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ICT FOR DEVELOPMENT: IMMEDIATE DOABLES

Keynote paper by

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A. Background

The success of Awami league in 9th parliament election largely attributed to two factors: the pledge to try war criminals and announcement of economic programme leading towards Digital Bangladesh by 2021. The economic and social programme coined in the manifesto focuses on reduction of poverty rapidly by achieving a two digit GDP growth. However, the distinction of the economic and social programme is an ambition to become a digital nation.

Various policy documents, both national and global, mentioned about the government's commitments towards ICT for development. Those commitments have been reaffirmed by the announcement of becoming a digital nation by 2021. In the first phase of World summit on the Information Society (WSIS) the government of Bangladesh pledged to build an equal information society. Bangladesh was one of the recommending countries to establish the Solidarity Fund for building digital solidarity fund. As the national five-year planning process was abandoned, the newly coined PRSP also identified a set of agenda for becoming a knowledge-based society. The ICT Policy 2002 announced to become a knowledge-based society by 2006. Although, the ambition was not supported by deeds. The ICT Policy has been revised in 2008 and proposed by the review committee for adoption by the government. However, it was not adopted during the caretaker government.

The proposed National ICT Policy 2008 reviewed progress since adoption of the first ICT Policy 2002 and prepared almost a new policy based on the recent technological developments and political reality. The policy document first time incorporated a methodological framework of the policy formulation and a comprehensive list of action items for implementation. In 2008 Bangladesh Computer Council also developed two important documents: ICT Roadmap and e-governance roadmap. Theoretically, a significant volume of work has already been done, which can feed the process of building a master plan for Digital Bangladesh for a period upto 2021.

This paper has touch upon only the master plan and five year plan, and elaborated only on immediate doables of the government for moving towards Digital Bangladesh. As the implementable action items more or less appropriately identified in three documents, the paper focuses on mainly institutional reform required for setting the base for proper implementation of plan for Digital Bangladesh and identified a few priority action items, carefully chosen from the policy documents. Before doing that, a short state of the art on ICT for development is presented.

B. State of the ICT and Development

Technology Infrastructure: Telecommunications sector in Bangladesh experienced robust growth during last one decade. While mobile teledensity had been predicted to reach 10 percent by 2010 (Raihan, 2007), actual teledensity by end of 2007 stood at 22.91 percent, more than twice the target (BTRC, 2008). There were 34 million mobile phone subscribers by the end of 2007. Competition policy and deregulation account for this phenomenal growth in the mobile sector. In contrast, the fixed/PSTN market observed modest growth, only 17.82 percent —1.19 million PSTN subscribers at the end of 2007 from 1.01 million in June 2006. Initially, the reason was identified as the major market, Dhaka city, was closed to competition until July 2007. In March 2007 Bangladesh Telecommunications Regulatory Commission (BTRC) invited bids from private operators for four licences to operate fixed line connections in Dhaka. The new operators started setting up connections in September 2007. However, the situation has not been improved and all PSTN operators are choking now competing with the mobile phone operators.

The fierce competition among the mobile telecom operators led to a nosedive in call rates within the domestic market. Some operators offer calls for only 0.4 cents per minute, the floor rate fixed by the regulator. Among South Asian countries, Bangladesh offers the lowest mobile phone call rates (Samarajiva and Zainudeen, 2008).

In contrast to mobile service uptake, Internet adoption was slow, mainly due to the high price of Internet connectivity. The expectation was that after Bangladesh got connected to the

information super highway via the SEA-ME-WE4 submarine cable, the quality of Internet connectivity would improve and the cost would be reduced. Indeed, data transfer capacity went up to 14.78 gigabytes per second, 64 times higher than total capacity at the time of installation in May 2006. By June 2007 the utilization was up to 3.28 gigabytes. But the state-owned telco, Bangladesh Telecommunications Company Limited (former BTTB), fixed an exorbitantly high price for bandwidth. Thus, the Internet service providers (ISPs) were able to reduce the price of bandwidth for subscribers. Moreover, many ISPs have had to maintain redundancy by using VSAT-based (very small aperture satellite) connectivity due to the unreliable fibre optic connection. In response to lobbying by various stakeholders, BTCL reduced Internet tariff charges by 20-40 percent in February 2008. Charges for monthly office use came down to about USD 10 from about USD 14.3, and the annual cost of leased Internet access up to 2 Mbps came down to about USD 20,571 from about USD 27,428. It is expected that the reduced rates would result in a net gain of USD 12.5 million as the user base would increase threefold due to the price reduction.¹

But industry stakeholders consider the revised rate to be still high compared to rates in neighbouring countries. The reduced rate is 10 times higher than the price for the same bandwidth in India. It also bears mentioning that the USD 35.1 million investment cost of the existing submarine cable has already been recovered, which is a strong argument for further reducing Internet access rates to make them at par with the rates in other countries in the region.

BTCL was allowed to own the only submarine cable network in spite of a provision in the telecom law that states:

If an operator provides more than one service, but there exists competition in the market in providing one of such services and no competition in case of another service provided by him, then subsidy from the earnings of the service which is subject to competition shall not be allowed for the other service which is not subject to competition. (Section 49, Subsection C, Bangladesh Telecommunications Act, 2001)

Exclusive ownership of the submarine cable's landing station has extended BTCL's monopoly to data connectivity and the Internet market. This monopoly is the primary reason for sluggish growth in the use of the available bandwidth. In May 2008 the government decided to allow the private sector to install and operate a submarine cable, which was expected to reduce the price of Internet connectivity. However, the private sector submarine cable did not materialise yet.

Responding to public demand, BTCL revised the rates for Internet services anew in the first half of 2008. For organizational users, the price is now BDT 27,000 per Mb. There is a special 75 percent discount for research organizations and primary schools will get 64 kbps Internet connections free of charge. However, it is not how primary schools would avail the benefit.

The demand for telecom and Internet services is expected to shoot up in the next three years with the implementation of the government's International Long Distance Telecommunication Services Policy (ILDTP) in the second half of 2008. The policy legalizes Voice over Internet Protocol (VOIP) services. Total bandwidth demand is expected to reach at least 15 Gbps in 2011, saturating the current capacity of the submarine cable. To prepare for this eventuality, BTCL signed a deal with the Power Grid Company of Bangladesh (PGCB) for backup fibre-optic connectivity. There are also offers for establishment of redundant fibre optic lines from various private sector companies or consortiums, including *Mahanagar Telephone Nigam Ltd (MTNL)*, *VSNL*, *Bharti*, *BSNL*, *Reliance Communications*, *VSNL International*, *Asia America Gateway Cable*, *SEA-ME-WE-3*, *SEA-ME-WE-5* and *South Asia Subregional Economic Cooperation (SASEC)*.

¹ There would be a 45 percent loss due to the reduction of tariffs worth about USD 4.6 million, but the price reduction is expected to lead to a threefold growth in the user base and additional income worth about USD 17.1 million.

The inadequate power supply in the country also impacts negatively on the growth of the ICT sector. Many domestic and international agencies are working to find solutions, with some focusing on alternative and cheaper power sources and others focusing on low-power ICT equipment.

Key Institutions Dealing with ICTs: In 1997 the government formed an ICT Task Force under the Prime Minister's Office (PMO) to foster ICT mainstreaming. A Support to the ICT Task Force (SICT) was formed in 2001 to identify and implement e-government projects. Five years later, in May 2006, an e-Governance Cell was initiated with the approval of the Prime Minister. In each ministry, a mid-level government official (at the level of Joint Secretary or Additional Secretary) has been appointed to act as the ICT Focal Point to coordinate e-governance activities and priorities within the ministry. Secretarial support to the National ICT Task Force is provided by the Planning Division, Ministry of Planning. The latter hosts the SICT Programme to implement the objectives of the ICT Task Force, particularly in e-government, and is the hub for inter-connectivity among the PMO, Planning Commission and Secretariat.

It is the Ministry of Science and ICT, established in 2001, that is primarily responsible for mainstreaming ICTs in economic growth and development. It formulates ICT policies and pushes for ICT-related laws, such as the Intellectual Property Rights Act which was enacted by Parliament in 2003 and amended in 2006, and the ICT Act which has been awaiting Parliamentary approval since 2002. The Ministry also facilitates the computerisation of government institutions and schools.

The Bangladesh Computer Council (BCC) under the Ministry of Science and ICT is the main institution for promoting ICTs. It provides ICT training to government officials and citizens, incubates software companies, provides advisory support to government institutions regarding ICT, provides connectivity to ISPs, and works for standardisation through such projects as the development of a local language keyboard.

The Ministry of Post and Telecommunication is responsible for building and maintaining telecommunication infrastructure. The Ministry of Education develops the curriculum for ICT education and spearheads the computerisation of schools.

The Bangladesh Telecommunication Regulatory Commission (BTRC) is the licensing authority and regulates telecom service providers, while the Ministry of Law, Justice and Parliamentary Affairs reviews ICT-related laws.

In the private sector the Bangladesh Association for Software and Information Services (BASIS) plays a key role in promoting the ICT industry. The ISP association, Bangladesh Computer Samity, also facilitates the growth of ICT in the country. BASIS organises an annual exposition of software and applications titled SOFTEXPO; many foreign software companies attend this exposition, helping to boost the reputation of the Bangladesh software industry. BASIS likewise acts as a lobbyist with the government for fiscal incentives and promotional support, such as income tax waiver, VAT waiver, and higher foreign exchange retention facilities. BASIS also organises capacity building programmes for its members, particularly in product marketing. Bangladesh Computer Samity played a key role in the elimination of import duties on computers in the early 1990s, which facilitated ICT penetration.

Private universities and institutions lead human resource development by offering advanced courses on ICTs.

Several institutions work in the area of ICT for poverty alleviation. Amader Gram, BRACNET.NET, and the D.Net (Development Research Network) are three prominent institutions working for ICTs in the rural areas. Grameen Phone built a national GSM network which is now also available for Internet connection anywhere in Bangladesh through EDGE and GPRS technology. D.Net is aiming to bring ICTs to the doorstep of poor people in the rural areas. It has developed a comprehensive volume of local language content on livelihood, making the Internet relevant to the common people.

ICT related endeavors were focused only on ICT economy and ICT education in tertiary education until recently. To bridge digital divide and make an inclusive use of ICTs for development, a movement for building ICT-based access to information and knowledge has been gathering momentum since 2006. The Bangladesh Telecentre Network (BTN), a coalition of organizations emerged in 2007, is spearheading the movement to promote the telecentres in Bangladesh. It launched Mission 2011 (www.mission2011.net.bd), a movement to build a sustainable information and knowledge system for the poor and the marginalized by 2011, the 40th anniversary of Bangladesh. As of January, 2009, 2102 telecentres have been established in Bangladesh. Mission 2011 has attracted the support of the government and the international community.

ICT and Education: ICT education in Bangladesh is generally concentrated at the tertiary level. Although there is an optional course on computers in the secondary schools, the course curriculum is outdated and there is little opportunity for hands-on practice. Only 10 percent of schools have computer facilities and few teachers are trained and/or willing to teach computer literacy classes.

There are a number of private initiatives to extend ICT education in secondary schools. The most noteworthy is the Computer Learning Programme sponsored by the Volunteers' Association for Bangladesh New Jersey Chapter (www.vabonline/vabnj), a group of non-resident Bangladeshis. The initiative, which is being implemented in collaboration with D.Net, aims to establish 1,000 school-based learning centres by 2010. To date, 100 centres have been set up. Another private sector initiative is the School Online Program of Relief International, which has set up 27 Internet learning centres. British American Tobacco's 'Disharee' is also noteworthy. This programme trains the children of tobacco farmers with ICT skills and provides job counselling service.

The lack of local content is also a barrier to increased use of ICT in schools. To address this gap, the Institute of Education and Development at BRAC University, in collaboration with Foundation of Education Research and Education (FERI) and D.Net, is developing interactive digital content in science and mathematics for Grades 6-10 students. BRAC University has also developed a CD-ROM for English language learning based on the national curriculum. D.Net has developed 'Computer Teaches Everyday English', an English language learning CD-ROM for secondary school students. These materials are currently being tested.

ICT in non-formal education (NFE) in Bangladesh is more vibrant. A study commissioned by UNESCO, Bangladesh (Raihan, 2007a) identified 23 organizations that are involved in developing various kinds of ICT-based learning materials for the NFE sector. The study found 195 such materials developed since 2004. Over 60 percent of the materials are video, animation or a combination of the two. Video CD (VCD) is the most common format used since there is a higher degree of penetration of VCD technology in the rural areas. Over 60 percent of the materials are intended for children, students and youth groups and 18 percent are for the disabled. There are no materials for the aged and for indigenous people.

The developer institutions identified the following constraints to educational content development: lack of a ready market, inadequate and irregular funding, lack of proper facilities for developing high-quality ICT-based materials, lack of skilled professionals, inadequate experience of educationists in ICT-based materials development, low penetration of ICT, and power supply interruptions.

NGOs generally develop materials for their own outlets. Some also supply other NGOs either for free or for a nominal charge. A few NGOs sell their products through retail chains. The Bangladesh Centre for Communication Programs (BCCP) outsources marketing and sale of their 'Nijeke Jano' (Know Yourself) package to a commercial outfit.

D.Net and BCCP are piloting revenue models for ICT-based materials. Studies show that there is a demand for quality ICT-based materials and organizations are ready to pay for them. Although the current market size is relatively small and the number of developers is limited, there is a big opportunity in this segment of the market with approximately 150,000 groups and organizations running NFE programs of diverse types. Moreover, the plan to

establish a network of telecentres by 2011 implies a significant expansion of the potential market for ICT-based literacy and skill training materials.

Digital Content Initiatives: Digital content has become a major issue as PC penetration and Internet access have increased across the country. Without locally relevant content, ICTs are of no use to people. Content development is now a priority not only of the private sector and civil society organizations but also of government. The content issue has been highlighted in the draft Broadband Policy.

The launching of the Bangladesh Government Press or BG Press (www.bgpress.gov.bd) in February 2008 was an important event in the history of facilitating access to government information. BG Press is the single point of publication of all gazettes and documents related to the functioning of the government and state. Initially, the website will publish gazettes released in 2008 and 2007. An earlier digital content initiative by government made government forms more accessible to citizens via the Web service www.forms.gov.bd. Many people access the forms through telecentres which charge a minimal fee for downloading the forms. The downloadable forms include passport application, visa application, citizenship form, pension form, Internet connection (BTTB), birth registration, income tax return, and driving license. The availability of these forms online helps citizens access government services in less time and minimises opportunities to bribe government officials. The website is bilingual and can thus be used by any literate person. Those who cannot read can get the forms from telecentres, which are now becoming popular in rural Bangladesh.

In 2003 D.Net started research on content development targeting the rural poor. Since then, a huge content base in Bangla has been developed. D.Net initially focused on the CD-ROM version of the content since Internet connectivity was not available in the rural areas at that time. But with the availability of access to the Internet through EDGE or GPRS from almost anywhere in Bangladesh, the Web version (www.jeeon.com) is scheduled for release in 2006.

The largest Bangla website at present is www.abolombon.org. The website is dedicated to human rights issues and provides legal practitioners with access to the full text of laws, explanation of laws, addresses of legal redressal institutions, and the like. Another local language website is www.gunijan.org, which features eminent citizens of Bangladesh for the young to get to know them.

Local digital livelihood content generation by NGOs gained further momentum in 2007. A new portal, www.ruralinfobd.com, emerged in late 2007 following the path of www.jeeon.com.bd, the largest portal in Bangla language. It was developed for telecentre operators by a private sector entity named WinBD, with financial support from a donor consortium.

UNDP has also sponsored the development of animated content in three areas: livelihood, indigenous knowledge, and conversion of content for visually impaired citizens.

The Bangladesh Telecentre Network and KATALYST, a donor consortium project for SME development are working with government content generating institutions, while the D.Net (Development Research Network) trained a group of volunteers in rural areas for creation of local content.

Online Services: Both government and non-government institutions offer online services, which range from information services to e-commerce.

The government's SICT programme initiated and in some cases completed over 40 e-governance projects of varying sizes across many government agencies. The SICT programme ended in 2006. However, there is talk of extending the project to 2011 with a new budget of about BDT 950 million (USD 14.3 million).

Among the more successful e-government projects is the innovative Ministry of Religious Affairs website (www.bdhajjinfo.org) which provides information-based services to pilgrims, their relatives and friends, agents and government officials. The interactive website, which was launched in 2002, can be used for searching information about individual pilgrims,

including their current location and status, for sending and receiving messages from individual pilgrims, and for accessing various information regarding rules and regulations.

Another successful e-government project is the Rajshahi City Corporation (RCC)'s Electronic Birth Registration System (EBRS) which provides citizens with a unique identity card that they can use for various services, such as education and health care. Since the card helps them get certain social services and benefits, citizens are now encouraged to register births, which was previously considered by many to be a worthless hassle. The electronic ID is used for immunization purposes and also for getting admission to government primary schools in Rajshahi. The EBRS helps to keep track of each child registered through the system, starting from immunization requirements to school enrolment status. Since 2001 a total of 45 222 citizens have received birth registration services using EBRS, or 15.38% of the total metropolitan population. In the Bangladesh context, this is a success: it means that almost all newborns are now registered with the electronic system. But there is a need for a campaign that would bring all citizens under this system.

Another laudable e-government initiative is the publication of the salary status of school teachers (<http://www.dshe.gov.bd/search.php>). School teachers can now check online whether their salary has been sent to the bank by the Directorate of Secondary and higher secondary Education.

As part of efforts to ensure free and fair national elections, the caretaker government developed a new voter list that also included photographs and finger prints. This was a response to the Election Commission's findings that there were 12.2 million fake voters in the old voter list.² The new voter list of some 80 million voters was prepared over 18 months by the Bangladesh Army with the support of UNDP, using 8,000 laptop PCs.

The government has also issued an all-purpose national ID card that citizens need to access many citizen services. This was the largest ICT project in the country with a successful accomplishment with fully national level expertise. An attempt to issue a national ID and voter database in 1995 met with failure (Raihan and Habib, 2007).

Moreover, while providing easy access to up-to-date information is a crucial service the government can provide to its citizens, the information on government websites in Bangladesh is unfortunately not current in most cases.

Private sector online services perform better. An example is www.bdjjobs.com, which was established in 2001 and which now has a monthly page view volume of 800 000 and 14000 daily unique visitors. More than 140 000 resumes are posted on the portal, which has over 2500 corporate clients. More than 2 500 employers in Bangladesh have recruited more than 35000 professionals at different levels through the bdjobs.com service.

The most popular online information service provider is www.bangladeshinfo.com. www.bdresearch.org.bd is a web portal for researchers, academics, and policy makers. It currently hosts more than 2000 papers, articles and book chapters on Bangladesh and South Asia published by prominent research and publication houses. The website has incorporated an innovative mechanism of selling research online through pre-paid cards.

Table 1. Basic ICT Indicators

Total population	140.6 million (2001 Census, updated in 2007)
Literacy rate	47.9 percent (Male = 54 percent; Female = 41.4 percent)
GNP per capita	USD 599 (FY 2008)
Computers per 100 inhabitants	1.2 (2006)
Fixed line telephones per 100 inhabitants	2.63 (2007)
Mobile phone subscribers per 100 inhabitants	22.91 (2007)
Computer Owner per 100 inhabitants	1.9 (2007)
Internet users per 100 inhabitants	1.3 (2007)

² <http://www.bangladeshnews.com.bd/2008/06/01/voters-number-to-fall-by-1cr/>

Domain names registered under .bd	5,987 (December 2007)
Broadband subscribers per 100 inhabitants	...
Internet domestic bandwidth	...
Internet international bandwidth	24.78 Gbps (December 2007)

Sources: Bangladesh Economic Survey, 2008; Bangladesh Telecommunications Regulatory Commission website; ITU, 2007

Open Source/Open Content Initiatives: The open source and open content movement is gaining momentum in Bangladesh through the efforts of the BdOSN. One of the organization's major programs is the Open Source Camp, which provides users with hands-on experience with GNU Linux, Open Office, Mozilla, LAMP/WAMP and Wikipedia. BdOSN also established the Open Source Support Centre in Dhaka in 2007. The centre, which is run by volunteers and which is the first of its kind in Bangladesh, distributes CDs, books and other materials on open source and open content, and provides hands-on support to users.

In addition, the Bangladesh Telecentre Network and BdOSN are working together to provide software and training to grassroots telecentre operators. BdOSN is also providing training on open source technology to 740 government officials.

Bangla Wikipedia is growing rapidly with many contributions from all over the world. The total number of entries is now more than 10,000. Bangla Wiki, a wing of BdOSN, is expanding, modifying and improving the wiki articles. They have also taken the initiative to increase the number of articles about Bangladesh in the English Wikipedia.

C. Conceptualizing Digital Bangladesh

The coining of the term Digital Bangladesh belongs to Mustafa Jabbar, who wrote an article on "Towards Digital Bangladesh" in the BCS ICT World, published in November, 2008. Subsequently, the term was captured in the national election manifesto of Bangladesh Awami League. He defined Digital Bangladesh as digital government, digital education and digital business. As "digital government" does not cover the citizen services through ICTs, I would like to propose one more component to the Mustafa Jabbar's definition. The Digital Bangladesh thus has four inter-related components:

- Digital Government
- Digital Education
- Digital Business, and
- Digital Citizen.

Digital government means the government work flow is fully integrated with ICTs. The decision making process is efficient as a result of government's business process re-engineering. The government can take informed and timely decisions on various policy matters, as the data generation system is fully automated from grassroots to the aggregate level. Digital government also means a transparent government through full implementation of "Right to Information" legislation, which also ensures participation of citizens in decision making process. The participation of citizen does not limit to decision making by citizens' representation in the parliament, rather a mechanism is present to capture opinions of various citizens groups and individuals through ICT and non-ICT tools. The transparency in operation ensures upholding human rights for all citizens including women, poor, marginalized and indigenous groups.

Digital education means the education system is restructured to ensure equity in terms of access to quality education. The quality of education is ensured through regeneration of dignity of teaching profession with appropriate skills development and upgradation system, where ICTs play a vital role. The education system produces quality human resources for meeting the demand of domestic knowledge-based economy and also global demand for quality human resources. ICTs play a crucial role in ensuring quality education both for urban and rural people and ICT skill gap does pose a divide within the country. The government does not hesitate to allocate appropriate resources in building robust and modern education system.

Digital business means general economic activities are reengineered through integration of ICTs and ICT business can unleash its true potential with appropriate human capital created through digital education. Businesses irrespective of their size can avail ICTs for production and access to market domestically and internationally. Businesses also can transact and make payment off line and online internally and globally.

Finally, digital citizen mean all citizens of the country irrespective of their residence, age, economic condition, race, ethnicity, have access to ICTs for accessing information and knowledge required to perform their day-to-day activities. A robust ICT network and public access point are the key factors to make citizen digital. The digital citizens are not anymore poor, because access to information and knowledge and education make them able to make informed choice for selection of their representatives, exercise their rights and entitlement, increase economic opportunities and protect themselves from exploitation.

Digital Bangladesh is thus another name of Knowledge based Bangladeshi society. The new government has promised to get Bangladeshi citizens towards a digital Bangladesh by 2021, which is free from poverty. The paper focuses on only immediate doables of the government for moving towards that destination. The paths may be different to reach the destination, but the goal is firmly determined.

Moving towards a Knowledge Society, which is free from poverty

Digital Bangladesh is a promise of the current government, and there is no way that it can back track from the commitment. And it is also important to take the first step - move from the rhetoric to some concrete action plan. The action plan may have three components: a comprehensive master plan (FY 2010-2021), a five-year detailed plan (FY 2010-2014), and a short term plan (FY 2010-2011).

A Comprehensive Master Plan: The Master Plan can be developed for 12 years period (FY 2010 - FY 2021). The Master Plan can be developed on the basis of existing works done by the ICT stakeholders in the country. The revised ICT Policy of 2008 can be a very good basis for the development of the Master Plan. Huge energy was given by stakeholders from all four segments of Digital Bangladesh concept. The revised policy is also not a product from the vacuum. It captures works and recommendations from all walks of life during last 20 years. The Master Plan should be designed in a way so that the plan is incorporated in five-year planning process and annual national budget preparation process. Otherwise, the Master Plan will remain in paper only, which happened with the PRSP plans related to ICTs. The National ICT Task Force should be involved in the process of development of the Master Plan.

A Five Year Plan towards Digital Bangladesh: A Five year plan would be very useful with detail work plans and financial requirements. This would enable the government to mobilize resources for implementation ahead of time and annual budgeting would be convenient.

Immediate Doables: Immediate Doables should be focused for the period of FY 2010-FY2011). There are two important things to do. One is to develop a comprehensive master plan with a timeframe of 2021, a five year plan with proper resource planning spanning the duration of the government and a list of immediate doables for 18 months. Another one is to restructure the current institutional set-up, so that plan can be implemented without any hiccup and lack of coordination. Which one would go first - it is difficult to say. Probably, both should go side by side. The time up to June, 2009 can be used for development of the plan for next two fiscal year with adequate provisioning in the national budget.

Restructuring Institutional Mechanism: A number of government entities are involved in the process of policy making, monitoring, capacity building and implementing ICT-related activities, very seldom interlinked and coordinated. However, for implementation of a master plan or road map for making Bangladesh ICT-based knowledge society, which is a prerequisite to building Digital Bangladesh.

There are currently at least two ministries - Ministry of Post and Telecommunications (MOPT) and Ministry of Information (MOI), which are involved in dealing with ICT-related infrastructure - along with Bangladesh Telecommunications Regulatory Commission (BTRC). The MOPT deals with telecommunications including Internet and MOI deals with broadcasting - both radio and television. However, the technology trends dictate convergence of regulation of these two technologies. For example, IPTV (Internet Protocol TV) or IP radio is a reality across the world, which in Bangladesh under the current regime would fall under the jurisdiction of both the Ministries and BTRC.

Although there is a Ministry of Science and ICT (MOSICT), its activities and terms of references do not explicitly include ICT as a whole. The Ministry of Science was just renamed in 2002 and did not get any attention during the Khaleda regime. Currently, the Ministry, through its wing - Bangladesh Computer Council (BCC)- works for promoting ICT business sector and has some activities related to capacity building of the government officials. The only ICT incubator in the country located in Karwan Bazaar is set and managed by the BCC. The BCC is also trying to implement the High tech Park since last 12 years in Kaliakoir, which is also meant for ICT business. The ICT infrastructure, e-governance, ICT for development is beyond the scope of the Ministry. On the other hand, the Ministry of Commerce is also trying to promote ICT business through ICT Business Promotion Council (IBPC).

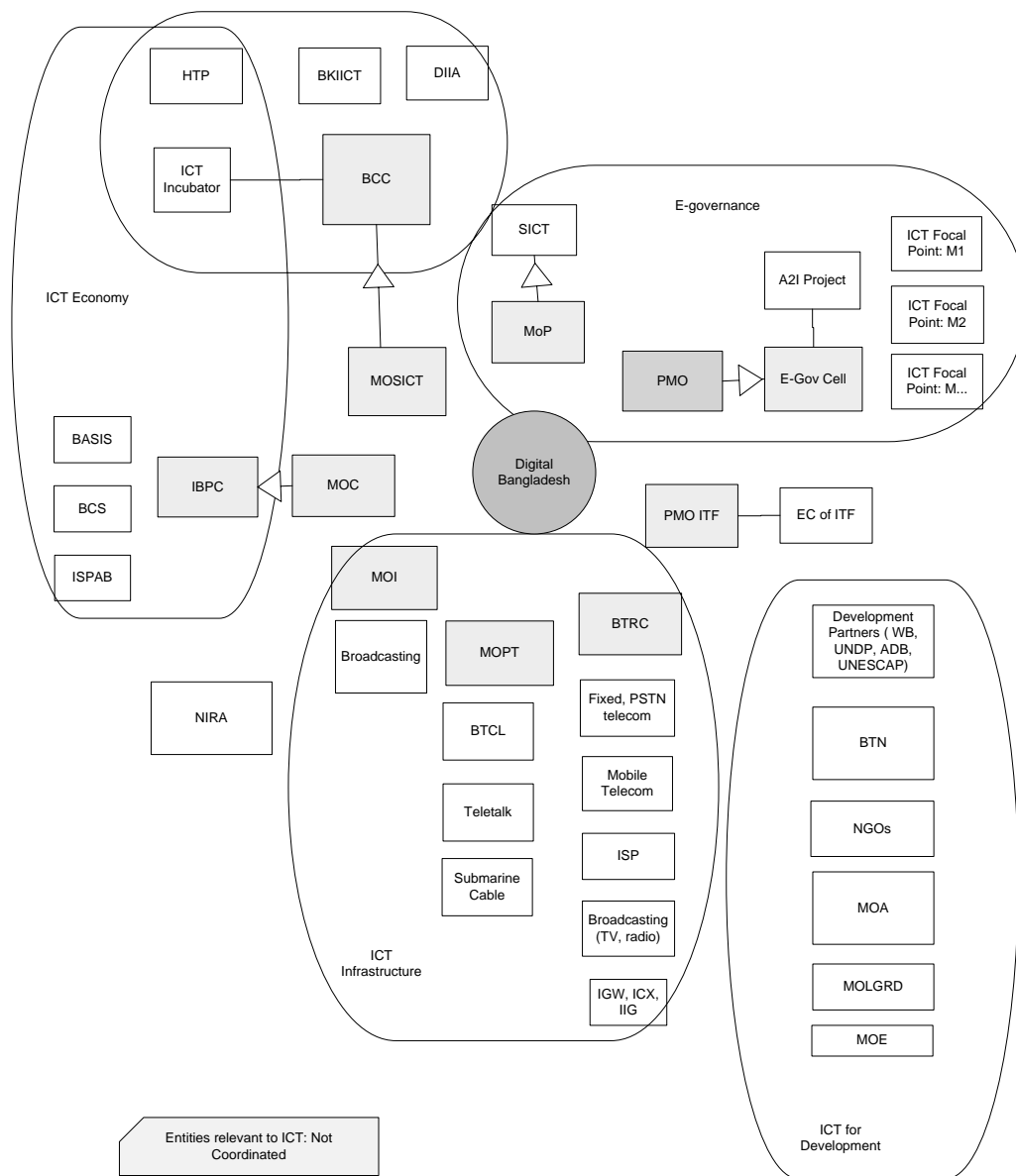
For taking care of e-governance related activities there are two distinct government entities - one is e-government cell, created in the Prime Minister's Office (PMO). The e-government cell is implementing "Access to Information" programme, under each Ministry has a ICT focal point in each Ministry for taking care of e-government related activities in each Ministry. The second entity is Support to ICT Task Force Project (SICT) under the Ministry of Planning. The creation of SICT under the MOP is a result of tug of war between MOSICT and MOP, and MOP won the battle. Although the SICT was under the ICT Taskforce, the SICT was not bound to report to the taskforce. Moreover, during last 7 years, only two meetings were held, which also shows the level of priority to build a knowledge-based society by 2006.

First of all, there was no need to create SICT under the MOP, it would be conveniently handled by the MOSICT's BCC. However, it did not happen as it was perceived that BCC did not have required capacity to do so. The creation of e-government cell under the PMO took place also for the same reason. Additionally, it was thought that if the e-governance related activities come under direct supervision of the PMO, the e-governance implementation would be faster.

ICT for Development was totally not in the focus of the previous governments. Although first PRSP planned to create telecentre in each Upazilla by 2006, not a single one was created by the government. A civil society organization created first telecentre in Union Parishad in 2004, subsequently another two were created by UNDP in 2007. Solving a set of other important issues including unicode for Bangla computing, interoperability, and connectivity for the rural areas remained out of focus. Recently, Ministry of Agriculture (MOA) and Ministry of Local Government and Rural Development (MOLGRD) have taken initiative to build telecentres in Union Parishads with support from UNDP and technical assistance of Bangladesh Telecentre network (BTN). Ministry of Education distributed 10000 computers in secondary schools without any holistic approach, and the result was a disaster, not a single student could benefit from those computers - either they remained packed in the rooms of head masters, or they were used by a few teachers.

As a whole, there is a total chaos in ICT sector in the country, be it for ICT for development, for e-governance, education and health. Only ICT business sector received some coordinated support from MOSICT and MOC.

Figure 1. Current Institutional Architecture Related to ICT



What to Do?: Institutional Restructuring is the key to realize the expectation of the citizens. A tentative outline for institutional restructuring is presented below.

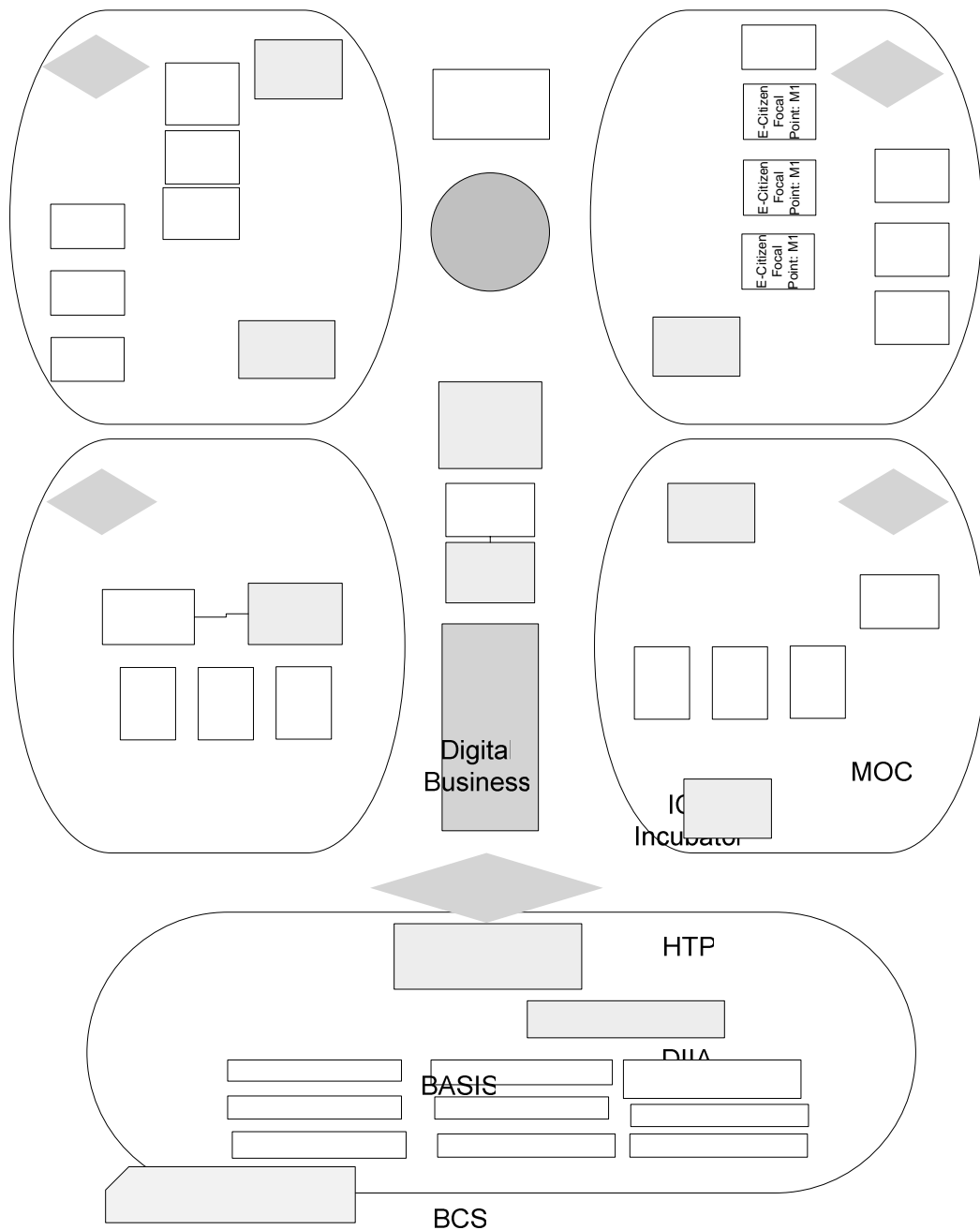
- a. **Creation of a "Digital Bangladesh Secretariat" under the Prime Minister's Office:** During the last tenure of Awami league Government(1996-2001) a National ICT Taskforce was formed to ensure accelerated ICT development in the country. Although the Taskforce was not abolished during the tenure of subsequent governments, the Taskforce remained dysfunctional. For undertaking a comprehensive plan and ensuring its smooth implementation, an executive wing of the Taskforce can be created. The executive wing may be titled as "Digital Bangladesh Secretariat" (DBS). The secretariat will have four distinctive wings in line with the conceptualization of "Digital Bangladesh". The Bangladesh Computer Council may be abolished and merged with the DBS. The activities related to ICT business promotion may be transferred to the Ministry of Commerce under ICT Buseinss Promotion Council, which also may be renamed as "e-Business Cell".
- b. **Single Point for ICT Infrastructure:** A strong Ministry of ICT may be the first step towards institutional reform. This Ministry will be the key Ministry for supporting the master plan through ensuring robust ICT infrastructure. The formation of a strong ICT Ministry may take place in the following manner:
 - a. To merge MOSICT and MOPT, because information and communication technology means telecommunications and Internet. The convergence of technology dictates that these two should be together.
 - b. To take "Science" part out of MOSICT and merge with the Ministry of Education, which will take care of science in general. The Ministry of Education and Science would be able to take care of science education and scientific innovations in general better, because there is a strong linkage between academia and scientific innovation. On the other hand, the "ICT" we are talking is more applied in the context of growth and socio-economic development.
 - c. To take "Broadcasting" part out of the Ministry of Information and merge with the Ministry of ICT. Again, to tackle the convergence of technology one single authority would do better. This would avoid potential turf war among the Ministries with the converged technology and services.
 - d. To bring in BTRC under the jurisdiction of the Ministry of ICT. BTRC will also deal with the matters related to broadcasting.
- c. **Single Point for all E-government Activities:** One of the four executive wings of the "Digital Bangladesh Secretariat". The existing e-governance cell may be renamed as e-government cell and will remain the focal point of all e-government related activities. The ICT focal points in all Ministries will be converted into "e-government focal point", which will be the coordinating point of all e-government related initiatives taken in each of the Ministries and Digital Bangladesh Secretariat. The SICT under the Ministry of Planning will be abolished and all e-government related activities to be coordinated by e-government cell under the PMO.
- d. **Creation of an "e-Citizen cell" under the PMO:** A new cell titled "e-Citizen cell" under the DBS will take care of access to ICTs by all citizens, particularly poor and marginalized population both in urban and rural areas. The Cell will coordinate with "E-Citizen Focal Points" in all line Ministries, which will be created under this reform programme.
- e. **Single Point for Coordinating ICT in Education:** Another new cell under the DBS can be created for coordinating mainstreaming ICTs in education system to be at par with the global demand for quality human resources. This cell will coordinate with focal points of the relevant Ministries.

- f. **Single Point for ICT Business Coordination:** The ICT Business Promotion Council can be converted into "E-Business Cell". The ICT Incubator and High-tech Park should go to Ministry of Commerce from BCC, may be under the IBPC. In this way, IBPC may find its role to promote private sector in a comprehensive manner.

The DBS will take regular guidance from the ICT taskforce and place the proposals to the Cabinet of Ministers.

The Figure 2 shows the new architecture of government machinery to implement master plan for Digital Bangladesh.

Figure 2. New Architecture for the Implementation of the Digital Bangladesh Master Plan



The immediate doables in this paper is based on the proposed revised ICT Policy 2008 and the government's election manifesto. Such doables would be more realistic, because consensus building is already done for them. The task zero of the government should be adoption of the revised ICT Policy.

Task 1: Project related to E-Citizen:

1.1. Integration of National ID Database: Feasibility: Bangladesh holds now the world's largest database created within a short time during the caretaker government side by side creation of a voter list with photograph. Probably, this is one of the good things done by that government. A free and fair national election was held using the database and the country received a pledge for Digital Bangladesh. Basically, Bangladesh Election Commission (BEC) undertook the voter ID project to address the requirement of many stakeholders including political parties for improved voter identification through either voter ID cards or a voter list incorporating photographs. The BEC considered options for national ID card, voter ID card, and Electoral Roll with photograph, and finally it was decided to prepare an Electoral Roll with photograph as the initial step towards a future national ID card system.

Now, a project for building institutional mechanism for providing national ID card to all citizens, touching the age of 18 on a continuous basis, can be the most important ICT project to be taken by the new government, which has far-reaching implications. First of all, such database, will ensure a ready-made voter list for any election to be organized by the Bangladesh Election Commission.

Rationale: A few use of the national ID system are presented below:

- a. **Birth registration:** If the nation wide system of National ID system is in place, then the government can launch a programme of compulsory birth registration for all citizens. For citizens under age of 5 years, the national ID system will issue a birth certificate, which will be compulsory for getting passport, getting entry into educational institutions, health care facilities, facilities under various safety net programmes of the government etc. At the age of 5 years, every citizen will get first national ID, which will have to be renewed every 5 years. Within five years of introduction of the system of birth registration, data of most of the citizens will be in the national ID system.
- b. **Implementing subsidy programmes:** The government faces challenge in distribution of subsidies to various economic groups including farmers every year. The national ID database can be supplemented by a database of eligible people for getting various subsidies. If the primary database identifies a person as farmer in primary or secondary occupation, the supplementary database can be built on that information with additional information (e.g. land registration and deed of transfer of land for cultivation).
- c. **Implementing social safety net programme:** There are a number of social safety net programmes launched by the government and implemented by the local government and other institutions. However, distribution of the social safety net remains a problem mostly due to corruption. Eligible people often remain outside of the programme. Identification of the beneficiaries of the social safety net programme will be easier using the national ID database.
- d. **Immunization programme:** Identification of target groups for immunization programmes will be very easy as the national ID database will provide list of citizens, for whom such immunization is required.
- e. **Ensuring Security:** As militancy is national and global problem, such database would be useful for law and security enforcing agencies to track the people involved in terrorist activities.

The success of the project will ensure a solid ground for equitable and participatory development needed for the country.

How to Build such a System: Our national ICT industry is capable for implementation of such project. If necessary, government agencies in other countries can help our local experts. not the opposite. For ensuring security, a number of redundancies will have to be deployed. Telecentres in local government institutions (Zilla parishad, City Corporations, Municipalities,

Upazilla Parishad, Union Parishad) can be used for regular update of the database. Telecentres in village level can also be used to decentralize the system. Community based committees must be involved to ensure accuracy of such database. For data entry, volunteers groups will need to be involved. Public-private-NGO partnership will be very effective to ensure smooth implementation of such database.

Expansion of Tax Base: As the domestic resource mobilization is getting important, such national ID database will be useful for tracing the tax evaders.

Risk factors: Compatibility of interoperability of the database must be ensured for integration of various national databases and enhancing data fields.

Duration: Initially 2 years will be adequate for development of a complete national ID database.

1.2 Online Tax filing: Mobilising domestic resources has become more important for the current government in the backdrop of the global financial crisis. In a country of 150 million individual tax payers are 2.2 millions. Estimates are there that if all tax eligible citizens pay due taxes, Bangladesh does to need financial resources for its national budget. However, citizens are reluctant to pay taxes for various reasons, including harassment and rent seeking behaviour of tax authorities. An individual citizen through this system can file tax return and pay online. If the NBR has doubt about any tax payer, it can investigate and take appropriate measures. This can be the first e-citizen project which will have significant visibility and at the same time largest benefit to the government is online tax payment system.

Duration: Implementing online tax payment system will take around six months to one year.

1.3 Building a network of telecentres as access point of government services: A network of telecentres in all local government institutions and public libraries will allow government to offer gradually all government services through internet. It will also allow to inform citizens about various government schemes so that people can access them without scope of favoritism. A public-NGO partnership will ensure proper functioning of the telecentres. It is to be ensured that all citizens, particularly poor and marginalized people have access to services independent of ability to pay. As telecentres are public institutions, commercial operation will exclude common people from the services available through telecenters. Income from a few services may cover cost of operation partially and the rest will be covered from annual budget of the local government institutions. Establishment of telecentres will create opportunities for educated rural youth for ICT-based jobs, which will facilitate the government to implement the "one family - one employment" programme of the government. Furthermore, scope of ICT training will create users, which will eventually play a positive role in creating skilled manpower for export from rural areas. The government can partner with Bangladesh Telecentre Network (BTN) to roll out telecentres.

The telecentres will be the first step towards the Digital Bangladesh as it will be an infrastructure to offer many services. It will be truly a part of an inclusive information and knowledge system for the poor and marginalized.

Duration: A roll out plan of telecentres within first two years of the current government will create visible impact.

1.4 Internet Connectivity across the country: The first two years should also be spent for building a country-wide network of reliable broadband internet connectivity. The following steps can be taken in this direction:

- a. **Introduction of Differential pricing:** As the EDGE/GPRS/CDMA network is already available across the country, although not very robust, the BTRC can introduce differential pricing, e.g. cheaper connectivity for rural areas, and relatively costlier pricing for urban areas. As the urban-rural average per capital income ratio is 1:3, the price of internet connectivity in rural areas should be one-third of urban areas. This can be done immediately through directive of BTRC. When 3G and wimax technology will be available, the offer should be applicable also for those technologies.

- b. **Free Internet Connectivity for Educational Institutions and Libraries:** The caretaker government announced that primary educational institutions will have free internet connections, secondary educational institutions will have connections at 75% concession, and other educational institutions at 50% discount, it is not clear who will give this connectivity, and how it will be ensured. The BTRC should give clear directive in this regard mentioning ISPs and procedure to avail such offer. The offer should also be extended to the libraries.
- c. **Free Internet Connections for Telecentres:** The BTRC should offer free Internet connections from all telcos for all telecentres, irrespective its location. A clear directive in this regard make the telecentres more financially sustainable. This is along standing demand of the telecentre operators in the country. The government should create universal service obligation fund to support the ISPs, who will offer the free connections.
- d. **Licensing:** The licensing policy of the BTRC was on a wrong footing, which created scope for sky-rocketing of license fees for wimax. As a result, the licensees are facing problem in rolling out the network. Furthermore, such high price for license will make the wimax connectivity unaffordable for rural people. The BTRC should review the license fee and call for fresh bidding for wimax licensing. Similarly, the license fee for 3 G should be limited so that operators can offer cheap connectivity. The BTRC's task is not to earn money rather than creating a vibrant connectivity network across the country so that economic, educational and other developmental activities create values for earning money for the government. The BTRC should also go for class licensing, which would ease life of technology providers.
- e. **IP Telephony:** IP Telephony is still illegal in the country, prohibiting people to connect with their relatives and business partners at an affordable price. It is ridiculous that potential of new technologies is barred in the context of market discipline. Such bar does not match with the philosophy of Digital Bangladesh.

Duration: All the above mentioned tasks can be implemented within six month and does not significant financial implications on the side of the government.

1.5 Content Development: All government research institutions produce content in printed form, which comes out from soft version. The government can easily publish all those content on the web for various target groups. Such publication of contents can be made mandatory for all institutions. Internet will be more relevant for the common people if such contents are widely available online, preferably free of cost.

Duration: Immediate with quarterly review of the progress by the e-Citizen cell.

1.6 Market Price Information: The market price information is the single most important ICT initiatives for agriculture producers and consumers. The Department of Agricultural Marketing (DAM) of Ministry of Agriculture maintains a web-site in English which publishes market prices of agriculture produces. However, data are not up-to-date and in many cases not reliable. In most of the cases, data field is empty when a search is performed. The telecentres can be assigned for collection of data on a prescribed format, which can be monitored by the Union Parishad. The data will be updated directly from the telecentres and viewers can see it in Bangla. A system of reward and punishment may be applicable to ensure quality and timely data entry.

Duration: This can also be done immediately after establishment of telecentres in all union Parishad.

1.7 Digitization of land record and transaction: The project can be taken by all Upazilla at the initial stage and gradually it can go up to Union level. The experience of Demra project can be taken into consideration.

Duration: Two years from FY 2010.

Task 2: Projects related to E-Business

2.1 Implementation of ICT Act 2006 and E-payment: The ICT Act was long standing demand of Bangladeshi business community and citizens. The Act was placed to the Cabinet in 2002 and dust piled upon it for four years. At the very fag end of the law was enacted. However, till date no action was taken for its operationalization. According to the law, digital signature will be acceptable for transaction and as evidence. However, for operationalization of the law, a public key infrastructure authority needs to be formed. Furthermore, online payment system through Internet should be implemented. Bangladesh remains outside of the e-commerce due to failure in implementation of the Act.

Rationale: Bangladesh's export earnings would enhance through online trading system not only for traditional products, but also for new products as well as services. The online payment system would facilitate small businesses to participate in global trading system. The IT-enabled services (ITES) would also boost up if online payment system is on place. Domestic business would also boost up through online payment system a number of new financial products would ease the business for the large trading houses. In the time of global recession, the domestic trade boost would play a positive role.

Duration: It would take six months to one year for implementation of ICT Act including introduction of e-payment.

Task 3: Digital Government

3.1 Online government procurement: There are two reasons, why people are not corrupt. One is, high standard of ethics and moral values do not allow a person to be corrupt. The second is, lack of scope to do corrupt practices. ICTs can not make a citizen ethical, but can build a system, which eliminates or reduce the scope of corrupt practices. Online government procurement is such a system. One of the largest sources of corruption is government procurement. An online procurement system can reduce scope of malpractices at the number of stages:

- a. **Procurement of tender document:** Online procurement of tender documents reduces scope for prohibiting parties from bidding process. If e-payment system is in place, then the document can be procured online.
- b. **Submission of tender document:** Online submission of tender documents also reduces scope for prohibiting parties from bidding process. The earnest money can also be submitted online through online payment system. As online payment system is not in place immediately, both payment of tender documents and earnest money can be paid through banking channel and the scanned payment acknowledgement receipt can be submitted online.
- c. **Evaluation of tender:** Online evaluation of tender will reduce scope for providing preferential treatments to any specific bidder.

Task 4: Tasks related to E-Education

4.1 E-learning as an intermediate solution to quality education: Quality of education is now prime concern for the future of the country. The Vision 2021 will remain in paper if quality of education is not addressed. The core problems of education are less related to ICTs, rather ICTs can be an intermediate solution to core problems. The core problems are:

- a. **Quality teachers:** The quality of teaching is shocking in primary and secondary educational institutions. Qualified graduates from tertiary education do not feel to join the primary or secondary educational institutions due to poor compensation package and dignity. The teachers in primary and secondary educational institutions are busy with government assignments, including conducting various elections, immunization and other programmes. The solution lies in overhauling the system of compensation on a priority basis in a way that qualified graduates feel to go there.

- b. **Skill upgradation of teachers:** The teachers do not have adequate facilities to upgrade their skills along with the upgradation of curriculum. ICTs may be helpful for teachers to improve their skills.
- c. **Poverty and malnutrition:** Poverty and malnutrition push children out of the school. Mid day meal may be a solution, where community can also participate.
- d. **Unattractive teaching approach:** Children do not find schools interesting due to lack of appropriate and modern teaching method.
- e. **Teaching infrastructure:** Infrastructure in terms of building has been improved during last one decade, however in-class equipment and facilities are not available, which are essential for quality teaching. Increase in investment is the only alternative.

While finding out quality teachers and providing them appropriate compensation are essential, for skill upgradation of teachers and making learning attractive, ICTs may be an intermediate solutions. E-learning at the initial stage should focus teachers and subsequently students.

4.2 E-content for Education: The crisis of textbook every year adds another reason, why the quality of education is poor, because it creates de-motivation among the young learners. While, the concerned authorities will sort out how to revolve the issue, an immediate and low cost solution is to publish all text books on the website of the NCTB. This initiative would allow schools to start classes at the right time by taking print out of initial chapters of the relevant textbooks from the website. This would also create pressure on the book publishers to print and distribute the books within schedule. The books may be published online on a pre-scheduled date, which will allow the book printers to print and distribute before the dates. The online availability of books in unicode fonts will allow various entities to create e-learning portals. The online publication will allow NCTB to publish the books in very colorful and attractive design.

Duration: This can be done every year with out any significant financial burden to the government ex-chequer.

4.3 Model ICT in Education Schools in All Upazillas: During the first two years, the government can undertake a project to launch model ICT in education schools in all Upazillas, based on existing experience in development sector. The schools will have a full-fledged Internet lab for students and multimedia projectors in each classroom with a PC, so that teachers and student can use ICTs of learning in the classroom and beyond the classroom. Non-resident Bangladeshis and development partners may be invited for contribution to implement such programme.

Duration: Two years will be adequate to set up the ICT facilities, develop relevant content and training of teachers.

D. Conclusion

It is to be mentioned that the commitment of the government will be reflected through announcement of the national budget for FY 2009-10. It is expected that the government will take appropriate measures through the national budget so that people's confidence increases and they also take part in building a poverty free digital Bangladesh. This year's budget should also transform the commitment of Digital Bangladesh from Awami league's election pledge to the government's plan of action.

References

1. Bangladesh Telecommunications Regulatory Commission web site: www.btrc.gov.bd. Data on mobile phone and PSTN subscription retrieved on 12 May 2008
2. ITU (2007) World Information Society Report 2007. Geneva: ITU, August 2007.
3. Jabbar, M (2008) Towards Digital Bangladesh. Article published in *BCS ICT World: Towards Digital Bangladesh*, November, 2008.
4. Ministry of Finance (2008) *Bangladesh Economic Survey 2008*. Dhaka
5. Raihan, A. (Ed.). (2007). *Pallitathya - An Information and Knowledge System for the Poor and Marginalized: Experience from Grassroots in Bangladesh* (abridged version). Dhaka, Bangladesh: D.Net.
6. Raihan, A. (2007a). *Use of ICT Materials in Literacy/Skills Training Programmes: Bangladesh's Experience in NFE*. Dhaka: UNESCO, Bangladesh.
7. Raihan, A. and Habib, S.M.A. (2007). Bangladesh. *Digital Review of Asia Pacific 2007-2008*. Orbicom, IDRC and Sage India.
8. Samarajiva, R. and A. Zainudeen, eds. (2008). *ICT Infrastructure in Emerging Asia: Policy and Regulatory Roadblocks*. New Delhi: Sage Publications and IDRC. Retrieved from <http://irne.net/2008/03/mobile-benchmark-studies-in-south-asia-and-latin-america-compared/>