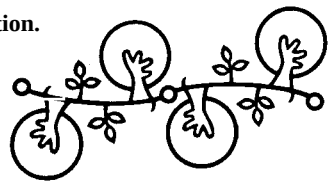
Annexure 46



M S Swaminathan Research Foundation

Rural Knowledge Centres:

Harnessing Local Knowledge via Interactive Media

Policy Makers Workshop

8-9 October 2003, Chennai

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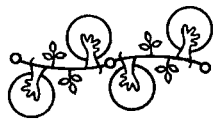

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Foreword

Information and Communication Technologies have opened up uncommon opportunities in rural areas for improving the quality of both the natural environment and human wellbeing. The experience of MSSRF in villages in Pondicherry with support from the International Development Research Centre (IDRC) and Canadian International Development Agency (CIDA) has shown that rural women and men take to new ICT technologies with ease and confidence provided the pedagogic methodology is learning by doing and the contents are dynamic and location-specific. Bridging the digital divide not only helps to bridge the rich poor divide in knowledge and skill empowerment, but also helps to bridge gender divide by enhancing the self-esteem and self-confidence of women. ICTs will be most meaningful to rural families if generic information is converted into a location-specific one. If properly designed, ICTs can help to reach the unreached in terms of knowledge and skill empowerment and help to convert the vast scientific know-how now available into field level do-how.

Encouraged by the sense of ownership of rural knowledge centres demonstrated by local women and men, MSSRF, Tata Trusts and IDRC have launched a National Virtual Academy for Food Security and Rural Prosperity. The Fellows of this Academy are rural women and men who have not only developed computer skills but also a spirit of innovation in content creation and connectivity expansion.

To discuss the experience gained during the last 6 years in taking ICTs to resource poor rural families, a Policy makers Workshop was held at MSSRF on 8 & 9 October 2003, with generous support from IDRC and CIDA. The present publication contains the proceedings of this workshop. We are indebted to Dr Madanmohan Rao both for preparing this report and also for his guidance and suggestions at various stages in the organisation of the workshop.

I am grateful to Dr Richard Fuchs, Director, Information and Communication Technologies, IDRC, for his active participation and guidance and to Dr Renald Lafond of IDRC for valuable suggestions. I am also grateful to Mr S Senthilkumaran, Prof. Subbiah Arunachalam and their colleagues in the Informatics Centre of MSSRF for their dedication to harnessing the best in information science for improving the quality of life of rural poor. I hope this publication will help to spread confidence in the value of ICT in achieving both human development goals and accelerated economic advancement.

M. S. Swaminathan

M S Swaminathan

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Rapporteurs
Madanmohan Rao, B H Shadrach, Suchit Nanda

Workshop Coordinators
Subbiah Arunachalam, S Senthilkumaran

Overview

In many emerging economies like India, a bulk of the population lives in rural areas, which lie on the other side of the proverbial digital divide. With mixed success rates, many experiments to bring the fruits of ICTs to rural areas have been launched over the past decades, especially in the Internet era. With the ICT revolution as a driver and WSIS as a backdrop, a workshop was held in India to bring together a wide range of stakeholders for deliberation and direction on ICT-enabled development.

The policy recommendations which have emerged from the workshop cover a spectrum of issues ranging from self-help groups and domestic software to virtual academies and alliance strategies. Informative lessons and analytic frameworks regarding ICT-enabled development also emerged.

This document summarises the workshop output, captures key themes of the discussion, presents the results of a participants survey on ICT-enabled development, provides suggestions for future policy makers workshops, and identifies key recommendations for policy makers in India and at WSIS.

The document will be valuable for all stakeholders involved in ICT-enabled development activities, ranging from the private sector and NGOs to government agencies and donors. While the discussion is largely on developments in India (due to requirements of focus and constraints of budget), some of the key lessons will be applicable to other emerging economies as well.

Workshop objectives

Over 70 development activists, academics, policy makers, public sector officials and private sector representatives gathered in Chennai in October 2003 to discuss four key sets of questions:

What are the dynamics of rural knowledge centres?
How can their scope and scale be amplified?
What partnerships can be formed with the private sector?
How can policy makers help enhance the ICT4D agenda?

These issues were deliberated in panel discussions spread over two days (see Appendix A), covering topics like local needs assessment, local content, financial models, emerging and appropriate ICTs, gender challenges, government services and the grassroots, cultural and political obstacles, cross-media strategies, knowledge centre experiences, inclusion of marginalised communities and policy recommendations.

Workshop documentation and research

Speaker presentations were distributed to participants in print form and on CD; the CD also contained video clips about the M.S. Swaminathan Research Foundation's rural knowledge centre projects. A bound collection of 22 research papers was also circulated (see Appendix B), covering topics like the UN's Millenium Development Goals, ICT and poverty reduction, overview of ICTs in India, book reviews, CIDA's knowledge for development program, gender equality in ICT4D, ICT decision making in developing countries, rural connectivity in India, rural knowledge centre case studies in Pondicherry, and the Asia-Pacific WSIS declaration.

A 14-item questionnaire on ICT4D was circulated to all participants (by email before the workshop, and on the first day of the workshop itself). The responses contain valuable insights on ICT4D and have been summarised in Appendix C.

At the end of each day, the three rapporteurs exchanged notes and assessed the day's deliberations. Some of the key highlights are encapsulated in Appendix D (Day One) and Appendix E (Day Two).

A smaller group of participants convened at the end of Day One to more specifically discuss ICT4D recommendations for Indian policy makers; these are captured in Appendix G. Based on overall workshop discussions and external research, the rapporteurs and organisers have also compiled a broader list of ICT4D recommendations for policy makers to be circulated at WSIS; these are listed in Appendix H.

Outcome

In addition to networking among participants and floating project/publication/research ideas, three key outcomes of the workshop are as follows:

- A 4-page policy brief consisting of ICT4D recommendations to policy makers gathered at the first World Summit on the Information Society (WSIS) in Geneva in December 2004.

- A 4-page policy brief consisting of ICT4D recommendations to policy makers in India.

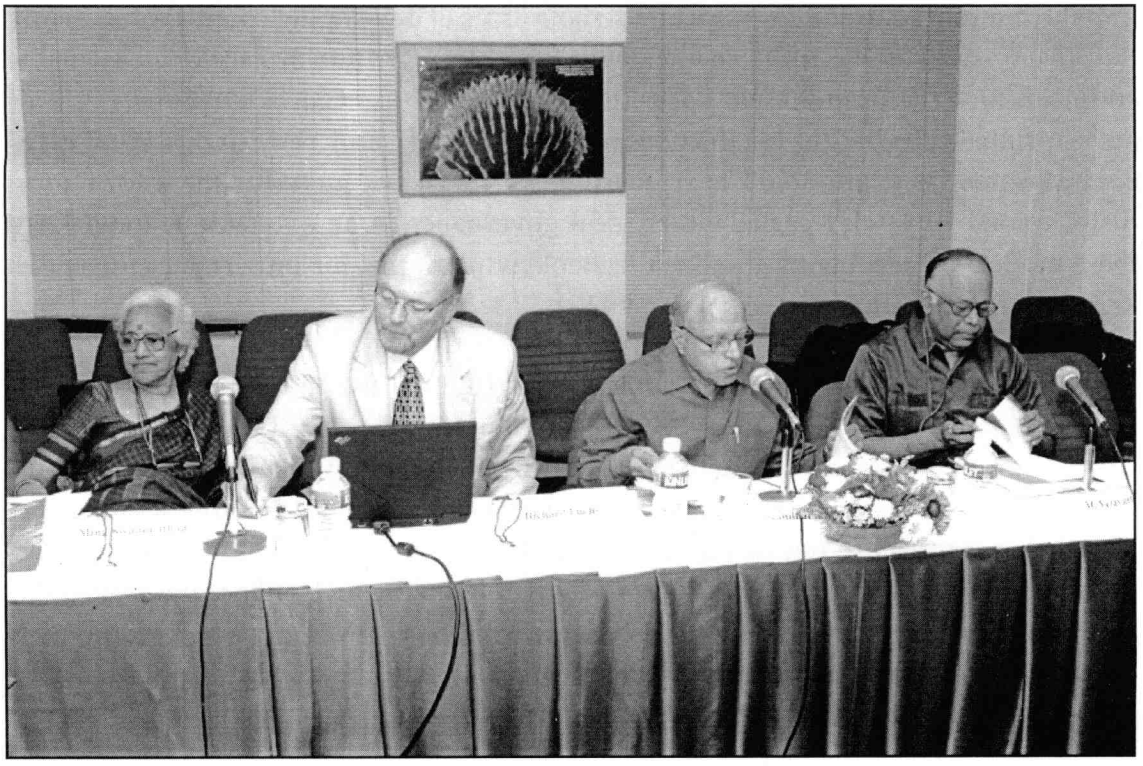
- A 40-page conference paper (this document) capturing the essence of the workshop proceedings, discussions and recommendations

A feedback form was circulated to all workshop attendees towards the end of Day Two; the workshop seems to have met its objectives, and interest was expressed to see further workshops on the issue of ICT4D policymaking as well as roadshows of the workshop to other parts of India (see Appendix F).

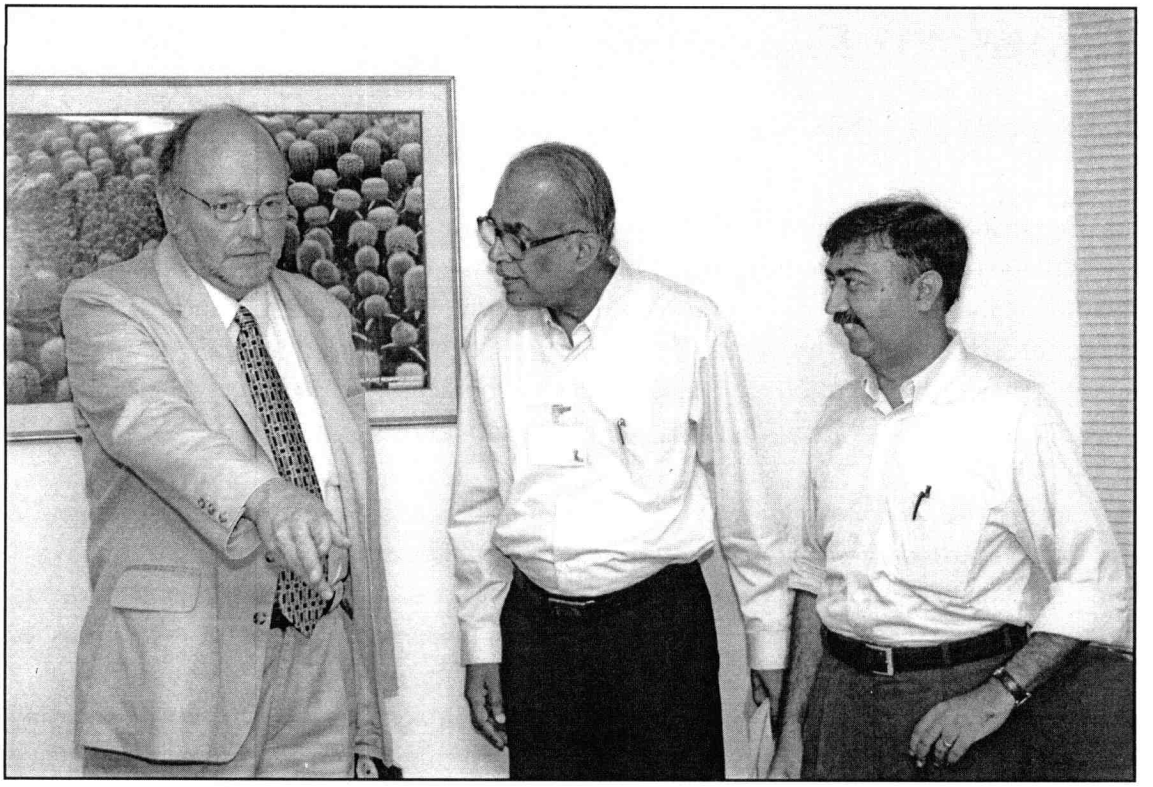
Theme 1: Dynamics of rural knowledge centres

At a crucial juncture in human history, when the benefits of revolutionary new technologies seem within the grasp of urban and rural communities, care must be taken by policy makers to accommodate the needs and aspirations of the neediest and marginalised communities within the unfolding of the knowledge age. Policy makers should pay special attention to leveraging the full benefits of ICTs for rural communities in conjunction with existing development imperatives.

As the reach of the Internet and wireless communication technologies continues to expand at unprecedented rates around the world, concerns are growing about ways and means of bringing rural communities into the fold as well. A number of approaches have emerged, such as building bridges via globally-dispersed online communities, or via locally-based community networks. The experience gained through the M S Swaminathan Research Foundation's Information Village Research Project has shown that people and their context should drive development programming rather than technology.



Mina Swaminathan, Richard Fuchs, M S Swaminathan and M Velayutham at the opening session



Richard Fuchs explaining a point to Arun and V Balaji

Can the Internet be useful for rural and remote areas of developing countries, especially the poverty-stricken regions? Can interactive technologies fit into the fabric of sustainable community development via social entrepreneurship? Can a virtuous cycle of appropriate technology, local knowledge capacities, and revitalization of rural communities be stimulated? Is it possible to interleave government information distribution along with participatory local governance in an equitable manner? Are there models for leveraging localized technology platforms for preserving indigenous knowledge and harnessing social capital?

A useful framework for analysing and assessing ICTs is the "8 Cs" framework (Rao, Madanmohan, 2003: "The Asia-Pacific Internet Handbook," Tata McGraw-Hill), consisting of parameters which begin with the letter C): connectivity, content, community, commerce, culture, capacity, cooperation and capital. In other words, rural knowledge centres are not just about connectivity to the Internet, but about content that is accessible, the communities that congregate online and offline, the embedded and emerging cultural attitudes, the commercial and other motives behind such activities, an attitude of cooperation and lifelong learning, and a capacity for creating and governing such information spaces (see Table 1).

The discussions on rural knowledge centres at the Chennai workshop can be assessed along these dimensions.

Table 1. The "8 Cs" of ICTs in rural communities

Parameter	Attributes
Connectivity	How affordable and widespread are ICTs (e.g. PCs, Internet access, software, community radio) for the rural citizen? What technologies are emerging and appropriate (e.g. wireless)?
Content	Is there useful content (local and global) for rural citizens to use in their daily lives? Can rural citizens access and create relevant content? Does the content meet the educational, health, business and other needs of the local communities?
Community	Are there online/offline forums where rural citizens can discuss ICTs, community radio, applications and related issues of concern? Will decision makers take part in such forums?
Commerce	Is there infrastructure (tech, legal) for e-commerce for citizens, businesses and government? How much commerce is transacted electronically? What hybrid means of fulfilling transactions can be leveraged for Government to Citizen (G2C), Business to Citizen (B2C) and Business to Business (B2B) commerce?
Capacity	Do rural citizens and organisations have the human resources capacity (technical, managerial, policy, legal) to effectively harness digital tools for daily use? Is there adequate organisational capacity as well? Can content and community activities be converted into knowledge assets?
Culture	Is there a forward-looking, open, progressive culture at the level of policy makers, businesses, educators, citizens and the media in opening up rural access to ICTs and harnessing them? Or is there nervousness, phobia and lethargy about ICT impacts?
Cooperation	Is there adequate cooperation between citizens, businesses, academics, NGOs and policy makers to create a favourable climate for using ICTs in rural areas? Can this cooperation be extended to policy initiatives at the national level?
Capital	Are there enough financial resources to invest in ICT4D in rural areas? What kinds of business and operational models exist for financiers? What kind of financial and social returns can be expected from rural ICT4D investments? What kind of knowledge goods and capital can emerge from rural ICT4D initiatives?

Source: Adapted from Rao 2003 (http://www.itu.int/osg/spu/visions/Conference/index.html)

1. Connectivity

Key challenges arise in bringing down the costs of PCs, community radio, ham radio, Internet access and digital peripheral devices (e.g. Webcams, LCD projectors, touchscreen devices) within the reach of rural communities. High import duties and obstacles to deploying used computers are hindering efforts to increase access to ICTs.

Many multinational ICT companies have expressed keenness to learn from grassroots organisations. For example, before setting up an R&D unit in Bangalore, focused on innovation for emerging economies, Hewlett-Packard sent two managers to MSSRF headquarters and several rural knowledge centres in Pondicherry. More recently, a team of four executives from Ericsson visited MSSRF and the knowledge centres to gain an insight into designing low-cost devices that would meet the needs of poor people.

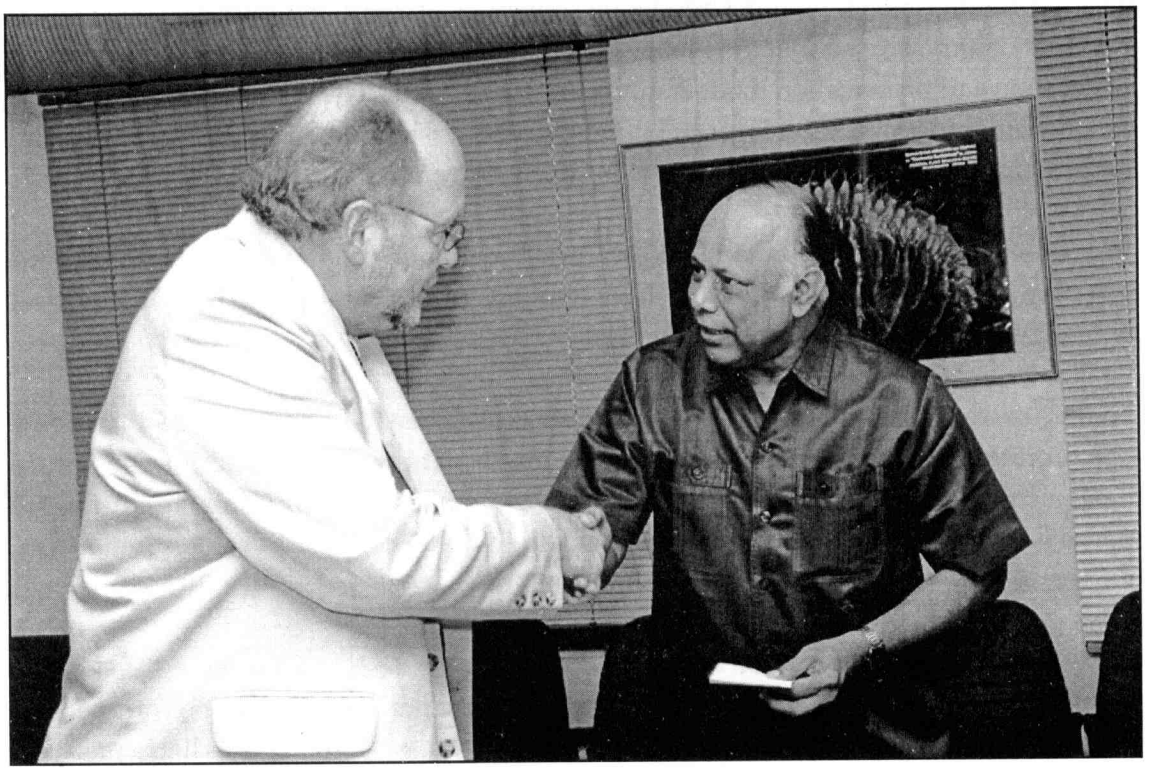
Emerging ICTs like wireless media can play an important role here, e.g. WiFi, roaming GSM networks, VSATs, WLL, Worldspace, ISRO. At the same time, efforts should be made to overlap government initiatives on the ICT infrastructure front – infrastructure should not be wastefully duplicated. Government departments (telecom, education, agriculture) should talk to one another to synergise ICT and content initiatives for rural areas. Open source platforms and tools should be actively embraced.

Care should be taken to avoid the "IT first" or "IT only" traps, and connectivity initiatives should be coupled with content and services. In designing connectivity infrastructure and services, adequate attention needs to be paid to back-end integration of processes and tools, and not just pretty front-ends.

Creativity will be needed in devising a range of user-friendly ICT tools for village users, including community radio (e.g. cable audio, handhelds), individual info-kiosks, and networked PCs. Solutions like solar energy can be used to address problems related to lack of electricity.

A range of models will be needed to bring the benefits of ICTs to rural areas: individual user models (one PC per user or family), telecentre models (shared access of up to a dozen computers for each village), and Rural Information Services Commons (RISC – based on large-scale aggregated infrastructure in areas where 100 villages can access it). This will require a very serious focus on and commitment to high-quality ICT infrastructure by governments and private sector players. Policy considerations will have to include multiplier effects of this infrastructure for the whole economy.

Notable initiatives to learn from in this regard include Drishtee, Gyandoot, e-choupal, cybercafes and the MSSRF rural knowledge centres. The telecentre proliferation should mirror the spontaneous, bottom-up explosion of the cable TV phenomenon in India.



Richard Fuchs greets M Velayutham, Excutive Director, MSSRF

2. Content

Needs assessment of information and knowledge requirements and aspirations in rural communities should be at the heart of any rural ICT4D initiative. Needs assessment needs to done repeatedly throughout the evolution of the ICT4D project and not just at the time prior to launch.

Issues related to design of the user interface, information architecture, language of presentation and communication of the information via alternative media (e.g. community radio) should occupy a key position. Rural users should be allowed to not just access but create content as well. Digitisation of crucial content (e.g. government services) should occupy priority. Portal templates for content and services can be successfully leveraged, but proper evaluation of these portals and their usability is called for.

Urgent measures are called for to standardise the representation of Indian language fonts and keyboards, otherwise islands of local content will proliferate and lead to difficulties in adoption and integration. Content created for rural users should be geared at providing answers to typical and pressing problems, and not just delivered as an information hose. Content should also be dynamically updated where relevant, otherwise static and unchanging content will be perceived as useless and outdated.

The information ecology and knowledge dynamics of rural communities needs to be carefully analysed (connecting labs, lands and people). Knowledge management, generation and propagation models should be actively studied to help rural communities move from the information layer to knowledge. Steps should be taken to ensure quality and integrity of locally generated content (e.g. via validation).

In terms of educational content, child-centric rural animation and multimedia games can play a useful role in easing early fears about ICTs, but care should be taken to avoid excessive obsession with idle gaming and entertainment.

Numerous examples exist of information services successfully delivered to a variety of communities: agricultural (e.g. sugarcane growth patterns, soil health, vermiculture, horticultural crops, crop rotation, gap between paddy rows, afforestation, rainfall patterns, pest calendars), fishing (e.g. weather patterns) and livestock (veterinary information).

In states like Tamil Nadu, Karnataka and Andhra Pradesh, government information services have been successfully delivered via information kiosks and the Internet, e.g. encumberance certificate for sale of properties, High Court cause lists, passport registration and land records. Other notable categories of local content include local audio programs, community newspapers, village yellow pages.

One World International and MSSRF have carried out experiments in setting up an Open Knowledge Network (OKN) using World Space Radio (AfriStar). Subsequently, One World International has carried out one more pilot in Africa. OKN has tested the provition of online information on government schemes for Dalits. MSSRF's Information Village Research Project routinely delivers content for farmers and fishermen in a timely manner via multiple media (including loudspeakers). The importance of presenting content in local languages for rural users cannot be overstated. ICTs can play a potentially significant role for providing rural women with health content regarding sexual health information, particularly in conservative communities.

Community newspapers fill a gap in mainstream media, which can also be too expensive for daily consumption by villagers. Other cross-media synergies which can be exploited include commercial TV and radio channels.

The Honey Bee network has documented grassroots technologies in eight languages. Awards have been given to notable innovators, and support has been received from the National Innovation Foundation. The Aravind Eye Hospital is leveraging rural ICTs in its efforts to create a "cataract-free zone" by distributing healthcare content and enabling videoconferencing with doctors. The Watershed Technology and Management Institute has helped agriculturalists develop water topology maps and watershed planning tools.

Community radio can increase the richness of local content via jingles, skits, quizzes, light music and special programmes focusing on gender issues. Creative examples of "radio browsing" have emerged in locations like Kothmale, Sri Lanka. Ham radio can play an important role in circulating information during times of crisis. Challenges remain in removing restrictive laws which ban community radio in India.

3. Community

Needs assessment of ICT4D should segment offered services according to the needs of the various rural communities, and prioritise them accordingly. The local communities should be made the implementers and managers of the projects during and after launch. The local community is the most important partner for sustainability of rural knowledge centres. Community involved in local micro-credit schemes is an important requisite for success.

Local forums are needed to air out the concerns and issues faced by rural communities on the ICT4D front, and to tackle possible political obstacles that may arise. Online forums play an important role in networking local communities with key professionals like healthcare workers. National online forums can take these discussions and best practices to communities of interest across the country, and global forums can facilitate valuable south-south exchanges. This workshop itself has been a successful forum for communities of practice in ICT4D.

Senthil talking to Atanu Dey as Satish Jha pulls out his laptop

Communities of ham radio operators have successfully spread the word during times of crisis. Community radio can also help foster a sense of empowerment and participatory democracy in local communities, as in the case of Namma Dhwani near Bangalore. Examples like the Aravind Eye Hospital patient-doctor communities, India-GII list, OneWorld and InfoDev are other notable case studies. The MSSRF conducts successful south-south exchange workshops on ICT4D.

4. Commerce

Rural knowledge centres have served as local hubs of commerce and business activities in multiple ways: disseminating information about price of agricultural produce, locating markets for sale of products, healthcare information, online marketing and cataloguing of local products, accessing business news, selling downloaded government forms, and e-commerce. Related activities include charging for email and Web access, photocopy services, printing exam results, computer classes, desktop publishing and other media services (e.g. renting audio/video tapes).

Community radio projects (e.g. Namma Dhwani) have successfully used radio to disseminate information on local weekly markets. Oddanchatrammarket.com has even helped export drumsticks to the Middle East. The Azim Premji Foundation's Young India Fellow program provides infokiosk operators with one third of kiosk revenues as salary.

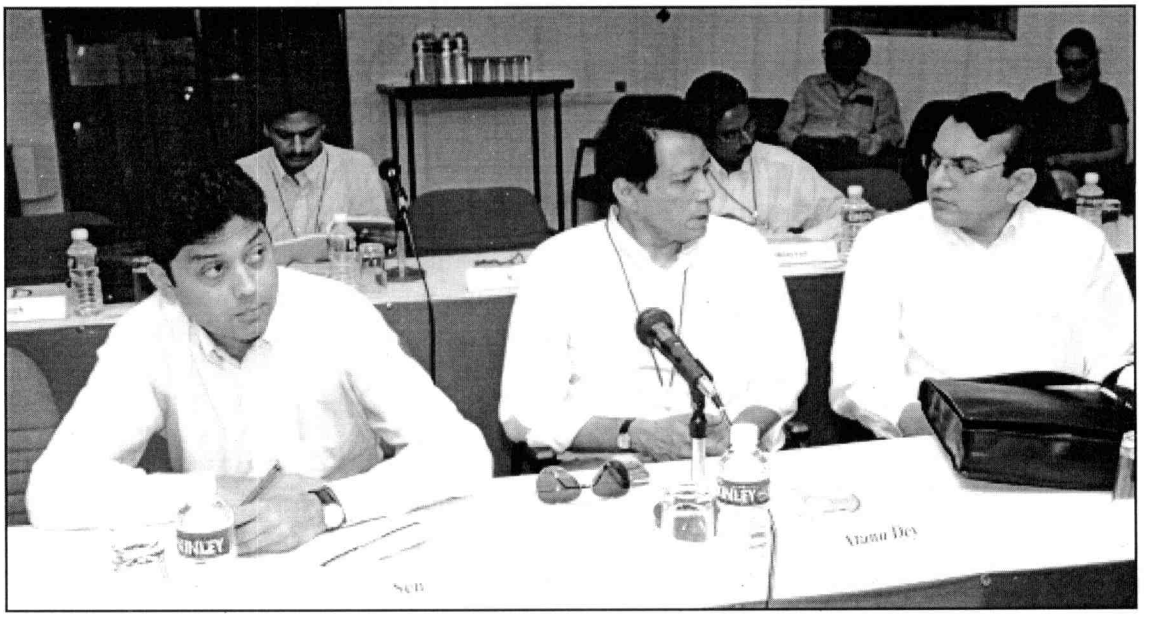
Experiments seem to indicate that rural communities are willing to pay for information services if they see the value and impact of the services, thus opening up the possibility of small revenue streams.

Questions to answer for ICT4D NGOs and policy makers include identifying the right threshold of population to sustain a rural infocentre, and the kinds of services that villagers are willing to pay for (e.g. land registration forms, entertainment).

About 10% of the information centers in rural areas of North East India (set up by NIC) are reportedly earning decent revenues as a result of such commercial activities. Drishtee has observed that setting up 5-6 kiosks a month in rural areas is a viable pace of growth.

ITC's e-Choupal is also a notable model for e-commerce, but it seems to be focused more on supporting the company's internal business model rather than the full range of village information needs.

Due to poor infrastructure of payment and online trust, hybrid models of payment (e.g. pre-paid accounts, cash on delivery) may be necessary to facilitate e-commerce in rural areas.



Ashish Sen in a pensive mood; Atanu Dey and Satish Jha in conversation

While financial sustainability of telecentres is an important issue, it is important to note that social sustainability is even more important for rural communities.

5. Capacity

In addition to access and content, rural ICT4D initiatives must focus on human resources capacity-building in village communities on multiple fronts: technology, management, strategy, user research, business models, security, digital publishing, information services design, metrics, project management, content management, creativity, and community dynamics. Depth-oriented capacities (e.g. research, knowledge frontiers) and breadth-oriented capacities (e.g. scaling up infrastructure) need to be developed in tandem.

Many rural information centres have successfully trained rural citizens in computer skills. For instance, the MSSRF rural knowledge centre in Pondicherry has provided computer training for 450 villagers. Youth are especially adept at picking up computer skills.

For rural information centres to migrate up the value chain and become knowledge centres, significant capacities will need to be built up in knowledge validation, peer review, authentication, quality and responsibility.

Self-help groups (as with the MSSRF centres) play a key role in bootstrapping skills and expertise via peer reinforcement and intermediation. Private sector and academic support in mentoring and collaboration are also called for.

It is important for ICT4D activists to develop capacities in metrics frameworks and assessment methodologies to evaluate the performance and growth of rural knowledge centres. This includes qualitative and quantitative metrics.

6. Culture

A forward-looking, open, progressive culture is needed at the level of policy makers, businesses, educators, citizens and the media in opening up rural access to ICTs and harnessing them. This can call for innovative strategies and persistent efforts in change management.

ICTs carry with them an associated culture with significant departure from previous technology trends, and it is important to develop new holistic perspectives to understand how to leverage ICTs. Care should be taken to avoid a "tech only" or "quick fix" approach to ICT4D; development considerations and long-term goals should be accorded first priority.

Cultural change needs to be fostered among teachers and educators who may be apprehensive that computers may replace their role in the classroom; they should be encouraged to integrate ICTs as supplemental, exploratory and complementary to their educational activities.

Stakeholders in ICT4D tend to come from different backgrounds: technology, civil society, academia, government and the private sector. Each of these tend to have strong cultures of their own, which need to be aligned and synergised for full effect. For-profit-private and for-public-good cultures need to be balanced as well.

Cultural values like social responsibility, accountability, transparency and altruism need to be promoted among ICT4D stakeholders. A culture of decision-making based on field research, evidence and long-term social gains should be sustained, rather than short-term personality-driven projects. It is important to have a culture of sensitivity as well towards the concerns and plight of the most marginalised communities so that they are also included in the fruits of progress, rather than addressing only the concerns of more privileged communities.

7. Cooperation

It is almost impossible for any single sector to take on the entire gamut of ICT4D activities: cooperation is therefore needed between citizens, businesses, academics, NGOs and policy makers to create a favourable climate for using ICTs in rural areas.

The ability to partner and form alliances should be built into most ICT4D initiatives. This skill is so important that an entire section of this report is devoted to alliancing.

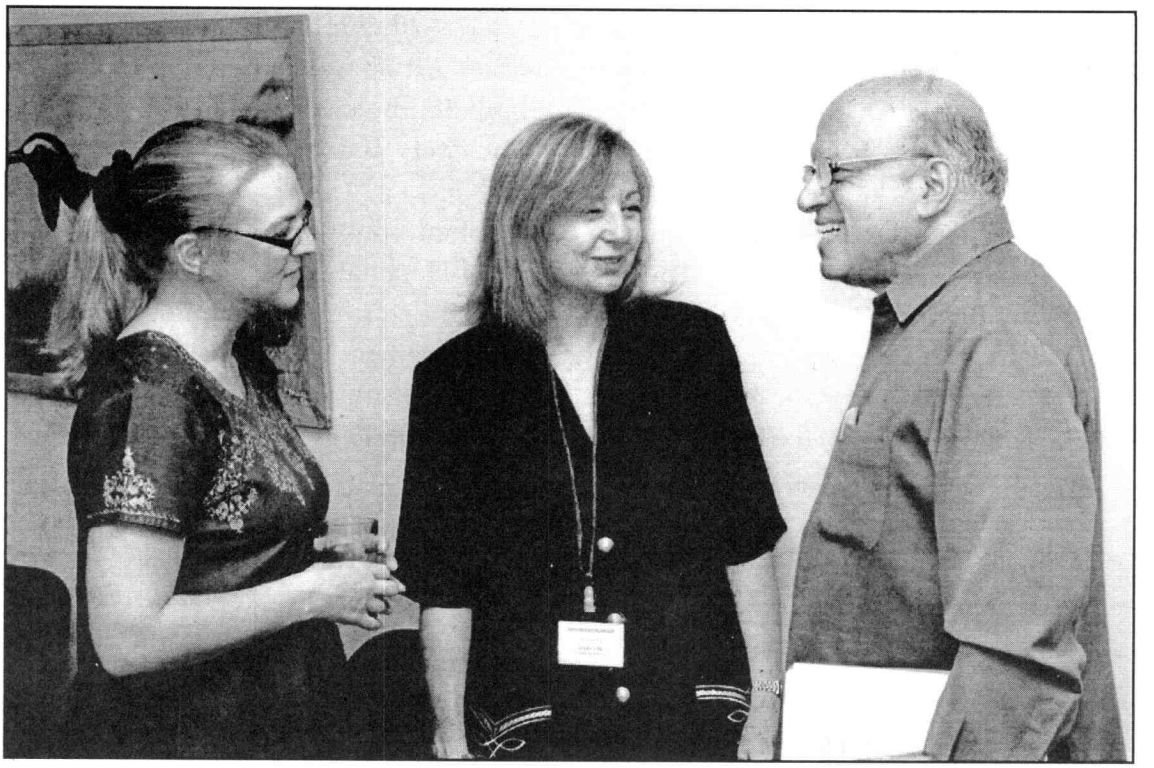
MSSRF partnered with One World International to create the Open Knowledge Network in conjunction with World Space Radio (AfriStar). It shares experiences with its counterparts in other parts of the world via South-South exchanges and workshops. Inputs have also been received from Harvard University and Accenture.

Voices and MYRADA have cooperated to bring community radio to rural Karnataka via the Namma Dhwani project. The Aravind Eye Hospital has been an invaluable partner in bringing healthcare benefits via telemedicine to rural communities of Tamil Nadu. Tulip IT Services has partnered with the government of Kerala in creating an Internet backbone network extending across the state, called Project Akshaya. The Azim Premji Foundation has tied up with the Rotary Club to give certificates to award winners in computer classes.

Government agencies (e.g. National Informatics Centre) have helped kindle interest in information kiosk operations in states like Tamil Nadu, Andhra Pradesh and Karnataka via government information services which can be blended with other offerings. NIC's local portal solutions have also been used in rural ICT initiatives by Voices.

UNDP, UNESCO, IDRC and CIDA have promoted cooperation and best practices exchange between their various ICT4D ventures. The Farm Radio Network for developing countries is another notable initiative in this regard.

Rama Hariharan and D C Misra listening intently



M S Swaminathan greets Lise Kriel and Zenda Ofir

8. Capital

One of the key challenges to ICT4D has been lack of significant investment. There is also a paucity of research on working models, business plans, sustainability strategies and return on investment on village information centre models. Policy makers have tended to invest more in basic social needs rather than ICT4D initiatives, failing to make the connection between the two. Finding low cost ICTs and shared access models will continue to be a key concern for many in the ICT4D movement.

IDRC has funded numerous telecentre initiatives in developing countries like India. UNDP has funded village infokiosks projects in Uttaranachal.

In India, NABARD and SBI have made notable commitments to ICT4D. This includes microcredit innovation, Kisan credit card, institutional development, and rural infrastructure projects. It has funded e-government projects in Himachal Pradesh and banking schemes for ICT enabled services in villages. It has also linked self-help groups to financing schemes. There are reportedly one million self-help groups in India, mostly run by women (90 per cent).

SBI has commercialised 80 rural information kiosks in Tamil Nadu. Its technology partner is n-Logue Communications. Sustainability has been enabled via revenues from promotion of entertainment services at kiosks.

Financial sustainability of village infocentres needs to be supported via models like auxiliary sources of revenue for kiosk operators via e-commerce, information sales and training services. oddanchatrammarket.com and the Premji Foundation's Young India Fellow program are good example in this regard. Local information dissemination can be supported via sales of local village newspapers; some fortnightly publications have already being launched by MSSRF and the Tamil Nadu Women's Corporation.

Volunteers can be roped in to bootstrap telecentre initiatives, but challenges can arise in ensuring their continued and sustainable commitment in the long term.

Aggregated infrastructure models like Rural Infrastructural Services Commons (RISC), targeting clusters of 100 villages, may be able to help align the offerings and services of a number of private and public sector players ranging from entertainment and retail to education and government information.

Indian government agencies are required to spend 3 per cent of their budget on ICTs, but this funding should be used to go beyond mere computerisation to full-fledged citizen services online. Archaic and restrictive government laws on import duties for ICTs should be done away with, to promote diffusion of ICTs and their cascading ripple-effects.

Mechanisms to promote and coordinate donations for ICT4D should be encouraged; the NRI community is a promising target in this regard, and could be approached via innovative schemes like "adopt a rural knowledge centre."

Detailed approaches are also called for in developing and monitoring appropriate metrics, dealt with in greater depth in the next section of this report.

Based on this discussion along the "8 Cs" parameters framework, useful lessons can be gleaned for amplifying the scope and scale of rural knowledge centres via strategic alliances. Important recommendations can also be drawn for policy makers at the national and global level, and are covered in the next two sections of this report.

Theme 2: Amplifying scope and scale of rural knowledge centres

Numerous initiatives have been launched in India on the community telecentre front: Gyandoot, Drishtee, the MSSRF rural knowledge centre, and others. They vary in geographical reach, intensity of usage, range of services offered, business models, and supporting alliances. Challenges of various kinds have been faced and in some cases surmounted: financial sustainability, buy-in by key stakeholders, acceptance by rural communities, and user-sensitive design.

Success of a rural networking initiative depends on how far it progresses down the stages of IT and information diffusion: initiation, adoption, adaptation, acceptance, routinisation, and infusion.

There are multiple stages in the maturation path of a rural telecentre, ranging from basic computer services to full-fledged knowledge-based activities, as indicated in Table 2. Each requires a certain commitment in terms of material costs, human resource support, enabling alliances and policy environment.

A session in progress

Table 2. Growth path and evolution of an online knowledge centre

Phase	Characteristics
Basic	Basic computer access, surfing Net, downloading forms
Interactive	Email, customisation of forms
Publishing	Creating Web pages, sites, Intranet, CD-ROMs
Transactive	E-commerce, job creation, marketing
Knowledge-enabled	Digesting/localising knowledge assets, creating local knowledge assets
Integrative	ICTs + radio + traditional media
Knowledge-capitalising	Leveraging intellectual capital for financial returns, gain
Globalising	Exporting model/IP to other parts of the world
Transformative	Radical restructuring of rural economy, networks

Depending on the local context, tariff structures of telecom services, and human resource pools, each state or region will need to commit varying levels of investment to launch and sustain such rural knowledge centres.

Care must be taken to build in appropriate metrics for monitoring and assessing the growth, impact and performance of such rural knowledge centres. While much attention has tended to focus on financial sustainability, social sustainability should be put on an equal footing. The aim of rural knowledge centres should be to benefit not just the better-off segments of society but also the underprivileged.

Such metrics should fall into five categories: technology, process, knowledge, people and economics. Taken together, they capture the full range of infrastructure and social dynamics of a village information centre. Examples of these parameters are indicated in Table 3.

Measurements of these parameters should be taken on a regular basis in order to assess progress and impacts of the infocentres and take corrective action where necessary. From a methodology perspective, the parameters involve a mix of qualitative and quantitative analysis. A sample range of these parameters, including semi-quantitative parameters, is indicated in Table 4.

Table 3. Knowledge centre metrics

Scope of knowledge centre metrics	Sample parameters
Technology/infrastructure metrics	Number of machines, bandwidth, number of registered users, frequency of usage, hours of operation, days of operation, multimedia nature of content (text/audio/video)
Process metrics	Quicker access to information (e.g. market prices, healthcare), faster response times to queries, fewer steps to get information (e.g. land records), key emergency services rendered, removal of exploitative middlemen,improved service quality in specific verticals (e.g. telemedicine)
Knowledge metrics	Number of ideas/innovations entered, rate of innovation, partnerships with knowledge institutions, information conversion into knowledge, localisation of external knowledge, patents filed
People metrics	Feeling of empowerment, sense of pride, feeling of ownership, satisfaction with reward/recognition, gender balance, pro-poor impacts, number of volunteers, intensity of involvement of volunteers
Economic metrics	Revenues generated, number of jobs created/filled, new companies created, new products made, new services offered, volume of exports

Table 4. Quantitative and qualitative metrics

Nature of metrics	Sample parameters
Quantitative	Reduced clerical work, less duplication of documents, reduced administrative costs, less paper flow, reduced telecom costs
Semi-quantitative	- Productivity (e.g. reduced training time, speedier information access) - Satisfaction (e.g. improved morale, mood) - Knowledge assets (e.g. usage of portal, reuse of best practices)
Qualitative	Better innovation, reduced knowledge hoarding, empowered citizens; stories, anecdotes

In terms of education-oriented village infocentres, initiatives of the Azim Premji Foundation have followed a maturation path starting off with basic computer education, followed by multilingual courseware supplementing classroom education, and leading on to multimedia animations and games with increasing student involvement.

V Link System experiments linking sugarcane farmers have progressed from basic information services to live chats via Webcams about cane cutting and disease prevention.

Community media projects (e.g. Namma Dhwani) have also evolved from basic transmission of educational and agricultural information to more interactive, participatory and activism-oriented radio programming.

One of the aims of a program of metrics is to move towards evidence-based decision making on village ICTs, and not be tied to the idiosyncracies and whims of personality-driven ICT projects.

Two models with potential to scale up to larger regions across a state include the hub-and-spokes model and aggregated RISC model. Elements of scale can be reinforced by widespread micro-credit schemes; elements of depth can be enhanced by greater focus on a research agenda. Support for depth and scale from country-level institutions like the National Innovation Foundation can connect and amplify the knowledge components of rural innovations, as in the case of the HoneyBee Network.

The choice of economic model and game theory underpinnings of village information centre initiatives play an important role in acceptance and proliferation of ICT-enabled development models. As with the Green Revolution, experiments with the MSSRF rural knowledge centres seem to indicate that a pro-poor·pro-women approach to ICT4D can help spur greater awareness and aceeptance of the power of this bottom approach in the target constituencies as well as better-off communities.

Theme 3: Alliance strategies

Alliances are crucial for amplifying the scope and scale of village information centers. "Lab-to-land" research and academic linkages help improve synergy between scientists and agricultural workers. Partnerships between government agencies and village telecentres help improve the quality and relevance of information services for rural communities. Involvement of the private sector can help increase the scale of these initiatives across entire states. Investments by donors and cross-border partnerships can extend the scope of these best practices to entire nations and regions of the world.

Two NGOs, MYRADA and Voices, have successfully teamed up for community radio initiatives in Bodhikote. The Honey Bee Network and National Innovation Foundation have formed an alliance for documenting, harnessing and propagating rual innovations.

Alliances with NIC have helped Voices offer "village portal" solutions to rural communities in Bodhikote via the eNRICH platform.

In a spectacularly successful alliance, Aravind Eye Hospital has tied up with rural knowledge centres to promote its goal of a "cataract-free zone" in parts of Pondicherry and rural Tamil Nadu.

At a state-wide level, Project Akshaya has brought together a state player (the Kerala government) and private sector player (Tulip IT services) to create an Internet backbone network for the state, which can be used as a platform to launch a number of infostructure initiatives.

Models like RISC involve high-order alliances and major investments by infrastructure players ranging from utilities and telecom to retail and IT.

Financial institutions which play a key partnering and nurturing role for rural knowledge centres include NABARD (e.g. e-government services in Himachal Pradesh) and SBI (e.g. rural information kiosks in Tamil Nadu).

Partnerships on a more international scale can be struck with players like Worldspace and One World International. International donors like IDRC and CIDA have supported partnering relationships between village infocentre players in Asia and other parts of the world.

Key success factors for such alliances include: clear identification of objectives, alignment of objectives of players, measurable goals and roadmaps, ownership of tasks, clear delineation of roles, successful change management, regular dialogue and demonstrated ability to move beyond mere planning to effective execution.

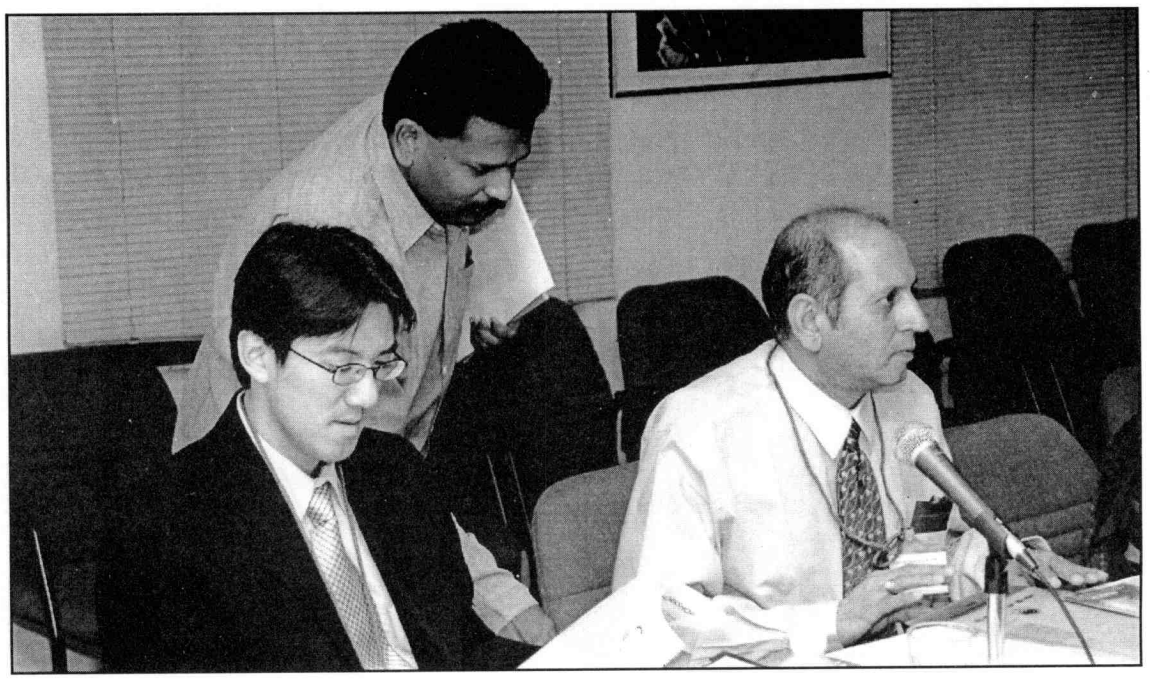
Theme 4: Recommendations for policy makers

Recommendations for policy makers in general (in India and abroad) include a focus on locally relevant content, community media, gender inclusion, financial sustainability, job-led economic growth, and political commitment.

The situation in India seems particularly poignant in light of neglect of local language standardisation, unnecessarily restrictive environments for importing of ICTs, lack of ICT4D priorities by government parties and general neglect of the poor and rural communities (unlike other developing countries like China). A wake-up call is desperately needed to put ICT4D (especially for the vast majority of India's population which resides in rural communities) in the centre of national planning agenda.

Appendix G lists recommendations for policy makers in India, and Appendix H captures the key recommendations for policy makers at an international level, to be circulated at WSIS in Geneva.

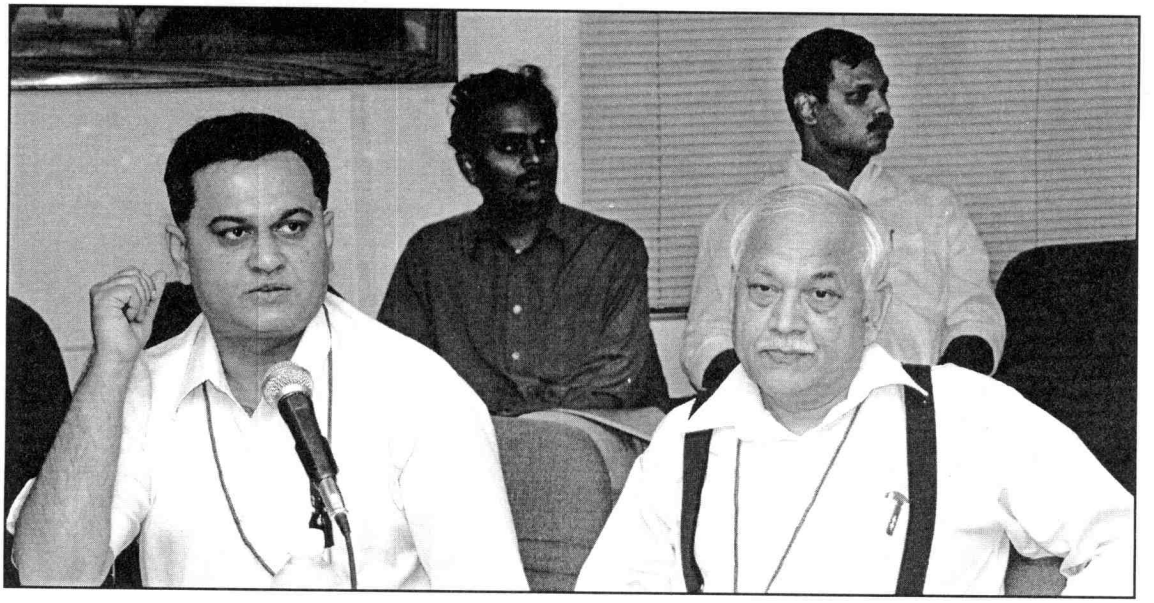
These policy recommendations for government are one set of outcomes from this workshop. Other recommendations can also be drawn up for NGOs and foundations in India who are looking at this issue, and have funds for such projects but no experience in ICT-based projects.



Frank Tulus, Senthil and S M Mehta

Manas Bhattacharya sharing a joke with K G Rajamohan and V Balaji

It was also suggested that this workshop should be taken as a roadshow to other parts of the country which really need to learn from south India's experience. Desire was also expressed to have prepared materials like a "knowledge centre manual" – what does it take to set one up, what are problems that may arise, how to justify investments, and related issues.



Amitava Banerjee and Harsha Sinvhal with Manikandan and Rajasekarapandy in the background

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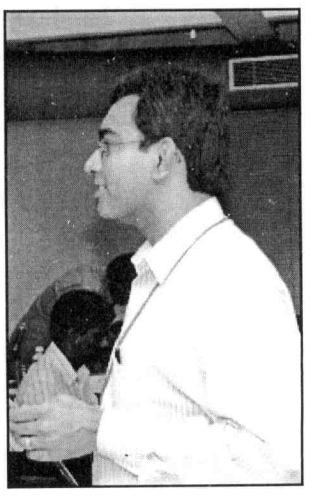


B H Shadrach

Appendix A

Workshop agenda

Rural knowledge centres: Harnessing Local Knowledge via Interactive Media

Policy Makers Workshop: October 8-9, 2003

DAY ONE			
Type of session	**Time**	**Title**	**Speakers/Panelists**
Welcome Address	9-9:10		Dr M Velayutham, Executive Director, MSSRF
Inaugural Address	9:10-9:25		Mr Richard Fuchs, Director, ICT4D, IDRC
Special Address	9:25-9:35	Gender mainstreaming	Ms Mina Swaminathan, MSSRF
Presidential Address	9:35-10:05		Prof. M S Swaminathan, Chairman,MSSRF
Orientation	10:05-10:15	Workshop documentation, process	Dr Madanmohan Rao, Chief Rapporteur
Orientation	10:15-10:35	Brief round of introductions of all participants	Participants
COFFEE BREAK			
Panel	10:35-11:35	Local needs assessment for ICT enabled development	Dr K Krishnan Kutty, Frontier Life sciences Dr V Balaji, ICRISAT
Panel	12:15-13:15	Financial models of operating infocentres: Fee-based services, online marketing, and more	Dr Jyothi Pathak, Gyandoot Dr K Balasubramanian, Director, JRD Tata Ecotechnology Centre, MSSRF Dr Atanu Dey, Netcore
LUNCH			
Panel	14:15-15:15	Emerging and appropriate ICTs for rural development	Mr J Shankar, Azim Premji Foundation Mr Suchit Nanda, Nanda Netcom Pvt. Ltd Mr C Senthilnathan, V Link System Mr D C Misra/Mrs Rama Hariharan, NIC
Panel	15:15-16:15	Grassroots participation: Government services and local decision-making	Dr V K Dharmadhikari, e-Rural, Department of Information Technology Mr A Mohan, National Informatics Centre Dr Zenda Ofir, Evalnet, South Africa Dr V Prithiviraj, IT Directorate, Pondicherry

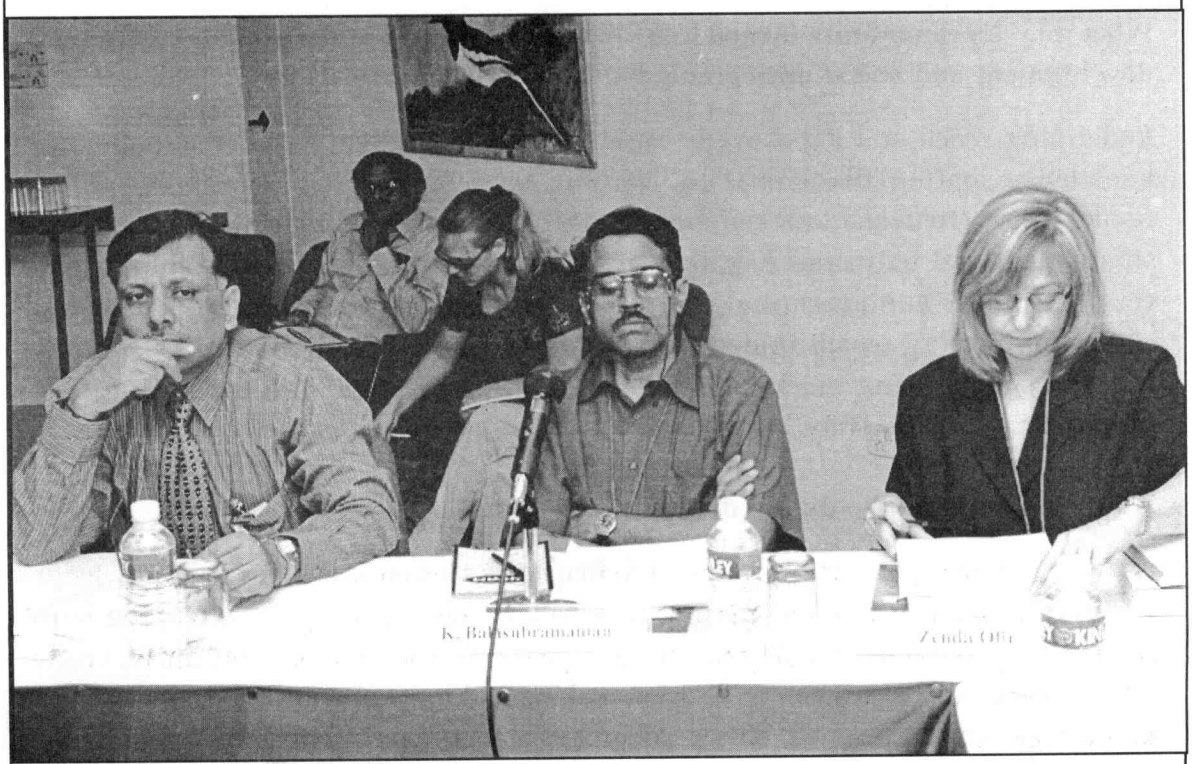
		COFFEE BREAK	
Panel	17:00-18:00	Local content: Making ICTs relevant for local communities in local languages	Dr S Ramkumar, Rajiv Gandhi Veterinary Collage, Pondicherry Prof. Subbiah Arunachalam, MSSRF Prof. H K Verma, IIT, Roorkee
		DAY TWO	
Dialogue	9:30-10:15	A day in the life of a village telecentre	Rural knowledge centre volunteers
Panel	10:15-11:15	Addressing and overcoming political and cultural/ financial obstacles	Dr G Palanithurai, Gandhigram Rural Institute Dr Meera Devi, MSSRF Mr C R Patnaik, Chief General Manager, NABARD Mr D J Raju, SBI Dr K Subramanian, NIC
		COFFEE BREAK	
Panel	12:00-13:00	Cross-media strategies: Leveraging ICTs along with traditional media	Mr Ashish Sen, Director, VOICES Dr S Ramanathan, Tamil Nadu Agricultural University Mr R Rajasekarapandy, MSSRF
		LUNCH BREAK	
Panel	14:00-15:00	Vertical case studies: Agricultural, coastal and mountain communities	Dr K Radhakrishnan, Director INCOIS Mr P Vivekanandan, SEVA, Madurai
Panel Centre,	15:00-16:00	Inclusion of marginalized communities: Tribals, women and slum children	Ms Gitanjali Sah, Habitat Learning India Habitat Centre Dr Tamizholi, MSSRF
		COFFEE BREAK	
Panel	16:30-17:30	The road ahead: Strategies for private-public partnerships	Dr Ilango, Aravind Eye Hospital Dr Bhushan Ambadkar, Watershed Technology and Management Institute, Col N C Gupta, Tulip IT Services Mr Frank Tulus, IDRC Dr Basheerhamad Shadrach, Oneworld South Asia
Wrap-up session	17:30-18:00	The Road Ahead: Proposals Feedback from participants Closing remarks	Mr Satish Jha, Digital Partners, New Delhi Prof. Subbiah Arunachalam, MSSRF

Appendix B

Table of contents of research/resource materials

1. Harnessing the power of information and communications technology for sustainable partnerships - "Seizing the extraordinary opportunities of the digital revolution is one of the most pressing challenges we face." by Kofi Annan
2. Creating the instruments for a knowledge revolution in rural India, by M.S. Swaminathan – *The Hindu,* Sunday, July 20, 2003
3. ICTs and rural development: Review of the literature, current interventions and opportunities for action, by Robert Chapman and Tom Slaymaker
4. ICTs, the Internet, development and poverty reduction, by R. Spence, IDRC 02/04/03
5. ICTs in India: Global opportunities, local challenges, by Madanmohan Rao in *Digital Review of Asia Pacific*
6. Overcoming the digital divide: Innovative strategies for community, infrastructure and content, by Madanmohan Rao, *Madhyam,* Vol. 18, No.02, 2003.
7. Information and communication technologies (ICTs) for poverty reduction? by Richard Gerster and Sonja Zimmermann
8. CIDA□s strategy on knowledge for development through information and communication technologies
9. Louder Voices - Strengthening developing country participation in international ICT decision-making - A study by the Commonwealth Telecommunications Organisation and Panos, London
10. Connecting rural India towards prosperity, by Ashok Jhunjhunwala
11. Toward a knowledge system for sustainable food security - The information village experiment in Pondicherry, by V. Balaji, K. G. Rajamohan, R. Rajasekara Pandy, and S. Senthilkumaran, *On The Internet*
12. Expanding the rural knowledge centres in Pondicherry, by S. Senthilkumaran and Subbiah Arunachalam, *Regional Development Dialogue,* Vol. 23, No. 2, Autumn 2002
13. Information Technology Project of DHAN Foundation
14. Role of telecommunication on health for the rural people, by K. Ilango

15. The Tokyo declaration - the Asia-Pacific perspective to the WSIS - World Summit on the Information Society (WSIS) Asia-Pacific Regional Conference
16. Akshaya - Bridging the digital divide campaign, Kerala
17. Information technology policy of Government of Tamil Nadu
18. Note from V.K. Dharmadhikari, Department of Information Technology, Government of India
19. National ICT policies and gender equality regional perspective: Asia by Chat Ramilo
20. Community informatics: Enabling communities with information and communications technologies by Michael Gurstein, 2000, Idea Group Publishing (www.idea-group.com), London, 596 pages. Review by Madanmohan Rao
21. Bridging the digital divide: Gyandoot – The model for community networks, by Rajesh Rajora, 2002, Tata McGraw-Hill, New Delhi, 319 pages. Review by Madanmohan Rao
22. India□s communication revolution: From bullock carts to cyber marts, by Arvind Singhal and Everett Rogers, 2001, Sage Publications, New Delhi, 297 pages. Review by Madanmohan Rao



Bhushan Ambadkar, Balasubramanian and Zenda Ofir

Appendix C

Summary of participant inputs to questionnaire on ICT4D

Questionnaire: Rural Development and the Role of ICTs

[Circulated by email to all participants prior to the workshop, and also distributed at the opening of the workshop. Collected and condensed at the end of Day One]

How can we enlarge the use of ICTs in rural and remote areas, especially in hunger and poverty hot spots?

Provide information services targeted to the needs of the poor, distance learning, treat ICT on par with other infrastructures, integrate with other media (e.g. radio), increase awareness of ICT benefits, harness new media (e.g. wireless), sustainable community ownership, couple literacy with ICT literacy, use the cooperative societies model, pull in the private sector, focus on ICT in agriculture, localisation of ICT, local champions and social innovators, seek NRI investment (each NRI should adopt one village!), commitment, integrate ICT with rural knowledge centres ("information ecology"), low cost ICTs, set national policy goals, participatory approaches

What role can community-owned knowledge centres play in sustainable community development and social entrepreneur-ship?

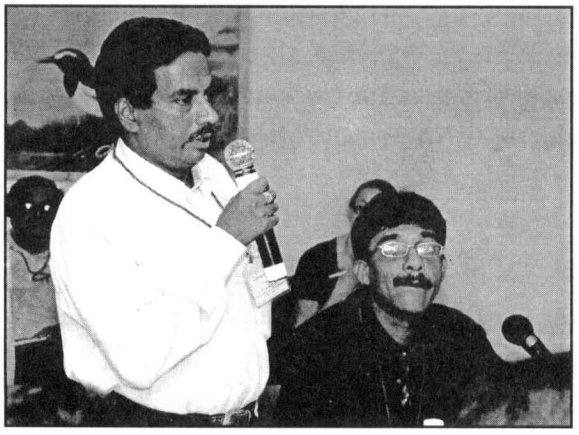
Redefining reach and exposure of rural people, strengthen rural civic networks, knowledge sharing/dissemination, learning services, stimulate entrepreneurship, revitalisation/rejuvenation, self-employment, catalytic role, value-added services, stimulating local industries (e.g. tofu in China), providing government information services, build human capital, harnessing volunteerism, providing affordable communication (e.g. email), bridge digital divide, sense of ownership and pride, spurring ICT skills, improving market intelligence, securing health, children's education, stabilisation of community

How do we bridge the digital divide in gender terms?

Encourage female self-help groups to manage the telecentres, share the knowledge which local women possess, putting women's agenda as a top priority, long term commitment to the issue, computer literacy programs for girls, empowerment, create critical mass, involve women in decision-making and management, let them own/run knowledge centres, promote entrepreneurship among women, document the divide, promote women volunteers in knowledge centres, training programs, address in context of all divides

A K Panth and Pearl Tiwari

Gandhi Kalidasan and V K Dharmadhikari



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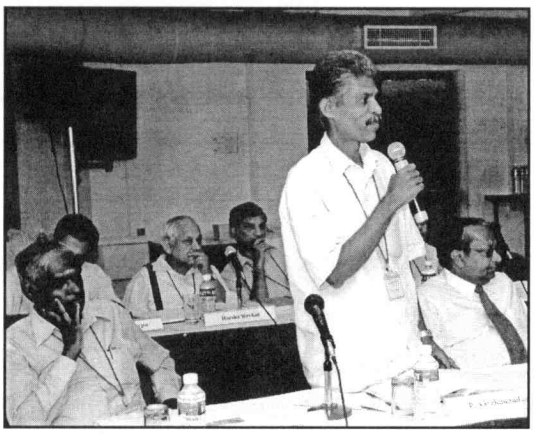

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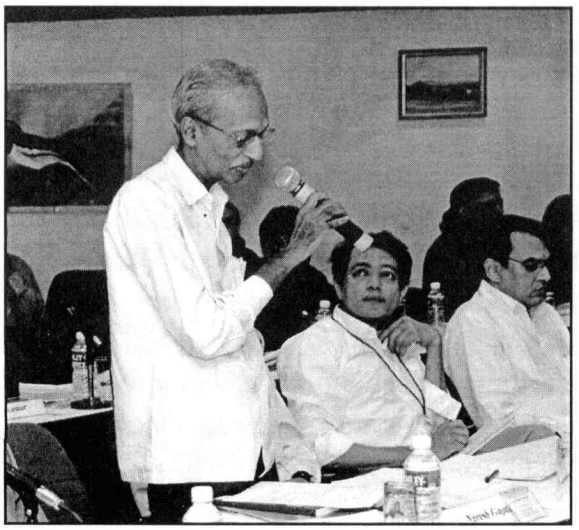
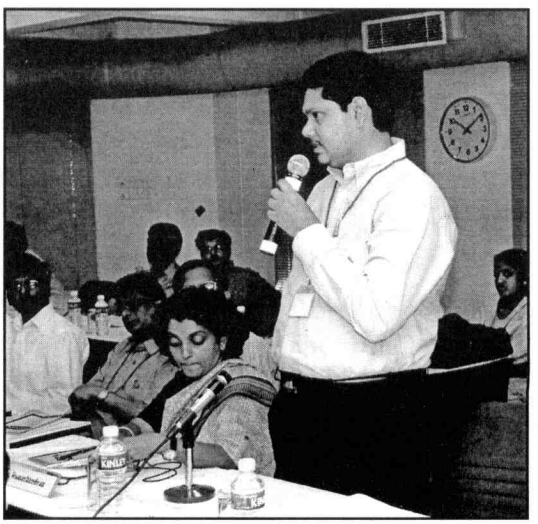


Naresh Gupta



Ilango

How do we leverage localised technology platforms for preserving indigenous knowledge and local culture?

Using ICTs in an appropriate manner (eg knowledge centres), mobilising knowledge, develop and build on local content, link various knowledge centres together, have proper documentation and quality processes, capture best practices, encourage grassroots innovation, formal KM, file patents, codification methods, capacity building, tap local experts and trainers, develop market strategies, financial compensation, revenue models, local portals, promote sharing behaviours, global competitivity, create new economic sectors

What are the top three contributions you think ICTs can make on the development front?

Reduce private/public transaction costs, provide realtime information for citizens and policy makers, foster diversification in the economy, respond to environmental indicators, harness early warning indicators, increase productivity, participation in global economy, education, e-government, better health information, increase all-round awareness/ innovation, breaking barriers, more efficiency in organizations, scientific R&D, improve social networking, convergence, less gender bias, increase volume of information exposure,

What are the three main myths and hype you have come across of ICT4D?

ICT can solve any problem, ICTs can function automatically, ICTs are always cheaper, ICT can eradicate poverty easily, ICTs are only for early adopters, ICTs are static, mere access to ICTs is enough, just log in for solutions, ICTs are not for illiterate people, you need formal education to use ICTs, ICT benefits will be found quickly, ICT dynamics in developing countries will be the same as in developed countries, ICT will make you rich quickly, villagers do not need ICTs, install PCs and content will follow

What are the five policy recommendations you would make on ICT4D at the national level? State level? Donor level?

Remove restrictive policies (e.g. on spatial data, customs), promote sustainable applications, involve communities in running services, promote infrastructure without duplication, share success stories with other developing nations, create infocentres, promote social entrepreneurship, standardisation of government information systems, leverage power grid, actively involve women, link national agencies, create ICT systems for social security numbers, promote e-government, regulatory authority should be autonomous, boost hardware sector, ICT literacy in all schools, promote Open Source, open up radio, promote pro-poor ICT4D initiatives

Identify five promising avenues of cooperation between the private sector and public sector on ICT4D.

Content/knowledge exchange, ISPs, fund NGOs, tech support groups, capacity utilisation, tech transfer, cooperative dialogue, e-government project cooperation, companies should donate a percentage of their profits for ICT4D, WiFi for poorer communities, WSIS, jointly running rural knowledge centres, farmer education, infrastructure, ICT literacy programs, RISC.

How can we stimulate a cycle at the virtual level of appropriate technology, local knowledge capacities, and revitalization of rural communities?

Agriculture extension programs in virtual university courses, blend knowledge capacity building with ICTs, proactively involve donors, use tools like eNRICH, start with small niches and then expand after self-confidence has been built, scale up local best practices at knowledge centres, networking of peer groups and volunteers, begin with pro-poor policies, nurture hub-spoke relationships, engage the global community

How can we integrate government information distribution with participatory local governance in an equitable manner?

Scale up NIC's efforts, focus on relevant services, promote right to information, create user-friendly services, promote "socialistic ICTs" like kiosks, couple government service delivery with village centres, make government officials go through a change management program, cooperation between panchayats, mandate government openness in info services delivery, use mixed media models

What are the three best practices you have come across of ICT4D in rural areas?

Rural areas: Wireless, GIS-based precision farming, satellite imaging, kiosks, e-chaupals, focus on women in ICT4D channels, encourage community-based ICT adoption, support innovators in poor communities, self-help groups in telecentres, community radio, land records online, MSSRF rural knowledge centres, Bhoomi, WLL, SEVA, UNDP Rajasthan project, farmer programs on All India Radio, Grameen Phone, Gyandoot, Drishtee.

Urban areas: BPO, call centres, wireless

What are the three promising trends you see on the technology front for ICT4D (e.g. wireless)?

Cheaper computing devices, cheaper access, VoIP, GSM, GPRS, GIS, PDAs, WiFi, Internet through/along power lines, new ICT4D models emerging in developing countries, satellite, Internet access via cellphones, convergence, local content in India in local languages, DTH, touch screen, open standards for VSAT, cable Internet, better

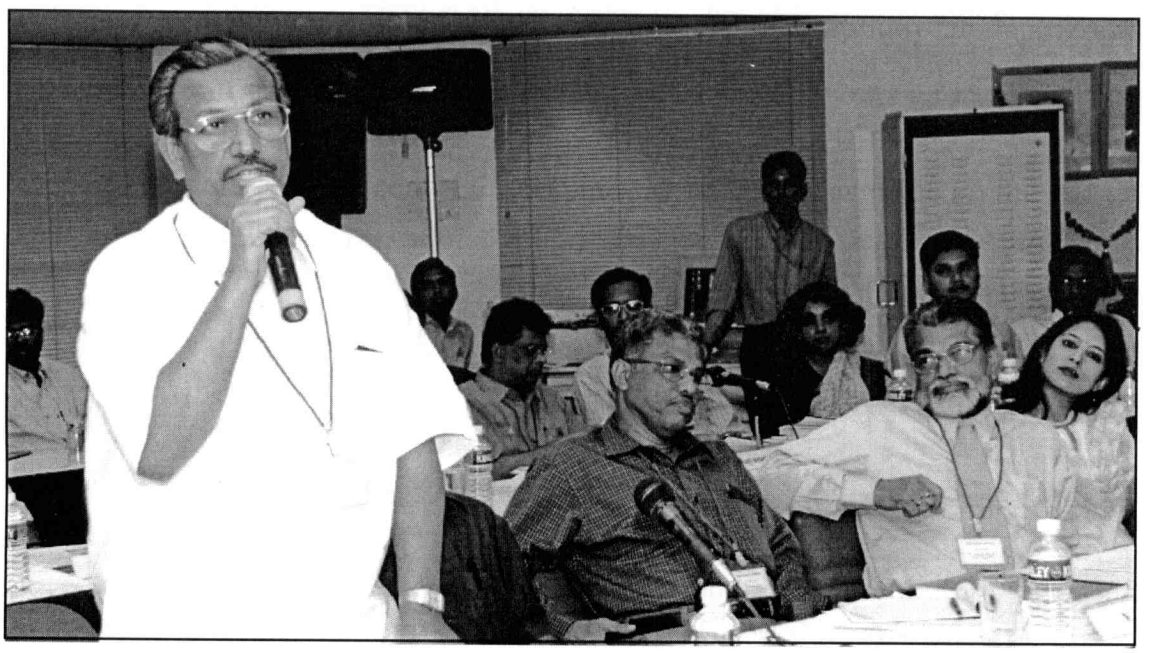
power cells for handphones/handcomputers, speech-to-text and text-to-speech

What are the three unique contributions that India can make on the ICT4D front?

ICT4D innovation for rural/poor communities, diverse/multilingual content, policy advice/models to other developing countries, human capital in ICT4D, indigenous knowledge systems, needs assessment models for rural areas, open source software, 3 Bs (brains, bandwidth, bottomline – low wages), rural telephony models, green technologies, people's power via ICT4D, hi-tech apps for low-tech people, ICT4D KM applications

What are the three unique contributions your organisation has made on the ICT4D front?

e-services software development, online information services in fishing zones, requirements compilation software in villages, social entrepreneurship forums (local/global), info-kiosks, rural exchanges, database of local innovations, e-learning, e-post, user-friendly system with local language interface, low cost connectivity in villages, information sharing via HAM radio, videconferencing, IT courses for girls, watershed software, online monitoring systems, mixed media models, funding, compiling best practices, policy analysis.



Prithiviraj, Radhakrishnan and Gitanjali Shah listening to Palanithurai

Appendix D

Rapporteurs' overview of discussions on Day One

	Local needs	Financial models assessment	Emerging and appropriate ICTs	Government services grassroots participation,	Local language content
Main contributions	Heart of developing appropriate ICT4D	Good financial models help make service sustainable	Education, local portals, agriculture can be supported	Delivery of government documents online	Vet services kiosks, Tamil newspaper/content for community
Key challenges faced	Sustainability of rural information schemes Improper financial resource utilisation	Ensuring financial sustainability of rural ICT4D	Power in schools for computers	We don□t learn from mistakes of the past; many development projects keep repeating mistakes	IPR issues of locally created knowledge. Scaling up infocentre model across country.
Opportunity areas	Sharing of services, infrastructure, between govt departments Back-end integration	Building sense of ownership and pride in rural communities	Wireless collaboration between farmers and labs	Governments are required to spend 3% budget on ICT	Infocentre hub-and-spoke model works well
Key learnings	Poor people should not be rendered invisible. Communicating about these services is key.	Public commons theory applies to pro-poor ICT4D	Youth gravitate towards ICTs	e-Govt services are accessed at user convenience 24X7	Kiosk information should be dynamic, not static
Prophecies/ predictions	Service level considerations will become important Service standards will emerge	Village-owned infocentres can mature into local knowledge centres	WiFi, GPRS, open source can play a significant role in ICT4D	Quantitative and qualitative metrics will become important	Different ICT4D models will emerge in different contexts Information architecture will be a key design issue
Recommen-dations	Do needs assessment throughout the project, not just at the beginning. Prioritise information needs. Give answers, not loads of information!	Also examine other models like RISC (aggregate infra-structure, services) Align where possible with corporate ventures (e.g. e-choupal)	Use trusted government information in ICT4D Leverage India□s heavy satellite investment	Funding of ICT4D should be tied to performance Different models will be needed for ICT4D initiatives for poorest of the poor v/s other income brackets	Use "socialistic"(pro-community) models of ICT4D Integrate ICT4Dand mass media with traditionalcommunication (street theatre, puppet shows)

Appendix E

Rapporteurs' overview of discussions on Day Two

	Village knowledge centre dynamics	Obstacles: Cultural, political, financial	Cross-media synergies	Special communities: coastal, tribal, marginalised	Public-private partnerships	The road ahead
Main contributions	Training of 450 people Marketing of rural products Info services for Dalits Increase in self-esteem of women volunteers	NABARD: Kisan credit card, rural infrastructure project eGovt in HP 80 rural info-kiosks in Tamil Nadu	Namma Dhwani has helped empower villagers (e.g. fixing complaints)	Satellite info services have helped fishermen, agricuturalists (World Space, NESAC) HoneyBee network has catalogued rural innovations	Arvind Eye Hospital leveraged IT for better service Software for watershed mgmt Project Akshay: ICT infrastructure in Kerala	MSSRF projects have pushed boundaries of possibilities; valuable alliances have been struck (e.g. One World)
Key challenges faced	Overcoming early fears, ignorance of ICT Dealing with perception that ICTs are for English speakers only	Capacity building Burden on women who fulfill triple roles of productive + reproductive + community	Govt regulations restricting community radio	Getting ICT access for marginalised communities (e.g. tribals, slum children)	Communicating complicated info via emails Quantifying RoI Govt changes ruined some partnerships	We are not listening to the lessons from the world re. Infrastructure Getting the message to key policy makers
Opportunity areas	Info services for farmers (e.g. soil health, vermiculture) Enlisting youth to help elders get online	Self-help groups (there are one million self-help groups, mostly run by women)	Ham radio services for emergency info Community newspapers (fill other media gaps)	Validation, propagation of rural innovation Program synergies with mainstream media	Partnerships between kiosks and healthcare centres	Research in info-centres South-South exchanges

Key learnings	Creating a sense of pride, ownership is important for rural poor Financial aid/support for launch of infocentres is key Village public spaces are important avenues to market messages	Empowerment is key to breaking political barriers Credit is a critical input for development	Creative solutions will be needed, e.g. cable audio Community media can assist home schooling Do not ignore the humble radio!	Grassroots people are knowledge-rich but resource poor	ICTs play an important role in fulfilling health goals Telemedicine calls for committed and motivated kiosk operators	ICTs will change the way we think Implementation partners will need to scale up the work of research projects
Prophecies/ predictions	Self-help groups will play an important role in rural infocentres	Mixed-service models (e.g. with entertainment) will become popular for info-kiosks	Community media (village newspapers, radio) will become important vehicles	ICTs will continute to spur creativity, imagination, access to new things for slum kids	Challenges will arise in going beyond planning to execution	Scaling up good ICT projects to the national level will be a key concern
Recommen-dations	Local language content, interfaces are key for increasing ICT acceptance Tell people what to expect in infocentres Govts should treat infocentres as a legitimate media outlet for disseminating info	Media should be sensitized to development issues Promote tech literacy for women Link self-help groups to financing schemes, promote microcredit-driven innovation	Move beyond mere information, to communication Media laws regarding community radio need to be improved	Couple education with innovation	We have to come up with our own solutions, not depend on foreign players only Build internal capacity to partner	Focus on infrastructure, competitiveness Plan ICT projects many generations ahead Plan with a view to reach all citizens

Appendix F

Participants' evaluation

A feedback form was circulated to participants and collected at the end of the workshop. It included numerical ratings as well as provision for open-ended comments. The numerical scores on the feedback forms seem to indicate that the participants were satisfied with the contents, process and outcome of the workshop.

Panel	Average rating
Opening addresses	5.96
Local needs assessment	5.36
Financial models	5.08
Emerging and appropriate ICTs	5.24
Government services	4.72
Local content	5.36
A day in the life of a rural knowledge centre	5.92
Political/cultural/financial obstacles	4.96
Cross-media strategies	5.24
Vertical case studies	5.24
Marginalised communities	4.92
Closing panel	5.28

[Rating scale of 1 to 7, where 1 = very poor, 2 = poor, 3 = not satisfactory, 4 = average, 5 = satisfactory, 6 = good, 7 = very good]

More specific comments made by the participants

1. A survey could be conducted prior to the workshop, assessing villagers' opinions of the knowledge centres (e.g. benefits realised, problems with usage, suggestions for better services, gender issues, youth/children/handicapped user issues, frequently

used info). This survey could be summarised and handed out during the workshop (as with the case of the questionnaire handed out to workshop attendees).

2. For attendees not familiar with ICTs, the first session should have explained what a knowledge centre is, what is the infrastructure, what are the wireless options, how much does it cost, what is the operational model/manual, Web site/Intranet architecture, etc.

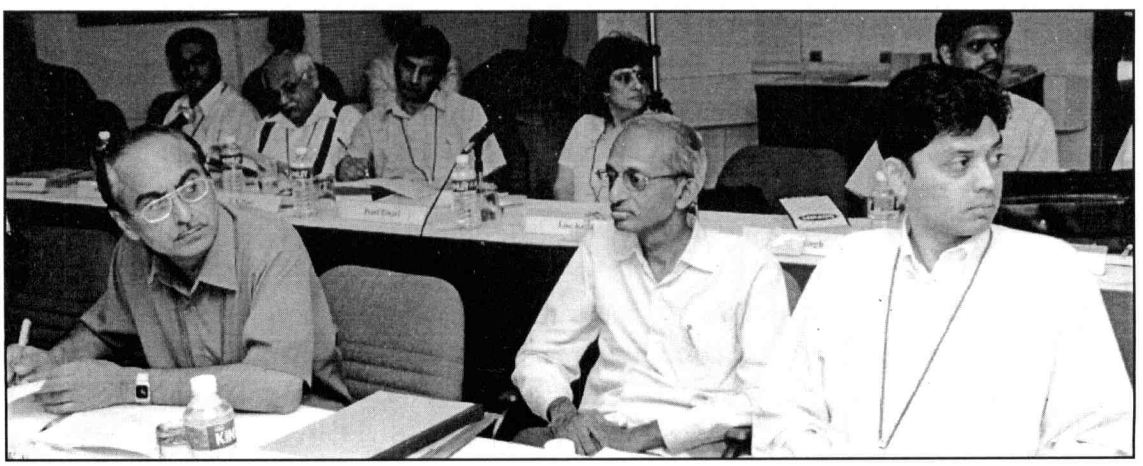
3. Some participants expressed the desire to learn about and participate in future events possible after this one (e.g. another policy makers workshop next year).

4. More coverage is needed of political conflicts in village centres and how to handle them.

5. This workshop should be taken as a roadshow to other parts of the country which really need to learn from south India's experience. Some foundations have said they would be very happy to fund the costs of bringing speakers to other states. They would like, however, to have material like a "knowledge centre manual" – what does it take to set one up, what are problems that may arise, how to justify investments, etc.

6. An exchange program should bring together villagers involved in such experiments across India, instead of just the NGO organisers/management.

7. The policy recommendations for government are one possible outcome from this workshop. There should also be a set of recommendations for other NGOs and foundations in India who are looking at this issue, and have funds for such projects but no experience in ICT-based projects.



H K Verma, Naresh Gupta and Ashish Sen - All attention

Appendix G

Recommendations for policy makers in India

1. Regional priorities: The North East region was identified as a priority area for launching a science and technology based poverty eradication programme using ICT in a significant way.

2. Information, knowledge and skill empowerment of self-help groups (SHGs): The microcredit supported microenterprise revolution triggered by SHGs has provided hope that a new deal can be extended to the self-employed. For SHGs to become sustainable SHGs, it is essential that forward linkages with markets and backward linkages with research institutions and data management centres are established. ICT has a major role in sustaining and extending this self-help revolution.

3. Every village a knowledge centre: There is a need for developing a master plan coupled with a business plan for extending the benefits of ICT to all the 600,000 villages in India by 2007, which marks the 60th anniversary of our independence. The master plan should help to link technology-knowledge-rural women and men in a symbiotic manner. The investment needs will have to be estimated and business plans prepared. A National Alliance for ICT for Poverty Eradication may be established for launching the Every Village a Knowledge Centre movement. Such an alliance should include the private sector, cooperatives, NGOs, R&D institutions, women's associations, mass media and appropriate government agencies.

4. Domestic software development and application: Learning from past experience in rural areas, there is a need for increasing India's competitiveness in domestic software applications. Government projects mainly provide static information. What is needed by rural families is dynamic information relating to weather, markets, health and other day-to-day information needs.

5. Community radio: Along with the internet, cable TV, local vernacular press and the All India Radio, community radio stations and ham radio will be of immense help in communicating up-to-date information to those who will benefit from them, as for example, fishermen in catamarans in the ocean. Government of India should liberalise policies for the operation of community and ham radio stations. This will help to confer the benefits of the knowledge

age to every woman and man in a village. Reaching the unreached and including the excluded will be possible only through an integrated ICT system.

6. Technology upgradation in villages: NABARD has been operating a programme in Himachal Pradesh with support from the Rural Infrastructure Development Fund (RIDF). This programme has helped to promote both e-governance and e-commerce. There is a similar initiative in Uttaranchal with the help of IIT, Roorkee. Scope for using RIDF in other States should be explored. This will help to convert the concept of every village a knowledge centre into reality.

7. Content creation: The usefulness of a computer-aided knowledge centre in villages will be directly proportional to the social, ecological and economic significance of the static and dynamic information being provided. Hence, a consortium of content providers will have to be developed for each agro-ecological zone. Leading industries could participate actively in such a knowledge and skill empowerment revolution by adopting specific villages where they could provide, in addition to monetary support, marketing and management information. There is need for a regionally differentiated approach to content creation. Both environmental audit and gender audit should be integrated in the procedures for monitoring and evaluation.

8. Women and ICT: The available experience indicates that rural women, whether literate or semi-literate, are able to take to new technologies like fish to water. It is therefore important that women managers and operators are trained in large numbers. There is also a gender dimension to the information needed. For example, quite often women require specific health information. Therefore, the participation of women both as managers and users of ICT should receive specific attention. Also, a gender audit procedure should be built into the final ICT programmes.

9. Participatory knowledge system: E-governance is invariably a passive system of information empowerment. There is need for promoting participatory methodologies of content creation and knowledge management. The approach to rural women and men should be one of partnership and not patronage. In the field of agriculture, a Farmer Participatory Knowledge System (FPKS) could replace the existing beneficiary and patronage approach to knowledge dissemination. The information should be demand driven and should be relevant in terms of time and space.

10. Sustainability and replicability – Role of Panchayati Raj institutions: Unless the local communities have a sense of ownership of the knowledge management centres, it will be difficult to sustain them. It is only a user driven and managed system that will be replicable and capable of developing a self-propelling momentum. Women's groups should be fully involved it the management and also enabled to operate distance education courses. The programme should be people oriented and not just project-centred. Affordable methods of cost sharing should be introduced in consultation with local communities. Sustainability and replicability should be the bottomline in the development of the National Action Plan for the "every village a knowledge centre" movement. In this context Panchayati Raj institutions, in which one-third of the members are women, could provide the needed space for the location of the rural knowledge centre. The Gram Sabha and the Gram Panchayats could both play a key role in ensuring that the knowledge centres become instruments for triggering a prosperity revolution based on gender and social equity.

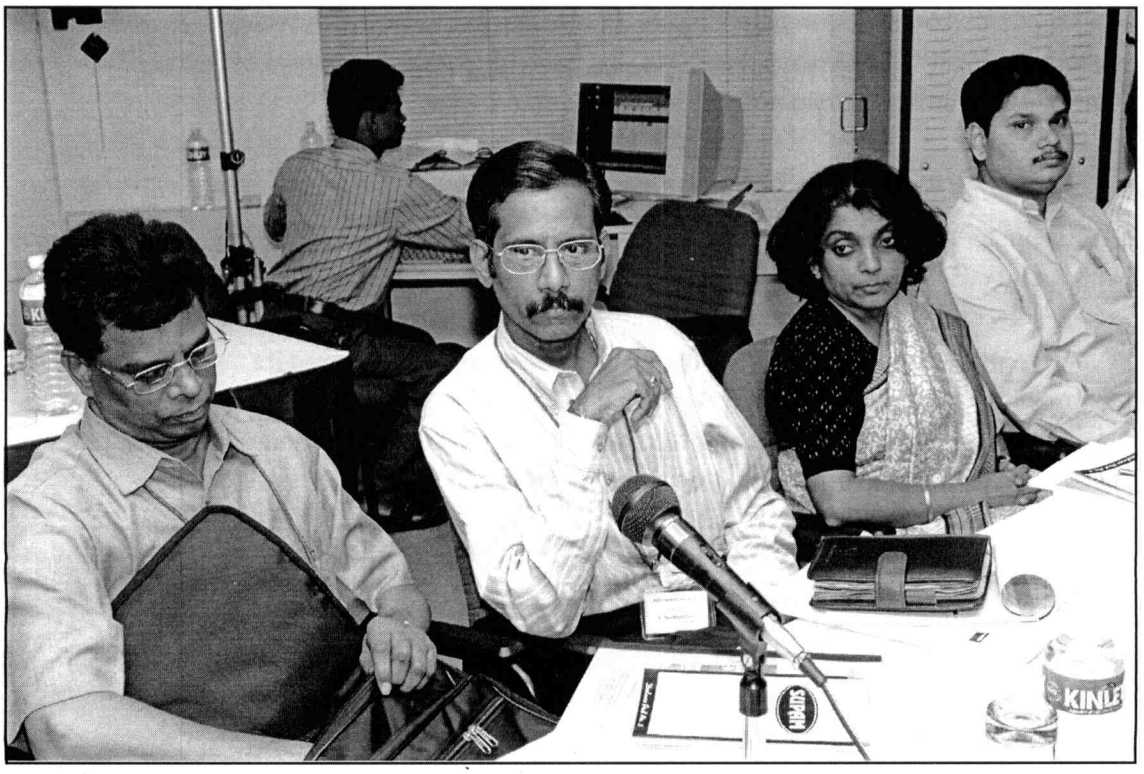
11. Promoting job-led economic growth: Increasing rural unemployment is resulting in the unplanned expansion of urban slums. There is need for more on-farm and non-farm employment opportunities in villages. This will be possible only if there is diversification of farming systems and value addition to primary products through improved post-harvest technology. Training should be with reference to market-driven skills. Small scale industries and Khadi and village industries should receive particular attention from the point of view of the upgradation of both technology and marketing skills. There is also need for synergy between the private sector and public and cooperative sectors in promoting more avenues for skilled jobs in villages.

12. Servicing and maintenance: Servicing facilities at the local level should be improved through appropriate training and capacity building measures. This will also provide additional employment opportunities for rural youth in villages.

13. Wake up call: In a country of over 1 billion, there are hardly about 5 million computers. 75-80% of these computers are used in offices. Hardly 20% is available for use in development. Therefore, there is no time to relax on the ICT front. We will be left far behind China and other South and Southeast Asian countries if we do not launch a National ICT for Economic Prosperity and Employment Programme. The penetration level will then increase. There is also need to review the customs duty procedures, which are mostly obsolete and obstructive. Needlessly inelastic rules should be dispensed with. Donations of new computers to NGOs working in rural and backward areas should be encouraged. Branding of projects should also be facilitated.

14. Virtual Academy for Food Security and Rural Prosperity: The Virtual Academy approach coupled with a hub and spokes model of the kind spearheaded by MSSRF is ideal for rural India. The Virtual Academy can help to mobilise the power of partnership and establish beneficial linkages with national challenge programmes like drought management. MSSRF Virtual Academy could develop linkages with other organisations devoted to the knowledge and skill empowerment of the rural poor in different parts of the country so that it becomes a National Academy supporting the "every village a knowledge centre" programme. There is need for standardisation of local language websites and also names in Indian languages. Dissemination of information should be in the local language.

15 Political commitment, public action and investment priorities: A Sub-Committee for E-Governance has been set up by the National Development Council under the leadership of the Deputy Prime Minister. The recommendations of this workshop could be forwarded to both the Deputy Prime Minister and the Minister for Information and Technology for appropriate action.



M V V Satyanarayana, Senthilnathan, Vidya Ramachandran and Ilango

Appendix H

Recommendations for policy makers at WSIS

Policy makers should pay special attention to leveraging the full benefits of ICTs for rural communities in conjunction with existing development imperatives. At a crucial juncture in human history, when the benefits of revolutionary new technologies seem within the grasp of urban and rural communities, care must be taken by policy makers to accommodate the needs and aspirations of the neediest and marginalised communities within the unfolding of the knowledge age. The following recommendations constitute a modest step in this regard.

1. Infrastructure

Developing nations should pursue near-universal and affordable access strategies via low cost devices, open source or shareware software platforms, reasonable tariff levels, and level playing fields between telecom and datacom operators. Associated infrastructure — like reliable sources of electricity — should also be ensured. Where necessary, access discounts and tax breaks should be given on a priority basis to needy sectors like education and healthcare. Shared access models should be actively pursued for rural communities, via cybercafes, kiosks and rural telecentres. New access methods like VoIP and wireless (WLL, WLAN) have tremendous potential especially for remote areas or dense urban clusters and should be actively explored.

2. Content and Online Services

Access should be promoted to global content via the Net as well as generation and promotion of locally relevant content in local languages. This includes local language tools, digital libraries, e-learning, archives of local cultural resources, and needs assessment of rural communities. Government agencies need to play a bigger role as online content providers by publishing citizen information for rural communities on the Web and promoting online services for applications like downloading and submitting tax forms, land records, import/export documents and pension claims. Standardisation of fonts and keyboards by private sector and government agencies is an urgent priority.

3. Grounding in Community

ICT4D policy initiatives should have a strong grounding in local communities of villages. Online and offline forums should be promoted for communities of interest and communities of practice to exchange knowledge on harnessing and creating ICTs in the rural context. Exposure to similar ICT4D initiatives in other rural communities can enable benchmarking and sharing of expertise. Many developing countries have extensive diaspora communities, which should be tapped as a source of ideas, development partnerships and capital for rural ICT4D.

4. Commerce

Legal infrastructure to nurture and promote e-commerce and m-commerce must be spellt out, taking into considerations the special constraints and circumstances of rural communities. Online services (e.g. e-government) should be designed with a mix of free and fee-based services so as to ensure commercial sustainability of rural ICT4D initiatives in the long run. As major consumers of ICT products and services, governments in developing countries can also lead by way of example in the use of ICT, implementing best organisational practices and spurring local markets in rural areas.

5. Progressive Attitudes towards Change

A culture of change, knowledge and lifelong learning should be encouraged by rural communities and the government agencies serving them, along with an openness to a wide spectrum of ideas in the knowledge age. Policy makers should have the wisdom, conviction and commitment to change when and where necessary. Efficiency and innovation should become the hallmarks of national culture. Cultures of merit, analysis, professionalism and evidence-based decision-making should be embraced in rural ICT4D initiatives. Commitment to mainstreaming of gender parity issues should be incorporated at all levels.

6. Human Resources

Measures should be implemented to increase ICT literacy in rural areas; private sector training institutes will play a major role here. Technical, managerial and design capacity should be built up in the adoption of ICT for rural communities, creation and maintenance of secure ICT infrastructure, and scaling up of rural ICT initiatives across dimensions of depth and breadth. Capacities should be built up not just in adoption of ICTs in rural areas, but in creativity with regard to devising new applications, R&D focus areas, and harvesting of local knowledge. Self-help groups and volunteer initiatives should be actively harnessed in this regard.

7. Alliancing

Stakeholders in private, educational, government, donor and multilateral sectors must pro-actively form partnerships to ensure ethical and economic use of ICTs in rural communities. Multi-actor alliances targeting rural ICT4D initiatives should be encouraged and nurtured.

8. Investment

Creating funding options for rural ICT4D initiatives should be explored, including venture capital, corporate foundations, donor grants, and revenue-sharing based on projected use. Special financing should be set aside for ICT initiatives involving

marginalised communities, the disabled, refugees, migrant populations and youth. Financial sustainability of such rural infocentres should be a key focus, but not at the cost of social sustainability.

9. Regulatory Environment

The optimum regulatory environment for the proliferation of successful rural ICT4D initiatives includes removal of restrictive import duties on ICTs, promotion of wireless communication channels, opening up of community media like radio, free flow of content, and funds for near-universal access to infrastructure and services in rural areas.

10. Alignment with Millenium Development Goals

The desired targets enshrined in the Millenium Development Goals should be correspondingly incorporated in the form of relevant and appropriate metrics in the design of rural ICT4D initiatives. A clear focus on quantitative and qualitative metrics at the macro and micro level, for urban and rural communities should be incorporated at the level of traditional and new media initiatives.

♦ ♦ ♦

Reaching the Unreached: Empowering the Rural Poor through Improved Access to Information

The Information Village Research Project of MSSRF won the Stockholm Challenge Award for 2001 under the GLOBAL VILLAGE category. Here is what the jury said about the project:

"Project Information Village Research is an outstanding embodiment of the spirit of the Stockholm Challenge to promote inclusion through the use of information and communication technologies. Today, thanks to InformationVillage Research, ten villages near Pondicherry, India, are linked with computers, providing information on such aspects as health, crops, weather, and fishing conditions. These new technology tools are bridging the economic and social divide between the haves and have nots. They are empowering everyone with knowledge and opportunity by an inclusive use of local languages and a multimedia format that allows all to participate. Because of this project, some traditional barriers have fallen. For example, a temple that formerly excluded low-caste people now opens its doors to everyone so they may use computers. This project is a wonderful example of the benefits of IT, and of the power of information and opportunity."

About the Foundation

M S Swaminathan Research Foundation (MSSRF) is a non-profit Trust registered in 1988. The basic mandate of MSSRF is to impart a pro-nature, pro-poor and pro-women orientation to job-led economic growth in rural areas and to harness science and technology for environmentally sustainable and socially equitable development.

MSSRF is doing research in Coastal Systems, Biodiversity and Biotechnology, Ecotechnology and Sustainable Agriculture, Reaching the Unreached, and ICT-enabled Development. The Foundation operates through the following pathways to agricultural and rural development: conservation and enhancement of natural resources, promotion of sustainable livelihoods, gender equity, voicing the voiceless, and information and skill empowerment.

The Foundation is known for its emphasis on bottom-up participatory approach, which places people before technology. Through the Hindu Media Resource Centre the Foundation promotes public understanding of science.

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