Bridging the digital divide--Some efforts from Kerala

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Kerala is one of the southern states of India lying nearly 9 to 13 degrees North and
having a population of nearly 30 million out of which nearly 74% live in rural area (2001 census).
It is striking to mention that rural population has gone up from 73.5% to 74% during 1991 to 2001.
Apart from an elected State Legislature, the State also has multi-layered elected local bodies.
There are 992 Grama Panchayayts (Village level councils) and 58 Municipal Councils and
Corporations representing the rural and urban areas respectively. Kerala, known as “God’s own
country” for its natural beauty and which makes it as one of the top tourist destinations of the
world, has also initiated various programs/steps to make the benefits of information technology
reach common people through innovative projects. Although Kerala has a literacy level of 90.92%
(2001 census) (Male 94.20% and Female 87.86%), however, the population connected to Internet
remain shockingly below 1%, the issues relating to lack of connectivity remain a big problem.

2. The Internet doubtlessly has potential to become an important medium to bridge the
development divide provided a solution is found to the problem of access. The World Bank's
annual development report, Knowledge for Development (1998), also stressed the importance of
leveraging new media technologies like the Internet in developing countries for areas like lifelong
learning, training and retention of skilled workers, transparency of government and financial
institutions, and rural as well as distance education. Therefore, the issue that calls for attention is
whether and if so how this new technology could bridge the gap between the industrialized and
developing countries when much of the population cannot afford even a telephone.

3. The cost of online access also remains unacceptably high in most developing world and
Kerala is no exception. Typically, the cost remains around US$1/hour for Internet access which
also happens to be the per day income of the family to be classified as above poverty line in
India. With one-third of population still below poverty line, their ability to access Internet still
remains an elusive dream even in areas where there is connectivity. Furthermore, even where
the line exists, the quality of service is another problem. Apart from this, there are issues like
regional imbalances; urban/rural imbalances as also gender imbalances.

4. Amazon.com's founder and CEO, Jeff Bezos, at the "Creating Digital Dividends"
conference in Seattle, USA, October, 2000, "emphasized that developing regions could leapfrog
traditional development by skipping entire layers of [ICT] infrastructure". But so is the concern that
developing countries will be "left behind" if they don't participate in the global information society.
For example, a 1996 World Bank report (Increasing Internet Connectivity in Sub-Saharan Africa)
stated that "If African countries cannot take advantage of the information revolution and surf this
great wave of technological change, they may be crushed by it".

5. The digital divide is soon becoming the most visible component of the development
divide. For developing countries, digital divide unless tackled has several potentially harmful
consequences, including further marginalisation (increased gender, rural-urban and poor-rich
gaps) as access to opportunities for wealth creation is reduced or polarised and potential losses
of considerable development opportunities as productivity and efficiency gains are not transmitted from rich to poor countries. This paper proposes to examine issues relating to bridging the digital divide through Information kiosks with specific reference to the efforts being taken by Keltron, a public sector company in this regard so that the gap between those who share in the digital revolution - and the increased productivity and wealth that it creates - and those who live on the other side of the digital divide, is narrowed.

6. The Information kiosks model apart from bridging the digital divide also addresses various social issues like unemployment of youth, empowerment of women through greater participation in decision making, bringing in attitudinal change in street children, structure networks for e-care and e-support especially for patients of diseases like AIDS etc.

7. Some of the other advantages of the Information kiosk model is that it allows decentralized functioning, so that local preferences are addressed. Besides, it empowers the local community not only to use ICT in future applications but also to express, share, gather, collect, disseminate, accumulate, distribute, and analyze information and knowledge. The model provides the platform for creating partnerships with public, private NGOs for developmental needs.

8. The relevance of the Information kiosk model arises not only from the advantages it offers with respect to access to common man but also the constraints that other models have in a developing country. Technological change is one such constraint. Processing and transmission speeds having multiplied every year leading to tremendous advancement in ability to compute and process data and thereby use the ICTs for greater and larger number of applications. This advancement in technologies has consequently demanded change in hardware configuration and also change in software configuration in short span of time. This poses a dilemma for decision-makers in work situations. Since end to end solutions are capital intensive, non availability of funds often affect project implementation and lead to time delays. And by such time, the technology itself has graduated to a different level, thereby requiring a fresh re-initiation of the project.

9. Therefore, technology appropriation at each stage is as important as adaptation of latest technology. It is pertinent to note that very many examples of technology appropriation have not been those based on most advanced technologies but have had tremendous impact none the less. Besides, latest technology requires very high bandwidth communication infrastructure, which is not available in many developing countries. Creation of such infrastructure involves huge capital outlays and mobilization of such capital pose further hurdles, which obstruct use of ICT for the benefit of common man.

10. It would be relevant to list out some of the successful models which provide encouragement for undertaking other similar projects in other fields, in other countries and in greater numbers reaching larger number of peoples. The sheer variety of sectors and objectives served by different projects point to the near universality of the approach for societies wanting to leap frog the traditional development paradigm.

FarmNet in Uganda...for information on markets, improved agricultural technologies and weather conditions for farmers.

Tortas, Peru- an e-commerce portal for homemade cakes made by Peru women giving them supplementary incomes.
Kothmale Internet Community Radio offers ordinary people a gateway to the global knowledge society by combining local radio and locally produced content in local languages with ICT applications in a wide range of social, economic and cultural areas.

The Sapphire AIDS Victims Fund – marketing of artisan products and use of funds for supporting women, children and orphans who have AIDS.

Centre for Mayan Women Communicators in Guatemala - women sell locally made handicrafts on-line, thus providing additional income for their families.

ASAFE (Association pour le Soutien et l'Appui à la Femme Entrepreneur, Cameroon offers women entrepreneurs who live and trade in Cameroon, Chad, Mali, Guinea and Benin various business services and support for their businesses.

The Bankilare Experience – Niger - A Community Information Centre (CIC) providing services like announcing weather conditions or alerting the community to potential disasters such as fires as well as providing information on topics such as health, nutrition, trade, environment as well as offering entertainment.

Across Borders – Palestine - connects Palestinian refugee camps in the West Bank, Gaza, Jordan, Syria, and Lebanon for the first time to the Internet

Nakaseke Multipurpose Community Telecentre and Library Pilot Project – Uganda offers services including computer applications, training, Internet, and e-mail, along with several business services such as photocopying, telephone and fax.

TARAhat.com – India - Information and Marketing Services using e-business to rural India.

InfoDes - Cajamarca, Peru - increasing the production levels of small farmers and the management skills of local governments, through the provision of information and communication tools.

Market Watch - Gobi, Mongolia - a multi-media price information and analysis service produced and delivered by the Gobi Regional Economic Growth Initiative,

Pondicherry – India - to enable rural families to access modern information and communication technologies in order to train and educate youth and women.

NairoBits: African Youth Online - Nairobi, Kenya to teaches young Africans from slum areas the technical and creative skills of web design enabling them to express themselves through the Internet.

Street Children Telecentre - the Esmeraldas, Ecuador to provide computer skills and Internet tools to street children and introduce alternative skills and lifestyles to support them in the search for better opportunities.

Virtual Souk - E-commerce for unprivileged Artisans - Middle East and North Africa aims to bring the artisans crafts onto the market, without standardizing their techniques, and provide them with a return in profits without too much inter-mediation, and thus improving their income.

Chapter 2 Network - South Africa provides support to civil society organisations involved in advocacy in South Africa.

Grameen Bank’s Village Phone Programme: a Multi Media Study - Bangladesh telecommunications in enhancing rural social and economic development.

Kothmale Internet Project - Kothmale, Sri Lanka uses community radio as an interface between the community and the Internet.

Gyandoot Project - Dhar - Madhya Pradesh, India a unique form of Government to Citizen (G2C) e-commerce activity

Healthinfo-Ethiopia Ethiopia to promotes ICT among health professionals as well as acquires and disseminate health-related information about Ethiopia/Africa to Ethiopians/Africans in the continent and the Diaspora.
Village Leap - Robib, Cambodia women are able to sell their traditional silk-woven scarves to customers all over the world through the village website.

Akashganga - India offers the Dairy Information Services Kiosk, which offers a multitude of animal husbandry related services, besides maintaining databases and offering Internet connectivity to the Dairy Cooperative Society.

11. The above examples show that information kiosks have been used effectively both by governmental organizations and non-governmental organizations for achieving desired results. For a government to provide services to its citizens, the kiosk model becomes all the more relevant. To plan for a successful kiosk based ICT application with the objective of improving services to common man, the following step wise approach is proposed:

   i. Identify specific information needs or services, which are proposed to be provided through the project. The identification of these needs/services should involve the targeted beneficiary group and a participatory need appraisal with the help of trained consultant is recommended, as this is the most crucial aspect in the success of the project.

   ii. Identify the activities, which will be done using information technology in the chain of events, which results in service being given to the user.

   iii. Design of software and hardware taking into consideration constraints like costs, connectivity etc.

   iv. Development of software and procurement of hardware and their installation

   v. Integration of remaining activities in the chain of activities of the system through manual processes. The manual processes are to be taken up for computerization in one or more phases based on availability of resources, development of infrastructure and experience gained from the earlier phases.

12. Some of the examples where such an approach has been successfully adopted in Kerala are discussed below:

FRIENDS

13. A Single one-stop stand-alone service center powered by twenty high-speed computers, FRIENDS delivers easy and efficient services through a single point interface. It promotes improved coordination between government departments and simplifies interaction between the citizen and the department. So paying bills, obtaining applications and remitting registration fees is quick, simplified and done through a single window. FRIENDS make life easier for over one million people annually. The FRIENDS kiosks provide the following services: electricity bill payment, water bill payment, telephone bill payment, property tax remittance, professional tax remittance, Traders license fee remittance, Building tax remittance, Basic tax remittance, Revenue recovery, Remittance of fee for new ration card, One time vehicle tax, Motor vehicle tax, Fee for licenses from Motor Vehicle Department, Fee for permits from Motor Vehicle Department, Registration fee for Motor vehicles, University exam fee, General fee for Kerala University, Fee for trade licenses.

14. FRIENDS very appropriately integrates the existing manual systems of various utilities/agencies with information technology intervention so as to make a much needed service to common man, particularly in urban areas.

Keltron Information Kiosks (KIKs)

15. Developing from the experience gained from FRIENDS, the next step is setting up of Keltron Information Kiosks (KIKs). KIKs are a one-stop networked facility to provide various services and information needs. The objective of these centers is to enable common man to access modern information and communication technologies and to enable government to provide quality services to common man using the strengths of ICTs. The focus of KIKs is to
generate content that is locally specific. KIKs are value-added cyber cafes providing various services related to Government through Internet and LAN and catering to everyday needs of the masses. (Some of these kiosks have already been set up in Trivandrum district and the service is proposed to be extended in all the districts of the State in a phased manner). The use of Internet, information systems, collaborative work and e-governance services are some of the features of the KIKs. The KIKs envisage an **E-governance Grid** by networking of government departments, institutions, and other agencies involved in governance. The E-governance Grid will also provide opportunity for collaborative effort on similar missions from other parts of developing world. The goal of the E -governance Grid is on one side to enable the governments to improve delivery of various services and on the other to empower the citizens to actively participate in the digital revolution both as clients of government services as also partners in creating, maintaining and disseminating information which is locally relevant and specific.

16. The present government delivery structure in Kerala and for that matter throughout India, suffers from various shortcomings. These shortcomings include, too much of compartmentalization, uncommunicative staff, lack of service orientation and over emphasis of power motif. Besides, difficult terrains, inaccessible areas and other backward areas suffer from lack of government services. KIKs would also address these drawbacks. Inherent to the KIK approach is the equal opportunity to all persons despite their location and resource constraint.

17. Efforts to use IT in government have been fragmented and have suffered from end to end solution approach, which are capital intensive. The KIK approach involves development, application and deployment of IT enabled services in various government departments. This also acts as catalyst to developing information systems in the departments themselves. Since KIKs are developed in a modular fashion, these can be developed based on available resources.

18. The E governance Grid also helps in enabling the infrastructure, communications and info-space architecture requirements both within the departments and also across the state, over which the semantic issues of e-governance can be discussed and resolved. It would help invaluable information resource, enriched service environment and links for each person to participate in the governmental processes.

19. KIKs are thus models of starting to practice the use of IT for common man, rather than merely conceptualizing theoretical models by which an IT based system would revolutionize the world. KIKs address some of the defects in the existing systems thus creating a harmonious government citizen ambience. The strategy for setting up of a E governance Grid and network of kiosks throughout the State involves public-private-community participation. Local bodies are also partners of this Grid.

20. The KIKs in Trivandrum which have already been set up provide a comfortable ambience with high-speed connectivity to 10 to 20 users at a time. However, all KIKs, need not necessarily have 10 to 20 computers. The number of computers may vary from one to whatever number required based on user traffic. It may also be mentioned that today there may be no ready vendors and service providers who will set up such kiosks. However, as awareness builds up and proficiency in the effective deliverance of services through the kiosks and the tremendous capabilities that they bring into the e-governance is felt/ realized, it will lead to demand from vendors. Different models of ownership of kiosks can be envisaged, like franchisee arrangement, partnership arrangement, or fully owned kiosks.

21. The KIKs work on a disciplined access and use of web space and e-commerce environment through various G2C transactions. The KIKs will therefore need the following infrastructure. Apart from the café based unit, there will be a special unit at the district headquarter called the KIK District Server (KDS). The KIK District Server supports the necessary e-governance environment needed for providing the desired services through the KIKs. The District Server is built on advanced Web Technologies over which several subject/ domain specific interaction/ information service networks across different departments/organizations are
built. The services that will be provided by the KIK District Server are mentioned below. KDS forms the hub of IT facilitation of various services. (The KDS for Trivandrum has already been set up at Vellayamabalam). The KDS in different districts are going to be interconnected to other district servers using broad band connectivity, which would be available throughout the state, via the optical fiber cable network being laid, and is expected to be operational by the end of the year.

22. Each district will have an Intranet of e-governance to be developed in a cost-effective manner. This is crucial as the ISP services do not reach even 1% of the population and the cost of access to Internet continues to be high. The PCO booth owners are going to be an important part of the overall vision of providing services through kiosks. The PCO booth owners are licensees, licensed to operate telephone services levying a nominal user charge and have been extremely successful in generating employment and providing telecom connectivity throughout the state. It is proposed to leverage the strength of this large PCO network and to integrate these PCO booths to act as KIKs, wherein the booth owner will now be able to provide, apart from mere telephone connectivity, Internet connectivity and various other value-added services. This would thereby address the problem of access to a large segment of the society. The PCOs also address the issue of last mile connectivity - a ticklish issue in any networking problem. For the PCO owner, the only investment that would be required would be that of a PC or a server or a modem, an investment that he would be able to recover easily from the services rendered by him.

23. The PCO owner can go for a server-based kiosk or a PC based kiosk depending on the number of users he expects to entertain. If he goes for a server-based system at his end, it would enable faster access and quicker response and would be more suitable for urban locations, whereas the PC configuration would be suitable for the rural areas.

24. The crucial aspect has been the content development for the KIKs. Content for certain services has been developed and for other is in process of being developed. During the project formulation phase, Keltron carried out a PRA exercise involving all stakeholders. The selection of the services was the result of this interactive exercise and was based on the advice and the felt needs of the users and the stakeholders. However, it has also been realized that that development of content is an evolving process and the content itself will have to be updated, modified or amended from time to time, based on the requirements of the stake holders. The services, which have been identified for first phase of the project, include:

i. Excellent ambience for operations
ii. High speed connectivity to the Internet with facilities for browsing, chatting, video conferencing, web hosting, photocopying, scanning etc.
iii. Basic training for the aforesaid mentioned activities to enable users to develop their own content on the Internet.
iv. Facilities for online application for PMRY scheme- an employment generation scheme for unemployed youth and display of status at various stages of processing of application.
v. Facilities for online application for provisional registration of small scale industries
vi. A user friendly module for counseling farmers regarding their agricultural needs, disease diagnostics, treatment, fertilizer application, soil fertility etc.
vii. Public grievance redressal with specified departments
viii. Online furnishing of sales tax returns for all sales tax payees
ix. Information related to 2001 census
x. Details of major schemes and programs of various departments of the government.
xi. Online availability of various forms seeking assistance’s under various government schemes
xii. Information regarding availability of food articles through Public Distribution System- online details of releases made to Authorized Ration dealers.
xiii. Below Poverty Line list
25. Apart from the existing services, the KIKs are planning the following services in near future. The project has been conceived in such a manner that it allows serial integration of services.
   i. e- Education
   ii. Income Certificate
   iii. Domicile Certificate
   iv. Caste Certificate
   v. Local e-mail
   vi. Employment news

26. The maintenance and upgrade of IT and related KIK infrastructure, cost of Internet are the main recurring costs involved in the project and since the services are proposed to be dispensed at a small user fee the project functions as a self sustaining project. In fact, the strength of these kiosks is their commercial viability. As a stand-alone project, the Banks and financial institutions can finance these kiosks. The only investment required is for setting up the district servers, the network and the development of content. But as a single stop service center for various governmental related subjects, the kiosks become the centers of e-governance for the common man. Government also saves in terms of cost of providing separate kiosks/centers for disseminating information for common people. And this is therefore a win-win situation.

27. The KIKs, in their own small way contribute to making the government more responsive to the needs of the society. While bridging the government citizen divide, they inherently also address the digital divide especially for those classes which are on the wrong side of this divide. The program thereby empowers people and is likely to provide solutions for important usage of IT in the field of e governance. The opportunities created by such an E governance grid across geographically dispersed areas are too many to be ignored. This could become an engine of growth for Kerala. Wide deployment of KIKs and encouragement of their uses, backed by carefully developed content in the KDS will make the IT Enabled services provided by these kiosks as common and popular as today’s TV.