INFORMATION TECHNOLOGY IN DEVELOPING COUNTRIES

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Editorial

We are already mid way through 2009 and finally there is something to cheer. After the gloom of two years, there are small signs of economic recovery. In India the election results and the political stability augur well for further reforms and improvement in governance. The last elections, more than any in the past, reflected the growing importance of good governance. Once again, in many states good governance was able to overcome the incumbency factor. In other states bad policies and dogma led to failure. On the global front, President Obama's bold speech in Cairo could pave the way for greater peace on earth in the long run. This second issue of 2009 reflects some optimism in the ICTD world. We carry articles about a number of successful projects from many different countries.

Payments being disbursed to pensioners in Warangal district of Andhra Pradesh

I had a fruitful four months since the last newsletter. In the first week of April, I had a chance to see first hand a remarkable example of ICTD in Andhra Pradesh, where two million rural pensioners receive their meager pensions in the full amount (no part of the amount is withheld by corrupt functionaries who disbursed these pensions earlier) at their door step and in time- thanks to an RBI initiative of financial inclusion which enables them to open accounts in a bank and perform electronic banking in their village.

In this Issue…

Creating an Information Society in Developing Countries
Lessons Learned from the Case of Palestine

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Abstract
This paper presents the results of tracing and evaluating the process of building of an ICT strategy initiative that was meant to orchestrate the Palestinian efforts in harnessing ICT into an effective tool for socio-economic development. It describes the process, the pillars, and the pitfalls in the efforts led by the governments in making a long term plan for ICT. The paper presents the outcomes of the research efforts that were carried out by a group of researchers who investigated the formation process of the strategy. The researchers traced the building endeavors through utilizing various methods and techniques ranging from focus group meetings, to individual interviews with stakeholders, and semi-structured interviews with all stakeholders, in addition to questionnaires, surveys, and observations of on-going activities.

The investigation has revealed that the creation of an information society in developing countries is a sophisticated and long term process that entails the involvement of all major players, under the direction of a resourceful government. The building process of the society should follow an indigenous bottom-up approach that has its agenda revolving around society development. The study has additionally revealed that the leading team should seek out the right formula in addition to the implementation apparatus that are capable of materializing the preset goals in the way to make these technologies successful development drivers.

Introduction
Since the dawn of history, information and knowledge lay the foundations for development and prosperity for countries and individuals alike. ICT speeds up the diffusion of knowledge among large portions of the populations. It also provides a platform for human interaction that seamlessly crosses borders. ICT advances have exceptionally boosted human capabilities in information processing, and knowledge harnessing. ICT is one of the fastest growing sectors nowadays, and the production, storage, and transfer of information are becoming the basis of any successful enterprises or institutions, and governments alike. ICT enables globalization which obliges companies, governments and civil agencies, to react more quickly, and operate more efficiently than they have done in the past.

ICTs have become the center of debate in socio-economic development circles since early 1990s, which marks the beginning of information and knowledge age. ICT is known to be the fastest rising industry during the past five decades, and its scene for upcoming expansion is emerging to be equally soaring (Freeman and Perez 1988, Willinger and Luschovitch 1988, National Research Council 1988, 1994). Developed countries are now heavy users of IT; emerging and developing countries are following in their steps (King et al. 1992).

ICT has been the central driving force behind the progress of the developed societies; however their ICT use and development are seen as a natural evolution in the course of history as these countries have led the transition from industrial to information and knowledge age. Developed nations have early recognized the economic and social implications of ICT so it turned out to be the heart of their national development policies seeking an advanced position for their local industries in the global market. ICTs are now interleaved in the social and economic life of these countries (King, et al 1994). A trend of government intervention in IT innovation across countries appears to be accelerating (Kaul 1987, Rahim and Pennings 1987, Bhalla and James 1988, Kraemer et al. 1992). However there is a substantial dispute about whether governments should lead the efforts to promote information technology diffusion, and if so, how it should happen (Land 1990, Odedra et al. 1990).

Developing countries are trying to catch up through actions such as significantly increasing spending for IT, releasing relevant legislations and laws, promoting ICT use and services among different government agencies, and so forth, in the hope of not being left behind in the global struggle for competitiveness.

National IT policy has become a center of debate since the beginning of the information age early 1990s. The debate rages between those who claim that national policy should act only to facilitate the ICT private sector taking the lead (Nelson, 1993; World Bank, 1993) to those who argue that broad government guide will achieve faster, wider, and more comprehensive progress (Schware 1992, Kraemer and Dedrick 1994a, Dedrick and Kraemer 1995).

Government intervention has been categorized as either being pro-production or pro-use or enabling to other production sectors (Flamm 1990, Kraemer et al. 1992). Each alternative has its own compelling arguments, making the question of policy making somewhat confusing (King and Kraemer 1995). In most developing countries national leaders are encouraged to take a strong stand on ICT, but there is no clear evidence on how to proceed, and this is why

most of the developing countries are still seeking the right formula in their endeavors to encompass ICT, (Heeks 1999a, Bedi 1999).

According to Heeks (2002), a high percentage of the ICT initiatives in third world countries either entirely or partially failed when applied to public sector reform. There were different views that tried to explain his findings, but one of the most respected ones is related to the social and organizational contexts that do not help integrating these technologies in the national policies and daily lives of the people (Yahya 1993, Mansell and Wehn 1998).

ICT usage in the Arab world is still at a low level both in private and public institutions (Goodman and Green 1992, Danowtiz et al. 1995). However, the lowest use of IT in these countries is in decision-making procedures amongst the public sector institutions.

Research Motivation and Methodologies
Motivated by developed and emerging countries experiences and accomplishments, most developing countries perceive an opportunity in ICTs, and therefore exerting extra efforts to seize it. The two phased information society summit held in Geneva and Tunisia in 2003 and 2005 successively, created an ICT hype that pushed most countries to rush their efforts in planning and initiating programs to cope with the ICT enabled development wave. Many of the developing countries were motivated by the commitments made by international donor agencies, and the hypothetical development pledges; like poverty reduction, illiteracy eradication, and healthcare improvement in what is known as the Millennium Development Goals (MDGs). Developing countries vary in their approaches both in methodologies and scale to seize the potential benefits of ICTs. However, most of developing countries have responded to this call through building what is later called the ICT national strategies or E-strategies (Siau & Long 2006). Palestine, as an occupied country and split in two geographical alienated territories: West Bank and Gaza Strip, has no control on their borders, has no sea or air ports, and with very scarce natural resources, thus relying heavily on foreign aids and donations. The Palestinian National Authority (PNA) recognized the exceptional benefits in ICT to push its domestic economy, and minimize the effects of Israeli military restrictions on movement, and help communicating with the rest of the world. Palestinians seek freedom in cyber space, through ICT, as they are unable to achieve it physically on the ground.

Palestine is a young nation with 50% of its population below the age of 15, with highly educated population whose literacy rate is 92% the highest in the Arab world. Table 1 gives details of the development indicators of Palestine. Successive governments within

the PNA, encouraged by donor agencies and the international community, started to focus on ICT as one of the main economic drivers and employment segments. Motivated by the fact that the ICT industry does not require major initial investments and that ICT products and services are not bounded to the Israeli military measures of closures or lack of control over borders, the PNA set the stage to build its ICT national strategy.

Table 1: Development Indicators

Population	4,011 M
Below 15 yrs age	45.7%
Population Growth	3.4%
GDP	4.5 B US$
GDP growth rate	-12.3%
GDP per capita	727 US$
High tech export	20 M US$
Foreign direct investment	150 M US$
Poverty rate	60%
Unemployment rate	50.6%
Literacy rate	92.6%
Enrollment tertiary education	25.95%

Source: Palestine Central Bureau of Statistics (PCBS 2008)

The PNA through the Ministry of Telecommunications and Information Technology (MTIT) successfully mainstreamed ICT as part of its national development strategy over the past decade. This paper will review the Palestinian experience in planning and deploying their ICT strategy, while evaluating its success in achieving its preset goals and in its contributing to the development endeavors within the society. The paper will also try to identify weaknesses of the strategy, both in approach and guiding principle. The overall issue the paper will try to highlight is the exploration of the real gap between planning and implementation levels that prevent developing countries from actual utilization of the benefits that are presented by ICT.

In a research as such, which deals with complex and emerging issues it is recommended to use multi techniques and employ several approaches that encompasses both qualitative and quantitative schemes. Multi-method approaches are recommended by social scientists when investigating compound, multi-stakeholders national initiatives. As of our research, almost all official documents and related publications were thoroughly reviewed. Government officials, MTIT ministry personal, and members of the national team where interviewed in a semi-structured interviews. Projects stemmed out of the initiative were evaluated in view of the declared goals of the strategy.

Palestine ICT Landscape
Before the Oslo Agreement which led to the creation of the PNA in 1994, Israel was in full control of the ICT sector, and there were only few ICT related activities such as small companies and shops selling hardware and electronics equipments. The

telecommunication network was fully controlled by the Israeli military authorities. Soon after its establishment the PNA took responsibility of the telecom network, and then lead the development of the sector and its activities through the foundation of the ministry of Telecom which was later dubbed the Ministry of Telecom and Information Technology (MTIT) in 2003.

Soon after the PNA was established, demand for ICT services dramatically mounted, mostly coming from the government itself, the private sector, NGOs and from universities. That period also witnessed the opening of many banks, the start-up of new businesses, and the ICT sector started to show significant growth by the end of 1995. The first Palestinian ISP was created and Internet became commercially accessible to individuals, companies and universities. Some development indicators are given in Table 1.

By 1997, the Palestinian telecom sector was fully privatized with the creation of Paltel, the Palestine Telecommunications Company, which built a complete digital network connecting the West Bank and Gaza and offers a wide range of services such as standard fixed telephone lines, leased lines, ISDN and in 2005 they launched broadband data services through ADSL connections. Currently, industry estimates put the value of the ICT sector in Palestine, at $250 million in annual sales, with 25% being attributed to software. These figures do not include Palestine Telecommunications Company (Paltel). Currently, there are approximately 150 ICT companies and large number of small computer stores in the West Bank and Gaza. See Table 2 for more ICT indicators as of the year 2008.

Table 2: ICT Indicators

IT employees	5,200
ICT sector annual sales	250 Millions US$, 25% software
Main Telephone lines	350,800
Cellular Subscribers	1500,000
Internet Penetration (Growth)	15% (314.4%)
Internet users (Broadband ADSL)	400,000 (50,000)
Palestinian families acquire PC	32.6%
Families access the Internet	15.8%
Families acquire landline phone	50.2%
Families with mobile	81.0%
Families with TV set	93.0%
Computer literacy	51.2% (55% males, 47 females)
ICT private sector	150 companies

Source: Palestine Central Bureau of Statistics (PCBS 2008)

Until 2009 the regulatory framework guiding the telecom sector in Palestine was based on the Post and Telecommunications Law No. 3 of 1996. The regulator and policymaker for the telecommunications sector is the ministry of Telecommunication and Information

Technology -MTIT. The law assigns the Ministry the responsibility for granting permits and licenses to network operators, setting tariffs, encouraging investment, monitoring and protecting consumers' interest, and enforcement. Currently there are attempts to draft a new Telecom law, but it is hindered by the political stalk. As of 2008 new Telecom operators were granted licenses, in mobile, in Voice over IP, and in broadband services, but still none of them is launching services.

PNA is attempting to launch some initiatives in ICT for development, such as the Palestinian Educational Initiative (PEI), which was launched with sponsorship of the World Economic Forum. PEI has targeted ICT utilization in the PNA educational system, training, and improving learning processes through developing web-based content. PNA is also putting extra efforts to enhance the internal processes within the government bodies through automating their internal operations.

Palestine ICT national strategy in Nutshell
The National ICT Strategy for Palestine emerged as a result of an 18 month long project conducted under the auspices of the Ministry of Telecommunications and Information Technology in accordance with a counsel of ministers' decision issued in 2004. The planning process sought to address the uncoordinated activities in implementing sustainable ICT enabled development strategy in Palestine. Key parties- from public and private sectors, civic institutions and universities- of the Palestinian society participated in the articulation of the strategy through workshops, brainstorming sessions, consultations, and discussions.

All endeavors took place in light of the Arab strategy for creating information society and the declaration of principles ensuing the information society summit (Geneva 2003, Tunisia 2005) and in synchronization with present and future needs of the Palestinian society. ICT strategy for Palestine selected the following stimulating statement as its vision: *Building a Palestinian information society that facilitates information access to all and adopting IT as a basic means of moving the Palestinian people forward and achieving its goals in all facets*. This strategy, which is meant to serve as general guidelines for the efforts to develop Palestinian information society, passed through the subsequent phases.

The SWOT Analysis
The SWOT analysis involves examining the Strengths, Weaknesses, Opportunities and Threats of the entire environment with regard to use and produce of ICTs. Strengths and weaknesses are internal to the setting, while opportunities and threats that are external to it. The SWOT analysis provides information that is crucial in matching the country resources and capabilities to the comparative environment, in which

it operates. As such it is an instrument in strategy formulation and selection. The outcome of the SWOT analysis as conceived by the strategy team is described below:

Strengths: The most prominent strengthening aspect with regard to ICT lies in the human capital in Palestine as the population is young and among the most educated people. Government adoption of a free market policy and a broader participation of the private sector in the economic development by the government are among the items to be mentioned. Opening of dialogue among all stakeholders including the private sector, civic society and academicians is also among the strengthening items. To a lesser extent, the participation of Palestinian expatriates in the national economy and the transfer of expertise, knowledge, and investment capital may have some value when appropriately exploited.

Weaknesses: Palestine, as a country under occupation for decades, has many weakening aspects such as the Israeli occupation and the consequent loss of sovereignty over different kinds of resources, and the lack of stability that discourages private sector to invest. Occupation creates unstable political and security situation, incomplete and ineffective lawful environment, low institutional performance and unavailability of public plans, lack of transparency, widespread corruption, and difficulties for long term planning. Other issues which are less related to occupation are the weaknesses in the ICT infrastructure as a result of the monopolistic regime which dominated the telecom operation in the country. The lack of skillful human resources, scarcity of scientific research and development, lack of pervasiveness of the culture of innovation, and the low income and standards of living of the Palestinian citizens, are weakening factors to be mentioned.

Opportunities: Open Arab and international market for Palestinian products, global interest in the development of the Palestinian economy, progress in the peace process and the ensuing increase in development might be considered to some extent as opportunities that worth of looking at**.**

Threats: Tumbling of the peace process, escalated tension and instability, failure of donor institutions and countries to live up to their obligations towards the development of the Palestinian society, degradation of the economy, the Palestinian Authority's lingering on pursuing reforms and fighting corruption, are major threats to the success of the ICT strategy as revealed by the official document.

Internal Brainstorming and Discussion
The MTIT has called on key stakeholders' activists to provide their own thoughts on the ICT strategy in writings. University professors, ministries and private sector representatives submitted valuable contributions adopted as preliminary documents for further debates. Consequently, MTIT has formed a steering committee of all stakeholders to oversee the whole process. The committee held several meetings in the MTIT premises in Ramallah where the roadmap of the strategy was set. Meetings and seminars were organized, and made open for public participation. The major players in ICT in Palestine took the opportunity to present their views in a participatory approach throughout these programs which extended over more than two months. Throughout this stage, the status of ICT in Palestine was intensely analyzed from various perspectives. The program also helped in publicizing the strategy project and ensured wider participation in forthcoming activities.

The Articulation of Strategic Pillars
Stakeholders and activists from the entire ICT spectrum participated in a workshop set to determine the bold strategic pillars of ICT in Palestine. The participants defined the ICT needs and problems, and then used that to identify the sought after solutions as strategic pillars. The official strategy document consisted mainly of five pillars that were categorized as the strategic themes of the whole initiative. A brief description of each is given below.

The government role: The strategy calls for the government to lead the national efforts through issuing laws, legislations, and policies to organize the sector activities and to create an enabling environment to encourage investments by the private sector. Most importantly, the document calls upon the government to create an independent regulatory body to institutionalize the sector different activities. Besides, the document demands the government to work and intensify efforts to launch the electronic government project as is the case with many neighboring countries. The strategy demanded the government to launch a national database or information center for healthier planning in the future. One of the urgent calls the document made for the government is to work to liberate the national information space, represented by the allocated spectrum, which is being occupied by Israel, and to have an independent telecom and data network especially with regards to direct international access.

Infrastructure development: This pillar has requested to build a robust and a secure telecom infrastructure that will help in building a Palestinian information society. To that end the government has been requested to create a competitive environment and end monopoly. The government has been also asked to issue licenses for more mobile operators, and broadband service providers.

Human resources development and encouraging innovation: The Palestinian society is considered young and therefore the future of the country including the ICT sector is dependent on the potential, awareness, level of education of its youth. The document has called to increase the dose of ICT education to the different fractions of the society, including school kids, university students and the public at large; and for increasing quantity, quality, and skills of qualified ICT specialists. Among other issues that the document has pointed to is the focus on scientific research and development, including the delicate issue of technology transfer. The document further called for the development of electronic learning, or e-learning as a support for the traditional learning system.

Development of a vibrant ICT industry: ICT industry including the creation of content based industry must be given the necessary attention lest for us to be mere consumers of ICT coming from foreign countries as we are consumers of technologies of industry and publishing of that content.

ICT as a means to economic and social development: The accomplishment of the thriving objective sought from the information society is realized through offering alternative solutions to problems of the society based on ICT which is the cornerstone for building the information economy and thereof has an important role in boosting sustainable development, increasing job opportunities, and fighting poverty.

Analysis of the ICT strategy
The purpose of this section is to investigate how successful was the development of the strategy in view of best practices and the consideration of strategic issues affecting ICT deployment in the development discourse of the Palestinian society.

In general, the study shows that the Palestinian Authority under the guidance of MTIT has exerted considerable efforts in formulating a plan to guide the sector and to define its strategic goals. Below is an attempt to evaluate the different sections of the strategy, based on considerations and practices during the course of developing the ICT strategy.

Before drafting the strategic goals, the team completed the SWOT analysis phase of the ICT environment. SWOT analysis came across internal strengths and weaknesses, and external threats and opportunities, however, the articulation of this section came out of brainstorming sessions rather than on collected statistics and quantitative studies performed on the environment as revealed by the planning team. This section to the best practices should come out of analyzing relevant data in order to precisely define

these issues. Statistics and quantitative data were the assets to articulate a comprehensive plan that utilizes strengths, avoid or remedy weaknesses, make the most of opportunities and avert threats. A SWOT analysis that comes out of realities will be much more effective in recognizing realistic and workable projects in generating swift impact, and touchable achievements, which are needed to create momentum towards achieving the more challenging goals. In this regards it is useful to mention that nations and societies should perceive ICT in four distinct phases:

- Firstly; random or undirected consumption, where in this stage, people get acquainted to the technology without well defined or preset goals for their use.
- The second phase is the one in which ICT is purposely used to leverage private businesses and the production sectors, and government services.
- The third phase is to direct ICT to empower people's life, increase their productivity, and consequently improves efficiency of institutions and the nation as a whole.
- The fourth phase is to focus on ICT as a production sector, and to improve quality and quantity of ICT products for export.

Keeping these stages in mind would be very helpful for the planning team for building a vibrant ICT strategy for a developing nation. The planning team should define the phase in which the country is in, and try to set up a smooth transition from one phase to another. It is very hard to imagine a society that can focus on ICT product export without passing through the stage of large scale consumption.

The strategy clearly defined five strategic pillars that were supposed to be carried out in parallel. It is very crucial to define the relationship among these pillars, as some of them are dependant on achieving progress in others. For example, ICT cannot be used to improve social, health, and cultural services without robust infrastructure along with affordable prices. In other words, the cause and effect relationship should clearly be outlined among the pillars, and the thorough comprehension of the relations that tie these pillars with each others, are central in drafting the right action plan to achieve the preset goals.

According to the vision defined by the ICT strategy, it was bluntly declared that the overall goal of the ICT strategy was to craft a Palestinian information society, through ubiquitous access to information to all people regardless of their social status, location or gender, and to exploit ICT as a means to empower the Palestinian society. This vision should be positioned within the context of the society, and should be harnessed to meet the imperative development priorities of the society. Founding a society as such dictates the creation of an

atmosphere that goes in line with the following guidelines. Firstly, large portion of the society should possess the basic competences that enable them to utilize ICT in their work in particular and in their daily practices in general. Secondly, the creation of a vibrant information society requires the existence of centers of excellence that are capable of executing nationwide ICT projects and initiatives. The centers of Excellence should be resourceful, and capable of executing a nationwide research and development initiatives, and capable of orchestrating the related laws and regulations when seen needed. The centers of excellence should also work to establish a national database that facilitates decision making processes from one side and offers services to institutions and the society on the other side. Thirdly, the availability of suitable information infrastructure that makes available to the population efficient and seamless interaction towards the utilization of such databases while enhance their productivity. Fourth; there is nothing more important, the government can do, than the creation of an enforcing, stimulating and dynamic legislative and organizational environment. Creating the legal environment by decreeing or modernizing laws, regulations, and conventions are necessary to lay the foundations for the sought information society. Palestinian endeavors within the above mentioned context were still lacking, as the majority ICT activities were governed by a law that was 13 years old, and all efforts to update it reached a dead end.

The creation of the information society should not be a goal by itself, but it should be seen as a vehicle to achieve development and prosperity. This is realized through employing the information society to empower the nation basic foundations, for example, the individuals' knowledge and competencies, the history and culture, government institutions, private sector, and the civil society. Adopting the information society as a vehicle to empower the Palestinian people means that this society should work to offer alternative solutions to urgent problems and crises encountered by the nation. For example, the scattering of Palestinians in discontinuous geographical regions, the lack of awareness of the international community with the fundamental rights of the Palestinian people, the unemployment, and poverty problems. Defending the Palestinians rights and working to change the image of Palestinian fighting for freedom should be central to any ICT national strategy. This requires the setting up of a well-defined plan aimed at promoting a Palestinian national content and online substance presence. Unfortunately, nothing has changed on this front since the launch of the ICT strategy. The amount and the quality of the content were not affected by the launch of the strategy, as revealed by many media and content watchers.

After all, the creation of the information society, and

the implementation of the projects needed, requires provision of the needed financial, technical and institutional resources without which there will be no chance in succeeding in these kinds of endeavors.

Discussion

This section is meant to assess the degree in which the strategy has covered the basic elements needed to build the information society and the degree of its effectiveness in addressing local needs of the Palestinian society.

The strategy detailed the infrastructure needed to setup the Palestinian information society. It also described monitoring and evaluation schemes to quantify the degree of its success. The document also came across the process of gradually raising the qualifications of the population to use ICTs and increase their awareness in the significance of ICT in improving their life and better prepare them for the future. However, to give these components the needed resources to thrive, there had to be national source-full institutions, in the form of centers of excellence, that take the responsibility to launch projects on national level, and that would complement the role of the government and the academic institutions in campaigning for the information society. Without these centers there will only be an ethos of information technology, but with serious deficit in making these technologies successful development drivers. The presence of these leading resourceful centers will better join the scattered endeavors, and work as the true missing compass that coordinates the efforts for achieving the targeted development goals. The scheme might start with one center, as a pilot, and then employ the experience accumulated in introducing other centers that are more dedicated in employing ICT in the business, culture and media, management and other areas. One of the central tasks that might be allocated to these centers is to build specialized information systems to computerize processes in ministries and government agencies, in order to make them more effective through ICT-centered solutions.

A basic remark that is worth mentioning is on the methodology. The style in which the Palestinian ICT strategy was built has witnessed excessive employment of templates derived from regional and international agencies recommendations. We believe that the approach in building the ICT strategy has not followed a professional practice, which stems out of the urgent needs of the country. The structure of the ICT strategy is to a large extent standard, encompassing traditional pillars that did not reflect on the unique status of the Palestinian society. Planners should keep in mind that countries differ in their context, nature, resources, and policy making mechanisms, which make ICT strategy templates ineffective practice to a certain extent. ICT strategy for

Palestine needs a high degree of customization, and contextualization, but should still be in harmony with regional and international agencies recommendations. The need is for an indigenous plan, not an exogenous one that tries to force the national settings in international templates. Moreover, the ICT strategy cannot be derived as a standalone plan, but needs to be an integral part of a wider and more comprehensive development plan that encompasses all facets. National planners need to draft a comprehensive development plan for the whole nation and derive an ICT plan in accordance. ICT strategy must be an integral part of a broad development strategy, so that ICT can be effectively utilized to address the fundamental development challenges of poverty reduction, employment creation and sustainability. It is to be recognized that the challenge to make ICT a powerful tool for development is a complex process.

Analyzing the way planners and the community at large interacted with the strategy, one would notice that even though the strategy has been articulated, the mentality and stakeholders' mindsets have not changed accordingly. Practices have shown that the adoption of ICT tools and solutions alone will not promote growth and development if it is not combined with training, capacity building, organizational, management and operational changes that try to make use of these technologies. An ICT strategy that strives to change a society into an information-based one will have slim chances of succeeding if people, especially policy makers and managers, continue to act and react in the same traditional way, as if these tools were not there. It is true that technologies change at a higher pace than people can absorb, but incremental and sustainable changes are needed to leverage the society to the sought information-based one.

Strategies are planned and designed by ICT specialists and enthusiasts, who hold a positive standpoint of ICT. Those planners have slight or no clue of what and how the public in general would perceive and view those tools. That creates a gap between the decision makers and the executing bodies in relation to moving from the planning to the implementation level. As there was no seamless flow of information between the management hierarchies, especially the planning and executing bodies, there happened to be a discontinuity in the management chain that created impediments in achieving the preset goals. Additionally, some of the government officials who are responsible for setting the ICT policy in motion lacked the right mindset, knowledge and experience in how to create the right atmosphere for its evolution.

It is worth noting that in this particular case most of the ICT developments are credited to the private sector, even those changes that were noticeable at government agencies. Therefore, the lack of coordination between the government and the private sector in developing a vibrant sector will not be an easy task as efforts will be scattered. Having no or low trust and coordination between the government and the private sector will work to hamper the development of a stimulating sector.

ICT effect will be more pronounced when high penetration of ICT is achieved among the different factions of the society. National strategies should focus on leveraging of mobile, Internet, and local content development through locally subsidized initiatives and stimulating regulations to help boost penetration and achieve magnified impact. According to many studies, exponential impact from ICT will be pronounced when a penetration level of 40% is reached in mobile and Internet. It has been reported by many research reports that upon the reach of a penetration level around 40%, exponential growth in penetration starts to occur, and the stimulating impact gets enlarged at a very fast pace due to the network externality effect. Network externality has been defined as a change in the benefit or surplus that an agent derives from a good when the number of other agents consuming the same kind of good changes (Liebowitz and Margolis, 1996).

Major steps are needed to reinforce cooperation between all stakeholders. ICT initiatives should revolve around what development thinking views are the most appropriate means to improve efficiency and effectiveness in government activities. It is noted that most ICT initiatives in the Palestinian case were driven by donor funds which created a continuous struggle between the NGOs and PNA and in turn hindered the socio-economic development plans. The PNA should have taken the clear lead to translate goals into executable projects, and measured outcome.

Conclusion
The process and methodology of building an information society within the Palestinian context, as a case of a developing society, were reviewed. It is to be recognized that information societies pass through distinct stages and it is important for each society to define the stage it is in, so that the strategy can work to transfer that society to a more advanced stage. This process is also critical to outline the fundamental pillars of the information society. Defining these pillars in addition to the relations among them is crucial in building a viable information society. The understanding of the right relationships among the pillars will help prioritizing the strategy action plans and produce a more efficient way in realizing the preset vision.

The information society vision, plan and initiatives should be positioned within the context of the society, and the development process should be harnessed to meet the imperative development goals of the society.

One of the most important tools that is needed to build the information society is a resourceful national network of centers of excellencies, capable of executing large scale research and development initiatives. This network takes the lead to create the legislation environment, the database, and the management and leadership qualifications, and is capable of influencing the decisions makers for the benefit of building the information society. A high profile champion is needed to lead the efforts in strategizing ICT through routes including the issue of laws, policies, coordination, and most importantly implementable initiatives. The government should seek to advance the development of a robust infrastructure, and of human resources through education, and focus on developing a viable content industry, and thus exert a focused and continuous effort to use ICT as catalyst for economical and social development.

References

- Bedi, A., "The role of Information and Communication Technologies in economic development - A partial survey," *ZEF-Discussion Papers on Development Policy No 7,* Center for Development Research, Universitat Bonn, May 1999.
- Bhalla, A. S. and James D., *New Technologies and Development: Experiences in "Technology Blending".* Boulder, CO: Lynner Reinner, 1988.
- Danowitz, A. K., Nassef, Y. and Goodman, S.E., "Cyberspace across the Sahara: Computing in North Africa," *Communication of the ACM*, vol. 38, no. 12, pp. 23-28, 1995.
- Dedrick, J. and Kraemer, K. L., "National technology policy and computer production in Asia-Pacific countries," *The Information Society*, vol. 11, no. 1, pp. 29-58, 1995.
- Flamm, K., "Globalization in the computer industry," Directorate for Science, Technology and Industry, OECD, Paris, Dec. 5, 1990.
- Freeman, C. and Perez, C., "Structural crises of adjustment, business cycles and investment behaviour," in *Technical Change and Economic Theory*, G. Dosi, Ed. London: Pinter Publishers, 1988, pp. 38-66.
- Goodman, S. E. and Green, J.D., "Computing in the Middle East," *Communication of the ACM*, vol. 5, no. 8, pp. 21-2, 1992.
- Heeks, R., "Information systems and developing countries: Failure, success, and local improvisation," *The Information Society*, vol. 18, pp. 101-112, 2002.
- Heeks, R., *Reinventing Government in the Information Age.* London: Routledge, 1999a, pp. 9-21.
- Kaul, M., "National policies and intervention processes," in *Searching for a Paddle: Trends in Information Technology Applications in Asian Government Systems*, vol. 1, M. Kaul, N. R. Patel and K. Shams, Eds. Kuala Lumpur, Malaysia: Asia/Pacific Development Center, 1987, pp. 1-23.
- King, J. L, Kraemer, K. L., Gurbaxani, V., Dedrick, J., Raman, K. S. and Yap, C. S., "Government policy and information technology in Asia-Pacific countries: A conceptual overview," *Information and the Public Sector*, vol. 2, no. 2, pp. 97-110, 1992.
- King, J. L. and Kraemer, K. L, "Information infrastructure, national policy, and global competitiveness," *Paper on Globalization of I.T. No 36*, Center for Research on Information Technology and Organizations, University of California, Irvine, Mar. 1995.
- King, J. L., Gurbaxani, V., Kraemer, K. L., McFarlan, F. W., Raman, K. S., Yap, C. S., "Institutional factors in information technology innovation," *Information System Research,* vol. 5, no. 2, pp. 139-169, 1994.
- Kraemer, K. L. and Dedrick, J., "Payoffs from investment in information technology: Lessons from the Asia-Pacific region," *World Development*, vol. 22, no. 4, pp. 1921-1931, 1994.
- Kraemer, K. L., Gurbaxani, V. and King, J. L., "Economic development, government policy, and the diffusion of computing in Pacific Area countries," *Public Administration Review*, vol. 52, no. 2, pp. 146-156, 1992.
- Land, F., "Viewpoint: The government role in relation to information technology," *International Journal of Information Management*, vol. 10, pp. 5-13, 1990.
- Liebowitz, S. J. and Margolis, S. E., "Should technology choice be a concern of antitrust policy?," *Harvard Journal of Law & Technology*, vol. 9, no. 2, pp. 283-318, 1996.
- Mansell, R. and Uta, W., *Knowledge Societies: Information Technology for Sustainable Development.* New York: Oxford University Press, 1998.
- National Research Council, *Information Technology in the Service Society: A Twenty-First Century Lever.* Washington, DC: National Academy Press, 1994.
- National Research Council, *The National Challenge in Computer Science and Technology.* Washington, DC: National Academy Press, 1988.
- Nelson, R. R., *National Innovation Systems: A Comparative Analysis.* New York: Oxford University Press, 1993.
- Odedra, M., Kaul, M., Okot-Uma, R. and Schmidt, P., "Role of institutional intervention in technology transfer and diffusion of information technology: The Commonwealth Secretariat perspective," *Working paper*, Commonwealth Secretariat, London, 1990.
- Rahim, S. A. and Pennings, A. J., "Computerization and development in Southeast Asia: A study of five ASEAN countries," Asian Mass Communication Research and Information Center, Singapore, 1987.
- Schware, R., "Software industry entry strategies for developing countries: A'Walking on two legs' proposition," *World Development*, vol. 20, no. 2, pp. 143-164, 1992.
- Siau, K. and Long, Y., "Using social development lenses to understand e-government development," *Journal of Global Information Management*, vol. 14, no. 1, pp. 47-63, 2006.
- The World Bank. *The East Asian Miracle: Economic Growth and Public Policy.* New York: Oxford University Press, 1993.
- Willinger, M. and Luscovitch, E., "Towards economics of information-intensive systems: the case of advanced materials," in *Technical Change and Economic Theory*, G. Dosi, Ed. London: Pinter Publishers, 1988, pp. 432-457.
- Yahya, A. H., "On the problems of information technology management in developing nations," in

Utilization of Digital Media for Professional Development of Teachers
Some Insights from Turkey

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Abstract

The account given in this paper is related to the experiences of foreign language teachers involved in the pilot study undertaken in a high school in Turkey. After outlining the distinctive advantages of e-portfolios in the context of teacher development, this paper discusses the results of a qualitative study addressing the value of e-portfolios as versatile teaching and learning tools to showcase the professional skills of the teachers. Data collection was undertaken through both semi-structured interviews with the majority of these teachers and field observations. By providing teachers with the opportunity to enhance their technological skills and to reflect critically upon their work as educators, e-portfolios can serve as an invaluable resource for meeting educational standards and promoting effective teaching practice.

Introduction

Electronic portfolios (e-portfolios) are gaining an increasing importance in the educational landscape of the 21st century as they provide today's learners with the freedom to gather and reflect evidence of their learning progress. As Ali (2005) states, e-portfolios are readily and conveniently used in most classrooms as they are highly motivating for the students who are encouraged by exhibiting their work.

Definition & Classification

Barrett (2000) describes e-portfolios as'(those that make) use of electronic technologies that allow the portfolio developer to collect and organize artifacts in many formats (audio, video, graphics, and text). A standards-based electronic portfolio uses hypertext links to organize the material to connect artifacts to appropriate goals or standards. An electronic portfolio is not a haphazard collection of artifacts (i.e., a digital scrapbook or multimedia presentation) but rather a reflective tool that demonstrates growth over time'.

Rather than being a personal web page an e-Portfolio is a network application that provides its creator with administrative functions for managing and organizing files created with different applications and for granting access rights (Greenberg, 2004). With the convergence of text, sound, graphics and video into a common digital format and the reduced technical barriers for production, a substantial online archive such as the digital portfolio can be maintained (Greenberg, 2004).

The underlying logic of e-portfolios is derived from the contemporary courses where students are urged to revise and resubmit their assignments after peer assessment (Ali, 2005). These assignments reach the teacher after several careful drafts. Ali (2005) asserts that the portfolio approach is developed from this concept of reflective practice. According to Greenberg (2004) different types of e-portfolios can be categorized in terms of when the work is organized relative to when the work is created. This results in three types of e-portfolios:

- The *showcase e-Portfolio:* Organization occurs after the work has been created.
- The *structured e-Portfolio:* A predefined organization exists for work that is yet to be created.
- The *learning e-Portfolio:* Organization of the work evolves as the work is created.

Still some other classifications of portfolios have been made according to their focus. To exemplify, Cooper & Love (2001) distinguish between the summative and formative portfolios, where the former is used for keeping track of the learning outcome and the latter as a report to parents in order to demonstrate changes over a period of time. Cooper & Love (2001) further classify the summative portfolios as:

- The *competency-based* or *outcomes-based portfolio*: It may show samples of a student's work collected as evidence of his/her skills and knowledge, which is relative to the curriculum or syllabi.
- The *negotiated learning portfolio* in which the outcomes of the negotiated learning processes are assessed through a portfolio.
- The *biographic portfolio,* which is a record of achievement. This type of portfolio may have a collection of work experience of a student which is collected over a period of time and arranged chronologically.

E-Portfolios as Personal Development Tools for Teachers

Throughout the literature, the value of e-portfolios as a resource for contributing to the teachers' technology skills and reflection on their teaching practice has been emphasized several times. To exemplify, Milman (1999) asserts that working with e-portfolios makes teachers get engaged in activities that not only reflect sound pedagogical principles via integrating technology into their classrooms but also support their own learning. So, the value of technology as both a teaching and a learning tool becomes evident in teachers' transferring their enhanced technology literacy skills to K-12 settings (Cunningham and

Benedetto, 2002). In a similar vein, Goldsby & Fazal (2000) and Gatlin & Jacob (2002) also assert that teachers working with digital portfolios are better able to create meaningful experiences using technology in their lessons.

As McKinney (1998) suggests, reflective practice allows learners "not only [to] step back from experiences but also to form connective links to rethink past experiences in the context of new ones and ideally to develop ways of applying those insights to future endeavors" (86). One of the major benefits of using e-portfolios is that without any need for being together at the same time and place to share work, one has extended access to a diversity of people via the Internet (Greenberg, 2004). Moreover, e-portfolios act as repositories for collecting and evaluating learning outcomes as well as storing evidence of competency regarding one's educational or professional growth (LaCour, 2005). By facilitating critical thinking through the use of technology and reflective practice (Levin and Camp 2002; Brown 2002; Devanney and Walsh 2002) broad types of evidence including audio and video can be gathered and reviewed to demonstrate the teachers' growth as reflective practitioners (Cunningham and Benedetto, 2002).

Furthermore, when certification and a demonstration of skills are needed for career advancement such as in K-12 teaching, an e-Portfolio can be an important way to present and maintain information about accomplishments for professional accreditation (Greenberg, 2004). In addition to presenting a wide range of evidence, e-portfolios provide easier management of resources and enhanced flexibility with regard to having access and providing feedback (Oduyemi, Kehinde, Ogston, 2006). As Oduyemi, Kehinde and Ogston (2006) assert that once the skills, knowledge and values are identified, these can be mapped against those for the future career development. Another important benefit of ongoing e-Portfolio participation is the opportunity to maintain connections with peers (Greenberg, 2004). Especially, within the context of K-12 teaching, where isolation and the need for ongoing professional development have created significant retention problems it has been observed that e-portfolios can establish an ongoing community of practice that is sustained as teachers pursue their careers (Greenberg, 2004).

Within the context of constructivism, learning is achieved through knowledge construction that is built upon the foundation of prior knowledge rather than the passive transformation of information from one person to another (Vygotsky, 1978). Because of its major benefits such as fostering critical thinking, reflective practice and a questioning attitude, increased understanding of one's own learning process, as explained above, portfolios are essentially constructivist tools, well aligned with modern educational theory, particular the work of authors such as Vyogotsky (1978).

Bearing in mind that humans acquire knowledge by actively organizing their experiences, e-portfolios are indispensable tools for documenting one's learning and achievement of individual goals as they made one think reflectively about where one is now and where one would like to go (LaCour, 2005).

The Context of Study
Being a developing country located in the Middle East, there have been many attempts to integrate the ICT s into Turkish primary, secondary and higher education system since 1990. Some of the factors which have affected the effective deployment and utilization of ICTs for educational purposes not only in Turkey but also in Middle East in general can be summarized as (Akbaba-Altun, S., 2006):

- Inadequate ICT infrastructure including computer hardware and software, and bandwidth/access
- A lack of skilled manpower to manage available systems and inadequate training facilities for ICT education
- Resistance to change from traditional pedagogical methods to more innovative, technology-based teaching and learning methods, by both students and academics
- The over-dependence of educational institutions on government for everything has limited institutions' ability to partner with the private sector or seek alternative funding sources for ICT educational initiatives
- Lack of effective co-ordination of all the various ICTs for education initiatives

One of the leading secondary schools teaching in English in Turkey, TVO has put every effort to integrate computers into its educational system via funding and grants. Apart from numerous computer laboratories with high-speed Internet connectivity one computer exists in every classroom. Teachers also receive regular training on integration of computers into their teaching process. With the initiatives taken by the school governance, TVO managed to utilize computer-mediated communication mostly with regard to its foreign language teaching process.

The e-Portfolio Study at TVO
Being inspired by the innovative use of technology for improving the teaching service and realizing the potential of emerging learning technologies, TVO's management was willing to embed the use of e-Portfolio technologies into the teaching experience in order to contribute to the teachers' success. Due to budget constraints it was decided to use generic tools such as word processing, HTML editors, wikis or any other commonly used Web 2.0 tools for developing e-

portfolios rather than customized systems that involve servers, programming and databases (Barrett, 2000).

Since the e-portfolio to be developed could be categorized as a learning portfolio the teachers were required to include a picture of themselves or a video created on their own, a short resume, a table of contents, good examples of coursework, lessons related to field experience, hobbies and interests and as well as their own reflective notes within their e-portfolio as Ali (2005) suggests. Depending on their preferences, the teachers could also work with PowerPoint by linking diverse types of media such as video clips, audio clips along with other work samples. Most of the portfolios resembled Web sites in design and included a cover that served as an index guiding readers to supplementary files.

One of the challenges during the e-portfolio implementation was that a common set of definitions for standard competencies for teachers across various subjects has not been adopted yet in the Turkish educational system. Nevertheless, essential competencies that can predict the success of the foreign language teachers have been identified by TVO's Foreign Languages Coordinator.

Working as the digital learning consultant in school, the researcher was assigned to teach the introductory course about e-portfolios. When introducing e-portfolios to the teachers at the beginning of the term, the content and organization of the e-portfolio depending on its aim was made clear. Since a lack of enthusiasm and commitment from teachers is likely to adversely affect their engagement with the development process of e-portfolio, an effort was made to convince the teachers of the benefits of e-portfolios. The researcher introduced the requirements for the portfolio project and provided technological support for teachers as they worked to complete the requirements.

During the introductory course, the following issues were discussed as Lane (2007) suggested.
- Basic technology instruction, such as how to use the e-portfolio tool, scan and format images for the Web, and perform other basic tasks;
- Models of effective and ineffective e-portfolios;
- Engagement with a variety of media, with discussion of which type of media is best suited for demonstrating particular skills;
- Opportunities to share e-portfolios with peers;
- Discussion of intellectual property issues;
- Evaluation criteria adapted to evaluating Web-based materials.

Once the portfolios were developed at the end of the school term, a peer review took place so that teachers could learn through their peers' comments (Ali, 2005).

Towards the end of the term, the extent to which the e-portfolios were presentable was also evaluated by both the Foreign Languages Coordinator and the researcher using various assessment models found on the Internet.

Methodology
This qualitative study investigates the experiences of the teachers utilizing e-portfolios for their personal development in a high school in Turkey. This project focused specifically on the use of electronic portfolios as a tool to facilitate reflective practice and as a way to document the teachers' experiences as they prepared for the teaching profession. Twenty-four foreign language teachers participated in the small-scale study undertaken in TVO, being one of the major high schools in Istanbul, Turkey.

To look more closely at the process of portfolio development, a qualitative study investigating the experiences of these 24 teachers was conducted. Data was collected via teacher interviews and field observations. Teachers enrolled in the introductory course participated in a focus group interview after completing their initial draft of the portfolio. The focus group interview lasted 45 minutes and centered on the decision-making process. A second group interview was also conducted by the researcher at the conclusion of the class, asking open-ended questions related to choice of media, and possible future revisions. These interviews focused on the process of developing the portfolio, reasons for developing the portfolio beyond the requirements, and changes they would like to make in their portfolio over time.

According to Patton (1982), the fundamental principle of qualitative interviewing is providing a framework within which respondents can express their own understanding in their own terms, and for which open-ended, rather than closed, questions should be used as far as possible (Patton, M., 1982).

Patton's style of qualitative interviewing is referred to as the standardized open-ended interview', through which questions are asked in the same way and order, with a minimum of probing by the interviewer (Patton, M., 1982). Use of probes were preferred by the researcher in order to allow the informants to answer more on their own terms (Patton, M., 1982), so the interviewer seeking at the same time both clarification and elaboration on given answers was more free to probe beyond answers (Patton, M., 1982).

Results
Teacher responses covered a range of opinions, with their diversity illustrated by the qualitative feedback from the open-ended questions:

"In my opinion, we should not be expected to be computer literate, that will be unfair in some

instances." This response was typically related by mature-age teachers with notably lower ICT literacy than the other teachers. Yet, with guidance and training, all teachers were able to produce e-portfolios readily in the weeks following the initial assessment. Another challenge for these teachers was their different opinions with regard to whether they should only include their experiences relevant to school or any other qualifications such as professional memberships or achievements in sports.

"It was quite fun to put together the e-portfolio. The assessment of this course also makes things less stressful on us." Once the requisite publishing skills had been mastered, teachers enjoyed the capacity to individualize the e-portfolios, and in general, invested disproportionate time in graphics representation, despite the fact that it was not rewarded in assessment. Moreover, those teachers who had used digital media within their e-portfolios admitted that the digital media indeed made a difference for them since it resulted in a robust learning experience.

"I think it is an amazing way for preparing job applications in the future. Learning about my personal strengths and weaknesses via the online portfolio, I can work now on my weaknesses." Similarly, one teacher mentioned that by being encouraged to identify their own strengths, they would take the responsibility of developing them further and hence get engaged in a genuine life-long learning. Moreover, one teacher stated that *"the good thing about e-portfolio is that it is your own and you don't need to be like someone else. You can write about yourself in a structured way."*

One of the challenges was how to write online when preparing e-portfolio. One teacher stated that *"It was difficult how to translate your ideas about your thoughts into the right words on the web page, but once you get used to it you can put your real life examples which may be helpful for your other colleagues"*. Yet, despite this challenge of selecting the right words, one teacher stated that *"once you start to reflect and record your experiences you think that you feel motivated to enter a new experience into your portfolio."* In a similar vein, two teachers stated that they can provide others with an understanding of the person behind the resume by giving more detail about who the person is.

The course participants were also encouraged to link single video or audio clips to several different categories or competencies as defined by the TVO Foreign Languages Coordinator when appropriate. To exemplify, audio recordings of their educational background were linked in two e-portfolios to the teaching standards requiring the effective use of technology. As one teacher said, "What better way to

convey to others my background than to let them hear my resume in my own words?"

Furthermore, three of the e-portfolios included some video clips of the teachers' interaction with their own students during their fieldwork, and these teachers believed these clips to be the most important component of the portfolio. Additionally, teachers included assignments completed for various classes and materials generated for use in their teaching events, linking them at certain points to corresponding competencies defined by their coordinator. Depending on how much the teachers got involved in preparing their e-portfolios they pursued different paths. To exemplify, those teachers who were just beginning the process often included PowerPoint presentations they were using throughout their lessons. One third grade teacher mentioned: "As I continued to work on my e-portfolio, I wanted to reflect my own personal beliefs and values as a teacher." As participants continued to revise and refine their work, they felt more motivated by the desire to reflect their teaching philosophy.

Although at the beginning of the e-portfolio development process, the teachers would like to know exactly how their e-portfolio should look as if the contents were set in stone, they eventually got accustomed to the unpredictable nature of this e-portfolio development process. After the initial evaluation of their e-portfolios participants were told that they should think about the portfolio as an ongoing process as well as revise the content frequently via utilizing the flexibility of the digital media.

Conclusion

This research suggests that e-portfolios may be a valuable tool for teachers' ongoing professional development, which is a dynamic and multidimensional process rather than a transmission of knowledge from one generation to the next.

Being versatile teaching and learning tools e-portfolios were utilized at TVO to showcase the professional skills of the teachers. Versatile means that e-portfolio has been used as a technological solution that delivered some major outcomes in making teachers develop both a competitive advantage over their colleagues and reflective lifelong learning skills. Although at the beginning of the development process, there was a resistance from teachers against this new digital media they eventually started to view it as expressing their authenticity. Depending on their level of technology literacy, their medium of expression ranged from PowerPoint presentation to videos of their classroom sessions. By viewing each other's e-portfolios the teachers also got motivated about learning how to embed these different mediums within their websites. As a result, their web publishing skills

increased as well.

Moreover, it is the researcher's belief that by getting accustomed to the use of e-portfolios, educators may be also more wiling to teach their students to utilize the Web both as a place for formal learning and to communicate effectively with professional and social audiences later on throughout their professional careers. In the case of TVO, a full-scale implementation of e-portfolios has not been possible, yet at least a culture of digital documentation has been fostered by encouraging teachers to practice developing simple websites, or storing their content online as Siemens (2004) asserts.

Despite the positive results of this small-scale research study certain questions need to be answered. To begin with, due to the fact that the participant size was small it would be challenging to know how to use the e-portfolios for larger programs since it would require an immense amount of time for interaction between the teachers and related staff as well as resources. Besides, the potential of e-portfolios to further advance the careers of teachers as they receive accreditation in their work should be further investigated. Finally, the extent to which the flexibility and freedom in e-portfolio design is possible at the earlier development stages needs further investigation.

REFERENCES

- Akbaba-Altun, S. (2006) Complexity of Integrating Computer Technologies into Education in Turkey, [online], *Educational Technology and Society 5(3)*, http://www.ifets.info/journals/9_1/15.pdf
- Ali, S. Y. (2005) An Introduction to electronic portfolios in the language classroom. The Internet TESL Journal, 11, 8: 15-23 [Online]. Available from http://iteslj.org/Techniques/Ali-Portfolios.html [Accessed 10/01/08]
- Barrett, H.C (2000) Create your own electronic portfolio. Learning and Leading with Technology, 39, 4: 28–37 [Online]. Available from http://www.electronicportfolios.com/portfolios/iste2k.html [Accessed 07/01/08]
- Brown, C. (2002) Electronic portfolios in preservice education—Distinguishing between process and product. In *Proceedings of Society for Information Technology and Teacher Education International Conference 2002*, eds. C. Crawford et al., 539-543. Chesapeake, VA: AACE.
- Cooper, T., & Love, T. (2001). Online portfolios: issues of assessment and pedagogy. Australian Association for Research in Education conference papers [Online]. Available from http://www.aare.edu.au/01pap/coo01346.htm [Accessed 03/01/08]
- Cunningham, A., Benedetto, S. (2002) Using digital video tools to promote reflective practice. In *Proceedings of Society for Information Technology and Teacher Education International Conference 2002*, eds. C. Crawford et al., 551-553. Chesapeake, VA: AACE.
- Devanney, G., Walsh, P. (2002) Collect, select, and reflect: Using the electronic portfolio in teacher preparation. In *Proceedings of Society for Information Technology and Teacher Education International Conference 2002*, eds. C. Crawford et al., 593. Chesapeake, VA: AACE.
- Greenberg, G. (2004) The digital convergence: extending the portfolio model. Educause Review, 39, 4: 28–37 [Online]. Available from http://connect.educause.edu/Library/EDUCAUSE+Review/TheDigitalConvergenceExte/40483 [Accessed 15/01/08]
- Gatlin, L., Jacob, S. (2002) Standards-based digital portfolios: A component of authentic assessment for preservice teachers. *Action in Teacher Education* 23 (4): 35-42.
- Goldsby, D. S., Fazal, M.B. (2000) Technology's answer to portfolios for teachers. *Kappa Delta Pi Record* 36 (3): 121-123.
- LaCour, S. (2005) The Future of integration, personalization, and eportfolio technologies. Journal of Online Education, 1, 4: 18–21 [Online]. Available from http://www.innovateonline.info/index.php?view=article&id=85&action=article [Accessed 13/01/08]
- Lane, C. (2007) The Power of "E": Using e-portfolios to build online presentation skills. Journal of Online Education, 3, 3: 15–19 [Online]. Available from http://www.innovateonline.info/index.php?view=article&id=85&action=article [Accessed 08/01/08]
- Levin, B. B., and J. Camp. (2002) Reflection as the foundation for e-portfolios. In *Proceedings of Society for Information Technology and Teacher Education International Conference 2002*, eds. C. Crawford et al., 572-576. Chesapeake, VA: AACE.
- McKinney, M. (1998) Preservice teachers' electronic portfolios: Integrating technology, self assessment, and reflection. *Teacher Education Quarterly* 25 (1): 85 -103.
- Milman, N. (1999) Web-based electronic teaching portfolios for preservice teachers. In *Proceedings of Society for Information Technology and Teacher Education International Conference 1999*, ed. J. Price et al., 1174-1179. Chesapeake, VA: AACE.
- Odeyemi, K. and Ogston, R. (2006) *The Challenge of implementing e-PDP at the University of Abertay Dundee and partner institutions*, EIFEL ePortfolio 2006 Conference Papers, eStrategies for empowering learners, Oxford, UK. [Online]. Available from http://www.eifel.org/publications/eportfolio/proceedings/ep06/ep2006_papers/ogston [Accessed 15/11/06]
- Oradini, F., Saunders, G. (2007) Introducing e-portfolios across a paper dominated university. ALT Online Newsletter. [Online]. Available from http://newsletter.alt.ac.uk/e_article000925026.cfm [Accessed 10/01/08]
- Patton, M. (1982) *Practical Evaluation.* Newbury Park:Calif. Sage
- Siemens, G. (2004) Eportfolios. ElearnSpace [Online]. Available from http://www.elearnspace.org/Articles/eportfolios.htm [Accessed 05/01/08]
- Vygotsky, L. (1978) *Mind in Society*. Cambridge, Mass: Harvard University Press.

Peruvian *Cabinas Públicas*
Does Policy Provide Practice or Does Practice Produce Policy?

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Abstract
Citizens in developing countries, striving for social networking and knowledge in the knowledge society, have led the call for information and communication technology (ICT) accessibility. ICTs include access to personal computers, the Internet and its associated services. In Latin America one of the continent's most successful Internet access experiences is the *cabinas públicas de Internet* (Peruvian telecenters). For achieving sustainable development in the technological sector of a country, a policy strategy must make use of the latest computer technologies available. Given the proliferation of *cabinas* in Peru, the question is posed whether government policy should provide practice or whether practice produces policy? This question is discussed with specific focus on the successful *cabinas*. Some government policy options are suggested by the authors.

Index terms
Information technology, Information services, Technology social factors

I. INTRODUCTION

Citizens in developing countries, striving for social networking and knowledge in the knowledge society, have led the call for information and communication technology (ICT) accessibility. ICTs include access to personal computers (PCs), the Internet and its associated services (*eg*. visiting chat rooms for Internet relay chat, checking emails, reading local and international news). In developing countries, Internet cybercafés and non governmental organisations (NGOs) are flooded with young adults attempting to find computer-based services not available to them in their rural villages or urban towns and cities.

In Latin America Internet cafés (small or medium-sized enterprises with commercial goals) and the 'telecentros' (typically non profit-making and organised as NGOs or as part of communal structures) can be found [1]. One of Latin America's most successful Internet access experiences is the *cabinas*

públicas de Internet ('Peruvian telecentres') which shows how smooth the transition between the two types may turn out and how much they can complement each other (Herzog cited in [1]).

There is a plethora of government white papers, mission statements, strategic plans and policies which indicate a striving towards coherence in developmental policy for developing countries, and certainly so in Latin America [2]. For example, Meyer and Cloete [3] suggest that for achieving sustainable development in the technological sector of a country, a policy strategy "must make use of the latest computer technologies available". Clearly ICTs have an important role to play in the technology sector of a developing country. The success or failure "will differ depending on the parochial context of each country" [3]. Formulating a 'correct' policy is the key to success. Getting the theory right is key to facilitating successful practice in the public sphere. The question is thus posed: What occurs with government policy if instead of providing practice, practice produces policy? In this article, this question is discussed with specific focus on the successful *cabinas públicas de Internet* in the developing country of Peru, Latin America.

Our article is organised as follows: Some perspectives on Policy and Practice literature are discussed. An overview of *cabinas públicas de Internet* (hereinafter referred to as *cabinas*) in Peru is then presented. Some possible government policy options for *cabinas* are discussed where after a conclusion is given.

II. SOME PERSPECTIVES ON POLICY AND PRACTICE

Policy is defined as "statement of intent" [4]. Policy defines the basic principles to be pursued in attaining specific goals. In the field of developmental planning, policy and planning have been closely associated [1]. In the developmental policy market arena, Edwards [5] suggests that the orientation is always "future positive". Likewise Hanekom [6] remarks that all (public) policies are future oriented, usually aimed at the promotion of the general welfare of society rather than a societal group and take place within the framework of legally instituted public bodies such as government departments. Mosse [7] indicates that significant energy is devoted to generating the right policy models and the practices and events that they are expected to generate or legitimise in particular contexts. Context determines policy [8]. Policy is made in a variety of contexts, different contexts produce different policies – the national economic context is a critical contextual variant (Hofferbest, cited in [9]). It is argued that some other variants include ICTs in the knowledge society.

In many countries, access to ICTs remains hampered by government control of the telecommunications

sector [10]. To become full participants in the knowledge society, these countries will have to reform their existing policies and systems by ceding a greater role to the competitive private sector. Dorsey [10] suggests that state monopolies have resisted giving up control of basic services which has partially slowed telecommunication reform efforts in some developing countries.

An important ICT sector driver in telecentre development is market and regulatory reform. Some developing country governments have made reforms in order to encourage rural telecommunications accessibility quickly and cheaply. The relationship between policy and field practices has a disjuncture in that two opposing views on government development policy exist. In one case there is an instrumental view of policy which may be seen as problem-solving *ie.* directly shaping the way in which development is to be done in a country. In the opposing second case there is a critical view that sees policy as a rationalising initiative which may conceal the hidden purposes of bureaucratic dominance or power. Mosse [7] argues that neither of these views does justice to the complexity of policy making and its relationship to project practice. For the purpose of this article, the authors contend that policy should be viewed in both contexts.

Whilst the government of Peru is keen on achieving goals between the people and the government [11], people are endeavouring to find new ways to conduct their business without little concern what should be the purposes of connectivity [12]. *Cabinas* emerged as individual commercial initiatives without initial support from the government or private sector. However, due to their prevalent success, they are increasingly attracting the interest of both [13]. However, Peruvian attitudes toward the Internet are somewhat distant from the intents of government officials – the latter attempting to synchronise their projects to an international agenda.

Peru is a country with little connection between the government and the population as social agents and it is not surprising that there is a significant problem regarding the absence of a strong relationship between government plans and actual needs [12]. This may mean that while the Peruvian government may be seeking to align its information and communication initiatives to international trends, there appears to be little concern of how the Internet has created a set of established social practices in Peru. However, the *cabinas* have contributed to turning a significant part of the marginalised Peruvian population from urban (as well as rural backgrounds) into regular users of the Internet [1]. Villanueva [12] indicates that the social practices created by the *cabinas* are defining the first step towards thinking on how to propose a set of

(Peruvian government) policies for establishing a community or socially relevant use of the Internet. This then raises the question whether existing social practices will influence or shape Peruvian government policy towards ICT accessibility. For example, *Facebook* is widely recognised as the latest popular social networking site and used by young adults in *cabinas*. There is thus a need for Peruvian government policy-makers to 'tap' into those ICTs that are popular nowadays.

III. CABINAS PÚBLICAS DE INTERNET

The first c*abina* was established in 1995 as an initiative of the Red Científica Peruana – the first Internet service provider in Peru. Since 1998, *cabinas* have spread quickly in low and middle-income districts in Lima (capital city of Peru) and in other towns (*eg.* Cusco). *Cabinas* are commercial and independent businesses that are established with the purpose of generating revenue to the owners [13].

Low prices are advertised and *cabinas* often have a better Internet connectivity in comparison with home access. *Cabinas* are "extremely popular and even used by people with home access" [13]. When individual ownership of desktops and Internet access were financially not possible, *cabinas* have enabled lower middle class adults and many students access to ICTs. This was as a result of individual initiatives of thousands of local entrepreneurs providing ICT services that are in high demand among local customers: 'cheap' Internet access [13]. The major reason for the success of *cabinas* is their relative low cost, which makes them affordable to the masses [14]. The Internet *cabina* has enabled a new generation of Peruvians to gain accessibility which would not have been able to through the traditional methods of access. *Cabinas* are characterised by their low prices – an average of 15-30 U$ cents per hour – and relatively efficient connectivity [15], while not necessarily providing support or training beyond very basic advice [16]. From recent observation and survey by the authors, some typical advertised prices of Internet access in *cabinas* in Lima and Cusco are reflected in Table 1.

Table 1: Some Advertised Prices of Internet Access in *Cabinas* in Peru
(Survey period: 21-24 June 2008)
(1 Peruvian Nuevo Sol= 0.280 U$ dollar)

City/Town	1 hour	¾ hour	½ hour	¼ hour
Lima	S/. 2.00	S/. 1.50	S/. 1.00	S/. 0.50
Cusco	S/. 1.50	-	S/. 1.00	S/. 0.50

Peru is among the leading nations regarding Internet access in Latin America [1]. Peruvians are proud of

their *cabinas* - they are considered a national product and something 'typically' Peruvian - like the vicuñas[1] or the Inca kipus.[2] Nowadays ICTs have replaced the knots with zeroes and ones and the Internet has become the alternative for the Chasqui[3] messenger and the llamas carrying the kipus around.

The literature indicates that governments have engaged in initiatives to establish telecenters in disadvantaged regions of both the developed and developing parts of the world. However, this has not been easy since such initiatives require significant investments of funds that governments in developing countries cannot afford. The *cabinas*' organisational model has evolved and adapted itself to different circumstances. The cyber-café model is significantly different from government top-down initiatives [17]. The Peruvian *cabinas*' organisational model has evolved and adapted itself to different circumstances; similar services can be found elsewhere in Latin America. While the cyber-cafés do not have (or serve) coffee to the Peruvian people, they provide a place that permits the emergence of sociality as part of public life and offer a combination of computer-based services – with an emphasis on the 'cyber' in terms of functionality, effectiveness and efficiency.

The name cyber-café is a 'carry over' from the original idea which appeared some time ago (and still exists), in some developed countries. Cyber-cafés represent a model of shared access that may have relevance for easing the digital divide and which have expanded from the first cyber-café to the uncounted thousands that are reputed to exist today [18]. A typical cybercafé is composed of between five and twenty computers varying levels of Internet access *eg.* dial-up or broadband [19]. The cyber-café name has not been used in Peru, with *cabinas* being a 'carry over' from a community service for accessing telephones during the 1970s and 1980s. A *cabina* (booth) is a private set-up for a payphone; community centres provided access to a number of payphones for local and long-distance calls. The *cabina* name was adopted due to its familiarity with the Peruvian population.

Cabinas are the result of thousands of commercial initiatives of small informal entrepreneurs and they offer other services as needed as a telefaxing,

scanning, printing, photocopying, text editing, CD/DVD-writing, long-distance calls and video-conferencing [20]. Our research indicates that the typical number of computers in a *cabina* ranges between 9 and 32 in Lima and between 11 and 15 in Cusco. It should be noted that these ranges are not representative of this Peruvian city and town – they are illustrative. The availability of *cabinas* is widespread: even in small towns in the Andes and in economically poor sectors of cities, there are places with poor connectivity but having Internet access. Access to electricity is not necessarily an impediment with portable, gasoline-run power generators being relatively common.

While the cyber-café in developing countries is geared towards tourists and first-time users, the *cabina* and its brethren are the connectivity mechanism of choice for a number of consumers in developing countries. Cybercafés have become an important means of providing ICT accessibility to underserved people particularly in urban areas; however, they are not designed with a developmental concept in mind nor have they been used by governments to help achieve universal access requirements in the knowledge society. Shared models of ICT accessibility are very often imagined when considering ICTs for the digital divide. In contrast to personal ownership of equipment and personal access to ICT infrastructure, shared access models such as the *cabinas*, shift the physical, economic and social burdens of accessibility from the individual to businesses, communities and the Peruvian government. *Cabinas* may therefore have a significant relevance for easing the digital divide in the knowledge society.

Another aspect to be considered regarding the availability of *cabinas* is their impact in education, especially primary and secondary. Rote learning, unfortunately still common in Peru's schooling system, demands the production of small assignments repeating easy-to find information, normally provided in books or sheets of papers bought at a local store [21]. Access to the Internet changes this practice, since an aesthetically pleasing document containing standard information is 'one click away' - sometimes 'ready made' at a *cabina*. Although the skill required of the student is simply usage of Google, rote learning is nevertheless facilitated.

The existence of *cabinas* provides for an opportunity for new forms of social interaction and social networking among young adults: gaming-only *cabinas* are not uncommon in cities and towns with the 'World of Warcraft' being a popular multi-player online role-playing game with young adults. Engaging in local gameplay video championships is becoming a preferred lifestyle of entertainment. With the popularity of mobile phones, the combination of a

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[1] The vicuña or vicugna is one of two wild South American camels, along with the guanaco, which live in the high alpine areas of the Andes.
[2] Kipu or Quipu was a recording device used in the Andean region. It usually consisted of cotton cords with numeric and other values encoded by knots in a base ten positional system.
[3] Chasquis (also Chaskis) were agile and highly-trained runners that delivered messages, royal delicacies and other objects throughout the Inca Empire.

variety of new media experiences is changing the style and speed of popular culture among the young adults. This in turn will spawn new business opportunities, alter accepted behavioural patterns at homes and in schools - resulting in social norm challenges.

There is a need to approach *cabinas* and turn them into agents working for their own benefit as well as for the common good [12]. This may require appropriate government policies. For example, a national policy of *cabina* rollout requirements for unserved and underserved areas in Peru could be considered. *Cabinas* emerged as individual commercial initiatives without initial support from the government. The government approach to universal access in Peruvian cities has been basically regulating competition in the telecommunications sector [13], [22]. Only quite recently has the Peruvian government begun to pay attention to *cabinas* because of the visible interest of the population in *cabinas*. The Peruvian government has approved legislation to regulate the functioning of *cabinas*. Some groups are demanding better services, facilities and a stronger leading role in the telecommunications sector from the side of the government [17]. Such services also include call centres stationed inside the *cabinas*.

Cabinas grew out of individual decisions driven by the promise of business (or commercial) profit. Notwithstanding this situation, there have been cases in which *cabinas* have been understood as a good practice and a model. This mistake arises from assuming that the original intention for a *cabina* to be a solid, social-developmental driven performer was successful. In fact, the converse is true with whatever *cabinas* successes having been achieved by economic market forces and public interest. Policy is non-existent but its absence leaves a void that does not look'natural'. Mosse [7] argues that policy is an *end* rather than a case; a result, often a fragile one, of social processes. Given this scenario, in respect of *cabinas*, there appears a need for developmental policies to be formulated by the Peruvian government. Some possible government policy options for *cabinas* are now discussed.

IV. SOME POLICY OPTIONS
Theories of policy and policy-making have been closely associated with political ideologies in which political values play a role [23]. In order to deal with the Peruvian Internet (*i.e. cabinas*) in terms of the Peruvian government's developmental policy, Villanueva [12] suggests three possible approaches:

- To engage with the *cabinas*, anchoring them in the communities, mostly through specific services, training and content;
- To create a parallel access infrastructure, centred on community building when possible, or in government services, or a combination of both;

and
- To leave things as they are now, letting the business (or commercial) market work its magic.

In respect of the third approach, de Coning and Cloete [23] suggest that a government following this (liberal laissez-faire) approach should "leave things alone" to be determined by "the market" or "by public choice".
A new, recent development indicates a possible different approach: Peru has decided to develop a significant rural infrastructure for Internet accessibility, with public financing for satellite downlinks and local services. At the same time, the country is participating in the One Laptop per Child initiative (purchasing some 290,000 PCs between late 2007 and 2008), to be distributed mostly to young adults at rural schools. This presents a new avenue for policy, since it bypasses the existing infrastructure, created through the *cabinas*, and sets a clear new policy direction - though one that favours a specific sector of the Peruvian population while leaving the remainder of the population under the'old', default policy of ICT accessibility through private connectivity umbrella framework [24]. Taking into consideration that there is no integrated, national policy about using computers at the school, especially for secondary-level education, and that the private schooling sector is developing its own answers to the demands of the Internet age, there is a significant series of questions to be addressed by policy-makers. This should be noted especially when considering the appropriate business skills that a younger generation of Peruvians will have to possess to meet the growing economic performance of Peru.

Appropriate regulatory frameworks establishing the'rules of the game' for the *cabinas* are essential to ensure that they are designed and implemented effectively to carry out their fundamental role as tools of social development in Peru. Such a framework can also provide an environment that encourages private sector participation as well as cross-sectoral linkages. Thus there is a need for the Peruvian government to establish a clear national strategy which addresses issues of concern while developing its policy framework model parameters. Policy framework models and policy implementation studies also provide important areas for research.

Policy implementation studies, predominantly in the form of documented case studies, are commonly referred to as the'information gap'. Mosse [7] suggests that projects work because they sustain policy models offering a significant interpretation of events, not because they turn policy into reality. The gap between policy and practice is thus negotiated away. In the case of *cabinas*, the balance is perhaps ambivalent.

V. CONCLUDING REMARKS

Traditional café's have long been recognised as 'social places' for conversation and general conviviality within communities [25]. The Peruvian Internet has now become a significant component of social networking in Peru's public sphere. Given the knowledge society and *cabinas*' existing social practices, these should provide meaningful input towards Peru's national strategy policy for universal Internet services so that community needs are harmonised in the public sphere. Similarly such existing social practices should be used when formulating Peru's developmental policies. Peruvian government policy-makers have an important role in promoting ICTs in the country's technological sector and for the knowledge society. This will serve to ensure that existing social practices within the *cabinas* context may serve to ease the digital divide.

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REFERENCES

[1] B. Hoffmann, "Downloading Democracy? Potential and Limitations of the Internet for Advancing Citizens' Rights in Latin America". IPG 3/2005, 2005. Available at library.fes.de/pdf-files/id/ipg/02949.pdf [Accessed 2 July 2008].

[2] E. T. Hawkins, "Bridging Latin America's digital divide: government policies and Internet access" in *Journalism and mass communication quarterly*, vol. 80, no. 3, pp. 646-665, 2003.

[3] I. H. Meyer, and F. Cloete, "Policy dynamics: change, failure and success" in F. Cloete, H. Wissink and C. de Coning (Eds), *Improving Public Policy from Theory to Practice*. Chapter 11, 289-314, Van Schaik Publishers: Hatfield, Pretoria, South Africa, 2007.

[4] C. de Coning, "The nature and role of public policy" in F. Cloete, H. Wissink and C. de Coning (Eds), *Improving Public Policy from Theory to Practice*. Chapter 1, 3-26, Van Schaik Publishers: Hatfield, Pretoria, South Africa, 2007.

[5] M. Edwards, *Future positive: International Co-operation in the 21st century*. Earthscan Publications: London, England, 1999.

[6] S. X. Hanekom, *Public policy: framework and instrument for action*. Macmillan: Johannesburg, South Africa, 1987.

[7] D. Mosse, "Good Policy Is Unimplementable? Reflections on the Ethnography of Aid Policy and Practice. *EIDOS Workshop on 'Order and Disjuncture' the Organization of Aid Development*, SOAS, London, 26-28 September 2003.

[8] H. F. Wissink, "The prevalence and institutionalisation of policy analysis in government" in F. Cloete, H. Wissink and C. de Coning (Eds), *Improving Public Policy: From Theory to Practice*. Chapter 13, 337-366, Van Schaik Publishers: Hatfield, Pretoria, South Africa, 2006.

[9] W. I. Jenkins, *Policy analysis: a political and organisational perspective*. Martin Robertson: London, England, 1978.

[10] S. Dorsey, "Community Learning Centers. Digital Opportunities for Development", pp. 13-41, 2006. Available at www.com.washington.edu/ict4d/upload/20060126_19 1400.pdf [Accessed 2 July 2008].

[11] Codesi Perú, "Plan de desarrollo de la sociedad de la información en el Perú: la agenda digital peruana", Lima: *CODESI / PCM*, 2005.

[12] E. Villanueva, "Preliminary Assessment of the Policy Consequences of Generalised Commercially-Based Access to the Internet: A Report on Two Cases in Peru" in *Proceedings of The 2nd annual conference of the Community Informatics Research Network (CIRN2005)*, ISBN 0-620-34769-4, 216-230, Cape Town, South Africa, 23-26 August 2005.

[13] A. M. Fernández-Maldonado, "Cabinas públicas de Internet" in A. Badshah, S. Khan and M. Garrido (Eds), *Connected for Development, United Nations Information and Communication Technologies Task Force*, pp. 213-220, November 2003a.

[14] Latina, "Internet Cabinas in Peru", 2007. Available at www.zonalatina.com/Zldata174.htm [Accessed 2 July 2008].

[15] A. M. Fernández-Maldonado, "The diffusion and use of information and communication technologies in Lima, Peru". *Journal of Urban Technology*, vol. 8, pp. 21-43, 2001.

[16] E. Villanueva, Internet availability and politics in Peru: a preliminary report on an apparent paradox. *Presentada en PISTA: International conference on politics and information systems: technologies and applications*, ISBN 980-6560-21-3, July 2004.

[17] A. M. Fernández-Maldonado, "Satisfying the Demand for ICT Connectivity of Low-income Groups" in A. Badshah, S. Khan, M. Garrido (Eds), Connected for Development, United Nations Information and Communication Technologies Task Force, pp. 57-60, November 2003b.

[18] E. Ivala, "The Internet and Distance Education". *Papers presented at the 1st National NADEOSA Conference*, 11-13 August 1999. Available at www.nadeosa.org.za/Frontend/ [Accessed 3 July 2008].

[19] S. Liff, "Cybercafes and Telecottages". Programme, Economic and Social Research Council, United Kingdom, 1998. Available at virtualsociety.sbs.ox.ac.uk/text/reports/access.htm [Accessed 2 July 2008].

[20] W. H. Curioso, M. M. Blas, B. Nodell, I. E. Alva, and A. E. Kurth, Opportunities for Providing Web-based Interventions to Prevent Sexually Transmitted Infections in Peru. *PLoS Medicine*, vol. 4, no. 2, e11, February 2007.

[21] R. Trinidad, *Entre la ilusión y la realidad: las nuevas tecnologías en dos proyectos educativos del estado*. Lima: IEP, 2005.

[22] R. Barrantes, "Analysis of ICT demand: what is digital poverty and how to measure it?" En: Digital poverty: Latin American and Caribbean perspectives. Lima: *IEP/DIRSI*, pp. 29-53, 2005.

[23] C. de Coning and F. Cloete, "Theories and models for analysing public policy" in F. Cloete, H. Wissink and C. de Coning (Eds), *Improving Public Policy from Theory to Practice*. Chapter 2, 27-61, Van Schaik Publishers: Hatfield, Pretoria, South Africa, 2007.

[24] E. Villanueva, "El proyecto OLPC en el Perú" in *Tarea*, vol. 66, pp. 82-91, 2007.

[25] J. Habermas, "The Structural Transformation of the Public Sphere: An Enquiry into a Category of Bourgeois Society". Translation by T. Burger and F. Lawrence, MIT Press: Cambridge, (German 1962, English translation, 1989).

Diffusion of ICT to the Malaysian Rural Area
A Case Study of 'Kedaikom'

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INTRODUCTION

Malaysia has been aggressively promoting the usage of Information and Communication Telecommunication (ICT) to its citizens. Malaysia's e-readiness level is also amongst the highest in the ASEAN countries (Tung et al., 2002) and this achievement can be credited to the government's dynamic ICT initiative policy, specifically its 'Vision 2020 Agenda' of moving the nation towards an information society by the year 2020. Based on the 2007 figures, Malaysia's Internet penetration rate for broadband connection alone increased tremendously from only 0.08% in the year 2002 (when it was initially introduced) to 5.0% in 2007 (MCMC, 2008), showing a rapid increase in the diffusion of ICT to the Malaysian population. However, one of the major hurdles for Malaysia to have all its citizens fully utilize the usage of ICT is the fact that it is still a developing country with a large rural population (more than 40%[4]). In Malaysia, there is an uneven distribution of the basic amenities, infrastructure and infostructure between the urban and rural areas, with the rural area remaining relatively less developed. Therefore, there is a need to have a special program that will diffuse ICT to the rural population.

OVERVIEW OF ICT DEVELOPMENT IN MALAYSIA

The distribution of ICT benefits across states in

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[4] Source: Malaysian Facts and Figures. Available: http://encarta.msn.com/fact_631504809/malaysia_facts_and_figures.html

Malaysia is not encouraging, where almost 70% of users are concentrated in developed states: The Federal Territory of Kuala Lumpur, Selangor, and Penang. In terms of internet subscribers these three developed states are above the national level of more than 50 subscribers per 1,000 people. The most pressing issue affecting the rural population is digital access, and usage and sharing of information.

The Malaysian government has specifically set aside RM 1.1 billion from RM 5.2 billion of ICT allocation to implement the digital divide programmes under the Eight Malaysian Plan (8MP) - a five year development plan for the nation from the year 2001 to 2005, in order to overcome the digital divide between urban-rural populations. Under the 8MP, the strategic thrust in closing the digital divide and consequently, achieving a balanced development, will be implemented by upgrading and expanding the infrastructure accessibility in the rural areas. Among the programs implemented are the 'InfoDesa', 'e-Bario' in the state of Sarawak and 'Kedaikom'. All these programs aim to engage the community to be exposed to and use ICT. This article will specifically explain and describe the findings from a study on 'Kedaikom', the community telecenters established for the underserved rural communities in Malaysia.

BACKGROUND OF 'KEDAIKOM'

The objectives of 'KedaiKom' are to build capacity; to introduce and to encourage the usage of ICT; and to create community communication equipped with a range of ICT services to facilitate Internet access, e-commerce and e-learning. The focus is on areas that involve an active community base but lack good infostructure, and relate to village or local area economic activities that can benefit from this access. Every KedaiKom will be provided with hardware by the MCMC as a one-off allocation with a minimum of five computers, a printer and its relevant peripherals. The facilities include satellite access solutions that provide two payphone services and broadband internet access with a dedicated 128kbp for downloading and 64kps for uploading. Internet connection will be supplied by an ISP and the monthly access fee of RM 400 per site is paid by MCMC. The operation hour for the telecenter is from 8.00 am to 6.00 pm on weekdays and will be extended to 10.00 pm on weekends and public holidays. The operators manage KedaiKom as their own business. The management team consists of a minimum of two personnel- a manager and an assistant manager. Training and courses are provided in the areas of usage of the Internet for the target groups including KedaiKom operators, local leaders, teachers, students, youth and women. Classes offered include those on basic competency in the use of personal computer, maintenance and Internet awareness. There are 58 KedaiKom projects that were implemented by June 2005, and 55 of the sites were in

the state of Perak.

A STUDY ON THE ROLE OF 'KEDAIKOM' IN DIFFUSION OF ICT

STUDY OBJECTIVES
The study was designed to explore and investigate how community access to ICT would influence the digital inclusion. The role of telecenter as a medium that has capacity to build, decrease, or supplement the community development outcomes, specifically in diffusion of ICT was examined.

RESEARCH METHODOLOGY
Data Collection: Primary data was collected through the questionnaire that is distributed throughout the KedaiKom premises in the state of Perak.

Data Sampling:
(a) Research Setting and Sample Frame: The research setting comprised of 55 locations of KedaiKom in state of Perak (94.8% of the grand total of 58 nationwide KedaiKom operated throughout Malaysia).
(b) Sample Element and Sample Size: The sample element is a KedaiKom user aged above 15 years old. With an average of 10 to 20 respondents to each KedaiKom, 600 questionnaires were distributed.
(c) Sampling Design: Non-probability sampling, using convenience sampling.

Questionnaire Design: The study used a self administered questionnaire which included both fixed-choice and open-ended questions. The questionnaire was divided into three parts: first, community technology; second, the community's technical and social access to KedaiKom; and lastly, user's satisfaction levels. From the total of 360 returned questionnaires, 326 (90.6%) were useable for analysis.

DATA ANALYSIS AND FINDINGS OF THE SURVEY
The respondents or users largely agreed that the main places for them to use a computer or the Internet is at KedaiKom (79.1%) compared to cyber cafés (65.6%), workplaces (60.7%) and at home (46.6%). Most of them (89.9%) agreed that the implementation of KedaiKom in the local community was good. In order to evaluate and examine whether KedaiKom has fulfilled its objectives in terms of digital inclusion, the beneficiaries or users' profile was identified. The gender proportion almost balanced, where female users numbered 52.5% of the total (see Table 1). Single users comprised of 88.7% of total users. The proportion of users with a 'single' marital status closely related to the fact that 83.1% of respondents' were less than 25 years of age. Majority of the users are single and students. As for the users' education

level, 67.8% of the users had secondary school level of education while 25.1% had attained tertiary education (attended polytechnics, colleges and universities).

Table 1: Distribution of KedaiKom Users by Gender, Marital Status, Age and Education

Attribute	Item	Number	%
Gender	Female	171	52.5
	Male	155	47.5
	Total	326	100.0
Marital Status	Single	289	88.7
	Married	34	10.4
	Divorcee	3	0.9
	Total	326	100.0
Age	15 – 19 years	178	54.6
	20 – 24 years	93	28.5
	25 – 29 years	19	5.8
	30 – 34 years	9	2.8
	35 – 39 years	8	2.5
	Above 40 years	19	5.8
	Total	326	100.0
Education Level	Primary School	4	1.2
	Secondary School	221	67.8
	Skilled Institution	13	4.0
	Polytechnic/College	46	14.1
	University	36	11.0
	No Formal Education	6	1.8
	Total	326	100.0

The socio-economic pattern of the users illustrates that most of them belong to poor and low-income groups and the majority were Malaysians. The study results disclose that 91.4% of the users have a family monthly income of less than RM 2,000; lived in their family home (78.5%); and 99.1% were of Malay ethnicity (as measured by the mother tongue) (Table 2). In terms of occupation, the majority were students (56.1%). About 45.0% of the users spend at least two hours per typical visit. Furthermore, 37.1% of the users have more than 3 years of computer experience compared to 29.1%, who have less than one year experience. Therefore, this finding reveals that most of the users are experienced internet users.

Table 2: Distribution of KedaiKom Users by Occupation, Income, Residence Type and Mother Tongue

Attribute	Item	Number	%
Occupation	Government Employee	14	4.3
	Private Sector Employee	32	9.8
	Self Employee	42	12.9
	Housewife	8	2.5
	Unemployed	40	12.3
	Retiree	5	1.5
	Students	183	56.1
	Others	2	0.6
	Total	326	100.0
Family Monthly Income	<RM 1,000	215	66.0
	RM 1,001–2,000	83	25.5
	RM 2,001–3,000	14	4.3

Attribute	Item	Number	%
	RM 3,001–4,000	5	1.5
	RM 4,001–5,000	4	1.2
	> RM 5,000	5	1.5
	Total	326	100.0
Type of Residence	Rental House	36	11.0
	Owned House	34	10.4
	Family House	256	78.5
	Total	326	100.0
Mother Tongue	Malay	323	99.1
	Chinese	2	0.6
	Tamil	1	0.3
	Total	326	100.0

This study also divided the users into two groups-active and passive users. Active users were those who visited KedaiKom at least once a week, and passive users were those who visited KedaiKom less than four times in an average month. It was found that 230 or 70.5% of the respondents were active users. In term of gender, this study found that male respondents generally tend to be more active than the female, and in terms of occupation, students tended to be more active than working users.

In responding to the issue of KedaiKom and digital inclusion influencing the beneficiaries' ability to achieve desirable digital inclusion from their KedaiKom; the findings from Table 3 explained that the personalities of KedaiKom users will not influence their ability to achieve desirable digital inclusion from KedaiKom in the underserved community, particularly as active users, except for male and student users. This showed that the demographic factor has no bearing on the personalities of KedaiKom users, on whether an individual would be an active or passive user. No significant differences were found between the two user groups with respect to age, marital status, education level, and family monthly income.

Table 3: Active and Passive Users: A Demographic Factor Comparison

Demographic Factor	Significance		Active Users		Passive Users	
	χ^2	P	n= 230	%	n= 96	%
Gender:	6.707	0.010				
Female			110	47.8	61	63.5
Male			120	52.2	35	36.5
Total			230	100	96	100
Age:	4.045	0.132				
<25 years			185	56.7	86	26.4
25 to 34 years			23	7.1	5	1.5
Above 35 years			22	6.7	5	1.5
Total			230	100	96	100
Marital Status:	2.227	0.136				
Single			200	61.3	89	27.3
Married/Divorced			30	9.2	7	2.1
Total			230	100	96	100

Demographic Factor	Significance		Active Users		Passive Users	
	χ^2	P	n= 230	%	n= 96	%
Level of Education: Secondary School/ Skilled Institution	2.357	0.970	166	50.9	68	20.9
Polytechnic/ College/ University			57	17.5	25	7.7
Others			7	2.1	3	0.9
Total			230	100	96	100
Occupation: Gov/Private/Self Employed	7.394	0.025	72	22.1	16	4.9
Students			122	37.4	61	18.7
Others (Housewife, Unemployed/ Retiree)			36	11.0	19	5.8
Total			230	100	96	100
Family Monthly Income: Less than RM 1,000	1.632	0.443	156	47.9	59	18.1
RM 1,001-2,000			54	16.6	29	8.9
More than RM 2,000			20	6.1	8	2.5
Total			230	100	96	100

As for the community's readiness to adopt ICT, the findings suggests that users are certainly ready and capable to adapt to ICT, with more than 70% of users agreed that ICT is important as a tool to develop the local community. More than 80% of the respondents agreed that community learning is enhanced by the incorporation of ICT in everyday life; that the rural community adequately supports the implementation of ICT initiatives; and local community leadership are willing to lead ICT development.

As for the issue of KedaiKom and digital inclusion for influencing community members' ability to adopt ICT in their everyday life, the findings suggest that rural communities adequately support and are willing to participate in the implementation of ICT initiatives. In addition, rural communities place appropriate emphasis on the integration of ICT, and the willingness of local leadership to lead when implementing ICT development in their local area. Users also believed that community learning is enhanced by the incorporation of ICT in everyday life. In order to make the expansion of ICT, in particular to bridge the digital divide initiatives in underserved community successful, the combination of community technology and social support is crucial to overcome barriers. About 70% of users agreed that improving

work related skills; improving skills to attain better jobs; and finding employment are important to them. About 70% of users also agreed that enrichment in information; social networking; encouraging information sharing among users; involvement in entertainment; and increasing interaction among community members are relevant for them.

More than 70% of users were satisfied with the services and facilities offered by KedaiKom. The result from the study also revealed that the conditions and the physical outlook of the KedaiKom as well as the availability of courses and training are not significant in attracting users. Instead, the staff disposition, Internet speed, operating time, and rates are more important for the users to consider their likely visit to KedaiKom.

IMPLICATIONS
The present research finding suggests that the implementation of KedaiKom in the underserved community is good and beneficial. With the majority of the users being youth, they are in a productive cohort that uses KedaiKom in a productive and effective manner. Majority of the beneficiaries of KedaiKom are also experienced internet users. It shows that active users are not influenced by the demographic factor, but the necessity and the need to use KedaiKom, especially for more significant reasons such as for job hunting, information seeking and sharing, acquiring knowledge and skills, social networking as well as in entertainment. The high level of ICT awareness and technology integration among community members will influence their ability to adopt ICT in their everyday life. Generally, the underserved community is ready and capable to adopt ICT.

The local community places an appropriate emphasis on the integration of ICT, with the support of the local leadership. Moreover, the community members are aware that for the diffusion of ICT and for bridging the digital divide initiatives in the local community, the combination of community technology and social support is crucial to overcome the barriers to technology integration. Those barriers include the lack of skilled staff, community support, information sharing, training, planning, infrastructure, funding and local leadership. The success prospects of a telecenter project are also affected by the combination of the interrelationship between the exogenous and endogenous elements. The exogenous elements include the function of the government and local authorities to continually promoting ICTs to the local community. The endogenous elements involve the strong support of ICT projects by the local. The most important usage objectives are related to the improvement of the user's skills and knowledge, which include improved working skills; increased

earnings; involvement in teleworks, e-commerce, and e-learning; and saving time for personal transactions. Thus, this positive usage of KedaiKom will eventually encourage the community members in the adoption of ICT in their everyday life.

Most of the users are satisfied with the facilities and services provided by the KedaiKom. The present research findings suggest that for the rural community, the implementation of KedaiKom in their community is more important than the physical condition of the KedaiKom itself or the supporting materials such as local content as well as the availability of related courses and training. The availability of internet access and the opportunity to use computers is more than sufficient for the rural folks for them to be the users of KedaiKom.

CONCLUSION
The KedaiKom is the main source for the underserved community to use computers and access the Internet rather than at home or at the workplace. Most of the KedaiKom users perceive that the most important step is to provide opportunities for them to access computers, the Internet and basic applications rather than providing quality services and environment, and ICT courses and training.

Overall, it can be concluded that the KedaiKom project, as rural telecenters to serve the underserved rural communities, has assisted the Malaysian government's objectives of diffusing ICT to the rural population. The results from the study clearly show that the rural population, especially the younger generation that will shape the country's future ICT agenda, is using the facilities at the telecenters as a point of access to ICT.

REFERENCES
- Government of Malaysia (2001a). *The Third Outline Perspective Plan 2001-2010*. Retrieved May 20, 2004 from www.epu.jpm.my/Bi/dev_plan/opp3.htm
- Malaysia Communication and Multimedia Commission (MCMC) (2008). *Facts and Figure 2007*. Retrieved November 10, 2008 from http://www.mcmc.gov.my/facts_figures/stats/index.asp.
- Ministry of Energy, Water and Communications (MEWC) (2006). *Industry Introduction: Institutional Arrangement*. Retrieved November 29, 2006 from http://www.ktak.gov.my/bm/template01.asp?contentid=42.
- Tung, X,; Sebastian, I.M.; Jones, W.; and Naklada, S. (2002). *E-Commerce Readiness in East Asian APEC Economies – A Precursor to Determine HRD Requirements and Capacity Building*. Asia-Pacific Economic Cooperation, Telecommunications and Information Working Group, Business Facilitation Steering Group, National Electronic and Computer Technology Centre, Bangkok, Thailand.

ICT-backed Healthcare and Support for Geriatrics

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Abstract

Life expectancy in India has been improving.[1] However, this has also thrown up challenges in dealing with geriatric population that is on the rise. India is yet to fully develop an end-to-end health care system for senior citizens. This, coupled with increasing structural changes in the societal matrix – from the conventional joint family to more urbanized nuclear family, migration and changes in economic activity – are all leaving the old people at the receiving end. Healthcare assumes one of the top most priorities for them.

With technology penetrating deep into the rural hinterland, it may now be possible to evolve a method for addressing the concerns of the senior citizens in a better manner, especially in the rural areas. Information and Communication Technology (ICT) can easily become an enabler for such schemes. The setting up of the common service centers (CSCs) promises a ray of hope as it will be able to provide surplus capacity to act as the last mile point of access to the rural citizens for elementary healthcare and support. This could also act as the last tier of a multi-tier health referral system. Once established, the system can also accommodate other related value added services meant for senior citizens such as health insurance and old age welfare schemes from the state.

Introduction

There have been several welcome developments in extending the welfare net to senior citizens, who for a long time remained as a neglected segment within the civil society. Starting with fare concessions on travel to better rate of returns on deposits with banks, the right noises have been made at the policy level in acknowledging the senior citizens. Yet much needs to be done in making public health care accessible to them, which logically speaking, should take precedence over other services. Based on the 2001 census, there are about 80 million senior citizens in the country and this will be over 120 million by 2020.

This papers attempts to identify ways in which Information and Communication Technologies (ICT)

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[1] The Registrar General of India states that life expectancy at birth for Indian males and females in mid 2003 was 62.3 and 63.9 years respectively, giving an overall life expectancy of 63.2 years.

can act as enablers to provide senior citizens easy access to health care, which otherwise is a challenge for this segment. The paper tries to establish that ICT can act as the backbone for broad spectrum public health care for the aged with the Accessibility, Acceptability and Affordability principle.

The paper also tries to examine the challenges and possible conflicts involved when technology plays a central role in a domain like health care. It finally concludes by suggesting a loose architecture for the public health care for the aged and a business model that may be considered for ensuring sustainability and replicability. Furthermore, the paper tries to establish the possible linkages between robust geriatric health profiling and transparent health insurance schemes. It also envisages the possibility of linking existing senior citizen schemes such as old age pension, widow pension etc. to the senior citizen health record.

Background

India along with other WHO member Nations pledged to ensure 'Health for All by the Year 2000' at Alma-Ata in 1978; and in the same year signed the International Covenant for Economic, Social and Cultural Rights – Article 12, in which the State is obliged to achieve the highest attainable standard of health. However the health scenario in India is abysmal.

The number of people over the age of 60 is expected to triple by 2050, according to a 2006 revision of 'World Population Prospects' by the UN Department of Economic and Social Affairs Population Division. And India, Nigeria, Pakistan, the Democratic Republic of Congo, Ethiopia, the US, Bangladesh and China will account for half of the world's 2.5 billion extra people by 2050.

The United Nations broadly classified societies into 'young' (4% or less of those aged 60+), 'matured' (4-7%) and 'ageing' (7% and above). India, which falls under the 'matured' society category, has moved further into the 'ageing' society.

The age-wise segments within the growing population are increasing at different rates, the fastest growing segment being the 60-plus bracket. As a result the percentage of population of the elderly is likely to grow steadily. According to United Nation's estimates there are 427 million aged persons in the world today, which constitute about 8.8 per cent of the total. However, by the year 2025, the population of the aged is likely to reach 1171 millions, which will constitute a staggering 21.9 per cent of the total population. It is estimated that by the year 2010 the elderly population of India may be around 124 million, constituting over 10 per cent of the total population.

Beyond the statistics, there are several socio psycho implications for the geriatric segment that need to be considered. In the Indian context, concepts of old age homes and Third Party Geriatric Care are yet to mature. Existing social system looks down at the proposition of sending ageing parents/relatives to "Homes." However, the increasing pace of life among the younger generation has resulted in a widening gap between them and their seniors. Economic non-productivity, failing physical abilities all add to the complexities that already exist with the geriatrics. Partners in Development Initiatives, an NGO working on health has pointed fingers at "loneliness" as a debilitating factor among the senior citizens. A study on geriatrics in Kashmir speaks about depression as a serious ailment that often goes unnoticed.[1] The paper also correlates the possibility of depression to family care and support. Adding up all the socio-economic factors, it becomes evident that this 10 per cent segment of ageing citizens requires equal or more attention than the new born and infants at the other end of the social spectrum. Needless to say, a significant part of such an intervention must happen from public spending.

The Government has attempted to give a boost to public health care by raising public health spending from the current 0.8 per cent to an estimated 3 per cent of the GDP (approximately INR 250 billion) by 2012 through a large program called the National Rural Health Mission (NRHM). NRHM is a comprehensive programme that seeks to improve rural health through decentralized planning and interventions. NRHM is being operationalized throughout the country with special focus on 18 states- Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Uttar Pradesh, Uttaranchal, Orissa and Rajasthan, 8 North-East States, Himachal Pradesh and Jammu & Kashmir. NRHM, together with the states' own health reform plans, is expected to push public spending in the health sector for better results.

The main aim of NRHM is to provide accessible, affordable, accountable, effective and reliable primary health care facilities, especially, to the poor and vulnerable sections of the population. NRHM seeks to strengthen Public Health delivery services at all levels. The interventions/initiatives launched under the NRHM aim to reduce mortality and morbidity, and consequently improve life expectancy.

While NRHM seeks to widen the coverage of healthcare through "innovation" and "public private

partnerships", role of technology is not expressed as forcefully as it could, however implicit it may be. Thus, a situation has arisen where there is a substantially large ageing population on the one side and there is an overarching "affordable, accountable, effective and reliable" health policy on the other side with a connecting link in between. Use of Information and Communication Technologies (ICT) can be an effective enabler in this context.

Health is a state subject; however, it is under the overarching reach of the National Rural Health Mission (NRHM). There are several avenues in the NRHM that can be extended to benefit the senior citizen of the rural areas. Some of the measures that we propose are:

- Mapping primary data of citizens
- Use of telecenters as collection points
- Convergence of data with the Village Health Plan, and making this data available to Rogi Kalyan Samitis (RKS)[2]
- Use of sub centres (SCs) as the first level of data processing
- Use of Primary Health Centres (PHCs) as the repository for localised health information
- Develop two-way information flow from PHCs to Community Health Centres (CHCs), medical colleges and research institutions
- Develop public private partnership for research and evidence-based promotive, curative and preventive care at the state medical department/headquarters level

Mapping Primary Data
Mapping and profiling of senior citizens at the local level is the single most important task in this exercise. Ageing and ageing-related ailments generally relate to disabilities affecting vision and locomotor movements, urogenital disorders and gastrointestinal disorders claiming the highest rate of prevalence.

The Department for Community Medicine at the All India Institute of Medical Sciences (AIIMS) has suggested the following set of parameters that can be applied to geriatrics. The entire matrix can be filled through a combination of efforts by the Accredited Social Health Activist (ASHA/ Multi Purpose Workers-MPWs)[3] and the Gram Panchayat.

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[1] Y. I. Munshi, M. Iqbal, H. Rafique, and Z. Ahmad, "Geriatric morbidity pattern and depression in relation to family support in aged population of Kashmir Valley," *Internet Journal of Geriatrics and Gerontology*, vol. 4, 2008.

[2] A Rogi Kalyan Samiti (Patient Welfare Committee) is a registered society that acts as a trustee for a hospital and manages the affairs of the hospital. It consists of members from local Panchayati Raj Institutions, NGOs, local elected representatives and officials from Government sector who are responsible for proper functioning and management of the hospital/ Community Health Centers/ First Referral Units. Source: NRHM
[3] It has been proposed under the NRHM to appoint

Source: Department of Community Diseases, All India Institute of Medical Sciences

Use of Telecenters as Collection Points

Under the National e-Governance Plan (NeGP) of the Government of India, 100,000 rural telecenters and another 10,000 urban/semi urban telecenters running on broadband connectivity and offering government services will be established. The telecenters will presumably have surplus capacity to act as collection points for geriatric health profiles. ASHA/MPWs with sufficient training can use the centres (there will be a minimum of one telecenter for a cluster of six villages) to upload the non-GP data. Senior citizens can be identified with the help of census data or through physical verification by the health workers. The profile once recorded fully, will generate a reference number that will be retained by the citizen.

Convergence of Data on to Village Health Plan

Accredited Social Health Activists (ASHAs), whose functions will be similar to that of ANMs but who will serve a population of 500 to 1000 people in hilly and desert terrains. Source: NRHM

NRHM envisages the development of a village health plan that is aimed at capturing the salient health parameters of the region. The geriatric health mapping could be a component of the village health plan. Further, this data could be used for reference by the Rogi Kalyan Samiti, a participatory committee formed at the district level.

Localisation of Data for Decentralized Administration

One of the unique features of the data capturing and retention at the local level is the reverse engineering impact it can have on health administration. As data at the grassroots level gets pushed upwards, it will also throw up region-wise demand for medical interventions and supply of drugs. A case in point is the decentralization of medical treatment for snake bites, effected by the Health Department of Goa. The Goa experiment shows how deaths from snake bites could be minimized through capacity building at the local level and decentralization of anti venom administration. Similarly, health care for senior citizens must be addressed by first mapping the generic needs of this segment, and then effecting it through a process-driven health support system.

Reduction in Deaths from Snake Bites through Localized Capacity Building and Decentralization of Anti Venom Administration in Goa

Mining is a major economic activity in Goa. The activity calls for substantial deforestation, which results in the straying of the forest inhabitants into human habitats. Cobra and krait are two commonly found reptiles in these parts and these snakes found their shelters in the houses and barns of the neighbouring villages.

This has resulted in increased number of snake bite reporting in the villages neighbouring the mining belt. Both snakes inject lethal neuro toxins into their objects which results in the breakdown of the nervous system and subsequent death. Only district hospitals stored the anti-venom for such snake bites and the delay in reaching the victims to the district hospitals invariably resulted in the loss of life.

A significant turnaround to this situation was effected with the collective efforts of the Health Department of Goa and an NGO. The Volunteers NGO worked with the youth and trained them to catch snakes when anyone reported having sighted them. Instead of creating a pandemonium out of fear, the villagers would seek the help of the volunteers to catch the snake from houses or barns. The snakes are then let out into their own natural habitat by the volunteers.

The Health Department, on the other hand, used the volunteers to sensitize the common people about snake bites and the essential first aid to be administered. The department also trained the medical and paramedical staff at the PHCs, CHCs and SCs in the mining belt to store anti-venom vials. This has helped to significantly reduce the loss of human life in the region.

The Public Health Care System follows an elaborate process of reporting. However, in practice, these reports are erroneous, unreliable and far removed from truth. This apart, these monthly dispatches are executed with a lag at village, block and district levels resulting in a wasteful exercise. Thus, the present system defeats the very purpose of accurate and clean data collection. With the proposed health care revamp using ICT, the village level telecenters can act as points for the primary level data collection. Data that is digitally fed in can be sent to multiple recipients without any time lapse. MPWs, ASHAs and Anganwadi workers who normally get intimidated by the amount of file work for such reporting can pass on the information to telecenter operators who would be responsible for entering and updating data.

Today, the data received from the field is kept with scant respect at the state headquarters. Often such files are looked at only when questions about a particular disease or a pandemic outbreak are raised in the legislative assembly or in Parliament. However, digital data updated at the village level can be converted into a wealth of primary information with respect to the general health profile of each and every region. The data can be used by not only the Directorate of Health Services in the state but also Institutes of Nutrition, Virology, Immunology, Communicable Diseases etc. to analyse and study commonly occurring deficiencies and the diet pattern of the people in a particular region; and to work on the possibility of supplementary nutrition etc

The Tripura Experience
In Tripura, the government is experimenting with the use of ICT in healthcare on a large scale. The government has embarked upon a plan to link major government hospitals in the state with PHCs with CSCs. This model is replicable as well as scalable in the rest of the country too. A work flow chart of the program is given below.

Telemedicine Model, Tripura
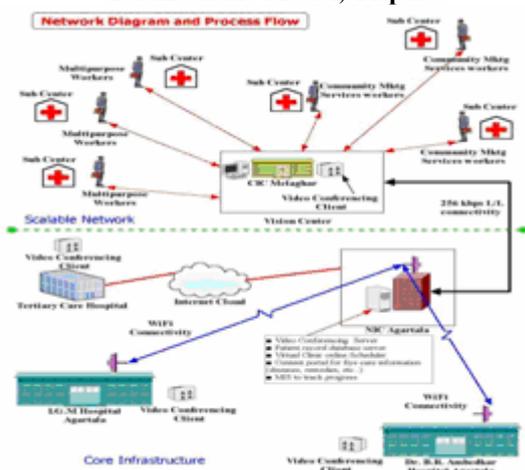
Earlier, the people of Tripura had to travel long distances to access health care services. Now, this is no longer required– at least in the case of eye sight related problems. The Vision Centre project, initiated by the Department of Health, provides quality eye care services to rural patients in an integrated manner whereby every case is accounted for, classified and closed with a solution.

41 vision centres for providing tele-ophthalmic services are being rolled out across the state. The vision centres in rural villages are connected to the mini data centre at IGM Hospital in the city for maintaining electronic medical records and connectivity with an ICT enabled real time consulting facility at the ophthalmology-OPD counter at IGM.

The project is being deployed in phases and caters to a population of about 3.4 million people spread across 38 blocks of four districts in Tripura. The first and second phases have been successfully completed with more than 5,000 patients having been screened in 11 locations. The third phase is currently on for the remaining locations in the state.

The Tripura model proves that a reliable network of primary data collection centres (telecenters) could be put to good use to link up with a multi-tiered health referral system finally terminating at the speciality and super speciality hospitals in possible far off areas. This hub-and-spokes model has the potential to include other services related to health care, such as health insurance and old age pension.

Data Synthesis and Way Forward
Some states have taken the step of connecting the front and back ends of the hospital administration. Since health is a state subject, the progress of interlinking medical establishments within and outside the states varies. However, concepts like Electronic Health Records (EHR) and Hospital Management Information Systems (HMIS) are being implemented at several places. Similarly, back-end supply chain management programmes are also being embarked upon. The proposed health profiling for the senior citizens can compliment the ongoing reforms and modernization in the public healthcare sphere.

The senior citizens' health mapping needs to be backed by a regular institutional support system which may be fee-based. The operational success of the scheme relies heavily on post-data support. The mapping done at the telecenters will be rendered useless soon enough unless it is regularly updated and followed up with through an institutional backing. The proposed plan is to widen the net of healthcare support through home visits by ASHA/MPWs and if required, the village postman.

Thus, the designated telecenter in the region acts as a data entry point for the entire catchment area

surrounding it. The (non-clinical) data is captured into a designated template by the ASHA/MPW and sent to the SC or PHC. Citizens, who are in receipt of the reference number from the telecenter, can present themselves at the Sub Centre or PHC for examination by the general physician (GP). The GP can access the template of the patient by feeding in the reference number and complete the clinical parameters of the patient. This completes the health profile of the rural citizen.

Using the health profile as a reference, the GP can flag areas of concern and send the template back to the telecenter. The telecenter manager acts as the coordinator for the region and uses the network of ASHAs/MPWs or even village postmen to track patients who require medication, care and support. Health profile card holders, in turn, pay a pre-designated amount for the service.

Enhancing Value Delivered to Stakeholders
The data collected at the grassroots level pertaining to this segment of the society is priceless. Research institutions such as the National Institute of Immunology or Institute for Tropical Medicine may find data updated at regular intervals to be extremely important. On the commercial front, health insurance companies stand to gain significantly as they could get authentic information regarding citizen's health. This information is also very useful to pharmaceutical companies and manufacturers of personal hygiene products wishing to target this segment.

From the welfare point of view, there are already several schemes running in the country that use chip-embedded plastic cards for data storage. NREGA scheme in Bihar, Women Economic Empowerment Scheme in Rajasthan, Employees State Insurance Scheme by the Ministry of Labour, Government of India are all examples where personal information is stored and distributed on plastic cards for easy mobility, transferability and authenticity. Therefore, it should not come as a surprise if a willing state introduces SMART health cards for its rural citizens that can be read at the Sub Centre level and upwards.

Indian Mobile Banking

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Over the past decade, far more people in India have gained access to mobile phones than to banking services. It's estimated that more than 400 million Indians have mobile telephone connections today and

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from the beginning of 2009 close to 15 million new mobile users have been added every month. In just the past 6-7 years mobile phones have become trusted and accepted by a large section of society as a means to exchange of information verbally as well as through text menus and messages. The Telecommunications Regulatory Authority of India (TRAI) estimates that while more than 70% of Indians have access to mobile telephone networks, outreach to the rest is happening quickly.

The formal financial system has been built over the past 150 years and by contrast reaches a smaller portion of India's 1.15 billion people. Nationwide there are approximately 55 million bank accounts, 14 million customers of microfinance institutions, 42 million members of village-based self-help groups with links to banks, and an estimated 100+ million members of cooperatives that offer financial services.[2]

India has 850 million people who live on less than $2 per day. At the same time it is emerging as one of the world's most influential countries. There is strong government interest in expanding financial services, an active microfinance sector, and fast-evolving business and technology sectors. India has all the ingredients for making mobile banking work: a government committed to increasing access; a central bank cognizant of the potential and the risks posed by branchless banking models; a large, sophisticated banking sector; a dynamic and competitive mobile phone industry; and no lack of cutting-edge technology providers. In addition, the relative ease and low cost of getting connected means that mobile telephones have rapidly become more accessible to poorer people than any other service provider network. All over India mobile telephones are being used by poor and rich alike. However, the potential of mobile banking is still largely unrealized.

Financial inclusion regulations put banks at center
The Reserve Bank of India (RBI) has consistently expressed a strong interest to improve access to financial services for poor people. Three years ago the RBI was amongst the first regulators to issue agent (business correspondent) guidelines in an effort to create space to provide financial services outside bank branches, along the lines of what Brazil and South Africa had previously done. Since then three areas of particular concern - promoting access to finance, protecting customers, and banking sector stability - have shaped RBI's thinking on branchless banking and mobile banking in particular. But progress has been slow so far. Despite the proliferation of business correspondent organizations that have signed on

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[1] Consultative Group to Assist the Poor, http://www.cgap.org

[2] N. Srinivasan, *Microfinance India: State of the Sector Report 2008*. India: SAGE Publications Pvt. Ltd, 2008.

several million customers, regulatory restrictions on the BC model means that it is difficult to make it profitable. Banks largely regard the use of business correspondents as a corporate social responsibility rather than a business opportunity. As a result, no viable models for the use of business correspondents have yet emerged. Reaching out to the hundreds of millions of un-banked people with financial services does not appear to be happening. The regulator can play a greater role in expanding access by pursuing policies that both make it easier to roll out services and that provide standards to ensure mobile banking is both broadly available and secure.

In general, the regulator has taken a bank-centric approach to mobile commerce. In October 2008, RBI issued mobile banking guidelines that permit only licensed banks with a physical bank presence in India to launch mobile banking. The guidelines follow previous directives on the use of business correspondents and technology to extend basic banking to the poor, both of which also assign a central role to licensed banks. The October guidelines state that banks offering mobile banking must ensure that customers with mobile phones from any network operator can use the service. Additionally, only domestic Indian rupee transactions are permitted and are capped at Rs 5,000 (US$104) per customer per day for fund transfers and Rs 10,000 (US$208) for purchases.[1]

Current regulations for e-money clearly do not permit issuance of e-money (or other similar stored-value instruments) by non-banks. As a result, non-banks, such as mobile telecommunications providers and e-payment service providers interested in branchless banking, have had to negotiate partnering arrangements with banks – this could be an expensive and complex proposition that will limit the potential for outreach. Banks often comfortable with their existing client segments show little serious effort to expand their mobile banking offerings.

Banks move gingerly into mobile services
To date, several banks have shown interest in mobile phone-based services, though none yet sees it as a part of its core business offerings. One of the earliest offerings was introduced in 2004. ICICI, India's second largest bank, launched a service in conjunction with Reliance Communication (R-Com), India's third-largest mobile provider. The service enabled an ICICI Bank customer who also subscribed to R-Com to send to and receive money from another ICICI customer (up

to a maximum of Rs 5,000 in any one day). Today, the mobile banking service is also accessible through four other mobile providers: Airtel, Vodafone, Tata Indicom and Idea.

More recently, Airtel, India's largest mobile provider, launched a range of mobile commerce services in partnership with India's HDFC Bank, ICICI, SBI, Corporation Bank, and VISA. The services, launched early last year, include mobile money transfer, bill payment, and prepaid recharge. Also last year, Barclays India introduced an offering called Hello Money that lets customers perform tasks such as checking balances, paying bills, transferring money, and adding prepaid minutes.

Meanwhile, public sector banks are rolling out their own mobile banking solutions. Union Bank of India recently rolled out UMobile, a mobile service for account inquiries and fund transfers. And State Bank of India, the country's largest commercial bank, now offers the first rendition of a service called SBI FreedoM, which provides fund transfers, account inquires, bill payment, and top-ups.

Technology intermediaries lead the way
Technology companies that provide backend functions for mobile commerce are taking the lead in rolling out new services that involve banks and mobile network operators. But while they are driving ideas, technology providers need partnerships to carry them out. Banks hold the accounts and mobile network operators have the channels and large agent networks.

To date, technology providers like Oxigen, mChek, Obopay, FINO, and A Little World have developed m-payment platforms and business models that are ready to be rolled out to un-banked customers via agent networks. The future growth of these depends on both creating partnerships with banks and agent networks (often organized under a non-profit business correspondent company).

Recently, Airtel partnered with mChek, an Indian provider of mobile security and payment technology, to provide the means to operate its mobile commerce platform. mChek says that currently more than 1 million users are accessing its technology. Another technology provider, FINO, is developing a solution combining the use of smart cards, biometrics, and electronic capability that will enable ICICI to see all transactions with partner microfinance institutions within 24 hours, thus addressing the difficulty in complying with know-your-customer requirements. FINO is experimenting with similar technology with a dozen other banks as well.

A Little World is another technology vendor which has made an initial foray by providing the technology

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[1] Reserve Bank of India. (2008, Oct. 8). Mobile Banking Transactions in India: Operative Guidelines for Banks. Available:
http://www.rbi.org.in/Scripts/NotificationUser.aspx?Id=4524&Mode=0

which has enabled banks to open thousands of accounts quickly. For example, teaming with the State Bank of India in the state of Andhra Pradesh over the last two years has enabled the bank to open 1.8 million accounts, each attached to a basic no frills account and magnetic swipe card. The state government processes some of its social payments through this newly developed channel increasing efficiency and removing opportunities for corruption. This early progress though still faces an uphill task in generating enough revenue to cover the costs. Estimates indicate it has cost the bank 50 rupees to open each account but it has earned only 5 rupees per account thus far. All must remain hopeful that the new channel adds more business to become fully viable,

Some action, no breakthroughs

Still, while banks, mobile network operators, and technology providers are rolling out a number of initiatives to extend cell phone banking, uptake has been slow. Banks are not well placed to take the lead nor are they enthusiastic to do so, technology providers are limited to complex partnership-based business models that are still unproven, and mobile network operators have the scale, appetite, and networks but are restricted by regulation. The potential for payment and m-banking services to be provided by mobile network operators and other non-banks has not yet been realized due in part to restrictions on e-money issuance by non-banks.

There have been indications, however, that change is on the horizon. International experience suggests that it is not necessary to subject non-bank e-money issuers to the full panoply of licensing and prudential requirements applicable to banks. The risks of non-banks issuing e-money can be minimized by stipulating certain specific regulatory requirements, such as limiting investment of the e-money float to low-risk/ highly liquid instruments, and limits on per-customer transactions and maximum e-money balances. In addition, to minimize risk of loss of customers' funds, operators can be subjected to enhanced security requirements and risk-appropriate market entry requirements.

The RBI to its credit is also taking initiatives to open up more regulatory space. The new Governor has publicly noted the potential of technology to extend banking services. And in recent months the RBI has taken some steps to further open up some of the initial restrictions placed on the use of business correspondents by extending the distance they can be opened from bank branches. A new working group has been formed to consider what kinds of people and organizations can be used as business correspondents. To date, prominent players in India's telecommunications, technology, and financial sectors have invested substantial time and resources into developing mobile banking services and infrastructure. It is time to think about how these investments will make a greater contribution to financial inclusion for the unbanked.

3rd International Conference on Information and Communication Technologies and Development (ICTD2009)

The 3rd International Conference on Information and Communication Technologies and Development (ICTD2009) was held on April 17-19, 2009 at Carnegie Mellon University in Doha, Qatar. The conference was attended by around 300 participants including several luminaries such as Dr. Raj Reddy of Carnegie Mellon University. Mr. William H. Gates, Chairman of Microsoft Corporation and Co-Chairman of the Bill and Melinda Gates Foundation and Mr. Carlos A. Primo Braga, Director, Economic Policy and Debt, The World Bank delivered the keynote presentations at the conference.

The objective of the ICTD2009 conference was to provide a forum for academic researchers and scholarly practitioners working with ICT applied to development. The conference program included oral and poster presentations, panel discussions, workshops, and demo sessions which provided researchers and practitioners a venue for showcasing live demonstrations of their work.

Among the 250 papers submitted for the conference, 19 papers were selected for oral presentation while another 27 were chosen for poster presentation. The papers focused on a wide variety of development goals involving a broad and innovative range of digital technologies. The paper titled "Results from a Study of Impact of E-government Projects in India" by Prof. Subhash Bhatnagar of IIM Ahmedabad and Ms. Nupur Singh of the Centre for E-Governance, IIM Ahmedabad was selected as the "Best Paper" at the conference.

Panels discussions organized during the conference covered various topics including new opportunities for development that have emerged thanks to the incredible penetration of mobile telephony in the developing world, and the associated issues and challenges; and issues related to evaluation of ICTD initiatives.

In conjunction with ICTD2009, IPID (the International Network for Postgraduate Students in the area of ICT4D) and GSHCID (Graduate Students in Human-Computer Interaction and Development) organized The Young Researchers' Workshop on the 17th of

April 2009. The workshop provided an informal forum for "young" researchers in the area of ICTD/ICT4D to meet, network, and share experiences in ICTD research. While the conference provided an excellent opportunity to present polished publications, the workshop was meant to facilitate discussion on work-in-progress research, field experience, and on the challenges on ICTD research. The workshop was divided into two sessions covering presentations of research, as well as break-out discussions in smaller groups, ending with a wrap-up discussion amongst all participants.

The other two workshops organized during the conference were the ICTD Curriculum Workshop to discuss current efforts in ICTD teaching, and begin a conversation on the content and issues that ICTD instructors think should be taught at the undergraduate and graduate level for future researchers and practitioners; and a third workshop to highlight rigorous, scholarly research in ICTD, and to raise and explore some of the questions around what makes good ICTD research.

Launch of the Centre for Development Informatics (CDI) at the University of Manchester

The Centre for Development Informatics (CDI) was launched recently – on the 14th of May, 2009 at the University of Manchester. CDI is a multidisciplinary centre researching the role of information and communication technologies (ICTs) in socio-economic development. The centre's work focuses on six main themes: Business, Informatics and Development; e-Governance for Development; IT Sector Development; ICT Policy; Mobiles and Development; and Theorising Development Informatics.

The Centre builds on the University's leading work in development informatics and expertise in e-government, e-commerce, ICT policy, IT off shoring, etc. to support growth in opportunity areas such as "m-Development", where the world appears to be on the edge of rapid expansion of interest - given the explosive growth rates of use of mobile phones in developing countries. The Centre for Development Informatics currently hosts a dozen PhD researchers, and also offers the one-year Masters degree on ICTs for Development.

New Books

Unlocking E-Government Potential
Concepts, Cases and Practical Insights

Subhash Bhatnagar
Sage Publications India Ltd, 2009, 380 pp.
ISBN: 9788178299280

The book "Unlocking E-government Potential: Concepts, Cases and Practical Insights" serves as a practical guide for conceptualizing and implementing e-government at the local, state and national levels and provides an overview of the global experience in implementing the same. This book is a sequel to the author's earlier book, E-Government: From Vision to Implementation. It describes the evolution of e-government applications through various cases and illustrations, and explores its potential impact on cost of access, quality of service and quality of governance for citizens and businesses, and on transparency and corruption.

The book includes a large number of case studies from India and other countries that can be used as a basis of class discussion and will be equally useful to professionals, academics and students from any part of the world, for understanding key issues in implementing ICT applications. These cases cover a wide range of e-government applications - serving different types of clients, focusing on different objectives, and built by different tiers of government. The book also documents the benefits and impact of e-government on different stakeholders, particularly citizens and businesses. Results from various impact assessment studies done during 2006-2008 for nearly 50 e-government projects are reported.

The book identifies critical success factors that must be present for e-government applications to improve governance, the many different challenges that must be overcome for implementation of e-government, and many diverse approaches that can be used to tackle these challenges. The book also provides guidelines for e-government implementation that emerge from worldwide experience.

For further details on the book, please visit the publisher's website at http://www.sagepub.co.in/browse/book.asp?bookid=1364.

Call for Papers on "Education and Development"

The International Journal of Education Economics and Development (IJEED) published by Inderscience, Switzerland aims to establish an effective channel of communication between policy makers, government
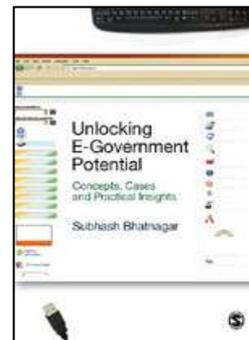
agencies, academic and research institutions and persons working in the field of educational policy and development, to disseminate information and to learn from each other's work. It also aims to promote and coordinate developments in the field of education economics. The journal uses a broad definition of development encompassing development at both micro and macro levels.

IJEED publishes original papers, review papers, research notes/commentaries, case studies, technical reports, conference reports and book reviews. It is currently soliciting papers that deal with all aspects of the economics of education and its connection to development. Papers may be submitted for consideration for possible publication in the journal to Dr. Ravinder Rena at drravinderrena@gmail.com and editorial@inderscience.com or to Dr. Mak Arvin at marvin@trentu.ca. For more information, please visit the journal website http://www.inderscience.com/ijeed.

Conference Announcements

eINDIA 2009
August 25-27, 2009, Hyderabad, India

This three-day international conference and exhibition provides a unique platform for knowledge sharing in different domains of ICT for development and facilitates multi-stakeholder partnerships and networking among governments, industry, academia and civil society organisations of different countries. The objective is to bring together ICT experts, practitioners, business leaders and stakeholders of the region onto one platform, through keynote addresses, paper presentations, thematic workshops and exhibitions.

eINDIA 2009, through its four seminal conferences, will focus on four emerging application domains of ICT for Development - e-government, ICT in education, ICT and rural development, and ICT-enabled health services. The conference will also serve as an exhibition host to some of the latest e-solutions, services, initiatives and case studies from across India. eINDIA 2009 will feature eminent speakers such as key resource persons from the government, senior executives and leaders from the IT industry, and high level representatives from the civil society, academia and the private sector from all across India and beyond.

For more information on eINDIA 2009, please visit http://www.eindia.net.in/2009/.

eChallenges e-2009 Conference and Exhibition
October 21-23, 2009, Istanbul, Turkey

This is the nineteenth in a series of annual conferences supported by the European Commission, which regularly attract over 650 delegates from leading commercial, government and research organizations around the world to share their knowledge and experiences, lessons learnt and good practices.

This three day conference will focus on research topics related to application of ICT in addressing major societal and economic challenges. The conference will combine strategic keynote presentations, technical and policy papers, case studies, workshops, an exhibition and social activities. Some of the thematic priorities of the conference include topics like ICT for the Networked Enterprise and RFID, eGovernment and eDemocracy, eHealth - Services to Citizens, Mobility, Security and Identity Management etc.

For further details on the conference please visit the e-2009 conference website at http://www.echallenges.org/e2009/.

Editorial

(continued from page 1)

The technology solution for e-banking uses a mobile phone with a near field communication chip that allows the phone to read an RFID card, a bio metric reader, and a printer connected to the mobile phone in a wireless mode. The solution was developed by a company called A Little World and the implementation across a few hundred districts in many states has been done by an NGO called the Zero Mass Foundation.

I presented a paper in the ICTD2009 in Doha in Qatar where Bill Gates delivered a key note. This issue carries a brief report on the conference. I had a great opportunity to meet Mr. Bill Gates in a one-on-one meeting where we discussed ICTD and e-Government in India. His grasp of the current status of development across the globe and the complexity of development problems, and an unabiding faith in basic research in medicine to solve some of the health related issues was amazing. His pragmatic view on the somewhat marginal role that ICT can play in development was also very welcome-coming as it was from someone deeply engaged with ICTs. Bill Gates singled out the Kenyan project of M-PESA using mobiles as an exemplary project which has scaled up very quickly- once again illustrating the fact that any intervention that delivers concrete value to users will scale up. Those projects that do not scale up question the value proposition in relation to the costs.

In early May I had a chance to speak at the LSE and at an event launching a new center for ICTD at Manchester University. It is so heartening to see large

numbers of graduate students from developing countries studying in these institutions, being engaged in research on the developmental problems of their own countries. It is even more heartening to see a large number of faculty members from various disciplines in these institutions taking serious interest in developmental problems. Perhaps groups like IFIP WG 9.4 have helped create this interest. One must acknowledge the efforts of early members such as Chrisanthi Avgerou, Shirin Madon and Richard Heeks who have played a key role in promoting the ICTD movement through their own research and also through their organizational capability.

So, with some positive signals on the global economic front and continuous innovations on the technology front, which issues will catch the attention of the ICTD community? We were very happy with the response of the global ICTD community in sending many articles for this issue, which made it possible for us to move away from a predominant India focus of some of the earlier issues. Do keep engaged in a similar way.

The IFIP WG 9.4 Newsletter Website

The ***Information Technology in Developing Countries*** *Newsletter has been published by Prof. Subhash Bhatnagar (Founding Chairman of IFIP WG 9.4) through support of various agencies such as IDRC and COMNET-IT in the past. In recent years, the Newsletter has been published as a joint publication of IFIP WG 9.4 and the* ***Centre for E-Governance*** *(CEG), Indian Institute of Management, Ahmedabad (IIMA).*

A legacy of 10 years of print circulation to its credit, this newsletter is now published on the web.

The next issue of the newsletter will be published in October 2009. For archives, subscription details and guidelines for contributions, please visit the Newsletter website: ***http://www.iimahd.ernet.in/egov/ifip/wg.htm***