their reach. In order to find a holistic solution to this problem, the government of Andhra Pradesh has designed and initiated a unique scheme called the 'Rajiv Aarogyasri Community Health Insurance Scheme' in April, 2007.

Aarogyasri allows BPL families to get treatment, if needed, from either government or private hospitals. Under the scheme, BPL families can avail health benefits through affordable insurance, the premium for which is financed by the government. The scheme aims to achieve 'Health for all' by assisting poor families through the provision of free insurance through a unique PPP model that allows the patient to avail medical care at both public and private institutions. To streamline administrative and logistic issues, an intelligent tracking system – Aarogyasri e-Office was developed to track a patient right from the point the patient approaches the primary health center to when he is released from the hospital.

e-Office, is the back office system for the Rajiv Aarogyasri health care system. The ICT solution provides a complete paperless, online and transparent electronic office system to handle around 39 departments of the Scheme with 10000 subjects and 4000 users. In order to provide a seamless integration between these departments, the e-Office application provides workflow management, document management, knowledge management along with the various scheme specific and general organizational, personnel and general applications.

Practise Background

From 2004 to 2008, the AP government spent around Rs. 425 crores from the Chief Minister's Relief Fund in response to request from families living below the poverty line (BPL) to cover their health expenses. There was a need felt in the state to provide medical assistance to families living below poverty line for the treatment of serious ailments such as cancer, kidney failure, heart and neurosurgical diseases etc., requiring hospitalization and surgery. It was found that health care expenditure was one of the prime reasons which lead people to the vicious cycle of indebtedness.

The Aarogyasri Health Care Trust was especially set up for the purpose of delivering quality tertiary healthcare to the underprivileged population. In order to meet the challenge of meeting the requirements of a massive scheme covering more than 7 crore people the system has to work for 24 hours and for this a unique and real-time workflow namely e-Office was designed.

e-Office was based on the implementation of Information & Communication Technology

(ICT) tools that would bring enhanced access, transparency, accountability and efficiency in delivery of government processes. The Aarogyasri Trust initiated the automation of this process of policy formulation and decision making by effectively using ICT tools to play a significant role towards achievement of high performance, transparency and effective management.

Implementation Process

The e-Office system, while handling 10000 workflows, also handles complex administrative activities exclusive for the scheme such as Aarogyamithra (health officer) shuffling, attendance capture on real item, payrolls based on the performance of the various roles. The system is a workflow-oriented integrated system which addresses all the needs of the target groups. Each phase of a patient's journey through the system, from in/out patient registration, surgery updates, discharge updates, claim settlements etc., are routed through the ICT. Decision-making has therefore become simple and the data analysis helps the administration in driving the scheme to become more effective and economical.

The key components that have been taken into consideration for implementing e-Office application in Aarogyasri Trust and Insurance Company are:

- The overall structure of the Aarogyasri Trust and Insurance Company.
- The administrative setup of the departments.
- Organizational hierarchy and associated workflows.
- Co-ordination with insurer.
- Other departments of Government.
- Current IT infrastructure in place.
- Applicability of e-Governance.

e-Office therefore, provides workflow management, document and knowledge management along with the various scheme specific & general organizational, personnel & general applications. While handling 10,000 workflows, the system also handles complex activities exclusive to the scheme such as biometric authentication of employees that ensures only authenticated users have the right to access the application.

Project Features

Technology Platform

Using a high bandwidth and high performance servers, www.aarogyasri.org enables patients to get referred from primary health centers and health camps organized at villages. Through a 24 hour call center integration, entry of patient registration in hospitals, upload of diagnosis reports including ultrasound, echo, angiograms etc., entry of preauthorization data for surgery, entry of pre and post-surgery clinical data, operation notes, post-operative clinical notes, treatment billing details, claim request, claim processing and online payment to the hospital with messaging

and e-mail intimation is achieved. Having enabled all the workflow and approvals through www.aarogyasri.org the system ensures transparency, efficiency, robustness and a corruption free environment.

The website is developed using Java/J2EE technology. The usage of Java enables portability. The ability to run the same program on many different systems is crucial to World Wide Web software, and Java succeeds at this by being platform-independent at both the source and binary levels. The necessary hardware and software along with high Internet bandwidth is used in the deployment of the application. The sizing of the system has been done based on the number of users, concurrent users, and volume of attachments being uploaded and downloaded.

Accessibility & Inclusiveness

In order to facilitate the beneficiaries, facilitators known as "Aarogyamithras" (Friends of Health) are placed in each PHC/CHC/Area Hospital/District Hospital and Network Hospital. An Aarogyasri Kiosk and uniform provides them with easy identification. They form the face of this insurance scheme. Over 3000 Aarogyamithras work in the field, while others are placed in the hospitals.

The Aarogyamithras placed in Network Hospitals facilitate registration of patients, admission, evaluation, pre-authorization, treatment, discharge and post discharge follow-up of patient. All the Aarogyamithras are connected by Closed User Group mobile phones with a centralized toll free call centre (1800-425-7788) for better coordination and communication. Any patient/relative can also call this number for referrals and advise. Further each hospital has a dedicated Aarogyasri Medical Coordinator who is essentially a doctor and an Aarogyasri medical camp coordinator. It is for all these employees that the e-Office system needs to work seamlessly.

The ease with which all graphical user interfaces cleared user acceptance testing and the number of users availing e-Office services speak volumes about the interactivity that has been incorporated in it. The e-Office website has a user friendly login page. Users are welcomed with the e-Office logo and a pictorial representation of all the departments and can log in with his/her credentials.

At the same time, all this information, including tracking of the patients file can be done on the internet, making the process transparent. Further, when a hospital performs a surgery etc., the Aarogyamitra is required to take pictures and update the site so as to prove that the medical treatment did take place, ensuring against false claims.

Community Participation

The essence of the Aarogyasri is to tie in the BPL community into the larger healthcare sector of Andhra Pradesh, and to that end, the project has been successful. Villagers are able to go and be treated at private hospitals for the first time in their lives. At the same time, the software has made it easy for the other side of the Aarogyasri dynamics – the staff – to run this system smoothly.

Sustainability & Cost effectiveness

The cost of running a health insurance scheme has been reduced dramatically by the right use of technology in installing and tracking the system. The Government is able to provide insurance coverage of

up to Rs. 2 lakhs per year on a family floater basis for 2.03 crore families at a cost of only Rs. 440/- per family per year. The scheme stabilized in two years and was able to screen 4000 patients in registered hospitals. On average 13000 beds are occupied by Aarogyasri beneficiaries across the state. This is possible due to the public private partnership which by reducing fund leakages has improved the scheme immensely.

Replication & Scalability

Both the Aarogyasri scheme and the e-Office system can be replicated in other states. In fact, the governments of Maharashtra, Delhi, and others have sent teams to learn from Aarogyasri and plan to replicate the effort.

Conclusions

The Aarogyasri health care scheme would most definitely not be able to work effectively were it not supported by an ICT based workflow which is its administrative backbone. e-Office ensures that the huge challenges in implementing this complex scheme across 23 districts are met effectively. To ensure the smooth and effective execution of this scheme, there are around 39 departments functioning including, field operations, vigilance, claims, pre-authorization, accounts, human resources, grievances etc. The departments have around 1200 different subjects with 250 various roles involving in 250 hierarchical workflows within and across the departments spanning across 39 different departments.

In order to make these departments work effectively, there needs to be a seamless integration of all these government departments. While each department has its own functionality and works independently, the department has to be integrated closely to establish the smooth coordination between departments. As part of the Aarogyasri scheme, the Aarogyamithras are shuffled between network hospitals on periodic basis and automation of this activity is a huge challenge as it includes considering new employees, resigned employees, their locations, preferences every time. e-Office meets the challenges posed by these administrative requirements very effectively.

To manage the employees of all the departments, e-Office has many applications developed like recruitments, allocations, attendance module, performance measurement, performance based payrolls and applications related to personnel, departmental and organizational etc. All these functions are automated leading to much faster processing. Around 750 requests and 400 files get created everyday across all the 39 departments for various needs to function the scheme effectively. e-Office effectively maintains transparency of the data and the process eliminating any delays in the administration of requests.

The huge challenge in implementing this automation is to provide user-friendly screens and easy navigation to enable all the departmental employees to work with ease. Another important requirement is to provide real time information on the status of the request and files etc. e-Office provides a completely paperless, online and transparent electronic office system

to meet all requirements. In addition to the above, training employees of the departments has been a herculean task. A separate training department has been established in order to oversee all the training needs.

Lessons Drawn From The Practise

Government schemes need to adopt ICT practises in order to keep track of how allocated budgets are being spent. All ICT tools available need to be implemented on the ground and Aarogyasri has, like many other e-government initiatives, crafted a system that not only tracks the volume of people getting treated through public health insurance but tracks all details about their health, procedures and so on. This will help not only run the operation smoothly but inspire confidence in the general public due to its transparent nature.

104 HMRI

104 Advice, the flagship initiative of Health Management and Research Institute (HMRI), is a state-of-the-art health helpline that provides the 80 million people of Andhra Pradesh with round-the-clock, qualified and standardized medical information, advice and counseling in three languages — Telugu, Hindi and English.

Category
m-Health

Organization
Health Management and Research Institute

Platform of product
Telephone/Mobile

Website
www.hmri.in

Achievements

- 104 Advice delivers a wide range of critical services: medical advice/ counseling, detection/diagnosis, monitoring, health and hygiene education, and drug prescription/ dispersal
- Promotes and propagates ICT-enabled health care services primarily to meet the unrealized needs of the rural population
- Offers medical advice based on a state of the art, validated and standardized portfolio of protocols embedded in Clinical Assessment Decision System (CADSys) Software – an automated Decision Support System

Summary

India has a sizeable rural population, most of which is severely underserviced by traditional healthcare resources. The existing rural health coverage is less than one-third of the World Health Organization guidelines, resulting in approximately three billion annual incidents of patients receiving unqualified or no treatment.

In Andhra Pradesh alone, more than 86% of the villages lie beyond three kilometres from the nearest hospital and roughly 600,000 patients go untreated each day. Besides the obstacle of distance from a centralized healthcare system, these rural populations also have several unique health concerns, including risk from mosquito-borne diseases, poor access to potable water, and a variety of sanitation/hygiene issues

104 Advice began as Health Information Help Line in February 2007 with a toll-free health contact centre to assist the people, particularly in rural and interior areas, who are facing difficulties in getting access to a qualified doctor and also getting information on any health problem. The primary objective was to set up a medical advice hotline - a phone number that anyone could call to get basic medical advice (on symptoms and ailments) or basic medical information (on location of specialists etc.). Assisted by pre-formatted algorithms and disease summaries, callers are matched with appropriately qualified health workers (including medical specialty experts) who provide advice/counseling or make preliminary diagnoses and referrals for further treatment.

Soon after, the initiative drew the attention of the Government of Andhra Pradesh, which signed a public-private partnership (PPP) agreement with HMRI. The aim was to scale up the service across the entire state of Andhra Pradesh. The service has witnessed a strong growth, starting from 4 seats attending to 200 calls a day in February 2007 to a current 400 seats working round the clock, attending to over 50,000 calls a day. It is among the world's largest health contact centres, attending to an average 1,500,000 calls per month.

Practise Background

There is a huge digital divide that manifests itself at both international and domestic levels. In India, rampant poverty and illiteracy substantially limit the disadvantaged sections' access to and use of technology. This digital divide can and must be narrowed, particularly in the health sector, through effective and focused utilisation of information and communication technologies (ICTs).

The deployment of ICTs can play a critical role in socio-economic growth of developing countries and the realization of U.N.'s Millennium Development Goals. Technology-enabled social initiatives can improve and augment the delivery of public services, promote more efficient functioning of markets, create new income-generating opportunities, and facilitate transparent and efficient functioning. This kind of transformation is even more

necessary for rural and isolated areas, where widespread access to and effective use of ICTs can make a huge difference to developmental outcomes.

It is in this direction that HMRI undertakes its mission to provide, promote and propagate ICT-enabled healthcare services for all Indian citizens. The service offers to all citizens of Andhra Pradesh a full range of healthcare services — on-demand, on-time and on-par, customized to the individuals' needs. The world-class technology infrastructure set up by HMRI connects healthcare providers and end-users, seamlessly catalyzing their interactions by providing the right information at the right time.

Implementation Process

HMRI launched the health helpline — 104 Advice — in partnership with the Government of Andhra Pradesh, under the celebrated Rajiv Aarogyasri scheme and in association with the Piramal Group. The 104 Advice service focuses on augmenting public health delivery systems by leveraging ICTs and modern management practices. It is currently accessible to the 80 million population of Andhra Pradesh. The service covers all areas of Andhra Pradesh that have access to telecommunication. It operates as a virtual medical advice hotline, which people can freely access. The service offers health information and advice in three languages — Telugu, Hindi and English, 24 hours a day.

The main objectives of the 104 Advice service are:

- To offer health advice and information on healthcare and counseling to callers;
- To provide primary screening to rural pregnant women, growing children and patients with chronic diseases in order to reduce maternal mortality rate (MMR) and infant mortality rate (IMR)
- To impart a range of health information and advice, including information about all health delivery services across the state and counseling for HIV/AIDS, matrimonial discord, depression and chronic diseases

Specifically, the key offerings of 104 Advice can be summarized as below:

- Triage (classifying the caller's condition into 'Critical', 'Serious' or 'Stable' states) and providing appropriate advice
- Directory Information (information about providers, diagnostic services, hospitals etc.)
- Counseling Services (HIV/AIDS, suicide prevention, psychological distress)
- Complaint Registry (citizens can register complaints against any public health system/provider for service improvement)

The service employs specially trained counselors and proven state-of-the art telecommunications equipment and technology. 104 Advice has qualified doctors and paramedics on board, with a present seating capacity of about 400 and total employee strength of about 1,500. More than 500 software engineers, 50 management personnel and several PhDs are working to support the system. Its services are based on 140 directories, 400 algorithms and 165 disease summaries that are used for providing information and identifying certain epidemics in real

time and then escalating them to the concerned authorities.

104 Advice is the world's largest health contact centre today, attending to an average 1,500,000 calls per month and about 40,000 calls per day. Other similar service providers like NHS (UK), attending 600,000 calls per month, and 13 Health Australia, attending 20,000 calls per month, have been left far behind in total calls. 104 Advice also has the lowest average call handling time compared to the above-mentioned institutions.

Project Features

Technology Platform
There are two ends of 104 Advice's technology platform. On one end are the users who can either use their landlines or mobile phones to dial a number. On the other end is the 104 Advice system which mans the volume of calls coming in. This system is equipped with an internal software design which ensures that the caller is placed with the correct call taker, based on the nature of the call. The service customizes health advice and information delivery through over 400 algorithms and hundreds of disease summaries, providing real-time validated information. It has also codified 140 directories. Each directory, algorithm and disease summary is updated and expanded every 24 hours.

Accessibility & Inclusiveness
104 Advice is a free service for all the citizens of Andhra Pradesh. Its employees can handle calls in English and the local language, ensuing that it is easily accessible and inclusive. It has approximately 1300 employees ready to answer the phone and solve a number of health related queries.

Community Participation
The project has been a great success in Andhra Pradesh. While its popularity in part could be because it is a free service, the level and quality of service provided have also been major factors to its acceptance with community participation being pegged at about 40,000 interactive calls per day! Since its inception in May 2007, 104 Advice has received 3, 50,50,997 calls, of which 96% are calls made for medical advice. 2, 75,856 calls came for counseling services, and 2,03,982 calls were made for information enquiry. HMRI's efforts to address the last mile problem in healthcare delivery are being widely recognised.

Sustainability & Cost effectiveness
The initial success of the project convinced the Government of Andhra Pradesh about the viability and the need for a solution, resulting in a public-private partnership between the Government of Andhra Pradesh and HMRI to increase the scale and scope of its services. Political will, corporate social responsibility and individual commitment have emerged as the key driving forces behind 104 Advice. The reach and cost-effectiveness of the service make it a viable complement to the existing primary healthcare systems.

The system employs paramedics in the forefront and doctors in the back-end. This strategy substantially brings down costs and addresses the supply-side constraints that the scarcity of doctors imposes. However, since the service is free with the major funding being provided by the

government it is not a viable financial model as yet.

Replication & Scalability

104 Advice is based on a proven platform, which connects the citizens' unmet and unarticulated healthcare needs with a robust ICT-enabled infrastructure, ensuring steady access, availability and assurance. HMRI has nurtured this platform's speed, scale, scope and flexibility to accommodate emerging needs, innovations and best practices. The system's operational strength emanates from its state-of-the-art technology, managerial competencies and committed grassroots participants. This could be replicated in other states across India..

Conclusions

Government spending on health facilities in India is amongst the lowest of all emerging economies (1.25% of GDP, compared to the 2.7% average for low and middle income countries). Inadequate government spending has resulted in fewer public health facilities and inadequate equipment, with the impact most acutely felt in rural areas. Use of information and communication tools can help in addressing both these issues by providing access to low-cost physical and virtual healthcare services to the public, specifically the rural population. ICT-based health interventions offer easy replication and scalability across geographies.

HMRI's vision is to transform health services delivery by leveraging state-of-the-art technology to create an easily accessible, digital health platform. Their target is to reach the 80 million population of Andhra Pradesh through the world's largest integrated digital health network, including 24/7 dial-a-doctor service, 40,000 onsite workers and 475 mobile health units. HMRI envisions increased use of ICTs in the healthcare sector, primarily to meet the unrealized needs of the rural populace

HMRI seeks primarily to address the following needs:

- Increasing penetration and enhancing the reach of health services in rural and remote areas
- Reducing the cost of access to health services
- Providing access to regular preventive health checks and health education

Lessons Drawn From The Practise

Only a fraction of the global allocation of funds for public health addresses the health issues relevant to emerging economies, where 90% of the global healthcare burden of preventable diseases and mortality lies. Two major factors contributing to this supply-demand gap are:

- Inadequate coverage of primary health centers to provide services to the sparsely distributed villages in rural areas
- 70% of health spending coming 'out of pocket', increasing the burden on poor and resulting in further impoverishment.

Increasing the healthcare coverage has for long been a key priority for India, plagued as it is by abysmally low health standards especially in rural areas. HMRI's helpline has shown that if given the right guidance in an easy to access manner, more citizens will not only take medical advice but also be able to improve their health in a timely manner. The service is not only free, but also very convenient as one does not need to leave the home/work place to make a call. It has also been noted that many people call 104 Advice as a second opinion, to verify what their doctors have told them.

By offering medical advice and creating awareness especially in rural areas, 104 Advice provides a platform to access primary and preventive healthcare irrespective of location, cost and gender – a truly commendable effort and service.

IMPACT

In December 2007, 40 students of Nehru Residential School, in Kurnool, were suffering from conjunctivitis. Their teacher, Mr. N Subbaraidu, called up 104 for help. 104 Advice associates got in touch with the State Epidemic Cell and reported the incident. The Cell reacted immediately and administered medication for the ailing students. They also gave lessons in prevention and eye drops to the whole school. The Epidemic Cell later expressed their gratitude for 104 Advice's help in identifying and reporting an epidemic.

Wireless for Communities (W4C)

Wireless for Communities (W4C) offers low-cost wireless connectivity at rural regions of the country.

Category
e-Infrastructure

Organization
Digital Empowerment Foundation

Platform of product
Wireless

Website
www.wforc.in

Achievements

- Enhanced internet connectivity at unconnected regions of the country
- Ease accessibility of information
- Connecting institutions and platforms
- Enhancing knowledge capability of users
- Livelihood and economic impact
- Local skill development

Summary

In developing countries, wireless connectivity has been emerged as one of the inexpensive technologies to bridge the connectivity gap in remote areas. These wireless technologies have created much interest on the part of the international-development community.

For example, in India, even with mobile penetration, the tele-density in rural areas is still less than 40 percent, and internet connectivity is a far cry. The reason has mostly been the issues around last mile connectivity. On the other hand, last mile wireless connectivity has the potential to resolve the issue of prohibitive cost of deploying conventional wired infrastructure in remotest areas of the country.

In order to address these issues, and connect remote and underserved regions of the country, in 2011, the Digital Empowerment Foundation (DEF) and the Internet Society (ISOC) initiated a joint project called "Wireless for Communities" (W4C) which utilises low-cost Wi-Fi based equipment to connect and empower rural and underserved communities. The motivation for the W4C project by ISOC and DEF is twofold. Firstly, to totally democratize the availability of connectivity and enable Internet accessibility to information in rural parts of the country, secondly to address the issue of lack of content product and services originating from rural areas which affects the economy from percolating to the bottom of the pyramid.

W4C is a complete solution that provides wireless internet connectivity at remote regions of the country. This project has two major objectives – deploying wireless mesh network in cluster environment to target a community and observe the benefits and impact over a period of time and provide Training of Trainers (ToT) on wireless technology and wireless mesh technology.

Practise Background

Poor network and connectivity together with lack of internet and services access has aggravated development as well digital divides. It has, thus, become imperative to connect unreached and unconnected communities with alternative technology deployment. Although, users and technology implementers are aware of known advantages of wireless network technology, however, this approach is yet second possibility among users.

The suitability of wireless deployment in remote and sparsely located communities is an established fact including its low cost solution advantages. The W4C programme was initiated to address key connectivity and accessibility criticalities. DEF launched the first pilot W4C project in 2011 at Chanderi cluster located in Madhya Pradesh, experimenting key connectivity factors:

- Addressing the issue of last mile connectivity;
- Democratizing the availability of connectivity and enable internet accessibility and information decentralization;

- Addressing the issue of content and services gap that obstructs local economy and pulls back social indicators; to address wireless technology skill gaps;
- Initiating a dialogue and deliberation between stakeholders including public and private parties on the impact, need, scope, viability and sustainability of wireless deployment for community empowerment and meeting needs of underserved regions;
- Initiating advocacy with the relevant public and private partners to propagate and adopt wireless technology as an unconventional solution to connect rural remote areas and communities with broadband connectivity and services on it.

Implementation Process

In 2011, DEF implemented the first wireless mesh network at its Chanderi Weavers Information Resource Centre (CWIRC) in Ashok Nagar District of Madhya Pradesh. The CWIRC centre which was started about almost 2 years back with the help and support from Ministry of Communication & IT, Govt. of India, envisioned to provide holistic ICT-Enabled environment and infrastructure for the weavers community to enhance their skills, add value in their supply chain of designing and market reach, provide ICT Skills to the youth and kin of the weavers family, providing e-commerce enabled market reach,

Keeping CWIRC centre as a base, the wireless mesh network has been set up covering a range of 15 km by establishing one relay station, covering more than 25 point-to-point nodes. The Chanderi project, to bridge network and information divide, has key elements in – network deployment, Internet access, developing capacity of local human resource in wireless skills and empower community with content and service.

To replicate this model in other regions of the country, in the second phase of the project, DEF implemented 3 states in India – Tura (Meghalaya); Baran & Tilonia (Rajasthan) - with deployment of wireless mesh network. Expanding its reach in South Asian countries, 2 'Training of Trainer' (ToT) programmes organized and conducted in Bangladesh and Bhutan.

Project Features

Technology Platform

Using a wireless technology, the wireless mesh network has been set up covering a range of 15 km by establishing one relay station, covering more than 20 point-to-point nodes. These 20 point-to-point nodes are providing internet connectivity at 1 CWIRC centre, 12 schools, 2 Madarsas, 1 PHC (Public health centre), 1 Hotel, 1 Digital Panchayat, 1 cyber café and 1 community radio station.

The ToT programme enabled trainees to be trained on wireless essentials – cabling; link analysis between two nodes; configuring the radio (Mikrotik and Engenus)

as access point, client and as mesh; configure the Mikrotik Router as DHCP server, router, and hotspot server; creating user profile of different varieties; connecting the client with security (WPA/WEP) and Mac authentication.

On experimental basis, 3 point-to-point nodes, covering 5 nodes within 3 km radius with a base station established in Tura during October 2011. The network provided internet connectivity to NGOs and educational institutes.

At Baran, 35 point-to-point nodes for a relay station have been established to cover maximum 35 kilometers and minimum 10 kilometers of the region. The network is providing wireless connectivity at 7 night schools-cum-libraries and 8 region.

Accessibility & Inclusiveness

The CWIRC centre (the base node of wireless connectivity) is serving the weaving community and its younger generation as information and training centre. The issue of poor connectivity in the centre is now resolved after the wireless set up. Trainees, youths and others are using the Centre's access services for various needs largely design sourcing, exam results and admittance process and media access. The wireless network has also impacted the weaving community in sourcing design patterns for creating new designs. A design repository generated with more than 250 new design patterns;

The wireless facility has provided enhanced facility for the 'Chanderiyaan' e-commerce platform that DEF launched to promote local produce and handicrafts of Chanderi. Through this e-Commerce platform, weavers are connected and they are easily able to market their products. Overall, there are about 50 weavers who are directly or indirectly associated with Chanderiyaan's various components of projects. Moreover, there is about 20-40% growth in their income and revenue because of not only wireless per se but being associated with Chanderiyaan.

Education

At Chanderi, W4C has resolved the issue of connectivity in 12 schools, including one (1) girls' school and two (2) Madarsas (Islamic Education Centre) that have now been connected through internet; students and teachers are having Internet and content access for course curriculum needs. DEF has set up IT labs in all schools by providing netbooks for the same purpose.

Governance

Moreover, 40 panchayats (local village councils) are utilizing the facility of internet for their official purpose at the Digital Panchayat Centre, an initiative of DEF and NIXI. Before the deployment, the centre was facing the issue of internet connectivity, now the centre has internet connection that has been utilized by panchayat members for their day-to-day work of office (such as creating online content for their panchayats, maintaining database of National Rural Employment Guarantee Act scheme, etc.)

Health

Enhancing the functioning of a government public health in its tele-health programme with better connectivity and access, a public health centre located in Chanderi now has a facility of tele-health services. The Chanderi Wireless project ensured seamless

connectivity that helped doctors to connect with senior doctors working in the district headquarter hospitals.

Community Engagement
At Chanderi ki Awaaz, a local community radio station in Chanderi, is now utilizing internet services for creating local content to broadcast local programmes up to 10-15 kilometer within the region.

Conclusions

The W4C programme ensured the wireless connectivity in those regions where internet connectivity is a major issue. Thus, the impact of the project has been progressive and encouraging. Key indicators of the project – network deployment, its reach, usage, access and benefits – have shown positive trends. Key institutions networked and connected including schools and local councils. Education, health and livelihood have received encouragement from the project. For instance, the 'Chanderiyaan' e-commerce platform received a boost with wireless connectivity. Skill development has a positive impact.

In terms of service utility, the project has larger impact in promoting art, culture, toursim and heritage in Chanderi. The impact of the project motivated partner stakeholders to replicate the same in other locations. The project has attracted the attention of stakeholders, including policy advocators, government and private players to adopt the wireless technology as an alternative solution towards connectivity and access. In the Phase II of the W4C programme, the project is being replicated in three rural locations in two States in India. It is also extended to the two South Asian countries.

Lessons Drawn From The Practise

It has been noted there is need to adopt alternative means of technology to access internet in remote regions of the country. The wireless technology is one of them. The usage charges are free, as it utilizes free spectrum space. There are multiple socio-economic benefits associated with the projects, some of which are access to e-governance services, e-learning, and e-commerce.

AirJaldi

AirJaldi is a wireless broadband mesh network bringing affordable and reliable high-speed Internet service to rural and low socio-economic areas where it was previously not commercially viable for major Internet service providers.

Category
e-Inclusion

Organization
Rural Broadband Service Pvt. Ltd.

Platform of product
Broadband Internet

Website
www.main.AirJaldi.com

Achievements

- Provides four networks in three states: Himachal Pradesh, Uttarakhand and Jharkhand
- Evolved into a for-profit commercial business and plans to expand using the franchise model
- Brings Internet access to over 10,000 people in the most rural and challenging parts of India
- Empowers local citizens and youth by training them in network management and maintenance so that they can manage and maintain their own wireless networks

Summary

Beginning in 2005, AirJaldi launched its first community-based wireless Internet network in Dharamsala, Himachal Pradesh, called The Dharamsala Community Wireless-Mesh Network. Since then it has expanded in Himachal Pradesh, Uttaranchal and Jharkhand. More than simply an Internet service, AirJaldi provides important training for community residents in order to enable them to implement, manage and maintain their own networks and to broaden their employment options.

Practise Background

Today, Internet connectivity is part of a region's basic infrastructure and essential to economic and social development. At the same time, bringing the Internet to rural areas has proved costly and unattractive to service providers, especially in a deregulated market. As a result, many isolated rural areas have been left with no Internet service. In general, Internet service in India is less dependable than in more developed countries and customer service also lacks behind.

As a result, the Internet service providers (ISPs) tend to be overextended simply dealing with the demand and traffic in cities and less willing to invest the same effort and capital in the less profitable rural areas. For the same reasons, the country's fibre-optic backbone reaches all tier 1, 2 and 3 cities, but not rural areas. To make matters worse, existing ISPs typically have their hands full satisfying an ever expanding demand in their existing markets. Therefore to make new rural markets a priority is not on their list. This situation is unlikely to change soon.

It is difficult to provide good quality Internet service while depending on a single upstream ISP for the entire network. Many rural networks, therefore, often evolve to rely on common Internet connectivity much more than initially planned, thereby turning them into local rural ISPs.

Given these conditions, the challenge was to:

- implement affordable Internet service where it was previously unavailable
- narrow the gap between the Internet-haves and have-nots
- enable rural communities to flourish and take charge of their own development
- make the Internet as much a part of the infrastructure as the roads and the railways

Implementation Process

Following the deregulation of Internet service providers in India in the early 2000s, AirJaldi implemented its first network in Dharamsala, Himachal Pradesh as a not-for-profit venture. It has since grown to four networks, including Terhi Garhwal District and Kumaon District, in Uttarakhand and Ranchi District in Jharkhand.

Project Features

Technology Platform

AirJaldi uses free and open source (F/OSS) technologies, small-sized, low-power nodes mounted on low masts and low-carbon footprint solutions to provide robust high-quality broadband service in the most demanding environmental conditions.

The AirJaldi platform had to overcome the following technological challenges in order to provide reliable Internet service in rural parts of the Indian Himalayas: a customer base that is too dispersed and few in number to economically support most readily available broadband technologies, an unreliable rural power supply that experiences frequent outages and wild fluctuations that can damage equipment, and the need for a stable workforce of skilled people to manage and maintain the system.

Therefore, to be a success, AirJaldi's solution had to be economically viable in low-density rural conditions and had to be able to provide uninterrupted Internet service. Their unique solution, known as "Bandwidth Maximizer" (BwM) takes advantage of available bandwidth from multiple upstream ISPs in order to minimize downtime and, at the same time, reduces costs by taking advantage of the different ISPs pricing packages. As a result, their service is more reliable than most of the competition.

AirJaldi favours robust and affordable equipment that comes with power supplies and electrical charge controllers capable of meeting the demands of the rural electricity service over more expensive equipment that requires more maintenance.

Their network extends existing broadband services, typically only available in large towns and cities, to more isolated areas via a network of wireless nodes. Nodes consist of low antennas mounted on rooftops or high points in the landscape - complete with routers, power supplies, a battery-backup and, in some places, photovoltaic solar panels - and are capable of withstanding the extreme weather and the irregular power supply found in rural areas. Requiring only 4 watts of power, they have a small carbon footprint and are ideal for use with solar panels.

Mesh networking also contributes to the efficiency and reliability of the service. A 'multi-hop' mesh network makes packet routing more flexible and efficient, especially in adverse rural conditions subject to power and service outages. It is also easily extended to thousands of devices. In the case of the Dharamsala, the network consists of 30 nodes organized into a mesh topology such that when one node goes

out of operation, the others can still communicate with each other. Broadband service is available to all nodes in the mesh.

AirJaldi delivers wireless broadband Internet service – typically RJ45 connection to a customer's home or business. Additionally, AirJaldi offers a number of secondary ICT services supported on their system, including intranet conferencing, off-sight file storage, file sharing, local and network website hosting and security features.

Initially a modest project to connect a small number of institutions in the area, the Dharamsala Wireless Mesh Network (DWMN) grew to be the largest operation of its kind in Asia. By 2010, it connected 2,000 computers across a 70km radius area in the valley of Kangra.

AirJaldi offers superior customer care, compared to its competition. As AirJaldi CEO Michael Ginguld says, "When the line is down, we are up." He believes that service is what sets AirJaldi apart from the competition and is a value added service that customers are willing to pay extra for.

Accessibility & Inclusiveness

In the interests of accessibility and inclusiveness, the AirJaldi Network Academy (part of AirJaldi Training and Capacity Building Division) offers training to people from the communities being served who might only have a rudimentary understanding of mechanics or digital technologies to start with. AirJaldi has developed simple and well-tested network management tools and teaches them through straightforward and practical hands-on courses given by them as well as other service providers.
In this way, AirJaldi disseminates technological know-how, ensures that its networks can be maintained and managed by skilled and knowledgeable local citizens who are best placed to respond to the needs of their own communities and generally makes the economic and employment possibilities of India's ICT revolution accessible to those who were previously excluded from it.

Community Participation

AirJaldi employs local citizens for network management and maintenance. Their customer base primarily consists of rural Indians and Tibetans and includes the Dharamsala Community Wireless Mesh Network. This is used by more than 5,000 students in five schools within a 50km radius, staff of the Tibetan Children's Villages organization, overseeing 15 TCV schools attended by 15,000 students and two teacher training institutions. The Norbulingka institute for the preservation of Tibetan culture, the Men-Tse-Khang Tibetan Medical and Astrological Institute, various Tibetan monasteries and Buddhist institutions and about 20 community organizations also access this network.

In Dharamsala, AirJaldi is affiliated with the Tibetan Technology Centre and is part of its efforts to bridge the digital divide with wireless ICT technologies. It plays a particularly important role in Tibetan community, supporting the Tibetan Children's Village and the Tibetan Medical and Astrological Institute as well as providing Internet service to a large number of Tibetan refugees.

The Internet allows refugees to stay in touch with their families and preserve their culture by providing access to e-books, articles, movies and blogs. AirJaldi was also developed in cooperation with other local institutions such as the

Dharamsala Information Technology Group and the Tibetan Computer Resource Centre as well as a range of community stakeholders and schools. The Tibetan Children's Village School hosts a cyber café run for and by children.

Also in the Dharamsala area, a non-registered NGO, Students for a Free Tibet (SFT), uses the AirJaldi system in its efforts to reach out to the Chinese population, advocate on behalf of Tibetans in China, transmit messages from the Dalai Lama and counter what they see as China's biased coverage of the Tibetan cause. Using AirJaldi, SFT members use Yahoo messenger to reach 90 people at once in China, tweet on Twitter and transmit the latest news. It is estimated that their efforts have reached 90,000 Chinese citizens.

In Dehradun, Uttarakhand, the AirJaldi network is now used by the Institute for Financial Management and Research (IFMR), a micro-finance organization. Previously, IFMR experienced service instability, which interfered with its day-to-day operations, delayed transactions, increased customer wait times at its branches and took a long time to correct. Because the existing service providers had few solutions to offer, IFMR formed a partnership with AirJaldi to network its 100 village branches with head offices across an area 30km by 40km.

Replication & Scalability

AirJaldi, originally a not-for-profit enterprise operating in the Dharamsala and Dehradun area, has already scaled up into a for-profit commercial business called Rural Broadband Private Limited and expanded into the Kangra Valley area of Himachal Pradesh and Mussoorie in Uttarakhand. The network's mesh structure allows it to be scaled up to thousands of nodes without reducing transmission speeds.

AirJaldi intends to expand its operations in areas with proven demand using the franchise model. Franchisees will be expected to be business-minded local entrepreneurs who are familiar with their own market and can contribute a customer base but will not be expected to be technologically skilled.

Potential future franchises will be considered according to the following steps:

- Review whether there are adequate customers in the area with the ability to pay for the service
- Review potential future customers such as schools, local institutions and private individuals
- Understand the local topography using Google Earth etc. to determine network feasibility
- Prepare a preliminary plan for the network based on the previous information
- Approach local entrepreneurs with details of the venture, including the initial investment required
- Implement the project and provide the necessary training.

In 2010, the franchise fee was in the area of Rs. 2 to 3 lakhs for an area of approximately 15km and would increase as the area increases. Additional money will typically also be required for things such as office space, vehicles, computers and salaries.

Conclusions

Broadband Internet access in rural areas is critical for the effective and efficient functioning of local government, business, schools and other organizations. Affordable service, furthermore, plays a beneficial role in empowering communities, providing economic development opportunities and improving the standard of living of rural citizens through improved education and training, connectedness, social participation, cultural preservation and banking. AirJaldi has proven that it is possible to provide reliable wireless broadband Internet service in rural areas. AirJaldi pioneered high-quality Internet service for previously unserviced rural areas and has been expanding operations to other areas in the country.

Lessons Drawn From The Practise

Poor local governance in some rural areas can be an obstacle to implementation and has prevented or delayed expansion into some markets. Furthermore, entry costs are high due to long drawn out and expensive licensing processes and bureaucratic bidding procedures. Well-trained technical employees in the field are critical for the operation but can be difficult to find. Further copper telecommunication lines are often stolen or damaged from landslides, floods, digging etc. This adds to system time-outs as well as maintenance expenses and should be taken into consideration.

EGMM

The Employment Generation and Marketing Mission –EGMM – is one of the largest jobs mission for tribal and rural poor in the world working in a public-private partnership mode with Government, companies and the rural communities as stakeholders.

Category
e-Inclusion

Organization
Employment Generation and Marketing Mission (EGMM), Department of Rural Development, Govt. of A.P.

Platform of product
Online

Website
www.egmm.ap.gov.in

Achievements

- Provides the rural community with fixed income, new skills, and self confidence
- Ensures remittances for the rural families and lowering of caste stigma
- Helps eradication of poverty within a generation's time in a sustained manner
- Creates employment for the rural youth
- Provides a competent, loyal, cost-effective workforce with an opportunity to fulfill its social responsibilities

Summary

One job per poor rural family is the goal of the Employment Generation & Marketing Mission (EGMM), which was established in 2005 by the Andhra Pradesh Rural Poverty Reduction Program (APRPRP). Andhra Pradesh's unemployment rate (6.7 percent) is slightly higher than that of India (6.0 percent). Rural areas are plagued with low incomes and under-employment with many people working in the informal sector, manual labor or seasonal small scale farming. EGMM's mission is to respond to this problem by facilitating employment in the formal sector—which offers more stable and higher incomes—for economically underprivileged rural youth so that poor households can leave poverty within one generation.

This government funded scheme is tracked through a special EGMM software, and it is through this software that the youth are matched with potential employers based on their interests, abilities and market opportunities.

The transaction-based software captures the proceeding of the activity as and when it occurs in the field. The data reports generated through the software and analysis have been designed keeping in mind the MIS needs of the government, funders and program. This software brings transparency into the program. The reports generated help in monitoring the large program and fund flow. The analysis is fed back to improve program quality.

The district performances are monitored at all levels – district collectors at the district level and senior government officials/ chief minister's review at the state level using only software data. All processes involved in job creation for the rural youth in enrolment, training and placement, can be viewed online. The information can be drilled down from the state, district to mandal level. The analysis is available on excel sheets. For easy and aesthetic presentation purposes, the excel sheet can be converted with a press of a button to bar diagrams; pie charts etc.

Practise Background

There is a serious gap between demand of jobs and supply of skilled labour. At the end of 2010, India's unemployment rate stood at 9.4% or 40 million people. The picture is bleaker when one considers that 74% of them do not have job opportunities as they live in villages, and even if they did, cannot qualify for those jobs due to lack of technical and language skills. Youth at the rural/village level obtain local university degrees but often they are not good enough to get jobs in cities – because they lack language, grooming and social skills.

As cities do well, more and more level entry jobs are created which city educated youth are often too qualified for. At the same time, the same opportunities have not yet reached the village level. The obvious step, therefore, is to help the village level youth find a city job.EGMM steps in here and helps these rural men and women get the necessary skills to man the front desk of a fast food chain, or learn how to be a

cashier. It also helps them find places to stay, jobs, while at the same time, inducting more and more people into these trainings.

Information and technology initiatives play a vital role to fulfill the gap in execution of projects. EGMM has got volunteers, national and international, for its program through this citizen-interface. NGOs, MNCs, and entrepreneurs, interested in this important area of skilling of youth have learnt about the processes and best practices through the website.

The motivation was to build an IT architecture which could monitor the program and bring a degree of professionalism to it. Today, the data is communicated to all stakeholders, rural communities, companies and government to bring them on the same platform.

Implementation Process

Employment Generation and Marketing Mission (EGMM) is a mission set up by the Department of Rural Development of the Andhra Pradesh (AP) Government to provide employment/ employability for the rural youth. These are the economically and socially underprivileged rural and tribal poor from remote areas.

Set up four years back, EGMM has emerged as one of the largest jobs mission globally for the underprivileged youth. It has trained over 3 lakh young people and placed 75% of them in entry-level corporate jobs. 45% are girls and 37% are SCs/ STs. EGMM works in a public-private partnership mode with Government, companies and the rural communities as stakeholders.

EGMM officials approach the youth in their villages, and encourage them to join their training schemes. A part of it is carried out at the taluk level, through 450 centers across the state, but the final bout of training is at the EGMM "finishing school" in Hyderabad. After that, they are placed in jobs in the cities.

However, without comprehensive software, these are the problems EGMM experienced:

- The inability to physically monitor the program leading to delay in process of trainings, placement, post placement
- Telephonically receiving data from districts leading to delay in preparation of MIS reports
- Physical statistical figures varied because of inaccuracies; hence there was no faith in 'government data'
- There was no transparency in implementation of a program due to the lack of a sophisticated tracking method
- Analysis of field data could not be fed into the program for improvements
- Forecasting was difficult to figure out market and field trends

EGMM is essentially a brand which compromises of 'pro-poor products' such as the country's first grassroots level English program, soft skills and computer academy, rural retail academy, and security academy. It also offers customized trainings for work in rural BPOs, SEZ manufacturing units, and so on.

It has partnerships with big companies such as;

- Retail: More (Aditya Birla Group); Big Bazaar (Future's Group), Reliance Fresh; Heritage Fresh; ITC

Choupal and Futures group.
- Security Services: Roxa/G4 Securitas.
- Sales: Hindustan Unilever; Reliance telecom; Tata Indicom; Vodafone; Airtel; Eenadu.
- Rural BPO: HDFC Bank.
- Hospitality: Mc Donald, KFC, Pizza Corner, Café Coffee Day.

The processes involved to make the program work are complex. It begins with collecting the data of unemployed youth that goes into a database. A market scan identifies opportunities. Simultaneously, various training centres are established, and youth screened to enroll in them. At the end of training, companies come for campus recruitment. The placed youth are offered sensitive support like counseling and hostel identification in cities (to prevent dropouts).

The software also keeps track of the following for analysis: name, age, gender, caste, village, mandal, district, job placement, salary, progress report, financial performance, placement analysis, performance reports, and unemployed youth analysis among many other factors.

Project Features

Technology Platform
The username and passwords are issued to JDMs, district/state partners to login for selecting trainees, entering details for placement and post placements by accessing the web through any browser. Citizens can also access the web directly through any browser for statistical reports.

Accessibility & Inclusiveness
The scheme itself is to foster inclusiveness, and its website aims to be as accessible as it can. The data in the reports (www.egmm.ap.gov.in) has been created through a transaction-based software to capture the proceeding of the activity as and when it occurs in the field. The software is user friendly and any citizen can access the site and view the statistical reports. At a glance, on the home page, the physical report on dashboard can be seen. The details of each aspirant can also be viewed.

The reports consists of district wise targets and achievements, training, placement details, salary, caste wise reports that can also be seen in the package. The web site contains ongoing trainings, completed trainings and placement, trainee details that can easily be understood by any laymen. Apart from the statistical reports, a citizen can get information on content of MoUs with training partners, district wise press clippings, photo gallery and articles in national and international magazines.

The information on corporate partners with EGMM can also be seen. The photo gallery contains meetings with parents of trainees, visit of VIPs to the training centers, ongoing trainings, onsite work of aspirants, etc. EGMM has got volunteers, national and international, for its program through this citizen-interface. NGOs, MNCs, and entrepreneurs, interested in this important area of skilling of youth have learnt about the processes and best practices through the website.

Community Participation
The EGMM community consists of not only the youth who are trained but also the companies and other

stakeholders who participate in the program. HR officials from firms email / visit the office for recruiting trained manpower from EGMM. MNCs and entrepreneurs offer their training services and placement by entering into MoU with EGMM. Others offer to give guest lectures and mentor youth on weekends.

Sustainability & Cost effectiveness

For a young country, India has a very low rate of skilled labor. Therefore, the funds allocated for this scheme are large; Rs 30,000 crores have been earmarked for this purpose. In Andhra Pradesh, Rs 80-100 crore state funds have been allocated for this scheme.

The rural and tribal poor youth are from agricultural wage laborer families which earn barely Rs 12,000 per annum. The youth, then, can send home on average Rs 24,000 per annum. This money is used to buy assets like TV, land, educating a younger sibling and to pay back debt. Thus impact studies showed EGMM work takes families out of poverty in a sustained manner. IT architecture provided allows for scaling in a sustained manner. This ensures funds really reach poor with fewer leakages.

Replication & Scalability

The project is highly replicable and many other states have come to study it. The need for training is felt around most rural areas of India and there is a demand of these processes, both from prospective employees and employers.

Conclusions

EGMM is a focused project that knows exactly what it needs to deliver to be successful. Through the work management software it is able to keep track of everyone who wants to join EGMM and matches selected people to the kinds of jobs they want. The training is also very focused, to ensure that these village/ small town young people end up with the necessary training to make it in the big city. It has allowed young men and women with high aims and ambitions to match those desires with real job prospects, and to that end, is really helping the youth of India realise its potential.

Lessons Drawn From The Practise

The impact of using a software to track the EGMM scheme has been carefully documented. First of all, it has helped in capturing the physical and financial progress of the program at each transaction in a uniform manner throughout the state. Any Right To Information queries are guided to the website, which is a detailed one. Using software has brought transparency into the operations, both for the program and budget flow. It has helped monitor-training partners for ensuring quality placements.

The four main processes of enrolment, training, placement and post placement are be done automatically, according to the time line fixed, after which data cannot be entered. This prevents delays in operation; allows for tracking of

delays and helps processes being followed for quality. The software also generates detailed MIS reports for the government and funders, and through them analysis reports for different trends, performances of districts which feed the learnings to improve program implementation. Finally, company placement analysis and salary analysis helps in understanding where to place the youth, helping them earn higher incomes.

Online Hearing Screening Project

The Online Hearing Screening Project is a simple online test developed as a questionnaire which helps to identify hearing loss.

Category
e-Inclusion

Organization
AYJNIHH

Platform of product
Online/Broadband

Website
www.checkhearing.nic.in

Achievements

- Helps to adopt and design information technology to reach out to all, in terms of screening, professional guidance and referral services for hearing loss in India
- Generates reports designed through computerized calculations and logic after screening aims to provide the user with the knowledge of his/her hearing sensitivity
- Provides further solution through referral service facility with a provision to upgrade the referral system

Summary

Hearing impairment is the inability of an individual to hear sounds adequately. This may be due to improper development, damage or disease to any part of the hearing mechanism. Hearing is a prerequisite for the development of normal speech & language. A child learns to speak by hearing the speech of others in the family and surroundings.

Deafness is an invisible impairment. Keen observation is necessary in order to identify a deaf child/individual. Deafness at birth or in early childhood has disastrous effects on the child's overall development. These effects vary depending upon the age of onset, nature and degree of hearing impairment.

Untreated hearing loss interferes with virtually every aspect of a person's life - both personally and professionally. When ignored and left unaddressed, hearing loss can lead to impaired memory; difficulty in learning new tasks; reduced alertness; increased risk to personal safety; irritability; negativism; anger; fatigue; tension; stress; depression; isolation; withdrawal; and diminished psychological and overall health. Simply, when a person chooses to ignore his/her hearing loss, he/she will be choosing a dramatic loss in the quality of their life. For the vast majority of people, it is not a conscious choice.

To help people understand the serious impact that hearing loss can have on their lives, the "Online Hearing Screening Project" has developed and validated a simple online test – a questionnaire – which can determine if the user has a hearing problem and then directs him/her to the nearest clinic equipped to deal with the problem.

The questionnaire has separate sections for different age groups: 0-2 years, 2-6 years, 6-18 years & 18 years. This test can be taken by individuals in the privacy and comfort of their own home. The test is designed to help people better understand just how serious their hearing loss is, and to determine whether or not they need further help.

The questionnaire was adopted as the best substitute for an online Internet hearing test. The questions were tested on children and adults both, and in the case of infants, were administered to the parents before the audiological evaluation. To avoid the elements of bias and subjective variations creeping in as well as to check the validity of the questionnaire, different clinicians carried out both procedures.

Strong positive correlations were found between audiological findings and questionnaire findings used for hearing test online project. This showed that the questionnaire can be used as a valid tool for early diagnosis and detection of hearing impaired in the highly sensitive group. Information technology thus can be adapted to reach out to the 3.1 million persons with hearing impairment in India, enabling a better quality life from cradle to grave.

Practise Background

Also though hearing impairment is not a life-threatening handicap it is serious enough to certainly affect the quality of one's life. There is hardly any information available in audiology books and journals and very few such tests are available on an internet. The Online Hearing Screening Project is an attempt made to provide information about such tests. It is really not practical to take an on-line hearing test over the Internet.

About 10% of the general population has serious hearing problems (including a third of the people over 65 years and three fourths of the people over 75 years) and the only way to be sure to have it tested by an audiologist. However due to the non-availability of such services, the Online Hearing Screening Project was developed which would at least help the individual to get an idea about his/her hearing sensitivity.

Further, this would help the individual to seek advice from qualified clinician, thereby enabling early detection. The project also would assist him/her in intervention of possible hearing impairment from qualified audiological services, in the near vicinity of his/her home.

Implementation Process

The online hearing-screening test was designed in steps, keeping in mind that accuracy was key to any diagnosis.

- Development and Design of tool (Questionnaire)

As part of this project four sets of questionnaire have been designed in English for four groups, which are linked to the real online test. The four target groups are 0-2 years, 2-6 years, 6-18 years and 18 years & above. The hearing screening tests provide a quick and cost effective way to separate people into two groups, a pass group and a fail group. Those who pass hearing screenings are presumed to have no hearing loss.

Questions include the following:

- Does your child fail to respond to loud sounds?
- Does your child fail to respond to soft sounds?
- Does your child turn his head to localize (locate the direction) the sound only when it is presented on one particular side of the ear i.e. either left or right?
- Did your child stop babbling after 6 to 8 months of age?
- Does your child show poor or no interest in playing with noise making toys like rattle, bell etc?
- Has your 1-1/2 year old child failed to start using meaningful words like mummy, daddy, bye-bye etc?
- Do you feel that your child does not understand simple commands like wave bye- bye until & unless your speech is accompanied by gestures?
- Does he/she insist on watching your face while you speak?

Is your child unable to respond to your call from a distance of 5 ft to 10 ft?

Those who fail are in need of an in-depth evaluation by an audiologist and may also need to follow-up care from other professionals. They

are given access to referral service solutions on the website. Auditing of the website was done as per the procedure of the Government of India and it was decided to remove the proposed chat facility and the flash in the website. The referral list was upgraded to include the ISHA members with hearing testing facilities, DDRCs, ENTs, and Medical Colleges with hearing testing facilities.

- Field Testing of the Tool

This involved the following:

- Field testing of questions used for screening according to age group,
- Field testing of speech sounds used for screening irrespective of age group and
- Field testing of audio frequencies for screening irrespective of age group.

The field tests resulted in a comprehensive knowledge about the various aspects of the utility and cost effectiveness of the test and adaptation of technology. Since the referral services and chat facility were to be constantly upgraded in terms of infrastructure development and progress in technology, no field test were carried out for these.

The calibration of sounds used was done initially using the physical calibration methods. However it was found that due to variations of speakers used, the volume controls and the sound card interface, the results during field test could not be validated. These variables of the type of speakers and the sound card of the system did not permit biological calibration as well.

As the sound tests were field tested, it was found to have various interferences and runtime errors causing logical link failure in sound tests and questionnaire tests. Hence it was decided to omit the aspect of screening using sounds and was decided to construct and validate the questionnaire and test its sensitivity and specificity.

- Validation of Questionnaire

The validation of questionnaire was done and the results showed a strong correlation between the audiological test findings and the questionnaire designed for the online hearing screening, that is, 88.4%.

Project Features

Technology Platform

In reality it is not practical to take an online hearing test over the internet as there are various interfaces that would need to be calibrated periodically. Hence the best substitute for such a test is a systematically designed and scientifically field tested series of questions that will serve the purpose of screening of hearing sensitivity, with a logical application of corroborative checks. The project also aims to check the utility of the website devised, designed and its impact on quality of life of the speech and hearing impaired beneficiaries. Its aim was also to collect the feedback for further enhancement of the website using the developments in Information Technology.

Accessibility & Inclusiveness

The main objective of this project is to adopt, design, and device the information technology to reach out to all, in terms of screening, professional guidance and referral services for professional help in

India. The report generation facility designed through computerized calculations and logic and after screening aims to provide the user with the knowledge of his/her hearing sensitivity. The users of the website are also given further solution provision through referral service facility and upgrade the referral system. However, its limitations are that it is in English and can only be accessed through the internet.

Community Participation
The referrals given are based on the users geographical location, however, beyond that there is no community participation.

Sustainability & Cost Effectiveness
The project is funded by the Ali Yavar Jung National Institute for the Hearing Handicapped which is an autonomous organization under the Ministry of Social Justice and Empowerment, Government of India, New Delhi. The Institute is located at Bandra (West), Mumbai. This project has no financial sustainability model.

Replication & Scalability
Since the questionnaire is a simple online one it can be easily replicated.

Conclusions

The concept of "online hearing test" is a recent one and has come into action only after the invention of internet. This concept was introduced because of the non-availability of specialized professionals like audiologists and their services near to home. Hence to get one's hearing assessed so as to achieve early identification and intervention was one of the basic goals of such tests. This is essential because hearing impairment is an invisible, silent, dual and sudden handicap.

Also though hearing impairment is not a life-threatening handicap but it certainly affect one's quality of life. It is an easy, convenient and effective way to bring the patient closer to a diagnosis and a first step before an actual checkup.

Lessons Drawn From The Practise

Basically about 10% of the general population has serious hearing problems and the best method of verifying this is to have it tested by a qualified audiologist using "up to date" and "calibrated" equipment. Intervention is especially important in the case of children for whom an early diagnosis and remedial measures could prove extremely important. This project by helping in diagnosis also lends the crucial and necessary support required in pointing out the necessary professionals who would take help in getting the corrective interventions required.

These would include professionals like the audiologist and speech language pathologist who are trained in the diagnosis and rehabilitation of hearing and speech problems. In case of hearing impairment this professional can carry out the hearing assessment, diagnose the type of hearing problem, do hearing

aid testing and fitting, help with a program geared at helping the child learn to make use of his hearing and develop speech and language and provide speech therapy interventions.

Equally important is the special educator who has specialized in educational methods for children with hearing impairment. These teachers use special methods to develop language and conduct educational programs for children with hearing impairment. They can assess the child's language abilities and guide you about the type of school placement best suited for your child.

The Online Hearing Screening Project is a vital step in ensuring that hearing loss can be corrected by timely diagnosis and intervention.

HarVa

HarVa is a rural start up that primarily focuses on skill development, BPO, community based farming and microfinance. HarVa aspires for sustainable inclusive growth by creating value in the heart of rural India.

Category
e-Inclusion

Organization
Ajay Chaturvedi

Platform of product
Broadband/online

Website
www.HarVa.co.in

Achievements

- Focuses on skill development especially in women
- Deploys intellectual capital to create BPO jobs in rural India
- Establishes agri-services and chain markets (to buy local and sell to markets)
- Establishes microfinance for employees and creates tele-health centers

Summary

HarVa – "Harnessing value of rural India" – is a company that aims to take urban opportunities to rural India. The philosophy behind the venture is that while many companies in urban India are losing their competitive edge because of rising costs, rural India has been left largely untapped. There is great potential in developing the skills of people in villages, who reside at the 'bottom of the pyramid'.

HarVa is a holistic approach to job and value creation in rural India. The company has a four-armed approach: rural BPO (Business Process Outsourcing), microfinance, tele-health centres and agriculture. HarVa's approach seeks to involve and engage entire farming communities as opposed to simply establishing an office in the area.

Practise Background

India's cities are experiencing development at a very rapid pace. Businesses are growing, as is infrastructure and income levels. However, by and large the rural population of the country has been left out of the process. The number of poor people in the country has not decreased much in the past few decades; in the 1970s the number was at 321.3 million, and by 2005 it was only down to 301.7 million. The figures also indicate that many people migrated from rural areas to urban areas, thereby contributing to urban poverty as well.

Official figures from the planning commission also reveal that the composition of 'poor' itself has been changing and rural poverty is getting concentrated in agricultural labor and artisanal households and urban poverty in casual labor households. The Planning Commission reports that agricultural labor households accounted for 41% of rural poor in 1993–94 as well as in 2004–05. This indicates that the ratio has not have not changed significantly over time.

However, at the same time, a critical issue in assessing employment behavior of the economy is the growth of employment in the organized sector vis-à-vis the unorganized sector. Public debate on this issue is conducted on the basis that unorganized sector employment is generally of low quality while organized sector employment is of high quality, and the focus of attention is on whether employment has increased in the organized sector.

Therefore, rural India has the tendency to become a land of missed opportunities. Those who go to school find themselves with no significant job prospects except farming. Many farmers have small pieces of land and no real knowledge of new farming techniques to improve their yield. There is hardly any infrastructure in villages. Women are married off young, and spend their lives taking care of the family. There is always a desire to migrate to urban areas to earn more money but often the only jobs available in the cities for them revolve around driving, cleaning, cooking and so on.

The opportunity, therefore, lies in the fact that due to the high cost of service in urban areas because of the lack of space and high salaries, it makes economic sense to invest in

rural India.

Internet connectivity is crucial to linking pockets of rural India with the rest of the country. Technology has widened the digital divide between the 'haves' and the 'have-nots'. People derive both social and economic benefits from these linkages. Internet helps to end isolation by allowing people who are geographically distant to partake in the information revolution. Information and communication technology (ICT) has become, within a very short time, one of the basic building blocks of modern society.

Implementation Process

HarVa is the brainchild of founder Ajay Chaturvedi. The project was born in 2008, with the plain philosophy that the opportunities of urban India can be brought to rural India for solutions. The XPO was officially launched in March 2010.

HarVa take a complex four-pronged approach to working with rural communities, called the "HarVa Parivaar". In the long run, each HarVa community will have a tele-health centre, an agricultural supply chain, microfinance and a BPO/XPO (XPO is another version of a BPO). HarVa has been testing out pilot projects across the country. Community farming has been piloted in Dehra Dun, Uttaranchal and Haryana. Tele-health has been piloted Haryana and Rajasthan. Micro credit has yet to be tested.

HarVa was started with a consortium of investors who gave seed capital of Rs 50 lakh each to HarVa Partnerships, the parent company. Under it, HarVa XPO Private Limited was established, and it is expected to go public by 2012. Today, Chaturvedi owns 90% stake in HarVa XPO, but in the future wants to give equity to his employees as well.

For HarVa, the rural XPO is the flagship scheme. There are 4 centers in Haryana, at Badshahpur, Aklimpur, Baas and Teekli. Of HarVa's Rs 3.5 crore seed capital, about Rs 80 lakh went in building these four centers.

Of them, the Teekli center is the main hub that houses 30 employees and 4 trainers. The Teekli center required Rs 25 lakh to set up. It has a running cost of Rs 4.5 lakh a month, as is earning about Rs 5 lakh in revenue per month. The internet costs (using data cards) come between Rs 10,000- Rs 20,000 depending on usage.

Establishing a new office in a rural area is very challenging because village communities are tight-knit. Team HarVa faced a lot of skepticism when it entered Teekli village, especially since HarVa was looking to only employ women at the XPO. Many family members felt that these jobs might take the women away to bigger cities such as Gurgaon, Haryana. However, with the support of the local panchayat, and a woman sarpanch (leader of the village council), slowly, the village came around.

HarVa advertised for job positions and arranged trainings for those interested. An impressive 500 women applied for positions, later the list was narrowed down to 200. External trainers were brought from Gurgaon to explain computer systems and software to the women. At first they were made to familiarize themselves with laptops, CPUs, sockets, and later with using the internet. HARVA

uses proprietary software along with Microsoft Word, Excel, and PowerPoint, which were all part of the training. Finally, 50 women were chosen to work at the office.

HarVa XPO offers supports all back and front office outsourcing jobs such as data processing, software testing, and call center support. The model has worked very well for the company, and it has won much recognition for its efforts. It plans to expand to other states across India as well.

Project Features

Technology Platform
HarVa needs computers, special software and internet connections to work. Telecom companies told the company that they would come into rural areas only if they were assured 60-80 subscribers. As a result, the Teekli centers 20 computers are connected to the internet through 20 data cards which use Reliance to connect to the World Wide Web. However, over time this will change.

Accessibility & Inclusiveness
HarVa employs trainers from the city to come and hold workshops to teach rural employees how to use computers, software and navigate the internet. As a result, skills are being transferred in areas where none were.

Trainers teach the employees online ad posting, sorting data, digitizing feedback forms and so on. It has been HarVa's experience that most of the rural women are very fast learners.

Community Participation
HarVa XPO employs only women as the company feels that women are less likely to leave their post in search of a new job. It has also been observed that because many families live in a 'joint-family' system, women are able to come to the office for a few hours in the day without much objection, as there is someone at home to cover for them. The shifts are 5am-1pm and 1pm-8pm.

As a result of this employment directive there is a socio-economic churning in the village as women become earning members, often earning the same or more than their husbands. Depending on how many hours they work, the women earn anything between Rs 2500 to Rs 7800 a month. This extra income, coupled with the fact that it is a women-only office has made HarVa a 'safe' site. On the weekends, some children come to the office and the mothers are able to teach them some computer skills. This way, the community gets to engage with the company.

Sustainability & Cost Effectiveness
Establishing a running office in a small town/village requires investment in terms of infrastructure, equipment, training, salary, generator and upkeep. At HarVa's Teekli Center the running cost is Rs 4.5 lakh per month. However, the center also brings in business that, in HarVa's case, is enough to allow the center to sustain itself without any further investments. In its first year itself, the Teekli centre brought in Rs 5 lakh per month. With more clients and more revenue, this is a highly sustainable business. And if the fixed costs rise, HarVa has the option of creating centres in more affordable rural parts of the country.

Replication & Scalability
The HarVa experiment has proved

once again that there is virtually a limitless talent pool across rural India. The main challenge lies in training people in technical skills and creating infrastructure. However, there are other rural BPOs (most notably, Desi Crew in South India), which also operate, in the same sphere. However, this market is nowhere close to being saturated.

Conclusions

Technology has allowed work to be outsourced from more expensive, urban areas to economical, rural areas. Through ICTs, a line of communication can be established through the country, helping disseminate work to those who need it. Unlike offline initiatives, ICT enabled initiatives are able to draw linkages between people who do not, and will not, even know each other, but yet, will work together and draw economic benefit from each other.

But, to keep this business model competitive, HarVa will have to continually expand inwards – which is to say, deeper and deeper into rural India. This is because as current HarVa villages start to experience the benefit of corporate jobs and eventually, consumerism, the company will face many of the problems experienced in the city offices today – rising costs and a high pace of attrition.

However, HarVa plans to give its employees a stake in the company to keep that from happening. The company will be listed in the future, and at that point, CEO Ajay Chaturvedi wants to give the employees 20% equity so that they are also part owners of HarVa.

Lessons Drawn From The Practise

Projects that seek to create employment in rural India often concentrate heavily on promoting arts, crafts and other local traditions. This project can be classified as a step in the right direction of bridging the digital divide. Already, HarVa has trained 200 women who are bringing income to their families, which is comparable (and in certain cases, more) than what their husbands earn. Replication across rural India will not only introduce technology to the countryside but also increase purchasing power.

Increased internet penetration and computer literacy will help the company expand its scope of work experimenting with computer related programs and workshops to increase farmers interest in technology and development.

Another challenge would be when the XPO has to start taking on voice calls. In that scenario, the training costs will increase substantially for both accent correction and language. At present employees do not even have a working knowledge of English, and even if they were to operate within Hindi and other regional languages, accents would have to be worked upon.

FINO

FINO's Technology Solution for Financial Inclusion is a complete end-to-end suite of products that enable institutions such as banks, microfinance institutions, government entities, and insurance companies etc. to take their financial products and services to the doorstep of millions of unbanked and under-banked households at bottom of the pyramid.

Category
m-Inclusion

Organization
FINO (Financial Inclusion Network & Operations Ltd.

Platform of product
Offline

Website
www.fino.co.in

Achievements

- Offers complete suite of financial products and services (Savings, Insurance, Credit, G2P transfers and remittances)
- Provides low cost of service to end customer by leveraging the FINO architecture
- Offers turnkey technology solutions and business correspondent services
- Utilizes the FINO technology architecture, which is proven, scalable and robust

Summary

FINO founded in year 2006, headquartered in Mumbai, India, has emerged as a leading inventor, innovator and implementer of integrated technology solutions for institutions such as banks, microfinance institutions, government entities, and insurance companies to enable a financial inclusion environment for the micro customers.

FINO caters to the industry needs across market segments by undertaking complete electronic payment platform projects. FINO solutions are anchored around using biometric smart cart, hand-held devices and micro deposit machines to perform field operations and biometric authentication.

Practise Background

Despite their best intentions, it had been a challenge for banks, insurance companies, micro-finance institutions and government entities to reach out to people in the vast rural landscape of India. With approximately 450 million individuals outside the ambit of the formal financial system, it is an enormous task to take banking, insurance and other financial services to the masses. FINO's technology platform currently reaches out to more than 19 million of these BPL people, which is close to 25 per cent of total BPL population.

The hurdles have been amplified by a general lack of awareness, high costs of delivery, accessibility problems, strict KYC norms, lack of infrastructure, and the overall perception by the banks that this customer segment is not financially viable for banks to service. But this exclusion has made it difficult for them to have any formal savings, transfer money across states easily, and even borrow money from someone who can offer them acceptable interest rates.

Banking institutions like FINO have changed this thinking. The idea was to push the envelope in a highly regulated environment and come up with a technological solution to enable banking transactions in a distributed manner using low-scale resources instead of only at licensed locations by well-trained banking staff.

Implementation Process

FINO functions via a simple but robust amalgamation of its 3 integrated pillars.

- Core System (channels interface, products engine and data repository)
- Distribution System (enrollment stations, smart cards and hand-held, field transaction devices)
- Information System (MIS and credit bureau)

The Core System: Core banking system component is built as a shared, back-end banking engine that provides accounting, MIS, reporting and monitoring facility for all asset and liability products that the micro

sector requires. The core component comprises of three sub units viz. Channel interfaces, Product Engines and Data Repository, enabling centralized data processing and data management of remotely captured transactions in the field.

The Core System transaction applications help manage various aspects of the card lifecycle, handheld device lifecycle, principal's field representative lifecycle, principal account lifecycle and transaction processing - field originated and principal originated - i.e. they ensure that

a. The field originated card present transactions are sent securely and timely to the principals' system and
b. The principal originated card not-present transactions are sent to the card in an effective fashion.

Some of the Core Banking Solution (CBS) Features include:

- Integrated CBS with branch-level multi-product support
- Mainstream Retail Banking CBS having all features built in
- Specially customised to suit the micro segment
- Highly secure, scalable and robust
- Trusted by hundreds of Banks in India and abroad
- Prompt & defined service delivery culture
- Low Error Rate: Tracking at each production stage
- Consistent Processes: ISO 9001:2000 certification
- Robust contingency management procedure CBS Sub-units:

Distribution System: Made up of enrolment stations which capture the customer demographic and authentication information and biometric enabled multi- application smart cards. All customers touched by FINO are provided with a smart-card, which carries their fingerprint, demographic information and financial relationship information on the chip; while the fascia holds the demographic information and cardholder's photograph along with Card Issuer's details.

The use of fingerprints allows the users to authenticate their accounts without having to remember any passwords or signatures. The card can maintain up to 8 relationships with financial (Banks, MFIs, etc) or non-financial (PDS, etc) institutions along with their individual transaction history of up to last 10 transactions.

Further, FINO's fingerprint validation engine ensures that a customer exists in the system once and once only. The service agents under the FINO umbrella are also given a smart-card with similar details, which forces them to authenticate themselves with their fingerprints as well. This ensures a secure offline transaction authenticated by the customer and principal's representative. While, the smart-card is an important tool to maintain the sanctity of the offline transaction, it does not mean that all transactions must be offline on FINO platform i.e. based on the nature of transaction, it can be designed to go online.

Information System: The MIS System manages all logics for data messaging to generate information for day-to-day planning and management of operations. The principals may utilize some of the pre-designed reports by FINO or ask for customized reports. The credit bureau component employs a mix of complex algorithms to assess the credit worthiness of a customer on the FINO platform. All the above components are customizable for the specific needs of the principals.

Customers are enrolled into the

system by agents of the client bank, or agents from FINO's own 'bandhu' network, by recording all their details along with a photograph and a record of his/her fingerprints. This data is fed into the system and each new customer is assigned a unique ID. Post-enrollment, once a smart card is issued to the customer, he/she can start transacting immediately to avail of any financial service.

The agent, who has a biometric hand held GPRS enabled Point of Transaction (PoT) visits the customer at his/her door-step for the relevant transaction (cash collection for deposit/loan repayment, insurance payment, disbursement of government scheme etc.). The agent then inserts the card into the PoT. The application loaded on the PoT asks for a randomly selected fingerprint of customer to validate the transaction.

After the customer swipes his/her finger on a biometric slot on the PoT, a receipt is generated and handed over to customer as a proof of the transaction. The transaction data is transmitted to FINO servers immediately.

In case GPRS connectivity is not available, the PoT is settled with a dial up connection/PSTN phone line at end of the day. All transaction details can be viewed by the client (bank, insurance company, MFI, government entity etc.). The benefits include:

- Capacity enhancement through a utility approach promises easy scalability.
- Enriched MIS from aggregate to granular levels with customised reports.
- Reduced IT infrastructure /Admin/ Maintenance costs.

Project Features

Technology Platform

FINO's technological solution is a combination of Offline and Mobile devices: a PoT device works offline and then syncs with the backend system twice a day. A mobile device is used for customer registration.

The FINO technology platform includes:

- SMART CARDS as the medium for authentication & storing information. The cards are responsible for managing the customer demographic, fingerprint authentication, product relationships _ their status and transaction history.
- PoT (Point of Transaction) a secure, biometric handheld device used to carry out transactions.
- SWITCH: the PoT talks to the switch to transmit data captured on the field, using ISO 8583 protocol
- CBS: the Core Banking System, which has been built as a shared back end banking engine that provides accounting, MIS, reporting and monitoring facility for all asset and liability products that the micro sector requires. The core component comprises of three sub units viz. channel interfaces, product engines and data repository, enabling centralized data processing and data management of remotely captured transactions in the field.

Accessibility & Inclusiveness

The strength of FINO's network lies in the fact that is has a team of 'bandhu's who go door to door, helping those families which would not ordinarily have the time/means to reach its offices during office hours, to bank with them. This is immediately

made the program inclusive in nature. This strategy has resulted in over 19 million previously unbanked people joining the banking sector (via FINO) in just four years.

FINO has the distinction of covering over 266 district panchayats, 5884 gram panchayats and 50000 villages in the country. The technology platform enables disbursement of the entire gamut of financial and allied services including savings account, loans, recurring deposits, NREGA/SSP payouts, insurance, remittance etc.

Community Participation
By roping in local officers – bandhus – to visit clients door-to-door, FINO has built up a community network of clients. To that end, FINO is very community oriented in its modus operandi.

Sustainability & Cost effectiveness
FINO has an in-house Technology R&D team to develop and enhance offerings and a Centralized Processing Centre, which is ISO 9001:2000 certified and has a robust contingency management procedure. It has received awards and recognition from reputed organizations. FINO works on national priority projects (NREGA, RSBY, SSP, etc.) for the central and state governments, and to that end has a financial sustainability model.

Replication & Scalability
FINO's model is highly replicable, but will only be successful if the implementing agency is committed to making regular visits to local communities and assuring them of the long term sustainability of the project. FINO's rapid growth; first million customer enrolments in 365 days, the second million in 180 days, third million in 69 days, fourth million in just 50 days, and fifteenth million in a remarkable 37 days, speaks of the great need of this facility from the customer end.

FINO is currently acquiring customers incrementally at the rate of over 50,000 customers per day with an average three million transactions per month and delivering to their doorsteps the entire gamut of financial products and services on behalf of banks, insurance companies, MFIs, NGOs and government entities. This is encouraging for both replication and scale.

Conclusions

FINO's mission is to serve the underserved through the FINO business model that relies heavily on its technology platform. This is transforming the age-old approach that has been adopted to serve the under-served, and will bring about greater penetration in the customer base and operational efficiencies of the institutions focused on inclusive banking. FINO's experience has been that technology can be harnessed to overcome minor to major challenges and ensure scalability and sustainability.

FINO's success also has great social implications. Many people who live and work at the periphery of society, be it in slums and as organized workers, have long been kept out of the banking sector. Often women cannot leave the house unattended during the day and as a result were not able to explore banking options. By taking banking to them, and also allowing transactions of very small

amounts, a certain saving culture is being inculcated. Instead of storing notes at odd places in the house, this demographic can actually save money in an account to be used at a later point. It also allows for previously unaccounted money to enter the system and help the economy as a whole.

Lessons Drawn From The Practise

Technology has helped us open up vast new and untapped markets in the micro-lending and micro-insurance sectors as well. Information and Communication Technology (ICT) is the way of the future. It is especially indispensable when you want to reach out to the masses, because ICT facilitates two very critical factors for the growth of any industry or sector: scalability and sustainability. The true test of any technology is when it is accessible and usable by millions.

Panini Keypad

Panini is a new multilingual Keypad System for India supporting languages of India on the mobile phone. The Panini keypad system when installed on a cell phone allows the user to type conveniently in Hindi, Bengali, Telugu, Marathi, Tamil, Gujarati, Kannada, Malayalam, Oriya, Gurmukhi (Punjabi) and Assamese.

Category
m-Inclusion

Organization
Luna Ergonomics Pvt. Ltd.

Platform of product
Mobile App Based

Website
www.Paninikeypad.com

Achievements

- Offers CleverTexting for the Indian languages such as Hindi, Bengali, Telugu, Marathi, Tamil, Gujarati, Kannada, Malayalam, Oriya, Punjabi and Assamese
- Provides integrated support for all the Indian languages and interconversion via transliteration

Summary

The Panini keypad is the brand name of the family of products for Indian languages, named in the honour of the famous Sanskrit grammarian who lived 2500 years ago. It can be downloaded from the web and installed on any java phone, making it easy to install. It is very helpful to allow people to start using their mobile phone features, such as texting, phone book contacts, and certain Value Added Features.

On its website, Panini keypad has written: '600 million phone users in India. Only 1/10th know English. The others can't write.' The non-English majority now has some good news – the Panini Keypad. A patented multilingual keypad for mobile phones, it is available in different Indian languages. It uses the same principle of predictive text for regional languages, so when typing, the software will try and guess what word you are typing to make it easier.

Practise Background

There are 90 million people in India who understand some English. But there are already 530 million mobile phone users, and 15 million new users are being added every month. Most of the mobile users of India are unable to type on their phones and hence they cannot store their address books, cannot send an SMS, shall be out of the scope of all the VAS and information enabling services of the government and shall stay out of the 3G, 4G opportunity. Unless we build the suitable regional language ecosystem for the phone, the whole data opportunity of Indian telecom will have to be restricted to the 15% of the phone users who know some English.

The regional language ecosystem shall consist of availability of Indian fonts on the phone with accurate rendering of complex character clusters, a technology for convenient typing of all Indian languages on the phone and finally an uniform standard based encoding of Indian language data between phones and network. Of the three, the challenging was the means to support convenient typing of Indian languages on the phone. The technology has to support all Indian languages, it should be easy to use and it should offer the means to type fast.

There was a breakthrough in this field from an Indian company called Luna Ergonomics in 2008-2009 who while exploring solutions for Indian languages, developed a brilliant new prediction technology that is based on the statistical nature of languages instead of dictionaries. The entirely new usability that was developed around this offered a means to write in all Indian languages on the same phone, needed no printed characters on keypad, was ergonomic to the thumb, and was dictionary- less in implementation apart from a host of other advantages.

It was one elegant solution that addressed all the industry acknowledged blind spots in one simple usability shift. The new technology developed in India was not only applicable for Indian languages, but also for all other languages of the world.

Implementation Process

The mobile has, over the last few years, been recognized as a tool which can bring grassroots empowerment because it is highly personal, accessible, affordable (more so than laptops/tablets/computers) and by its very nature, immediately connected to a network. The Panini keypad mobile phone software has been created by an Indian firm called Luna Ergonomics founded by Abhijit Bhattacharjee, previously an engineer with theIndian Army.

The Panini keypad uses statistical predictive texting (CleverTexting) – a patent pending path breaking invention by Luna Ergonomics - which allows one to type in all languages of the world on the existing phone without the need of printed characters on the keypad. Also, it is touted as the world's first ergonomic keypad because characters are automatically and accurately predicted and placed at positions most comfortable to the texting finger and the user only types through single key presses (no multitap). This technology is dictionary-less and hence one can write non dictionary words with the same ease as a dictionary word.

CleverTexting is a new texting technology that offers a solution with an entirely new usability. In this the phone estimates the limited possible characters that the user could be writing next and shows them on the screen. This allows the user to choose from amongst the predicted characters using a single key press or directly from the screen in case of a touchscreen device.

The predictions of CleverTexting are very accurate because they have been derived from statistical mining of the particular languages in terms of probabilities of letter combinations that actually occurred in large texts called corpora. In 90% of cases, the predictions of CleverTexting turn out to be accurate irrespective of the language which is the key demonstrated power of the technology.

The advantages of Panini keypad include the following:

- Allows for much faster typing in terms of speed.
- Involves the smallest number of key taps or keypad interactions. Almost the same number as number of characters one writes. Very little overhead.
- Allows single key press typing, no multitap. Seniors can use.
- Provides a seamless experience across dictionary and non-dictionary words. No mode changes required.
- Ergonomic to thumb. Pleasure to write long sentences, no blackberry thumb.
- Is very easy to learn, operate for all age groups and educational profiles because only two simple rules.
- Characters on phone keypads are normally tiny, many need glasses to read them, CleverTexting characters are on the screen and large to read.
- Can operate in darkness (no back lit keypad required)

Statistical prediction relies on mining large quantities of language text to develop combinatorial probabilities to form basis of predictions made by the system. This works extremely well for both dictionary and non-dictionary words. And we have seen that languages from all linguistic families of the world display high

correlation and that is what has been exploited here.

Having "crunched" exhaustive content for particular languages, and using an indigenous algorithm, the team designed an interface that places characters in a 3x4 grid (mimicking the phone's keypad) and displays them ergonomically from the top left (most used) to the bottom right (least used). Depending on what a user types, the algorithm predicts the next list of characters in another 3x4 grid and so on. Because the interface displays one character per button, it facilitates "texting" for the visually impaired, and—owing to its ease-of-use—for technophobes as well.

It offers a terrific advantage of single keystroke typing on limited keypad devices like the mobile phone. It offers a smoother typing experience to the user. Being without a dictionary it is also very lightweight and can be implemented with low complexity and very little demands.

Only Java-enabled phones can run this software at the moment. The team has come up with four different packages for different types of users, ranging from "Basic" for callers using low-end mobile phones to "Touch" for those using touch-screen mobile phones. The virtual keypad can either be downloaded to the phone from the company website or taken as a service through a value card. Once it is installed, they can begin the typing by using the phone keyboard to follow the character prompts appearing on the screen.

The features of Panini Keyboard:

- Statistical Predictive texting : Dictionary-less
- Single key press typing always.
- No multi tap, no chording, No mode change, no disambiguation.
- Easy to learn and operate, even for the aged.
- Is the fastest input system ascertained through trials.
- Ergonomic to the thumb with several options.
- Support for multiple language on the same keypad.
- Equal ease for non-dictionary words.
- Improves spelling habits.
- Smooth seamless typing experience.
- Touchscreen ready.

This product also supports foreign languages which include English, Spanish, Arabic, Portuguese, French, Swahili, Hebrew and Russian. Currently work is under progress for CJK languages (Chinese, Japanese and Korean). Transliteration is also supported on Panini keypad between all Indian languages. It also supports a pan-India vector script called 'Shiva'. Transliteration is also offered after receiving messages.

Another interesting feature offered by Panini keypad is SMS compression. This helps people send longer messages, but without having to pay for more than one text! The application can be easily downloaded in the desired language from the website by providing the mobile number.

Project Features

Technology Platform
The technologies offer the means for a user to type in all regional languages of India on the phone, PC, web, IPTV, STB and other digital interfaces. It works on Java enabled phones. There are two versions, one for basic phones and the other for touchscreens.

Accessibility & Inclusiveness
The entire product is designed to be inclusive. The innovation provides high interactivity with users. It provides various typing modes along with right and left hand combination. Also the message can be transliterated into any language and can be sent to other users. Panini keypad also offers compression of your SMS for the first time.

You can compose a message and then choose to compress the message before transmission. This allows you to pack in more text into your standard SMS length for the same cost. The decompressed message is displayed automatically at the other end. The compressed format also offers confidentiality during transmission of your messages.

Community Participation
Anecdotes are the best way to understand how a Panini keypad enabled community is coming up. A pan shop owner who is far from his home and knows only Hindi uses the product to chat with his family and friends via SMS. This has eased his problem of otherwise high STD call rates. The same can be said for countless other local language users who were previously unable to text their family and friends, and had to bear expensive STD bills if they wanted to communicate with any who were outstation.

Sustainability & Cost Effectiveness
Luna Ergonomics Private Limited, a spinout from the startup myMobile Phone is a technology incubator sponsored by the Department of Science and Technology of the Government of India. As the download is free, Panini is not yet making any revenue from its consumers.

Replication & Scalability
The idea and product is unique. It is first of its kind multi- lingual dictionary-less texting service which does not require printed keypads for various languages support. People other than English knowing generation can also avail the benefits of the mobile revolutionary technologies. To that end, it is replicable in countless of other languages, as Luna Ergonomics has been doing.

Conclusions

The full potential of the mobile phone has not yet been realized. First there was voice, then text, but today with GPS enabled services, a world of untold possibilities has opened up. However, as has been the problem with the internet as well, most of these developments have favored the English speaking populations, leaving behind those who only speak their local and regional languages. To that end, Panini keypad has found a way to bring in these people into the mobile technology fold.

Lessons Drawn From The Practise

A big question when talking about the 'digital divide' is the need to produce content in local languages so as to ensure that everyone is able to take advantage of modern technologies. By simply giving the tools which help people themselves create content, Panini has begun to bridge this gap on a day-to-day level. While it is not attempting to create websites in regional languages it has arguably, given a more important tool to users: the ability to generate their own content.

Raftaar

Raftaar is the first ever integrated and universal search engine for Hindi language in Devnagari script.

Category
e-Localization

Organization
Indicus Netlabs Pvt. Ltd.

Platform of product
Online

Website
www.Raftaar.com

Achievements

- Organizes aggregated local content in Hindi
- Provides search technology and expertise in making all local valuable content accessible with utmost ease to the users of this content in Hindi
- Provide typing and font management solutions for handling local content published in Hindi

Summary

Raftaar is the world's first integrated search engine in Hindi. It allows users to function online in Hindi and search across all Hindi language sites. A simple user interface, it is designed to enable typing in Hindi by a large spectrum of people. On one end are people who recognize the English alphabets on the keyboard and can relate to the sounds associated with them, and on the other are people who have no idea about English and can use the on screen keyboard to type in Hindi.

The search results are from all Hindi sites. Raftaar's search algorithm ensures that you get the most relevant results. The results are categorized to enable easier search experience for the user. The spell check and related word option help you refine your search with ease. The cache results ensure that you can see any site in a standard unicode font. The Raftaar index presently has the largest set of searchable Hindi pages. In short Raftaar has enabled Hindi users to search in Hindi and search the entire web for Hindi content without worrying about technology requirements thereby making the net usable, user-friendly and useful for the average Indian.

Practise Background

India has about 60 million internet users compared to China's 300 million users. One of the key reasons why this populated country is so far behind is that it does not have enough vernacular content to encourage those speakers to come online. Vernacular languages aside, there is not enough provision for Hindi content – the country's official language – on the internet.

One solution, developed by the Raftaar team, is to make it easier for a user to access Hindi content on the internet. Considering the numbers, that there are about 300 million Hindi speakers in India – the same as there are internet users – the numbers make it clear that there could be a significant addition to the number of internet users should Hindi content be encouraged.

Not only does increased number of Hindi users add more internet connections, but it will help close the digital divide, information gap, spur more e-commerce, sprout online education projects (in Hindi) and so on. The possibilities are endless. The next step would also be to convert the existing English content in Hindi so that users can access the same sites, articles, games which English users do. The final step would be to encourage content creation in languages other than English. To that end, Raftaar encourages users to even create content in Hindi as they have provided a platform where it can be discovered and read/watched by others.

Implementation Process

Poor search engines have restricted the growth of Hindi on the internet. Over and above, there have been other constraints: typing, parsing, converting, standardizing. Raftaar was developed to solve all these problems by introducing a Hindi language search engine. Its alpha version was released in January 2006, and the beta version in August, 2006. Finally, the site went live by January, 2007. At that time, Raftaar was able to access over two million Hindi pages.

However, the challenge did not lie in connecting all these varied pages to the search engine but also in building its various features, such as spell check, related term searches, a search bar which can be integrated and so on.

The guiding principle behind building Raftaar was usability. Once the user types in www.Raftaar.com, the browser takes them to a website with a very simple user interface. This is designed to enable typing in Hindi by a large spectrum of people. The users range from people who recognize the English alphabets on the keyboard and can relate to the sounds associated with them to people who have no idea about English and can use the on screen keyboard to type in Hindi.

On having typed in the word that the user is looking for, he/she presses the search button from the keyboard, which brings them to the link in the web pages that have the word.

The difference between Raftaar and any other site is the value brought to the Internet user looking to surf the Internet in Hindi. A user interface with a visual keyboard for typing in Devanagari is meant for those who do not know English. There is an inbuilt phonetic typing manager for typing in Devanagari that is meant for those who also know English (Roman Script). There is a back end that searches over the net indexes all the Hindi websites (whatever be the font) and then presents the search result.

Raftaar gives its search results a ranking that gives the user the most relevant sites in the top 10 results itself. It has, arguably, the largest set of indexed Hindi web pages, and also standardizes them from all the sites so that the user need not download any new fonts. It is the first integrated online spell-checker in Hindi. It is also the first integrated online Hindi thesaurus. The site also features a tracker that updates the latest news every hour.

To help the user further, the spell check and related word option help to refine the search with ease. The cache results ensure that one can see any site in a standard Unicode font. The Raftaar index presently has the largest set of searchable Hindi pages. Since it has the largest set of indexed Hindi web pages-standardized from all the sites, one does not need to download new fonts. Besides, it has the capability to convert all the fonts available.

The other features include the first integrated online spell checker in Hindi, on the hour crawling of latest news, tracking of Hindi blogs and first Hindi search bar that can easily be integrated with any site. It can also be scaled to work for all Brahmi based scripts.

Additionally, the team at Raftaar has been very carefully to keep the computer literacy of the average Hindi user in mind when designing this site. He/she will not be computer literate or for that matter even

comfortable with English usage. Thus their needs are very different from the tech-savvy English literate urban user. This is why Raftaar was the first to commercially deploy a Hindi user interface that can enable even primary dropouts to access the Internet, a crucial aspect for an interactive site.

Understanding of Indian language complexities includes a process which involves understanding Devanagari script, the issue of fonts, morphology, glyphs and other complexities. For this, a research study was undertaken to identify the set of constraints that hinder the use of Hindi and other Indian languages over the net.

The team at Raftaar had a grasp of the prevalent technologies and what would be the best set of frameworks to deploy for the Hindi search engine. For instance, their choice of Mangal font, an inbuilt unicode-based font feature (Microsoft), and the use of java script even though it would make the code public, and many other such nuances were based on taking into account various factors such as outcome of technical skill, willingness to understand, and objective of user friendliness.

Raftaar promises its users the use of latest technology to deliver a better experience. The team keeps it a point to abreast of latest technologies, and is involved in developing better solutions for its users. This has kept the search query returns result at the speed comparable to most of the leading search engines. As the team says, Raftaar is an outcome of passion for the Indian language and an inbuilt faith that this team can act as a catalyst that ushers in a true information technology revolution in India.

Project Features

Technology Platform
Raftaar can be accessed from any computer, and works with an open source unicode so as to enable any user to view Hindi pages from any system.

Accessibility & Inclusiveness
Though Raftaar works with all systems, sometimes rendering of the Hindi font is a problem, as not all systems support Indic fonts. This problem has been tackled to some extent by using a unicode font. However, the team is still exploring new ways to make the program universally accessible.

Community Participation
In 2006, Raftaar had 200,000 registered users and was clocking in 300,000 hits per month. According to current statistics available online, Raftaar now has a steady stream of over 5000 hits per month, according to some online studies. As of mid-2011, Raftaar's three-month global Alexa traffic rank is 14,107. Visitors to it spend approximately two minutes per visit to the site and 37 seconds per page view. Search engines refer roughly 30% of visits to it. Raftaar has been online for more than five years. Roughly 90% of this site's visitors are in India, where it has attained a traffic rank of 906.

Sustainability & Cost Effectiveness
Raftaar's revenue model is based on traffic and advertisements. The traffic model is built through a focus on Hindi, making it easy for user

to search by simply clicking. The differentiator is that it is the only "Hindi Search Portal" rather than a search engine or a content portal. However, its financial statements are not available for public use.

Replication & Scalability

In theory, Raftaar can be replicated as it is a Hindi search engine. However, Raftaar's own challenge will be the challenge of any competitor. It will need to be able to connect more web pages when it comes to search results. While simple Hindi to English words might be tagged because it is an easy translation, however, proper nouns have a tougher time. The 'Sachin' of Sachin Tendulkar might get translated as 'essence' (the actual) meaning and thereby derail that particular search. Therefore, the team has to physically translate English words and meanings which could be very time consuming.

Conclusions

The challenge of developing effective vernacular search engines is, entrepreneurs say, directly linked to the low Internet penetration in India. However studies show that there is a growing number of online users that want to find Hindi content on the Net. It is also important that if people in villages are to be beneficiaries of the IT revolution, then information must reach them in their own language. The emergence of local content on Internet will lift usage as there is a large population of people who would add to the number of Internet users if there are search-engines in Hindi.

Raftaar is an important initiative in this direction towards providing a starting point for Hindi language speakers to access the net. It will help them find relevant vernacular content which they can understand and access easily. It will also therefore allow them to derive immense benefit from the huge database available on the World Wide Web.

Lessons Drawn From The Practise

There is and always will be a demand for relevant information whether it is land records or agriculture prices or movie songs. ICT tools have the power to provide this at a much cheaper and efficient manner. Right and relevant information leads to empowerment. Internet is the most democratic of all communication mediums and it needs to be developed so to get the maximum benefit.

Making this information, or news articles, entertainment stories, and other content easily available in the vernacular language is the most effective way of bridging the knowledge divide using ICT tools. Raftaar has taken the lead providing Hindi speaking computer users crucial information, and it is only a matter of time before it company or others like them, start providing this services in all other Indian languages.

HindiWordNet

The Hindi WordNet is a system for bringing together different lexical and semantic relations between the Hindi words. It organizes the lexical information in terms of word meanings and can be termed as a lexicon based on psycholinguistic principles. The design of the Hindi WordNet is inspired by the famous English WordNet.

Category
e-Localization

Organization
Center for Indian Language Technology, Computer Science and Engineering Department, IIT Bombay

Platform of product
Broadband/online

Website
www.cfilt.itb.ac.in

Achievements

- Provides concept definitions and records the semantic relations between these synonym sets.
- Produces a combination of dictionary and thesaurus being more intuitively usable
- Supports automatic text analysis, natural language processing and artificial intelligence applications

Summary

Hindi WordNet and Associated Software Programs is a system of language data and tools consisting of sets of synonyms; lexical relations like antonyms; semantic relations; Application Programming Interface (API) to access all this information. More languages are being added to this experiment including Sanskrit making it a unique experiment in linguistic development through the World Wide Web which is a permanent medium. It is also linked with similar WordNet initiatives in the USA & EU which is all the more creditable in language development.

A WordNet is a large lexical database of language, in this case, Hindi. Nouns, verbs, adjectives and adverbs are grouped into sets of cognitive synonyms (synsets), each expressing a distinct concept. Synsets are interlinked by means of conceptual-semantic and lexical relations. The resulting network of meaningfully related words and concepts can be navigated with the internet browser. Hindi WordNet is also freely and publicly available. WordNet's structure makes it a useful tool for computational linguistics and natural language processing.

WordNet superficially resembles a thesaurus, in that it groups words together based on their meanings. However, there are some important distinctions. First, WordNet interlinks not just word forms—strings of letters—but specific senses of words. As a result, words that are found in close proximity to one another in the network are semantically disambiguated. Second, WordNet labels the semantic relations among words, whereas the grouping of words in a thesaurus does not follow any explicit pattern other than meaning similarity.

The Center for Indian Language Technology at IIT Bombay has developed the Hindi WordNet, which currently has about 35000 synsets and approximately 80000 unique words, making it a rich repository of word knowledge. The system was made publicly downloadable in 2006. Since then the HWN site has got more than 200,000 hits. The data and the programs have been downloaded more than 5000 times.

In the Hindi WordNet the words are grouped together according to their similarity of meanings. Two words that can be interchanged in a context are synonymous in that context. For each word there is a synonym set, or synset, in the Hindi WordNet, representing one lexical concept. This is done to remove ambiguity in cases where a single word has multiple meanings. Synsets are the basic building blocks of WordNet. The Hindi WordNet deals with the content words, or open class category of words. Thus, the Hindi WordNet contains the following category of words- Noun, Verb, Adjective and Adverb.

In a WordNet, which is basically a semantic network, the different lexical categories of words (nouns, verbs) are organised into 'synsets' (sets of synonyms). Each synset represents a lexical concept and they can be linked by different types of relation (hyperonymy, antonymy, etc.). For obvious reasons, all WordNets resort to the same system of synset identification.

The Hindi WordNet contained 34,357 synsets and 84,190 unique words in 2010. It is still under construction. WordNet is a basic resource for computational linguistics

purposes and language engineering application (machine translation, IE, WSD, knowledge representation, etc.). The Hindi WordNet uses Unicode for Devangari fonts for which Unicode support needs to be installed on the computer.

Practise Background

The work has been inspired by English WordNet (http://www.WordNet.princeton.edu) at Princeton and EuroWordNet (http://http://www.illc.uva.nl/EuroWordNet) at various countries of Europe. HWN forms a prominent member of the Global WordNet grid (http://www.globalWordNet.org).

The WordNet helps protect and encourage correct use of a language. Hindi WordNet has been widely used all over the world in machine translation and search involving Indian languages, and in language teaching and learning.

Hindi WordNet is the first effort in the country to build a rich, complex and large electronic resource along with associated tools. Word meanings are represented through word associations, technically known as relational semantics. The fundamental idea exploited is that words when put together disambiguate each other. Linguists have used this notion for meaning determination. Many unique properties of Indian languages have been used in creating the system.

One of the important uses of the Hindi WordNet is Word Sense Disambiguation (WSD) which is fundamental to all Natural Language Processing. Prof. Bhattacharyya's lab has pioneered Indian Language Word Sense Disambiguation research through Hindi WordNet.

Implementation Process

The main technological challenge in developing Hindi WordNet has been the task of representing knowledge of words and their meanings to a computer. The methodology relies on intricate analysis of meanings of words and their associations. A WordNet defines a complex graph of words and their relationships with other words in the form of synonyms, hypernyms (subsuming concepts), meronyms (parts), antonyms (opposites) and such relations. The associated softwares are for accessing efficiently the nodes and edges of the graph, mainly for Word Sense Disambiguation.

The activity of building the Hindi WordNet was started by Prof. Pushpak Bhattacharyya in 2000. Support for the activity was obtained in the same year from the Ministry of Communication and Information Technology, Government of India. In 2002, 10000 synsets (corresponding to about 30000 unique words) were completed, as also the Application Programming Interface. By 2006 Hindi WordNet was 'opened up' and the system was made freely downloadable. Since then the resource has been downloaded at least 5000 times.

Hindi WordNet (HWN) and the associated software is a system of

language data and tools consisting of

- Sets of synonyms, e.g., {ghar, makaan, bhavan} (meaning house). They represent various senses for a word. For example, a different synset {ghar, parivaar} would mean a different sense, viz., family.
- Lexical relations like antonym (e.g., acchaa-buraa; good-bad) and derived-from (e.g., sahan-Siila-sahan; tolerant-tolerate)
- Semantic relations like hypernymy (is-a, e.g., sher- jantu; lion-animal) and meronymy (part-of, e.g., rasoi-makaan; kitchen-house)
- Application Programming Interface (API) to access all this information. For example, given sher, the system can return all the senses of sher and its associated words through synonyms, antonyms, hypernyms, meronyms etc.

As a structure, Hindi WordNet is much more complex than a dictionary or a thesaurus. A dictionary gives word meanings and example sentences, and a thesaurus gives synonyms of words and their categories. Hindi WordNet goes many steps further, doing all this and moreover capturing complex word relationships. The resource has found immense use in language technology (natural language processing, text mining, information retrieval and extraction), in language teaching and learning and as a language reference system.

In 2006, Ministry of Communication and Information Technology, Government of India started large-scale national projects on Machine Translation (MT) and Cross Lingual Search (CLIR). This involved the languages Bengali, English, Hindi, Kannada, Malayalam, Marathi, Oriya, Punjabi, Tamil, Telugu and Urdu. IIT Bombay introduced a novel concept based dictionary that required the mentioned languages to link their words to Hindi WordNet. This has given rise to a massive multilingual dictionary framework called MultiDict. The labour involved in dictionary making came down drastically. The MultiDict framework has become the de facto dictionary standard in India for language technology development.

In 2007, the Hindi WordNet started getting linked with the English WordNet and was included in the Global WordNet Grid (http://www.globalWordNet.org). Prof. Bhattacharyya was made office bearer in top natural language processing conferences, because of his contribution to language technology through the Hindi WordNet. In 2008, major search engine companies acquired the commercial license of Hindi WordNet. The agreements got renewed in 2009. Proof of futher success, in 2008, Linguistic Data Consortium of USA (LDC, USA) has procured Hindi WordNet and made it available through their catalogue. LDC is a highly reliable, authentic and prestigious international forum for linguistics (http://www.ldc.upenn.edu).

Project Features

Technology Platform

The main technological challenge in developing Hindi WordNet has been the task of representing knowledge of words and their meanings to a computer. The methodology relies on intricate analysis of meanings of words and their associations. A WordNet defines a complex graph of words and their relationships with

other words in the form of synonyms, hypernyms (subsuming concepts), meronyms (parts), antonyms (opposites) and such relations. The Associated Softwares are for accessing efficiently the nodes and edges of the graph, mainly for Word Sense Disambiguation.

Accessibility & Inclusiveness
Access to Hindi WordNet is easy. The resource, along with the application programming interfaces (APIs), is freely downloadable for research purposes from the website hosted at IIT Bombay: http://www.cfilt.iitb.ac.in/WordNet/webhwn.

The site is visited daily and the total number of visits in last 3 years has been over 24,000. It is very rare that a query is not found due to unavailability in the HWN. One can view the queries by clicking on the 'view log' provided on the online interface of the HWN.

Community Participation
Hindi WordNet site is open to the public all year round. There is an online feedback form that users fill for any feedback and comment. These feedbacks are attended on a daily basis. This continuous usage of the Hindi WordNet and its inspection by external online users helps extend and correct any errors in the WordNet in an ongoing manner. The browsing interface has been tested thoroughly in multiuser environments. A very marginal increase in the response time has been observed compared to a single user environment.

Sustainability & Cost Effectiveness
The technology of WordNet has been transferred to a number of important and prestigious organizations. Prominent search engine companies have made an agreement with IIT Bombay for the commercial license of the Hindi WordNet since 2008. The Linguistic data consortium of USA (LDC, USA) has procured Hindi WordNet and made it available through their catalogue. European Language Resource Repository (ELRA) is interested in Hindi WordNet for the European language researchers to acquire it for translation purposes.

Replication & Scalability
Twelve official languages of India have emulated IIT Bombay's efforts on HWN to create their language WordNets leading to the IndoWordNet. These languages are Hindi, Marathi, Konkani, Sanskrit, Nepali, Kashmiri, Assamese, Tamil, Malayalam, Telugu, Kannad, Manipuri and Bodo.

There is no problem as far as the scalability of browsing or extending the database of Hindi WordNet is concerned as it can be done in-house at IIT Bombay.

Conclusions

There is no doubt about the criticality of digital content for development in our life today. Language forms the most important digital content, along with images and pictures. Representing, accessing, storing, processing and providing spoken and written information in digital form are cornerstones of ICT. At the same time, there is a school of thought that believes that all written/printed content should be converted to digital format in order to preserve them for the next hundreds of years.

In a multilingual country like India, language processing is an

activity of utmost importance. To ensure that our languages stay alive and well, and that their meanings remain intact and easily accessible to scholars and users the world over, the idea of a WordNet makes absolute sense. It is encouraging that other Indian languages have adopted the WordNet whole heartedly, and it would make sense to extend the same to the remaining languages not yet included under the WordNet umbrella.

Lessons Drawn From The Practise

The goal of WordNet was to develop a system that would be consistent with the knowledge acquired over the years about how human beings process language. While there are many practical examples of how ICT can be implemented on the ground, it is equally important to make use of these technologies on an academic level, and that is exactly what Hindi WordNet has done.

Infochange India

Infochange is a free-access resource base, with special sections on poverty & livelihoods, social exclusion, environment and climate change, women and child rights, the impact of globalization, governance, public health, urbanization, migration and displacement, gender and sexual rights, cultural diversity peace-building and more.

Category
e-News

Organization
Centre for Communication & Development Studies

Platform of product
Online/Broadband

Website
www.Infochange india.org

Achievements

- Empowers civil society with information, analysis, diverse perspectives and alternative messages
- Enables citizens to assert, exercise and claim their rights
- Helps citizens participate in meaningful discussion and citizens' action
- Advocates change in public policy and social attitudes

Summary

Infochange is one of the earliest knowledge-building and knowledge-sharing portals in India. Its content has been contributed by a wide, credible and informed network of over 400 of India's leading writers, researchers, civil society activists, policymakers, development journalists and subject specialists. The portal provides a mix of perspective, analysis and independent reportage from the corners of India, including marginalised areas.

All content is designed to be accessible and readable, taking information for social change out of seminar rooms and to the people, enabling them to participate in drawing up an agenda for a more equitable and sustainable world. The site is updated daily, with news, views and analysis on issues such as women and child rights, poverty and livelihoods, governance, environment, public health, education, agriculture, food security and much more.

Professional journalists and development analysts with a strong commitment to social justice issues and the dissemination of information for social change manage the website. Infochange registers over 70,000 visitors and 1.5 million hits every month. Its content is linked, cited and reproduced by hundreds of organizations worldwide. Scores of documents are downloaded every month, and used as discussion papers, research material etc. As a result of these citations and links globally, and the high quality of content, www.Infochange india.org ranks on top in Google and other searches on issues related to social justice in India.

Infochangeindia.org is a regular reference point for students, researchers, media persons, academics, policymakers and concerned citizens. It is also a regular source of information and updates on development policy and debates for people working within the development sector in India and abroad. The content is used as training material by CSOs, and as discussion papers at seminars/ conferences. Dozens of websites, including BBC and oneworld, link to, cite and reproduce the content, multiplying the reach of Infochange . The content is also regularly reprinted in print publications. This helps reach thousands of readers beyond the Internet.

Infochange is an initiative of the Centre for Communication and Development Studies (CCDS), a non-profit institution that uses innovative communication processes to build an informed, open and inclusive society. CCDS fosters new platforms for research, advocacy, dialogue and citizens' action on pluralism, social justice and sustainable development in India.

The core competence of CCDS is the use of innovative communication strategies and media advocacy to influence public policies and societal attitudes. Its civil society discussion forums, the Open Space civil society and youth outreach programme, the online resource base on social justice and development issues www. Infochange india.org, the quarterly journal Infochange Agenda, and other action-research works and publications play a crucial role in advocating issues related to balanced development, good governance, human rights and social justice.

Practise Background

The news media in India, as is a global trend, has become increasingly commercialized. As a result, while there is coverage of social issues, a lot time and effort goes into covering city-based stories, politics, sports and entertainment than social issues. There is less and less space for in-depth coverage with only a handful of journals retaining space for any long form articles which can adequately go into the root causes of social ills. Fast changing headlines means the narrative in the news media changes quickly and often views are left confused and with a very cursory understand of events.

At the same time, because of low penetration of the Internet across India and slow broadband speeds, many news organizations have not invested in an online presence. The trend has changed today; however, even then it is mostly the same content as is found on TV or in the printed newspapers and magazines. The online web presence is not considered a whole new platform with original material.

In the wake of this, fresh new content from sources such as Infochange appeal to the reader. Infochange also focuses on matters of extreme importance and serves an important need for examining issues at the heart of India's development.

The readership of this online resource base consists of:

- Students and researchers in the social sciences, ecology, development studies, human rights law looking for analysis, facts and figures, news updates
- Academics and teachers, looking for material they can incorporate in their course work
- Activists and members of civil society organisations in India and abroad, seeking to keep abreast of news in the development sector and governance, or seeking to represent their own work on the site, or get in touch with and network with like-minded organisations and campaigns
- Policymakers and commentators
- Journalists and media persons, looking for background material and context for their stories/ reports, or for stories about sustainable development and social justice to follow-up
- Individuals and organisations working in social communications, including a vibrant network of documentary filmmakers in India
- Volunteers and donors, looking for opportunities to collaborate with individuals and organisations making a difference
- Citizens concerned about governance/rights/sustainable development issues
- Marginalized groups such as the disabled and the HIV-positive, looking for information on their rights, and for organisations and networks that can assist them.

Implementation Process

Started in 2001, www.infochangeindia.org aims to strengthen civil society by enabling readers to marshal facts, opinions and perspectives on rights and development issues, so that they can participate in drawing up an agenda for a more equitable and sustainable world. It aims to bolster and improve civil society and citizens' action for social justice, human rights, sustainable development and accountable governance, which is the foundation on which a prosperous, peaceful and successful society is built.

This 6-year-old website allows completely free access. All the content is 'copyleft', which means that readers are free to use and disseminate all of www.infochangeindia.org material for public education purposes. It empowers activists, students, researchers, development analysts, policymakers and concerned citizens by giving them pertinent, timely and useful information on development and rights issues, all in one place.

The site provides apart from other sections: dozens of stories of change from the grassroots, a vibrant film forum that features some of the best documentaries on social justice issues in India and South Asia and a section for kids called 'Kids for change' – to raise awareness of social justice issues amongst the 11–14 age group.

www.infochangeindia.org has been built by a strong network of development journalists and analysts. Over 300 journalists and analysts make it possible to professionally present balanced, independent and jargon-free information and analysis.

Contributors include Ramaswamy Iyer, Suman Sahai, Jayati Ghosh, Jean Dreze , Lawrence Liang, Mohan Rao, P Sainath, Dunu Roy, Devinder Sharma, Richard Mahapatra, Meena Menon, Harsh Mander, Ammu Joseph, Neha Madhiwalla, Flavia Agnes, Meena Seshu, Vijay Paranjpye, Dilip Chitre, Manisha Gupte and P.V. Satheesh.

Within Infochange, there are microsites covering HIV/AIDS, 'development dictionary', toxic tours, India's agricultural crisis, the girl-child, pollution, tribal rights and so on. There are also detailed dossiers on industrial pollution, access to public healthcare, sexual rights in India, child rights in India, the political economy of water, the political economy of hunger, the cost of trade liberalization, climate change and energy use.

www.infochangeindia.org content is linked, referenced and recommended by dozens of articles, papers and portals like BBC, Wikipedia, UNDP, oneworld.net, Barefoot College, Universities of Texas, Stanford, Columbia, The Communication Initiative, The World Bank's Development Gateway, The Global Health Council & TERI.

The profile of readers, coupled with the ever-increasing traffic on the site and the increasing number of publications/websites reprinting or linking to the content, suggests that:

- there is a clear need for the kind of information provided on www.infochangeindia.org
- there are very few independent, free-access, informed and accessible cross-sectoral resource bases for civil society on development/rights/justice issues in India/South Asia
- The site has become a regular and well-established resource base and reference point for information

and analysis on development and social justice issues in India
- It is not only a source of credible information, but a growing civil society network.

Major new editorial additions on www.infochangeindia.org have included the construction of a comprehensive section on Trade & Development and Globalisation. These provide background and perspective on the impact of liberalisation, privatisation and globalisation in India. A sub-section on Intellectual Property Rights forms part of this package of content. Importantly, www.infochangeindia.org also provides stories from the grassroots that illustrate the impact of liberalisation on the lives of people. Several other contemporary debates related to trade and development, including the SEZs debate, have been extensively covered on Infochange india.

Project Features

Technology Platform
The website is free to access online. It can be viewed by anyone with an internet connection. The website offers print, video and audio content.

Accessibility & Inclusiveness
The website is in English, and therefore its level of inclusiveness is not high within the country. However, for the English speaking population and also a global population, it is a great repository of information about India's development and provides a wealth of information to those accessing it.

Community Participation
Infochange has an active community of readers and contributors who frequently access the site. To keep the readers satisfied, Infochange has hundreds of news updates which are written in-house from secondary sources on a daily basis and 300 original, bylined stories uploaded per year from their various contributors.

Sustainability & Cost Effectiveness
www.infochangeindia.org does not have a viable financial sustainability model. It operates from funding money, and has an annual budget of Rs 30 lakh. As it pays each and every contributor, and does not charge for reprinting of its material, it is entirely dependent on sources of funding for maintaining its operations. In the past, funding has come from various sources, including Tata Trust, ICICI bank, and Ford Foundation. This is a key area where it needs to craft a long term strategy.

Replication & Scalability
Many other online journals have cropped up in the recent years and have been more successful, commercially, than Infochange. Unless it is able to advertise and be creative about its web presence, it will find itself dwarfed by other mainstream ventures.

Conclusions

From the start www.infochangeindia.org was conceptualized as a broad based project that would reach out beyond the seminar rooms, policy makers, NGOs and activists to the common man interested in these issues. It was started in 2001, much before the internet became popular within urban sections of the population and has slowly grown to become a credible voice for 'bottom up' journalism.

Over time, people from smaller towns have also started to engage with the website, as the content covers issues in their parts of the country too. This is a testament to the growing nature of both the website, and also internet usage in India.

Lessons Drawn From The Practise

By the very nature of the content and the platform, www.infochangeindia.org is targeting the urban Indian reader who has the ability, capacity and interest to engage with this information. To that level, the audience is a small segment of Indian society, but that should not be a limiting factor for such enterprises.

If www.infochangeindia.org could be translated into regional languages, its reach and growth, and perhaps even financial model could be improved. In this age of experimentation, online portals like Infochange should definitely try out new strategies. Already, its content is translated and appears in regional papers; however the website as a whole is not available in other languages. However, this only means that with proper funding and resources, www.infochangeindia.org could leapfrog in popularity.

India Water Portal

The India Water Portal (www.indiawaterportal.org) is a rich online resource base and a virtual community on water. It is a completely free and open platform, for the dissemination of information, knowledge and discussion and debate on water issues.

Category
e-Science & Environment

Organization
Arghyam

Platform of product
Cross media

Website
www.indiawaterportal.org

Achievements

- Draws on the rich experience of water-sector experts, packaging their knowledge and adding value to it through technology
- Disseminates this knowledge to a larger audience through the Internet
- Provides a comprehensive database of knowledge and resources related to water, sanitation, agriculture, the environment, climate change and other related themes and issues in India

Summary

The India Water Portal (www.indiawaterportal.org) is an open, inclusive, web-based platform that shares water management knowledge amongst practitioners and the general public. – an idea that was mooted by the National Knowledge Commission, (http://knowledgecommission.gov.in). The India Water Portal consists of case studies, movies, slideshows and courses based on the work done by partner organizations on various domains of water e.g. groundwater, rainwater harvesting, water quality, urban water.

Practise Background

With all the recent advances in information technology and networking on the Internet, it is of interest to see how these work in the important human development space. Information and Communication Technologies For Development, ICT4D is the acronym used to describe this area of work. ICT4D is an active and vibrant area, but the results are still disappointing. However, India Water Portal has attempted to make use of these technologies to provide a space where this knowledge can be collected and disseminated.

Understanding the magnitude of the problem helps in appreciating the uniqueness of the idea. Before the India Water Portal, knowledge about water in India existed in silos of universities, governmental and non-governmental organizations. Traditional knowledge and understanding of water were in serious threat. Since the past decade, the idea of utilizing 'Information Technology' was in threat of being over-discussed. Yet, how many genuinely open, Wikipedia-like communities do we have to show, where knowledge is shared and built up from the community? Not many. India Water Portal aims to change that.

IWP sees the knowledge asymmetry amongst stakeholders of the water sector as a critical factor hampering the sustainable management of water resources. The portal seeks to address this asymmetry by sharing best practices, advocating sustainable approaches, bringing transparency in public data and information and spreading awareness. The objective is to address equity and sustainability issues in the water sector by catalyzing change on a large-scale by this sharing of knowledge, leading to improved practices and informed debates.

Implementation Process

The India Water Portal was launched officially in January 2007 at a function at the Prime Minister's residence in New Delhi. The India Water Portal (IWP) is one of the five thrust areas for Arghyam, a public charitable foundation setup with a personal endowment from Rohini Nilekani and working in the water sector since 2005. IWP is an open-source, open-

to-all, rich online resource base and virtual community on water.

The portal contains more than 1200 knowledge levers in the forms of case studies, slide shows, movies, courses, interviews, talks, policy documents, etc. covering a wide range of water related topics - rainwater harvesting, , drinking water, water body restoration, urban water, ground water, watershed development, sanitation, wastewater, and water quality. The idea for IWP was encouraged by the National Knowledge Commission of the Government of India, which recognized the need to create a collaborative platform for water community creation, and knowledge dissemination. The role of Information Technology (IT) to create such a platform was envisaged; and the "Water Portal" was conceived.

Apart from being a knowledge portal, IWP is slowly becoming the discussion hub for all - NGOs, water experts, scientists, academicians and common citizens. This can be seen from the success of its "Ask The Experts" and the "Discussion Forum" services. It has the potential to become a major source of information to the common man on tackling everyday water problems of availability and quality.

India Water Portal's commitment to reduce both the digital and the content asymmetry prevalent in India can be validated from its emphasis on "language portals", "multimedia courses" and the "Kannada Radio shows". IWP also launched the Kannada Water Portal and the Hindi Water Portal. The portal has also brought out multimedia courses on CD to enable citizens with low bandwidth to access rich content about watersheds, groundwater, fluoride mitigation and traditional water harvesting structures over a normal PC.

Language is paid attention to. For example, the multimedia course on Earthen Dams is available both in English and Hindi, and the one on Fluoride mitigation is available in English, Kannada and Telugu. Dr. Anupam Mishra's talk in Hindi on traditional rainwater harvesting systems has also been captured. The India Water Portal is also investing significant resources in the creation of innovative resources or applications that apply recent advances in technology to specific water problems.

An example is the Meteorological Data application that provides 11 climate parameters (including rainfall, temperature, and evapotranspiration) for all parts of the country for the past 100 years. This has been mapped onto a GIS platform that makes it very easy to use for all. Earlier, this data was difficult to obtain for the average citizen; now, it has proved invaluable for water resource planning and research. The portal also offers information about most water-related organizations in India, and has started a feature called Schools Water Portal to discuss the issue of clean water in schools.

Project Features

Technology Platform

IWP is a repository of all kinds of information available regarding water issues. For this, it uses all kinds of media that includes, print, videos, audio, and presentations. For anyone accessing the site, they would have to have a working knowledge of these

applications and also a broadband connection that enables easy connectivity.

Accessibility & Inclusiveness
IWP has not kept the site the exclusive domain of the English speaking population. The site is available in Hindi and Kannada.

Community Participation
As of late 2011, IWP has about 5500 English subscribers, around 2000 Hindi subscribers and Kannada Water Portal has about 400. Hindi Water Portal also has about 10,000 people who are interested in the portal but do not want to get into the technicalities of subscribing online, i.e. they are not registered users on the Hindi Portal but are engaged with it through other channels like the newsletter, for instance. Others such as the School Water Portal have about 800 subscribers.

In terms of visits per day, there are 1800 for English, 800 Hindi from different regions including international visitors, and about 300 visitors for Schools Water Portal. IWP's database has about 5326 registered users on the English portal, and approximately 3,5000 on the Hindi portal, who are active in the water and sanitation sector.

India Water Portal helps people learn about water issues, thereby creating an interested community around it. It offers the best management practices crucial for both the short term and long term sustainable use of water, by compiling comprehensive case studies, slideshows, courses, movies, research and policy documents around several key areas – rainwater harvesting, agriculture, drinking water, water body restoration, urban water, ground water, watershed development, sanitation, wastewater, water quality, and water for industry. This initiative aims to provide appropriate solutions to the issues around water and environment that the general public and practitioners are looking for.

Features like "Ask-The-Experts" and "Discussion Groups" are the primary interactive platforms on the site. At 'Ask-The-Experts', anyone can ask a question for free on this service and all the queries are posted on the portal. The queries are passed on to IWP's partner - WES Net India (http://www.wesnetindia.org/), which is a network of more than 2000 water and sanitation professionals. The answers suggested by these professionals are then placed back on the website. Besides, anyone can directly answer any question. IWP also has radio programmes which are strong platforms for community interaction.

Sustainability & Cost Effectiveness
Currently, the portal is funded by Arghyam (www.arghyam.org) a public trust focusing on water sector issues since 2005. A web portal is inherently scalable, and requires very little maintenance. The strength of the portal is that the knowledge is built up as a compilation of resources from the community and the open-source, open-software nature of the technology, ensures scale remains largely a measure of content, which can be easily added over existing knowledge base by the community. This community "ownership" of creation, compilation, maintenance, updating of content is the heart of the sustainability and scalability for the portal.

Replication & Scalability
IWP is a sector focused resource center which is a great value addition to the internet. In fact, there should be more sites like this across varying sectors, especially in the sphere of social development. Other groups

have experimented with such sites, focusing on subjects such as agriculture. IWP can also launch more portals in other Indian languages, and through that, keep growing.

Conclusions

Lack of proper telecommunication infrastructure, poor PC penetration, low education levels, all contribute to the digital gap, and have been well documented in the past. However lesser mention is given to the fact that lack of content in Indian regional languages results in significant increase in the content gap in India. Many times, even when such content is available, it is scattered all over, and notoriously difficult to trace. India Water Portal's commitment is to reduce both the digital and the content asymmetry prevalent in India.

A first step in this direction was taken by launching the Water Portal in Kannada and later in Hindi. The portal also brought out multimedia courses on CD to enable citizens with low bandwidth to access rich content about watersheds, groundwater and fluoride mitigation, etc. These courses bring to bear rich multimedia experiences in combination with photography and videography of practical work on the ground and domain expertise through a water sector institution. Most of the courses were done in at least one Indian language right at the beginning with the intention of more translations based on demand.

Over the course of the past couple of years, the Water Portal has transformed itself from a static one way website to a dynamic participatory website where the energy comes from the interaction with users. When someone sends a note about a water body in their area that is being encroached and asks for help in opposing it, the Portal team sees what it can do to help that person.

When the Bihar floods of 2008 occurred on an unprecedented scale, again the team added its effort in disseminating information about the situation on the ground and facilitating donations to disaster relief work. Overall, IWP has strived to not just bring together crucial information about this sphere but also to make it accessible to those who do not speak English. However, it remains to be seen if the traffic will grow over the next few years.

Lessons Drawn From The Practise

The vision and promise of ICT for development has been articulated by many people but the challenge is to build more successful applications to realize the promise and scale them widely. Success will lie in pursuing applications with dedication and commitment and getting the small details right. The promise lies in several areas including freeing up information, especially government data and knowledge, making government functioning more transparent

A related potentiality with the web is to tap into volunteers. India is at a stage where there is a large

youth population who is quite enthusiastic about issues related to the environment, public service and development. They are keen to take part in volunteer activities but do not find meaningful real-world projects to work on. If the India Water Portal could tap into these volunteers in an effective way, a huge amount of useful work could get done. With IT tools it should be possible to manage these resources across geographical locations in ways that were not possible earlier.

Peer Water Exchange

The Peer Water Exchange (PWX) is a scalable network and process that can transparently and efficiently select, manage, and monitor the tens of thousands of small village projects needed to solve the water and sanitation crisis.

Category
e-Science & Environment

Organization
Peer Water Exchange

Platform of product
Web/Internet

Website
www.peerwater.org

Achievements

- Allows for large funds to be divided into small projects through peer review and without bureaucracy, while enforcing collaboration and cooperation.
- Empowers implementers in the field, who historically have been at the end of the funding process, to use their experience to decide how funds get allocated.
- Increases the resources available to tackle the water crisis facing Asia and the world.
- Encourages increased water project funding and commits funders to encourage others to support this cause.

Summary

The Peer Water Exchange (PWX) was created by Blue Planet Run (BPR), a seamless amalgamation of process, technology, and people that solves the management problem of soliciting, selecting, overseeing, and long-term monitoring of small-scale rural water and sanitation projects.

PWX is the first truly participatory decision-making system in the development sector. PWX uses mapping and other social internet technologies to showcase the work of all partners, even historical projects. Funders can search for high quality water projects that have been pre-approved by experts. Users can receive updates on progress and long-term impact. By allowing independent visitors to monitor projects, it allows global participation and increases the resources available for monitoring and evaluation at very low costs to show impact years after project completion.

Practise Background

Lack of safe drinking water is the largest hazard to children around the world. One in every six children lacks access to safe drinking water. This situation causes diarrhea, stunted physical and mental development. Every year, for two million kids under five, it causes death. For millions of girls, it means trekking to fetch water instead of going to school. The waste in human potential is criminal.

The solutions are relatively simple – from dug wells to hand pumps, from rainwater harvesting to johads, from bio-sand filters to solar pasteurization. But, a complete water solution does not end there. It encompasses many more dimensions such as education, hygiene, sanitation, maintenance, and long-term monitoring. Most importantly, for sustainable impact, the project has to be customized to the local culture, a transfer of ownership has to occur, and changes in behavior are mandatory.

Integrating these various dimensions involves effort, coordination, and time, creating a vast overhead. This overhead makes it difficult to scale up our efforts and manage the tens of thousands of small-scale projects needed to reverse the water crisis. PWX addresses the challenge of scale by providing an online platform where peers (funders, implementers, and third-party observers) in the water sector come together to share, collaborate, and learn. PWX empowers grassroots implementers to leverage their experience into the decision-making process. They not only weigh in on and rate each other's applications; they can shape and evolve each other's approaches and plans.

Implementation Process

PWX went live at the World Water Forum in Mexico in March 2006. By 2007, it had won awards from ComputerWorld and the Information Integrity Coalition. Over the next two years, its network grew through peer review to 59 plus members. The network in India includes large famous organizations such as Barefoot College, Gram Vikas, and Watershed Organization Trust (WOTR) to small startups such as Ekoventure. By 2009, Gram Vikas and WOTR adopted PWX to manage and showcase all their water projects over the past 15 years. Value is both in improved project management and in benefits to all water groups through increased learning.

From being competitors, the groups become collaborators; from touting their own approach, they help improve each other's approaches. The process is as follows:

- Implementers submit applications for projects
- These are distributed for review to other members, including other implementers
- Questions and comments are made on the application (fully visible to the public) interactively
- Reviewers rate the applications and the highest rated applications are funded
- Funders from around the world can search for high-quality water projects that have been pre-approved by the network of experts
- Updates by staff and visitors are easily posted as projects get implemented, on progress and long-term impact

The new approach of PWX encourages funders to return to the water sector with increased funding. In addition, the map-based approach invites the public – the general consumer – to view and participate: the platform is completely transparent!

For the past few years, PWX has been the management platform for BPR's water and sanitation program and now manages funding for other funders too. It has grown to become a network of over 50 partners that span the globe with many partners and funds in India. The results – in all dimensions of projects, community, connections, and learning – of over $1.6MM in funding are visible on the PWX website. The recommended way to learn and experience PWX is through the website.

PWX is extremely cost-efficient (~5% overhead), effective in choosing the highest potential projects to fund, and uses a transparent way to strengthen the knowledge and abilities of organizations in the water sector. The growth of the PWX network in both size and activity is a testament to the value the water community sees in it. PWX divides up the problem of soliciting thousands of applications, selecting and refining them, managing them, and measuring their impact into small manageable tasks. These are assigned to a network of experts, implementers, funders, and interested members of the public.

The work can thus get done in a decentralized, bureaucracy-free manner with little overhead and maximum transparency. Not only are a larger number of resources brought to bear, they are connected in a collaborative way that maximizes learning and sharing. Traditional funding processes involve program-

management personnel at a funding agency overseeing the project management cycle. It is hard for them to cost-effectively deliver small-scale projects and it is bad for their career to report failures. Scaling up of projects entails giving larger grants to a lesser number of agencies. This could result in transferring the same problem of translating large funds into smaller projects to them.

Directly working with small local NGOs is a hard task since grassroots implementers in the field are not usually savvy about technology and communications. Historically they do whatever the funding agencies ask for and do not trust their experience and judgment. While they usually need mentoring in project and organizational management, they also bring some skills and experiences that are not typically taken advantage of. By tapping into field expertise, small grassroots projects and their implementers can be brought to the forefront, similar to eBay and Craigslist bringing small transactions to the surface.

PWX goes beyond a single transaction and uses its peers for project preparation and long-term monitoring. It enforces collaboration and cooperation. PWX has the potential to manage thousands of projects and millions of dollars of funding transparently, efficiently, and effectively, both directly and through peer review - and show impact long after project completion. Widespread adoption of the PWX platform is critical to enable long-term solutions to the global water crisis.

Project Features

Technology Platform
There is complete transparency to view applications and discussions, learn, report on projects, or view maps. There is a username/password required for applying for funding, peer review, and help. All this can be accessed through any browser with a flash plugin.

Accessibility & Inclusiveness
PWX is designed for interaction! From the map to Q&A to visitor reports, every user has a role to share and learn. From submissions to forum postings, connections are constantly being made. This interaction is serious – it is about work and about constant improvement and learning and sharing. It is social too, where former competitors for funding work together, but its aims are lofty: to get people to align to solve the world's water and sanitation crises.

Community Participation
By putting application decisions and project reports online, there is nothing hidden – PWX eliminates the content gap. PWX also solves additional major gaps in the digital divide. It empowers grassroots implementers by giving value to their experiences and also by giving them a vote in the funding process.

Small implementers who cannot make it to national and international conferences get on the same 'stage' with large implementers and can comment on everyone's applications and projects. They are also eligible for the same funding opportunities – another divide bridged. PWX adds transparency to a very opaque domain. All projects, successful or not, and all contributions (even the lack of them) are visible to the public.

Sustainability & Cost Effectiveness
PWX is designed to be scalable. PWX divides the work and parcels it out. As the network grows, more applicants mean more hands to manage and absorb the funds and solve the problem. This keeps costs low and ensures that all water groups are committed to PWX success. PWX will be financially sustainable as more funders use the platform. A small management fee to funders will be sufficient to continue to operate and enhance the platform.

Replication & Scalability
PWX is a unique idea with great potential going forward. It brings the peer review process into the water and sanitation world. Peers submit applications and review and monitor each other. Funding agencies become peers too and participate in sharing and learning. This way, people working on water and sanitation projects around the world can read, critique, and collaborate on each other's work. No other network gives a vote on funding to the grassroots implementers.

This kind of system can be replicated for any other funding projects, be whatever sector. Many international organizations such as Knight Foundation or Ashoka Changemakers use similar systems to help decide what projects to fund.

Conclusions

When ICT empowers the groups at the bottom of the funding chain and in turn the beneficiaries, it plays its highest role. Providing information and content is one thing, but recognizing their worth and their value is a greater goal. A person sitting in a remote internet café with real-world experience should get an equal vote as should someone in a large office in a city; their experience is as much of value as that of an academic.

An ICT tool should provide a larger role and empower the people at the bottom of the digital divide, thus uplifting them on their terms, and reducing the power gap. Not only should a tool empower people to solve their own problem, it should make them a part of the large global team effort to solve humanity's crises. PWX and BPR are using ICT tools to invite all of humanity to join in this global mobilizing effort.

Lessons Drawn From The Practise

Creating a project such as PWX might sound complicated at first, but once you set up certain guidelines it becomes easier. Especially in the area of judging projects for funding, some might not see the benefits of an open system. However, there are many. For example, by using standard online forms, bureaucracy is reduced and time spent on grant-writing and completing applications is reduced. Field expertise reduces the funding agencies' burden of screening applications and managing remote projects. Also due to peer review, reporting of failed projects does not result in harsh judgment.

Finally, due to reduced costs of

having field people monitor each other's projects, costs come down. More monitoring and sharing occurs also. Complete transparency in decision-making and project data is achieved – which is very rare in the non-profit sector. The knowledge base created is live and therefore, is always up to date. The map-based approach to project management and knowledge sharing – also a first – allows system-wide progress to be seen with new insights. It is a great move forward to not just use ICT for information delivery but actively "work" on it from multiple locations around the country and more significantly around the world.

BIOTIK
Biodiversity Informatics and Co-Operation in Taxonomy for Interactive Shared Knowledge Base

The electronic BIOTIK identikit is a free knowledge base of about 650 tree species in the Western Ghats using a computer-aided identification software system. Playing a vital role in identifying the tree species, BIOTIK consists of information on the botanical, ecological importance, distribution range and status of the tree species.

Category
e-Science & Environment

Organization
French Institute of Pondicherry

Platform of product
Offline

Website
www.biotik.org

Achievements

- BIOTIK adopts a graphical interface system called "IDentification Assistée par Ordinateur" (IDAO), which integrates the most recent progress of graphical capabilities of the computers.
- Provides easy and instant identification of tree species implementing 2 interfaces and relying on a wide database of different types of barks, branches, leaves etc.
- Functions as a capacity building and research tool in taxonomy, biodiversity and species conservation.

Summary

Funded by the European Union, the project - Biodiversity Informatics and Cooperation in Taxonomy for Interactive Shared Knowledge Base (BIOTIK) - has four main partners – French Institute of Pondicherry, CIRAD-France, National University of Laos, Lao PDR and National Herbarium Nederland.

A complete database was developed by conducting field work in 127 locations between 2005 and 2007 in the Western Ghats, a practically unbroken relief dominating the western coast of the Indian peninsula for almost 1600 km, extending from the mouth of the river Tapti to the tip of south India - the only gap in the chain being the Palghat Gap. In all, 33,009 photographs were taken from 528 specimens. These were methodically studied for characters, processed and lodged in the herbarium, and were integrated into the database with IDAO. Finally, BIOTIK was launched on 20th December, 2007.

Practise Background

There is growing scientific consensus that habitats are being altered and species are disappearing at rates never before witnessed on the planet. The biodiversity crisis is not just about the perilous state of plants and animals but also lack of specialists who know them. Unfortunately to date we lack complete information on the exact number of species existing on Earth. Experience suggests that about 1 in 100 of all plant specimens collected from previously unexplored, or poorly explored, parts of the tropics are new to science. The demand for biological expertise is growing, and in particular the demand has increased over the last 20 years.

Presently, biological information is needed by a large group of users for various purposes such as research, industrial purposes, nature conservation, policymaking, etc. The available floras/field keys are difficult to use for such professionals, specifically for non-specialists. Biodiversity informatics revolution is finally enabling biodiversity researchers to overcome such impediments. BIOTIK aims to develop the knowledge base on tree species identification system for the Western Ghats. The knowledge base would be instrumental in understanding and assessing the biodiversity of these highly significant areas, as it would provide and facilitate dissemination of scientific and traditional knowledge.

Implementation Process

Biological research and species conservation programs depend upon the correct identification of organisms. The difficulty encountered when identifying species using standard flora is centred around three major constraints, namely:

- The ability to identify the species

without reproductive structures such as flowers or fruits
- Use of dichotomous key in conventional flora, which cannot tolerate any error and imposes the choice as well as the order of questions
- The use of technical terms not understood by non-specialists

This project is an initiative in the emerging area of biodiversity informatics with the following objectives:
- To enhance the biodiversity assessment capabilities in the region through building a knowledge base on the tree species of the Western Ghats of India
- To preserve and disseminate traditional knowledge in local languages and improve taxonomy knowledge-sharing through IT&C initiatives
- To establish open data standards and protocols for the common use of species descriptions, terminology etc., which adhere to the standards defined by the Global Taxonomy Initiative (GTI) from the Secretariat of the Convention on Biological Diversity

The BIOTIK identikit application was constructed by adopting a graphical interface system called "IDentification Assistée par Ordinateur" (IDAO). The IDAO identikit uses a comprehensive graphical interface based on a system that reconstitutes the species using drawings. It has been designed to remove the main difficulties encountered by non-botanists when identifying species using standard flora.

The user friendly electronic BIOTIK identikit was developed to identify 528 trees species of Western Ghats. This application has been designed to provide multiple entry points that allow the user to choose any characters based on resolution-independent vector graphics in the querying interface. In the identification process the user describing a plant through the vector graphics.

It uses only pictorial representations instead of botanical jargon and provides users the freedom to choose the character (multiple entry points) that needs to be described. Missing information or data are permitted, thus allowing for the identification of incomplete samples.

A certain level of observational error is also tolerated and, at each step of the identification process, a similarity coefficient is calculated for each species. It also permits backtracking of the identification procedures if an error in data entry is suspected. The identikit builds a conceptual plant as and when the user chosen a character state in the querying interface and simultaneously the identikit provide the number of species that matches the user supplied character states with a matching percentage.

In this system the characters are displayed in order of merit, but the user is free to choose any character generating rules as required. The choice will be influenced by the accessibility of the character in particular circumstances; by the user's own assessment of the separating power of the character for a particular specimen; and by the user's confidence in his ability to understand and use the characters.

Eventually, the IDAO system presents the results as a list, sorted by decreasing order of similarity. The process does not eliminate other possible matches based on the user-supplied discriminate characters. Each species is described in detail in

a file documented with photographs and drawings where every botanical word is defined with hypertext.

An IDAO application is divided in two main interfaces; viz. the identification interface and the result interface and the user can shift from one interface to the other. IDAO builds a conceptual plant by allowing the user to select any of the characters and their respective character states. The system is then supplied with the selected character states to calculate the best possible match. The number of the identifiable species depends of the number of layers that have been introduced in the application.

On the result and species list interface, a HTML file is provided for each species that contains images, descriptions, ecology and distributional details of species in English and three other local languages viz., Kannada, Tamil and Malayalam, in which technical terms are defined in a hypertext style. Unicode standard has been used for this implementation. As a work in progress, all the descriptions are being made available in the local languages in a phased manner.

BIOTIK was designed as a capacity building and research tool in taxonomy, biodiversity and species conservation. The developed program can be run in a Windows version and an online version. The MS-Windows version of IDAO is developed in Visual Basic V.6.0 and the data related to the identikit are stored in an Access database. The vector drawings of the identikit are designed with Corel draw V.13 and are used in Windows Metafile format (WMF) and, as such, are independent of the user's screen resolution.

With the use of vector images, it becomes easily possible to adopt the IDAO software to various computing hardware with limited screen sizes like PDA's and UMPC (Ultra Mobile Personal Computer). This has been developed using C, GTK for front-end manipulation and MySQL for database handling. The online version of the BIOTIK has been implemented using PHP (PHP: Hypertext Preprocessor) for server side scripting, MySQL for database, Scalable Vector Graphics for the representation of characters, AJAX (Asynchronous JavaScript and XML) for the interactivity and the client-side language JavaScript. Open source technologies and w3c standards have been adopted.

Project Features

Technology Platform

For online version browsers with native support for SVG like Mozilla Firefox V.1.5 and higher, Opera, Google Chrome, Safari and Internet Explorer with Adobe SVG plugin can all access BIOTIK. It has unicode standard fonts for the local language, and SVG compliant browser for the online version.

BIOTIK was developed as an open source web-based application, with the knowledge base available on-line, and on DVD for personal computer platforms as well as on Ultra Mobile Personal Computer, to identify species easily. The identification is confirmed by comparison of the specimen with on-screen images and descriptions. The users can access the results interface without going through the identification process

every time. They can choose to directly browse the list of species, or by families or by common names. Thus it also serves as a database of a particular collection of species for ready reference.

The result would primarily address the needs of stakeholders that are involved in maintaining and preserving these diverse rain forests, including the large scientific community working in these geographical areas and also the government agencies. The partnership builds on the foundations of the pre-existing scientific collaboration between the various partners who have specialized in developing ICT applications for taxonomy (IDAO) on one hand, and taxonomy itself on the other hand.

Accessibility & Inclusiveness
The identikit builds a conceptual plant as and when the user chooses a character state in the querying interface. Simultaneously the identikit provides the number of species that matches the user supplied character states with a matching percentage. By making it visual, BIOTIK is simplified and can be used by taxonomists and students alike.

Community Participation
The identikit allows the identification of incomplete samples and for a certain level of observational errors. Such errors can be traced back and corrected by the user by an error backtracking system. With this feature, BIOTIK has opened itself up to its users, allowing them to participate in making the product better.

Sustainability & Cost effectiveness
The project was made via a grant and is available for free downloads. To that end, it is not sustainable without funding.

Replication & Scalability
The same algorithms can, and are, being used to create similar products for other agricultural purposes, and those can be marketed, if desired. However, the market for such inventions remains small, limited on the whole to researchers, taxonomists, forest officials and students.

Conclusions

The idea of building a tree knowledge base using ICT's is unique and also the first of its kind in India. The application caters to both specialists and non-specialists by providing information ranging from species identification to distribution in relevant local languages. On top of this to ensure maximum outreach, the applications are made available as free software.

The initiative covers most of the tree species of the Western Ghats region which demonstrates a viable model to build such applications. The knowledge base is scalable both horizontally by adding more botanical data and vertically by aiding capacity building, biodiversity assessment and conservation efforts.

The domain of botanical knowledge has largely been restricted to specialized circles which the BIOTIK initiative tries to overcome by designing appropriate content for both specialized and non-specialized audience. The focus is rather on the quality of the content and availability rather than on technology itself.

Lessons Drawn From The Practise

Digital content, particularly in environment and ecology, can help to reduce information gaps and help efficient flow of information between multiple stake holders, whose role are crucial to biodiversity conservation in the current scenario. Such efforts could contribute on one hand to assimilate and present diverse knowledge and on the other serve to the needs of a range of stakeholders. This approach could effectively help a development strategy in a specific domain like environment and its conservation.

AWATAR

Awatar' (Any Where Any Time Advanced Reservation) — is the online passenger reservation system for the Karnataka State Road Transport Corporation (KSRTC) and the first-of-its-kind road transport online passenger-booking project in the country.

Category
e-Travel & Tourism

Organization
Karnataka State Road Transport Corporation

Platform of product
Web

Website
www.ksrtc.in

Achievements

AWATAR is an advanced system that

- Allows passengers to plan their journey well in advance and reserve tickets online with their credit or debit card
- Integrates mobile booking, service information, route map, franchisee details, bus schedule timings, pick up points , under one unified umbrella
- Includes 509 reservation counters to enable even those without internet access to benefit from it.
- Bringing about rapid changes through multiple levels, this system has even made way for better employment opportunities for differently-abled individuals
- Enables easy access, optimum revenue collection with never-before-seen growth in accessibility, accountability, transparency and added responsiveness

Summary

The Karnataka State Road Transport Corporation (KSRTC) operates intercity bus services and inter-state bus services to Kerala, Andhra Pradesh, Tamil Nadu, Goa and Maharashtra. It has a fleet of over 5500 buses and covers over 20 lakh kms a day. It carries an average of 2.2 million passengers a day, through over 5000 schedules, and has over 25,000 employees!

KSRTC's guiding principle has always been to ensure the maximum travel comfort, convenience and familiarity for the commuters. Keeping in mind this motto, in 2006, the corporation replaced the traditional passenger reservation system with revolutionary and highly scalable web-based on-line reservation system named AWATAR (Any Where Any Time Advanced Reservation) –the first-of-its-kind-and-scale road transport passenger booking system in the country.

AWATAR is extremely beneficial for KSRTC as it:

- Improves efficiency, accountability, transparency and responsiveness
- Enables more cost-effective collection of revenues, enhances revenue collection
- Provides more accurate and real-time information of the work in KSRTC
- Creates a real-time centralized database
- Provides a scalable system incorporating service oriented architecture and web services
- Enhances branding of KSRTC, being the first reservation portal in public road transport corporations in India

.For the commuters the benefits are immense as it provides them with booking through the Internet and a convenient, speedy, reliable, timely, anywhere to anywhere ticket reservation experience. It also provides an electronic channel for information and services, instilling confidence in the commuters. It eliminates wastage of time, money and resources for the citizens to access information and services and provides a lot of convenience to the citizens in terms of buying tickets and travel information

AWATAR has now emerged as the sustained change in road transport sector in India, which commuters were looking forward to and were not able to access before AWATAR came in. The main objective of this project is to assist the public in gaining an easier and faster way of reservation.

Practise Background

Technology has touched every aspect of our lives. It has become the ideal platform for communication and collaboration. Technology is applicable to every domain of transport, playing a crucial role in every aspect of its service delivery. While it has definitely shrunk the world in terms of its wide reach, it is increasingly being seen as a particularly strong tool that can cut down operational costs and increase efficiency and ease of ticket booking. And, of course, it helps streamline administrative operations to deliver good service to commuters and

optimise resources.

Transportation, like all industries is largely influenced and driven by information and communication technologies with the focus being on meeting customer needs and value added services. In today's economic environment, travel programmes are under the microscope like never before at corporations across the globe. This system has specialized solutions, resources and services that are proven in reducing travel management, costs and increasing productivity.

The AWATAR has aimed at achieving global reach with local market expertise to meet programme and traveler requirements and has become an innovative tool that makes daily travel management efficient, cost-effective and secure. Total traveler support, including the ability to balance our corporate strategy with corporate social responsibility initiatives. It delivers an unrivalled, global, end-to-end travel and expense management platform.

Implementation Process

Before the implementation of AWATAR, KSRTC had an Oracle based passenger seat reservation system, a client server based one, restricted to book only for services departing from a particular bus stand. The reservation system was used through Point-to-Point connectivity at the various KSRTC ticketing counters and Franchise Ticketing Counters. The system was based on stand-alone architecture.

Today, the web-based reservation system has changed the status and led to a major shift in paradigm particularly in transport industry. The general public has a host of new facilities that is making their lives easier, such as booking tickets through credit cards and direct debit to bank account. That AWATAR is available at all KSRTC counters and franchisees set up across the state has resulted in a mini IT revolution. AWATAR has improved efficiency, added convenience, and also added accountability, transparency and responsiveness of the passenger reservation system.

In order to book a seat under this system, the passenger can walk in to a nearby KSRTC/franchisee/ BangaloreOne counter and obtain a ticket by giving the details and paying there. Those passengers who have an internet connection can book their tickets online, by visiting the www.ksrtc.in website. They need to create an account, log in, select their journey and seats, make a payment and print out their tickets. The ticket is also sent through email and the details sent to the registered mobile number.

To cater to the needs to the next generation of patrons, KSRTC has launched booking of passenger tickets through mobile phone enabled with GPRS/data connection using AWATAR. Booking tickets through mobile brings immense convenience to the commuter availing its services. Through this mobile booking facility, the passenger can literally make a booking from his palm. The passenger will have to give his/her mobile number on the KSRTC website, and a mobile booking application will be sent. Else, passengers can simply SMS "KSRTC" to 56767 to download the secure service provider application on to their GPRS enabled phones.

After completing a one-time registration, users can book tickets, select the class of service, select seats and also specify a convenient pick-up point. The payment can be made using a variety of options such as credit cards, debit cards, bank accounts and cash cards. On completion of a booking, e-ticket is generated and sent via e-mail. Those users do not have an e-mail can show the ticket details at designated KSRTC counters and get their tickets. The ticket details will be sent via SMS as well.

AWATAR offers more than 3,000 services, and over 200 forms with more than 1500 functionalities. Passengers can book a ticket 30 days in advance through this system. KSRTC AWATAR application has fourteen lakh registered users including those residing in other countries. Around 6 lakh site visits are recorded per month and 94 lakh page views are recorded per month. On an average 16.08 pages per visit is viewed.

Project Features

Technology Platform

The KSRTC enjoys the distinction of being the very first organisation in the entire country to implement 'Web Based Passenger Advance Reservation System' i.e., AWATAR (Any Time Any Where Advance Reservation System). It has made itself accessible to the general public over two main ICT platforms, that is, the internet and mobile. These are meant to compliment the already existing physical counters.

AWATAR can handle upto 5000 concurrent users on its site. The e-booking, or payment options, are available round the clock. For internal purposes, it has a 'disaster recovery' facility and advanced MIS options.

Accessibility & Inclusiveness

While users need to have access to the net or a mobile phone to use AWATAR, it is still a welcome step forward when it comes to government services aimed at the public. Additionally, the site provides information to commuters such as view seat availability, service availability, franchisee locations through service tables and contact details. As per Google Analytics, www.ksrtc.in is the most popular surface transport website in India. As more people are able to access the internet/use mobile phones, its usefulness will increase.

Community Participation

The passenger seat reservation system was restricted only to a small number of services and to the passengers from that specific place. With AWATAR the passengers can plan their journey program well in advance and have their seats reserved. This system also has scope for incorporating facilities like mobile bookings and with advance booking, there are considerable hits per day.

Duplicate ticket, ticket cancellation, different discount schemes, onward and return journey booking, e-ticket through payment gateway using credit card and direct debit are amongst prominent features that form the nuclei of the application. Reserved seats and blocking of seats for special category such as peoples' representatives (MLAs), blind people, senior citizen, and freedom fighters are also available.

Sustainability & Cost effectiveness
KSRTC has about an annual state budget of Rs 100 crores from the Kerala state government, which is used for running buses, upkeep, paying employees and other such expenditure. It also earns money through ticket sales. AWATAR also falls within this budget.

With over 600 AWATAR counters across the state (and outside), the average number of tickets booked daily is in the 200,000 range which brings in a revenue of about Rs 80 lakh. On peak days, bookings have crossed 250,000 which means over Rs 1 crore in revenue.

While AWATAR is a government sanctioned site, it does earn some revenue through advertisements for hotel bookings and local transport options. There is regular patronage from passengers travelling in high-end buses, and has helped KSRTC augment the number of Volvo buses and earn a good margin. In fact Volvo buses run at about 40% advance reservation, which in turn adds to the overall performance of KSRTC.

Replication & Scalability
In terms of replication, countless private organizations already offer booking tickets online, be it for trains, planes and even buses. In India, the Indian Railways has been a pioneering service, allowing people to book from online counters and internet cafes, instead of having to physically visit the nearest train station to book tickets. AWATAR is only taking forward, logically, what others have been doing around the world: which is allowing the passenger to book tickets at his convenience. At the same time, it collects some revenue through an assured advance booking. AWATAR is as scalable as KSRTC, and as long as the latter expands, so will AWATAR.

Conclusions

The age of the internet is also the age of the consumer. Companies have realized that to sell their products more effectively and rake in higher profits, they need to market these products in the right places. For KSRTC, bus tickets would sell regardless, but the experience of online booking has shown that more well off customers will be happy to book luxury buses online. At the same time, in this digital age, it is only logical that services have an online presence, and to that end KSRTC is moving with the times.

Lessons Drawn From The Practise

The first step most e-government projects usually take is to tackle the front end delivery systems. At KSRTC, AWATAR was made to encourage people to buy tickets at their ease and convenience. Allowing many counters across cities was a good way to help people save time and also encourage people to opt for a bus ticket. However, that is only part of what the AWATAR system can be used for.

While it has been successful at being a sales point, at the same time, AWATAR can be expanded into a larger MIS system. There have been

official indications that this will, in fact, be the next step. ERP, Vehicle Tracking System, Intelligent Transport System with PIS features, Material Management System and other such features will only enhance the success of AWATAR and help further usher KSRTC into the digital age.

Barefoot College

Barefoot College successfully provides practical training for thousands of poor, young, illiterate, semi-literate and unemployed residents of Tilonia, a rural village in Rajasthan, focusing on solar engineering, water harvesting and conservation, wasteland development, education, health care, rural handicrafts, people's action and advocacy, communication and women's empowerment.

Category
e-Women & Empowerment

Organization
Social Work and Research Centre (SWRC), Barefoot College

Platform of product
Internet

Website
www.barefootcollege.org

Achievements

- Offers a financially sustainable business model
- Provides online sales of traditional handicrafts (www.tilonia.com)
- Uses a multi-facetted communications strategy that includes traditional puppetry, music, songs, street theatre, photography, film-making, screen-printing and a community radio station
- Provides equal opportunities for people of all genders and castes

Summary

Founded originally by Sanjit 'Bunker' Roy in 1972 and in operation for 40 years, Barefoot College has been training youth and women in rural Rajasthan in solar engineering and water conservation, healthcare, women's empowerment, handicrafts and communications. A cost-effective, wireless internet service supports BC's teaching and outreach programs and provides a reliable platform for communications both at the campus and in field.

Practise Background

According to 2001 census data, 72% of India's population lives in rural areas. In general, the rural population experiences higher unemployment, lower levels of education, fewer productive assets, less access to financial resources and substandard healthcare compared to people in cities and large towns. Furthermore, nearly one third of India's population lives below the poverty line and half the country's women are classified as poor.

Historically, many development projects in India have been top-down in nature and, as a result, can be criticized for being overly-hierarchical, top-heavy, and insensitive to local knowledge and skills and for not providing opportunities for community ownership. Barefoot College, by contrast, is founded on a bottom-up, people-centered approach based on local know-how and traditional skills.

Implementation Process

Founded originally in Tilonia, Rajasthan, in 1972, on the principal that solutions to rural problems lie within, and for, local rural communities, Barefoot College's programs focus on practical skills and solutions, sustainable rural development and advocacy issues. BC consists of a main campus and field centres where illiterate and barely literate men and women are trained in a variety of occupations such as teaching, dentistry, solar engineering, architecture and carpentry.

Internet service was introduced in 2003 and has become indispensable for the campus as well as its satellite operations. BC added community radio to its communications unit in 2009. Having an internet presence and a global identity has meant that BC could expand its operations, attracting students from around the world, and establish a global network of affiliated organizations and donors.

Technology Platform

Tilonia is a village in a remote area of Rajasthan, 20 kilometers from Kishangarh. Given its isolated location, Internet service is essential for connecting Barefoot College to the outside world. The Internet was introduced by BSNL in 2003. Today, the college has 10 computers with cable internet access and three Wi-Fi routers. Original capital cost of the Internet was Rs. 50,000. Annual operating costs are Rs. 25,000.

The college's Internet café is used by students as well as villagers. Usage figures suggest that 1,000 villagers per month make use of the Internet café for a variety of communications needs. The Internet is also used for outreach to potential new volunteers and trainees, for follow-up with past students and contacts, including people as far away as Africa, for liaising with its associate organizations and for keeping in touch with Bunker Roy, the program Director. Internet access at six of the BC field centres is used by the local community, Panchayats and youth groups.

The Barefoot College website (www.barefootcollege.org) includes information about the organization, its work and its mission, examples of student work (eg. films created in the audio-visual program), a photo gallery and a place to make donations to the organization. A second website, www.tilonia.com, was set up by a USA based group, Friends of Tilonia, to market and sell online handicrafts made at the college. Prior to that, products could only be sold in Tilonia.

The internet is also critical to the Neerjaal water-quality pilot project. The Neerjaal team surveys the number and location of hand pumps, wells and water tanks as well as water levels and drinking water quality, thereby mapping water quality in 150 villages across two Blocks in Rajasthan, and organizes the data into an open database. The results are made public and available to villagers and Panchayats on the Internet at www.neerjaal.org and sent directly to stakeholders such as the Department of Science and Technology in Delhi. They use Google Earth and Google Maps to organize information graphically, keep things up to date and make the interface more user-friendly.

Accessibility & Inclusiveness

Since 1991, illiterate and semi-literate women from the area surrounding Tilonia have been given computer training at Barefoot College. Since then, they have gone on to train at least fifty other local women, some of whom now work for the college. BC's women's empowerment unit routinely uses the internet to stay up-to-date on relevant news and regulations (eg. minimum wage or current laws) as well as the work of other advocacy organizations so that they can get the most out of their own communications and advocacy work.

The Tilonia Community Radio has been in operation since 2009 and currently broadcasts six hours a day to a 15km radius broadcast area. TCR broadcasts educational and current events programmes, interviews and discussions with local specialists (eg. health workers, engineers, railway officials, police officers, bank officials etc.), has collected over 1,000 hours of folk songs and stories and archived numerous discussions on rural development.

Internet connectivity and

electronic communications have made a positive impact on both Barefoot College students and community members at large: online sales bring in revenue; ICTs support many of the college's learning programs; and Tilonia Community Radio improves communications and the dissemination of information. Less directly, they help break down social barriers and promote intercultural exchange.

Community Participation

In the interests of sustainability, all activities are based in villages and managed and owned by those they serve. Nearly everyone who works at Barefoot College is local, familiar with the community and well placed to develop effective solutions to its challenges. In the interests of empowering rural women, BC has trained over 6,525 women since inception.

The 'barefoot approach' – with its emphasis on community management, control and ownership, decentralization and simple solutions - has won numerous awards for the College, including the Skoll Award for Social Entrepreneurship, the Stockholm Challenge Award for Information Technology and the Tyler Prize for Environmental Achievement.

Those who have been trained by Barefoot College receive skills and experience which can translate into better jobs and direct economic benefit. For example, Malian women who trained in BC's solar technology program were able to earn $2.50 per month from each of 92 village families for each solar lantern that they supplied. This amounted to $230 per month in additional income, which is a significant amount for rural women in that country.

Barefoot College can also bridge cultural and geographical divides. Women have come from various countries to live and learn at the BC campus for periods of six months at a time as part of the solar technology program. For example, representatives from 21 African countries and places as far afield as Guatemala, Columbia and Afghanistan have come to BC to live together and learn practical skills that they can take back to their home countries.

For many of these women, this was the first time they had been to school or travelled outside their country and even though they spoke different languages, they had much to learn, not only about solar technology but also about Barefoot values, conditions in India and the lives of their counterparts from different countries

Replication and Scalability

For Barefoot College, the use of the internet is easily implemented, relatively inexpensive and has many benefits. Moreover, there are various options for enhanced use of the Internet in the college itself: first, the creation of an online catalogue and e-commerce platform for the sale of handicrafts on the main Barefoot website and, second, the installation of wireless WiMAX infrastructure to connect villages, improve reliability and increase bandwidth and connection speeds.

Barefoot College is also financially sustainable. At present, the Internet café's daily operational costs are met by charging outside users Rs. 20 per hour to use the internet and 75 paise per page to print. Additionally, the college's network of national and global donors and supporters contribute sufficiently (over Rs. 11.6 crore in 2009) to sustain the organization financially for many years.

Conclusions

The Internet is fundamental to many of the successes of the Barefoot College's programs. First, it supports many of its learning programs. Second, it brings in significant revenues from online sales: about 20% of the total handicrafts revenue, amounting to approximately Rs. 3 lakh annually is raised in this way. Additionally, two to three additional orders come in by email daily.

Third, the public and potential new donors get exposure to BC via its website and YouTube channel. For example, the YouTube video The First Women Barefoot Solar Engineers of the World has been viewed over 29,000 times. Fourth, local inhabitants have used the Internet to gain employment, thus increasing their income as well as boosting the local economy. Fifth, it makes worldwide news and up-to-date information available to isolated villagers who, previously, did not have the benefit of being connected to the Global Village. And lastly, Skype, email, Gtalk etc. make country- and world-wide communications fast and inexpensive, resulting in significant savings to BC's operating costs.

Barefoot College has also had important social impacts. Its use of technology and communication has challenged social norms, for example, by breaking down caste and gender barriers. Puppeteers and musicians in this area of Rajasthan are traditionally from a lower caste and treated accordingly. Reportedly, repositioning their skills and transmitting them on electronic media such as the radio has elevated their standing and status and changed attitudes in the local community. In general, the college does not recognise caste and all members eat and live together as equals and earn roughly the same income.

To return to the principal aim of Barefoot College - addressing the problems of the people of Tilonia – it is important to appreciate the full range of BC activities and associated results, from water-quality projects, the reduction of water-borne diseases, increased employment and improved health.

For example, the college runs 150 night schools powered by solar electrification; the health centres see approximately 2,000 patients annually; the dentistry department (staffed by 2 female illiterate BC-trained dentists) sees 1,300 patients a year; more than 6,000 people have been trained in various skills and occupations; the water sources in 150 villages have been mapped and tested; more than 300 villages across India have been equipped with solar lighting; and more than 7,000 women have participated in the women's empowerment program.

Barefoot values, as disseminated through its various communication mediums, have resulted in changed attitudes and practices amongst local people, which cannot easily be reversed. Similarly, progress made on women's and caste empowerment should be sustainable. The training that thousands of people from all corners of the world have received has resulted in life-long skills and learning that will be passed on to others.

Lessons Drawn From The Practise

Rural Internet service in the field centres is intermittent and can be interrupted for days at a time before it is up and running again. Thus, it can be difficult to guarantee Internet service, as well as photocopying and printing, for those who it is supposed to serve.

Most of the content on the Internet is in English. Many of Barefoot College's constituency, however, are illiterate or semi-literate and find English to a barrier to access and, consequently, do not make as much use of the Internet as they could.

Chanderiyaan

The Chanderiyaan project is a multi-dimensional project aimed at improving the livelihood of the weaving community in Chanderi, Madhya Pradesh. It includes a broadband Internet-enabled Resource Centre, training in computer applications, English, fashion design and marketing, on- and off-line sales.

Category
e-Women & Empowerment

Organization
Digital Empowerment Foundation in partnership with Media Lab Asia

Platform of product
Internet and broadband

Website
www.Chanderiyaan.chanderi.org

Achievements

- Offers a digital archive of over 50 traditional and over 500 new weaving patterns
- Provides an in-house, offline retail store that enables the weavers to sell directly to the public
- Allows increased weaver participation in Self Help Groups (SHGs) that allow them to organize collectively and get around the master weavers' and traders' monopolies on raw materials
- Empowers the disadvantaged local weaving community through increased income, education and the ability to control their own supply chain and sales
- Promotes traditional weaving crafts to help secure its preservation

Summary

Launched in 2009, Chanderiyaan was created to improve the economic conditions and living standards of the weaving community in Chanderi, Madhya Pradesh. ICT tools, broadband connectivity and training are used to improve product design, productivity and efficiency and raise the overall standard of living. Qualitative evidence from the project highlights the importance – and the challenges - of combining broadband access with ICT tools in rural development projects.

Practise Background

Chanderi, a town located near the River Betwa in the Guna Constituency of Madhya Pradesh, is part of the Ashok Nagar District. In 2001, according to census figures, approximately 10,000 of its 30,000 overall population were members of the weaving community.

Chanderi has the potential to be a tourist destination due to its over 375 historical monuments, a centuries-old hand-weaving community, plentiful medicinal and therapeutic plants and a history dating back to the 11th century. Unfortunately, it is relatively isolated from urban centres and difficult to reach. As a result, only about 1,000 tourists visit each year.

According to current estimates, the town has approximately 8,000 weavers working on 4,000 looms. Overall, 60% of the community is linked in one way or another to the weaving trade with about 60% coming from the Muslim community and 40% from the Hindu. The annual turnover in Chanderi's weaving business is substantial. However, 80% or more of the weaving community tends to be low-income contract workers who earn only between Rs. 2,000 and Rs. 3,000 per month working for the traders and master weavers who control the raw materials and production and who keep the remainder of the profits.

On average, a typical weaver supports four people, however, some support up to seven on that income. To make matters even more difficult, income is based on a piece-rate and hours can be limited and unpredictable, especially during the monsoon season. According to a poverty survey, 90% of weaver households live below the poverty line and most suffer bad health and experience unsafe and unhealthy work conditions.

These conditions make weaving an unattractive option to youth and, as a result, there is a risk that the traditional weaving culture and skills will be lost. A number of structural issues contribute to the poverty of the Chanderi weavers.

- The majority of Chanderi silk is bought relatively cheaply by companies like Fabindia and exported to other places for sewing, embroidery and final production. As a result, Chanderi weavers miss out on the employment and income benefits of this value-added work.
- The weavers do not have direct access to the retail market and have to sell to middle-men who typically mark-up their product by 100%. The weavers' profit could increase significantly if they could sell directly to the public.

- Third, the weavers do not have control over the design process and cannot design for market demand. Being reliant on limited available patterns, they often resort to simply repeating old patterns rather than creating new.
- The weavers typically do not have enough working capital to source raw materials and, as a result, are dependent on the master weavers. This condition often creates delays and unemployment.
- Most weavers cannot afford to build up a reserve of finished product and are forced to sell their product at uncompetitive prices as soon as it is made.

ICT infrastructure is limited in Chanderi. With no Internet café in the town, the only option is the local computer training centre where computer use is available for a small charge. The only broadband Internet service is provided by BSNL, while mobile phone service is available from AirTel, Vodafone, Reliance, Tata and BSNL.

Given these conditions, the project's challenge was to:

- leverage ICT and broadband Internet connectivity to improve the weavers' livelihood
- provide textile design software and training as well as training in product design, manufacturing and marketing so that the weavers could expand the scope of their activities
- use ICT-based technologies to improve the weavers' economic opportunities, abilities, skill-sets, self-esteem and mobility

Implementation Process

Launched in 2009, the project was implemented in two phases over the course of two years. Phase one included infrastructural organization, basic training for weavers and their families, setting up a showroom and development of the Chanderiyaan website (www.Chanderiyaan.chanderi.org). Phase two consisted of training in a range of tertiary textile trades (eg. block printing and embroidery) as well as additional ICT infrastructure development (eg. a tourist web portal) and the creation of computer training labs in educational facilities.

Project Features

Technology Platform

The Internet is key to this project and serves several functions: marketing and online sales using an e-commerce model, connecting the citizens of Chanderi to the larger community (including local schools, government bodies, NGOs and social agencies), reducing isolation, creating timely awareness of consumer and fashion trends, improving project sustainability and broadening skills and career opportunities for the town's youth.

CWIRC's Internet café charges Rs. 10 per hour and averages 8 users per day with over 200 users overall. The majority of them are youth (80%) and male (70%). Like the rest of us, they use the Internet for entertainment, email, chat and social networking. However, the weavers also use it to

research design trends and market scenarios and tradespeople use it to transact sales.

www.chanderi.org is a broadband website that promotes the Chanderi area as a tourist destination.

Accessibility & Inclusiveness

All of the employees of the CWIRC resource centre are from the immediate community. The project has fostered increased gender equality.

Community Participation

The ICT facility has 18 desktop computers and 10 laptops equipped with broadband and textile design computer aided design (CAD) software. New patterns have been created and the old ones archived in a digital library for preservation. Looms have been set up for the most disadvantaged of the weavers and a showroom has been opened. Additionally, children, youth and adults, both men and women, have been trained in computer skills, Skype and English; and weavers and their families have been trained in embroidery, hand block-printing and kalamkari as well as in computer-assisted textile design and clothing design. A tourism website has been launched, a telemedicine service is now available for Chanderi residents and a Jacquard Punching machine is operational.

Many Chanderi weavers have formed new SHGs and some have found employment at the resource centre. The Chanderi weavers are also beginning to take charge of their own marketing and networking: they have established a direct supply chain with Mother Earth; they had a sales stall at the 2010 Commonwealth Games; they are in discussions with the Delhi State Industrial and Infrastructure Development Corporation to market their products through the Delhi Khadi and Village Industries Board and the weavers have participated in exhibitions and fairs in India and abroad.

Replication & Scalability

Project sustainability is related to its various revenue streams (Internet café, retail sales, online sales). At present, the Internet café needs to increase its customer base in order to break even and the online sales platform is yet to come on stream. As a result, the program is not yet self-supporting. It is believed that it is just a matter of time before these conditions are reversed and, therefore, there is much scope for project duplication.

DEF's SWOT analysis has identified eight potential locations across India where family-based handloom clusters face similar problems of economic exploitation and technological backwardness and the Chanderiyaan model could be implemented in future.

Conclusions

The Chanderiyaan project has had many positive impacts in the community, both social and economic, including (a) improved livelihood, education and job satisfaction for the weavers' families, (b) enhanced design diversity and preservation of traditional patterns and (c) the reduced isolation of the community that comes with Internet connectivity.

Economically, the financial benefits for the weavers have been significant. First, the 80 weavers who sell their product directly through Chanderiyaan have seen their wages

double and have received 75% of the net profits from sales. Second, the resource centre has provided good quality jobs for 23 community members, whose wages have increased 50% as a result. Third, the ability to participate in exhibitions and trade fairs has meant direct experience of the market and increased sales profits.

Less directly, ICT tools have reduced the cost of education and training. For example, tools such as Skype and NetMeeting make it possible to connect the weavers to experts in distant cities while eliminating the cost of travel and accommodation.

Broadband Internet access has improved design and productivity. Having access to up to the minute information about market trends has resulted in over 500 new designs better suited to the market demand than some of the traditional ones they had been relying on. Computer aided design software, furthermore, has meant that patterns can be used and transmitted more accurately and efficiently than before and, therefore, expenses can be reduced.

Online sales also have many potential benefits: increased revenues, reduced costs and a larger market. It is much less expensive to set up an e-commerce website than an offline retail store location, let alone a chain of them. Online sales, furthermore, can reach customers across the country and around the world and offset Chanderi's isolated location.

Chanderiyaan has improved the wellbeing of women in the community in particular. Women have received training in computers, tailoring and embroidery and been encouraged to join SHGs. To date, over 300 women have done so and, as a result, are participating in regular savings plans and building a capital reserve and rainy-day fund for emergencies. Additionally, the program has encouraged women to seek training and work outside the home, something that was not previously done in their caste and context.

The program has had a positive impact on the youth in the community. Training children in computer literacy and English created good will across the community increased their career options and is expected to have a long range positive impact on the overall community. Lastly, the Internet café, though it is yet to become a profitable venture, brings indirect benefits by connecting Chanderi to the outside world.

Lessons Drawn From The Practise

Despite its success, there are challenges that the project still needs to overcome. It needs to become economically profitable and self-sustaining but, presently, its costs exceed its revenues. It is expected that this will change when the e-commerce website begins operation and establishes a growing customer base.

However, e-commerce – especially when it comes to fashion sales – comes with its own challenges. Customers often like to see, touch and try on products before purchasing them. Therefore, it will likely be necessary to complement the online sales service with in-person

marketing at fairs and exhibitions as well as social media in order to build a viable customer base. Further, the resource centre only benefits 80 of the 8,000 weavers in Chanderi. It is important that it increases its reach. It will be necessary to invest extra effort and energy into marketing and social networking in order to overcome this obstacle.

SMSOne

SMSOne establishes Short Message Service [SMS]-based local media by reaching out to communities through their mobiles, allowing them to receive useful information about their daily lives on issues such as health, government services and political information like elections, community events or education.

Category
e-Youth

Organization
SMSOne

Platform of product

Website
www.SMSOne .in

Achievements

- Empowers the under-served rural communities through application of ICT-based solutions
- Helps set up SMS as a Local-Micro Media
- Provide self-employment to 2,00,000 + school-college dropout youths
- Sets an example of Social Entrepreneurship in India

Summary

SMSOne is a concept proposed by YouthNet, a Pune-based group of youth and was first implemented in July 2007. The pilot project covered 70 communities in the state of Maharashtra.

SMSOne is a community newsletter organization which bunches about 1000 mobile users into one geographical community, and then sends them free SMSes on local issues. It also sends them relevant information ranging from health camps, government notices and business promotions. Further, it has also new features: subscription based newsletters called Eduvarta, Bizvarta and VIPvarta whereby users can pay for specific services.

This service enables deprived young people and dropouts from school to self-employ themselves by becoming the community mediators, sending targeted SMS to different groups within their community. An undereducated youth is employed to run the community SMS newsletters, in order to promote employment, and he can expect to earn around Rs 5-6,000 per month.

Practise Background

Studies have shown that India has 840 million active mobile users, making it one of the highest mobile penetrations in the world. Mobile phones have fast become a boon for millions who were previously unconnected outside their small communities. Many did not have the opportunity to call relatives (except for an occasional STD call) and since their lives didn't take them very far geographically, had no idea about the world outside their bubbles. Mobile phones, through their basic features of voice and text capability, have ushered in an information revolution where people can get news anytime, any day.

However, of the 840 million mobile subscribers in India, only 15% have smartphones, which leaves a lot more people outside the ambit of 'apps' and firmly in the sms-generation. While in the cities, there is a lot of excitement and engagement over pushing new features via 'apps', the reality is that most of India needs their information via voice or text still. It is with this limitation (and yet, progression) in mind, that SMSOne has developed a sms-based project to deliver community based information to those who need it the most.

Implementation Process

The local SMS community model is a streamlined process. SMSOne employs a young man, who has good contacts in society. Ghate's team selects those people who have not passed high school because they want to encourage unemployable young people to take up jobs instead of becoming nuisances in society for the lack of one. This person gets affiliated with the coordinator (TC).

In an earlier avatar, the young

man would have to start building a list for the SMS Community Newsletter by making mobile users sign a permission slip for messages. However, as the program expanded, it is now possible to subscribe to SMSOne by buying coupons and entering an ID code.

A database of all members is prepared by taking their information, which includes name, age, gender, profession, pin code etc. Bulk SMSes are sent to community members, of which 75% of the content are promotional messages by residents and 25% by businesses. Each community newsletter has a specific name, for example, Aundh News or Baner News. Thus, the message appears from that group ID.

The cost for the SMS newsletter is recovered by roping in advertisers, to the tune of 50 paisa to Re 1 per message. The SMSes carry alerts, news, reminders and other custom made messages such as local news, birthday greetings. There is also crucial local information such as water and power shutdown dates, telephone bill due dates, road/ traffic congestion, important local government announcements, local activities like eye testing, health checkups, climate changing alerts, local police instructions, emergency services like blood demands, and even cricket scores!

At the same time, commercial messages can be charged (up to Rs 2), such as: local shopkeepers ads, bank scheme announcements, discounts from shops and restaurants, messages from local insurance agents, car/bike deals, real estate ads, marriage invitations. A premium rate for political ads is charged – Rs 5 per message -- such as gram panchayat announcements, candidate messages during election time and so on. The incentive for the young man who handles the SMS community newsletter is that he can keep about Rs 2-5 per SMS as a profit. This means, he can earn upto Rs 1 lakh per year as long as he is active in the community.

Project Features

Technology Platform

SMSOne does not need advanced equipment to be implemented, as it transforms mobile telephones into micro-media using their SMS capability. Therefore, end-users only need an entry-level mobile device without advanced features to receive the local SMS newsletter. To send the SMS bulk-messages, a computer with Internet access and the SMSOne Express software are needed. A simple desktop and web-interface software was designed to centralize all the SMSOne activity throughout Maharashtra.

For users, the ability to receive text messages on their mobile phones is enough. The SMSOne newsletter can work on any phone. As regards to signing up, the process has become even easier by the introduction of a unique ID to subscribe.

Accessibility & Inclusiveness

While a text message presupposes the ability to read, SMSOne is easily used by community members because of its relevant and simple nature. The messages can be easily read out, or passed on, and help deliver information in a timely manner. The entire service is inclusive because it helps deliver local information, as opposed to national/ state news to a local community

that cannot benefit or act upon that information directly.

Community Participation
The crux of the entire idea and its execution lies in community participation. As the newsletter groups are community specific, and the messages are hyper-local, there is almost no element of this project that lies outside the community. The young men chosen to manage the newsletter are from the community as is the audience and the content creators. By choosing to target communities with what they need, SMSOne has created a highly potent product.

Sustainability & Cost Effectiveness
SMSOne has proven to be a sustainable and cost effective business. In fact, the company has expanded its local SMS newsletter into specific categories of newsletters, some focusing entirely on educational news while another on social causes. Since the entire business was started on the basis on a financial model: both in terms of a salary for the young man handling the newsletter and a way to finance and profit from the messages it carries. The price levied on those subscribing for special newsletter and on those wishing to send out notices can be revised from time to time, if need be.

SMSOne's working design is simple. A local youth pays Rs 1000 to become the "franchisee". Once he is the representative of the area, he collects different kinds of messages to broadcast to his community. These range from emergency services, to local business ads to local government information. For every SMS he sends, the youth keeps a percentage. SMSOne only sends out 4-5 message blasts a week. This way, depending on frequency and audience, the youth can make anywhere from Rs 3000-6000 per month.

The system cannot generate any loss to the young entrepreneur as no fixed costs are involved. From an end user point of view, information about government services (especially water and electricity cuts, which one needs to plan the day around), discounts, health checkups, can improve the quality and effectiveness of life quite dramatically. User feedback has almost unequivocally positive.

From a marketing perspective, businesses and politicians have both found an effective way to reach a relevant audience.

Replication & Scalability
In both replication and scalability, SMSOne has managed expansion internally and successfully. The project started in Pune, where Ghate and his team are based, but has expanded to employ over 550 youths and 7 lakh subscriber base. At the same time, they have added on tailor made services such as Eduvarta, etc, which will not just increase the base but have the same subscriber now pay for multiple services, thereby increasing their income.

Conclusions

SMSOne is one of the ways to bridge the digital divide. In an Indian household, typically an earning member has a mobile phone. Communicating with him/her means you are accessing all other family members of the house. A health camp related SMS to an individual

would be discussed amongst all the members. This way, any members who need a doctor could then arrange to attend the health camp.

Another case is that of social messages. Even if the SMS for a lecture by a spiritual guru reaches the mobile phone of the youngest member, the grandparents will also still get to hear about it. This clearly shows that irrespective of whether the elderly members or kids have the mobile, and regardless of which family members are literate, they can be reached by SMS and encouraged to take part in social activities.

In a sense this is bridging the digital divide, by allowing those ordinarily out of reach to be contacted, through technology. Serving through SMS has tremendous impact on local communities as one SMS impacts least 5 members of the house. If 1000 mobile users are connected in a local community, this means the network is about 5000 people strong.

There are also economic advantages, the biggest being employment and marketing channels. To begin with, if there are 15 crore mobile users and each community is defined as 1000 users, it means about 1,50,000 youths can be given jobs as SMSOne mobile community newsletter leaders. Even if only 10% of the newsletters are successful, it means that 1 lakh youths, deemed unemployable because of the lack of educational qualifications, can have a regular income.

The second advantage, already discussed, is the opening up of an advertising channel and relevant audience for business owners and social groups. This has a direct impact on society as well.

Lessons Drawn From The Practise

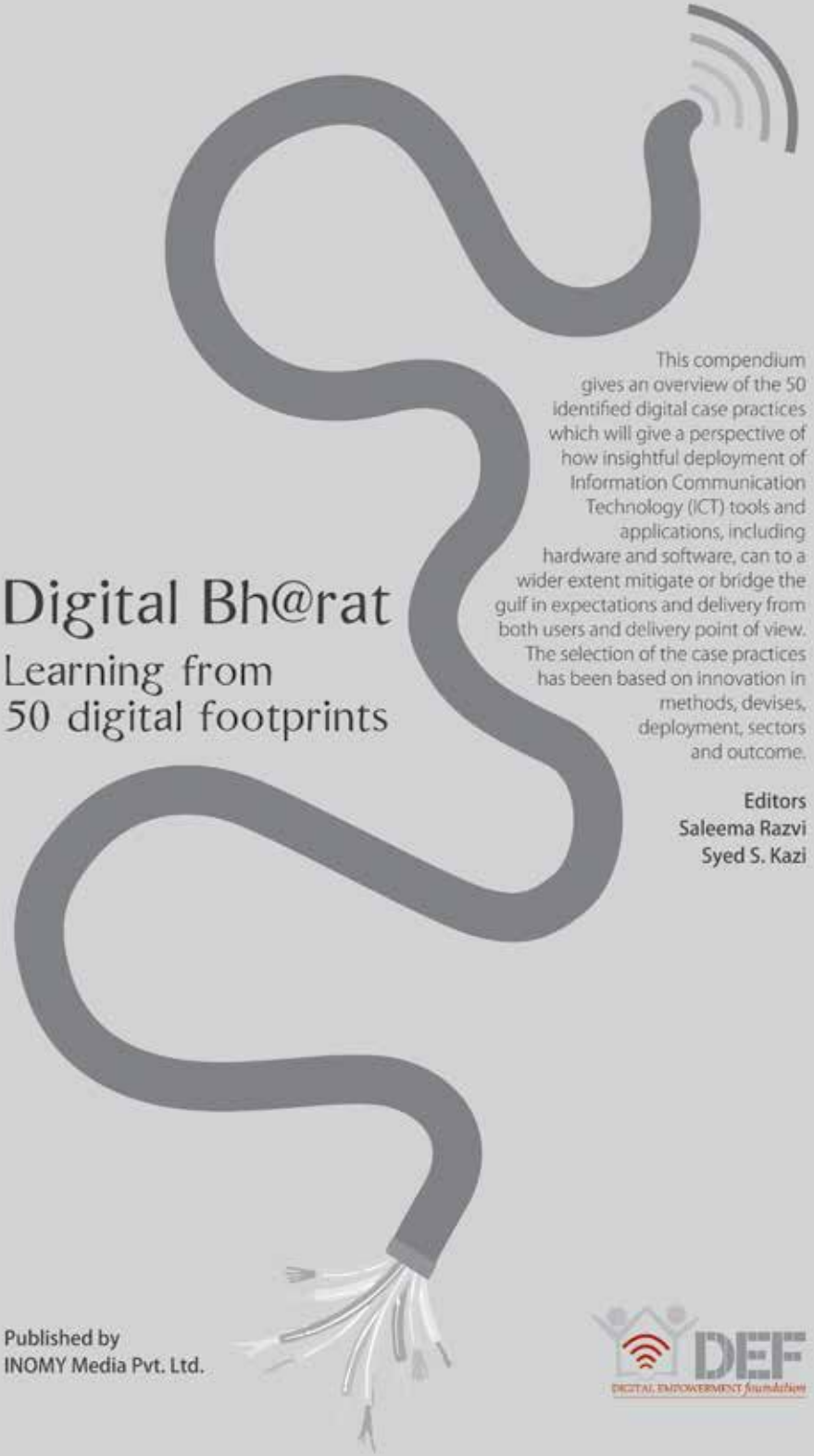
Sometimes the simplest ideas can be the most effective. It has been seen that many entrepreneurs are using mobile phones to reach the masses, dispense information and connect them to each other. SMSOne also aims to do the same; however, instead of dispensing information as a resource portal, it actually serves as a medium for people to talk to each other about any important events, business promotions and the like. As a result, it has become a highly localized platform for news and information.

SMSOne tackles two major problems of the Indian countryside: isolation and lack of relevant information and youth unemployment inducing fewer opportunities. Its standardized implementation process and its simplicity make it easily replicable in other regions. It is a cost-effective solution that provides free services to the community, targeting its special needs. Being managed by a young person from the locality, the information conveyed through the system is relevant for the subscribers and deals directly with their environment. SMSOne creates a virtuous circle as when it adds members to the service, it becomes more attractive for potential advertisers, providing more revenues to the young entrepreneur.

However, taking this a step further, SMSOne has added further purpose to their offerings. By offering specialized newsletters, such as Eduvarta, to students, they have

made possible what internet searches do for those with easy access to the net. This idea has been widely recognized and has been given a grant by the Vodafone Mobile for Good Foundation in association with the Digital Empowerment Foundation.

SMSOne shows how ICT solutions can provide self-employment in rural areas and can be essential to reduce rural-urban migration by providing opportunities at the rural community level.



Digital Bh@rat

Learning from 50 digital footprints

This compendium gives an overview of the 50 identified digital case practices which will give a perspective of how insightful deployment of Information Communication Technology (ICT) tools and applications, including hardware and software, can to a wider extent mitigate or bridge the gulf in expectations and delivery from both users and delivery point of view. The selection of the case practices has been based on innovation in methods, devises, deployment, sectors and outcome.

Editors
Saleema Razvi
Syed S. Kazi

Published by
INOMY Media Pvt. Ltd.

DEF
DIGITAL EMPOWERMENT foundation