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Towards Good Governance: Developing an e-Government

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1. INTRODUCTION

Information and Communication Technologies (ICT), today, are seen as the miracle medicines for curing a nation from the ails of corruption, mismanagement, poor governance, inflation, monopolies, business stagnation, illiteracy and so on. One important aspect concerns development and implementation of ICTs for the E-Governance. E-Governance holds enormous potential in terms of improving service delivery and efficiency, better response to business and citizen needs, and provision of affordable government services. Defined as "Government's use of technology, particularly web-based Internet applications, to enhance the access to and delivery of government information and service to citizens, business partners, employees, other agencies, and government entities [McClure (2000)]" or "the continuous optimisation of service delivery, constituency participation, and governance by transforming internal and external relationships through technology, the Internet, and new media [Gartner Group (2000)]". The e-government makes it possible for a government's different departments and organisations to have direct access to grassroots and vice-versa. It cuts down the costs and delivery times for the government and simultaneously becomes a tool for check and balances against the government. The e-government in short is a tool for good governance—transparency, participation, regulations and accountability.

E-Governance is divided into categories or areas. Based on areas it is distinguished into, namely: e-democracy, e-service provision, e-management, and e-governance [Per04: 15]. And based on interactions it is divided into three categories, namely: government and business (GnB), government and citizen (GnC), and government and government (GnG), which are further divided into government to business (G2B) and business to government (B2G), government to citizen (G2C) and citizen to government (C2G), and government to government (G2G) nationally and internationally respectively [Gha06], see Figure 1 below. The later division is based on the flow of services in one direction and flow of money in the other direction. For example civil servants working in government would be considered under C2G category.

The second step after realisation of need of e-government is the development of a strategy for implementation. This paper is an attempt in this direction. It builds upon the Jigsaw E-Government Framework [Ghayur (2006)] and develops a strategy for transition of a government into an e-government—more specific to the environment of a country like

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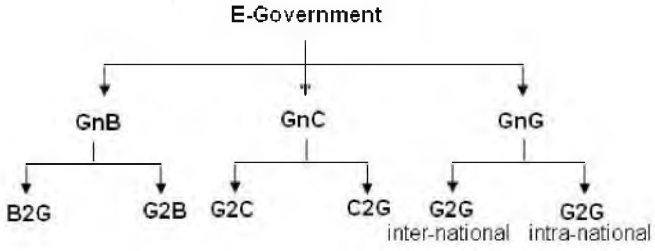
Fig. 1. e-Government Categories



Pakistan.[1] After listing the progress and development efforts of different countries towards the goal of e-governance in Section 2, the paper discusses the phased approach tailored for Pakistan's transition into e-government in Section 3. Section 4 introduces a new e-service development for efficient development of e-government services and the paper ends with some concluding remarks in Section 5.

2. EXAMPLES OF e-GOVERNMENTS

The e-economy models appearing in different regions of the globe can be categorised into three models, namely: (i) e-Business Core Model, (ii) e-Government Core Model, and (iii) Hierarchical e-Government Model. These models, though distinct, have further numerous derivatives. Each of the three models has three parties, namely: citizen, e-government and e-business. The three models are differentiated based upon the roles these three parties play and their respective structures. Other than the three prevalent models, a fourth model—Jigsaw Model—with four parties has also been proposed [Gha06]. This fourth model aims to transform a government into one that does not sit on top of the citizens and businesses, rather stays in between. The other significance of this model lies in the fact that e-government would not keep on evolving on its own whilst the other parties sit at the bottom of the evolutionary chain. Before advancing onto the next stage the e-government would make sure that the other parties in the model are ready and able to move to the next stage as well.[2] It may be pointed out here that the shape and structure of an e-government depends upon the e-economic model a country is moving towards or is in the process of implementation and the governance theory it is based upon, which are, namely: (i) Rainbow Theory, (ii) Smog Theory, (iii) Virga Theory, (iv) Kytoon Theory, and (v) Tempest Theory.[3]

This section takes a quick but thorough look at the e-governments around the globe. Currently three countries are leading the world in terms of e-governance, namely: America, Australia and Singapore. This section describes the efforts of these countries towards the goal of e-governance; firstly looking at the visionary process of the respective governments, followed by what has been achieved so far. America and Singapore are discussed here for their obvious lead in e-governance. However, Australian implementation of e-government has been looked upon because of its similarity to

[1]It may be pointed out that any e-government framework or model has in its basis a philosophical theory and the models developed thereof. This has been done by the author in [Ghayur (2006)]

[2]For details, see [Ghayur (2006)]

[3]For details, see [Ghayur (2006)]

Pakistan in terms of similar geographical obstacles to overcome—vastness, and diversity in land. Finally, India is chosen here to give a hint what Pakistan is up against in its own region. This section ends with a comparative index of Pakistan with other countries in the area of e-governance.

2.1. USA

The United States was one of the pioneering countries where the potential of e-government as a means to transform the governance was realised. The United States is implementing an e-Business Core Model leaning towards Virga Theory. The American government began its work on e-governance through the utilisation of ICTs in 1993. In September 1993, a policy document entitled "Reengineering Through IT" was published as part of the broader reinventing government framework policy of the National Performance Review (NPR). The report envisioned e-government as the one which "overcomes the barriers of time and distance to perform the business of government and give public the information and services when and where they want them. It can swiftly transfer funds, answer questions, collect and validate data, and keep information flowing smoothly within and outside government" [VPO (1993)].

The NPR-policy programme continued till 1997 under the name of "Access America" with the main policy programme to allow every American citizen to transact business with the government electronically, and to do so easily and quickly. The programme was renamed from the National Performance Review (NPR) into National Partnership for Reinventing Government (NPRG) to include the participation of parties outside the federal government, such as Postal Service, Social Security, etc. In 1999, a series of directives called "e-gov framework" were issued by President Clinton to meet the goal of US Paperwork Reduction Act which meant offering all federal services and transaction online by 2003. On 24th June 2000 American public was addressed for the first time in a webcast by President Clinton.

The e-government framework in USA is based on 7 principles comprising the following:

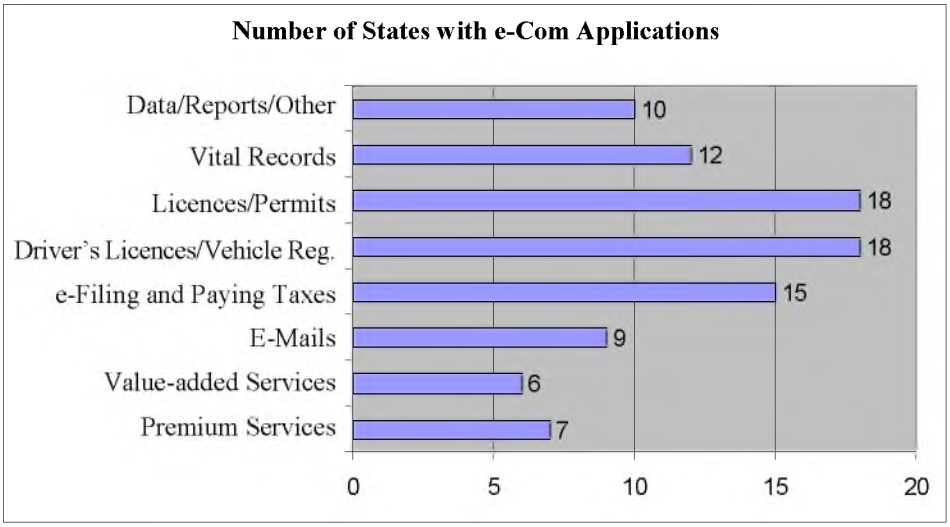
- easy access;
- re-engineered systems;
- automated systems;
- one-stop service;
- service by customer, not provider;
- privacy protected and embraced; and
- access to the physically challenged.

As a result of the initiative taken by the government, many of the services have been transformed into e-services in different American states (Figure 2), the main achievements include the following.

- Citizens are able to search all online resources offered by the federal government from a single web-portal, "firstgov.gov".
- Citizens, small businesses, and community groups have one-stop access to US $500 billion in grants and procurement opportunities.

- Citizens, students, researchers, and government employees are able to compete for US $50,000 prize for the most innovative idea for advancing e-government.
- Integrated services are offered across different federal agencies to help citizens tailor government to their specific needs, thus the services have been grouped on websites to target a specific group of citizens such as students, entrepreneurs, etc.
- Nearly 40 million Americans carry out transactions with the federal government electronically.

Fig. 2.



Based on [Sto01: 84].

2.2. Singapore

Singapore launched its IT2000 master plan in 1992 with the aim of transformation into an "Intelligent Island". The Singaporean Government is being modeled into eGovernment Core Model based on the Kytoon Theory.

The master plan was carried out in number of steps. At first, the plan laid out very broad goals, identifying following objectives [Wong (1997), p. 33]:

- develop a global hub;
- boost the economic engine;
- enhance the learning potential of individuals;
- link communities locally and globally; and
- improve the quality of life of Singaporeans.

Based on these broad objectives, the government narrowed down its aims. In 1996 "Singapore ONE" initiative—the implementation of a nation-wide high capacity network infrastructure was launched. In 1998 the target of making all key public services electronically available by 2001 was set. In June 1999 the successor of IT2000 master plan, "ICT2" master plan was presented with the main aim of developing Singapore into

a leading ICT-hub in Asia. On 6 June 2000 "e-Government Action Plan" was presented and US $900 million were allocated over the next three years for the said purpose. The plan included following five strategic thrusts:

(1) Delivering integrated electronic services;
(2) Using ICT to build new capability and capacity, e.g. equipping civil servants with access to information any time any place;
(3) Innovation with ICT;
(4) Being pro-active and responsive; and
(5) Reinventing government in the digital economy.

Based on the strategic thrusts mentioned above, six strategic policy programmes identified were: (1) knowledge based working places for civil servants, (2) electronic public service delivery, (3) ICT experimentation, (4) operational efficiency improvement, (5) adaptive and robust ICT Infrastructure, and (6) ICT education. As a result:

- In 1995 a onestop shop Government Internet Website and an eCitizen Centre were set up. The eCitizen center is based on the metaphor of a citizen journeying through life. The packages offered are ordered chronologically through the stages of life of an average Singaporean. 130 public services are delivered electronically through the eCitizen Centre [eCitizen (2004)];
- From 1 April 2000 telecommunications market was liberalised;
- Singapore Government Network (an Intranet facility) was broadband-enabled in 2001; and
- A network architecture was created to give over 30,000 civil servants access to systems and information at anytime and any place.

2.3. Australia

Australia's eBusiness Core Model is being modeled around Primary Rainbow E-Governance. The Internet has enabled the Australian federal government to provide the same quality of public services to Australians living in rural areas as for those living in bigger Australian cities [Lip (2001), p. 84]. In 1995, the minister of finance's IT review group presented a report, "Clients First: The Challenges for Government Information Technology" which concluded that there was room for reform in how the Australian federal government used IT to develop policy and conduct its administration [Lip (2001), p. 84]. A special Office for Government Online (OGO) was created within the Australian Federal Department of Communications, IT and the Arts to deal with the aim of development of e-government.

In a policy statement in 1997 "Investing for Growth", following commitments were made [Lip (2001), p. 85]:

- To have all the federal government services available online by 2001;
- To establish a Government Information Center as a main point of access to information about government services;
- To establish a government-wide intranet for secure online communication; and
- To establish electronic payments as the normal means for federal payments by 2000.

In 1998 the importance of Australian federal government's leadership role in adopting new ICTs was further emphasised in a policy statement, "A Strategic Framework for Information Economy". Ten key areas were identified to transform Australia into a leading player in the global information economy. Gatekeeper, a framework for federal government was developed to address the needs of government agencies for public key technology to support authentication and identification in government online transactions. It was in use by all the federal government agencies by 2001.

2.4. India

Indian Government is implementing a Hierarchical eGovernance Model based on Primary Rainbow Theory. The main achievements of Indian government towards the goal of e-government include:

- *Gyandoot Project*, started in Dar district has created a network of 39 internet-enabled kiosks that provides local entrepreneurs with Internet and telecommunications access, each kiosk servicing 25 to 30 surrounding villages reaching over half a million people;
- *Lokmitra* is a Rs 40-lakh (4 million) pilot project launched by Himachal Pradesh government aiming to provide easy access to information at the remote corners of the state;
- *Raj-Swift* is a statewide intranet to facilitate data, text and email between office of the Chief Minister and all the district collectors;
- *Rajnidhi Informaiton Kiosk Project* has been created to function as a modern service delivery system;
- To monitor various key activities of Rajasthan state Chief Minister's Information system has been created [Raj (2004)];
- *Vikas Darpan*: GIS based planning and decision support system; and
- *Project Telemedicine* interconnects three medical institutes using ISDN for tele-diagnosis, tele-consultation and tele-education [ZDN (2002)].

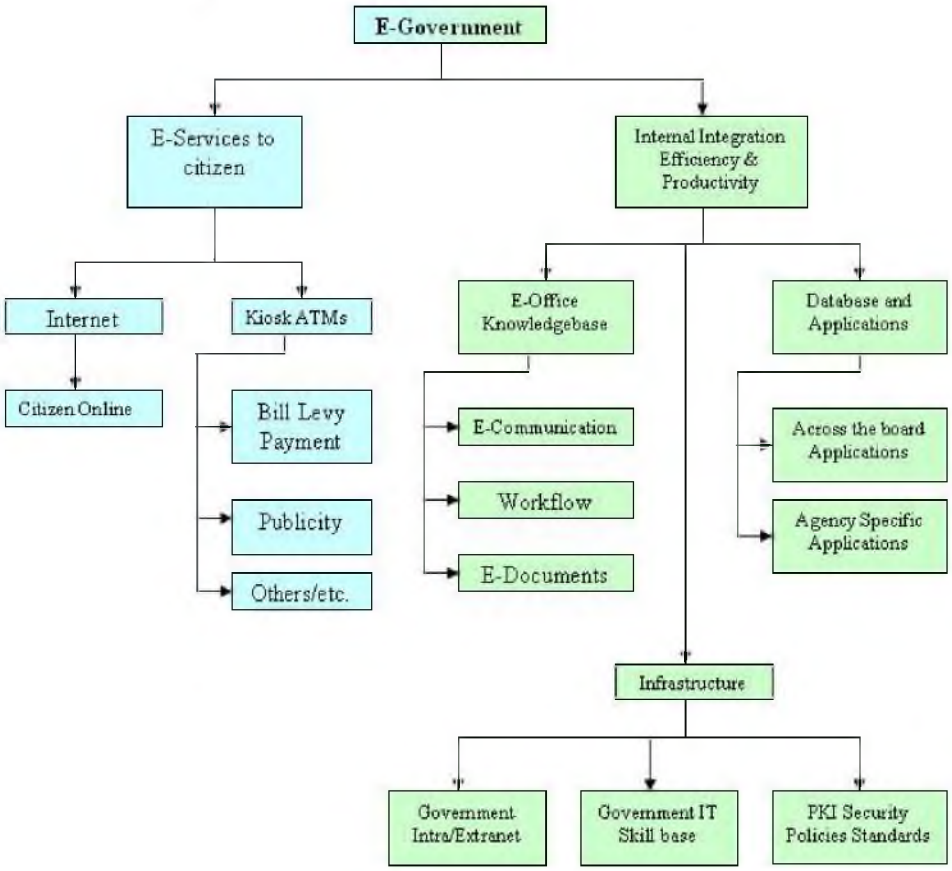
2.5. Pakistan

Pakistan is in the beginning of implementing its e-governance, and so far it seems to be heading towards Primary Rainbow E-Governance with Hierarchical Government Model. The e-government programme in Pakistan is an initiative of Ministry of Information Technology under the National IT Policy 2000 approved by the Federal Cabinet in August 2000 [PIT (2004)] and in 2001 Rs 2.6 billion were allocated for promoting e-governance in the country. In October 2002 the Electronic Government Directorate (EGD) was established in pursuance to a decision of the federal cabinet. The EGD is a dedicated wing of ministry of Information Technology. The main objectives which the government set (elaborated in Figure 3) to be achieved out of the implementation of this programme are:

- Improve service delivery to citizens; and
- Improve the internal efficiency of government operations so that government

functionaries become well versed in the use of ICT to provide service in a speedy, efficient, and transparent manner.

Fig. 3. Main Objectives of Pakistan's e-Government



Based on [Maqbool (2000), p. 12].

When e-government programme is implemented, the public services are to be provided through three mediums:

- internet (commonly known as online government);
- kiosks and ATMs; and
- manually, as is being done at present.

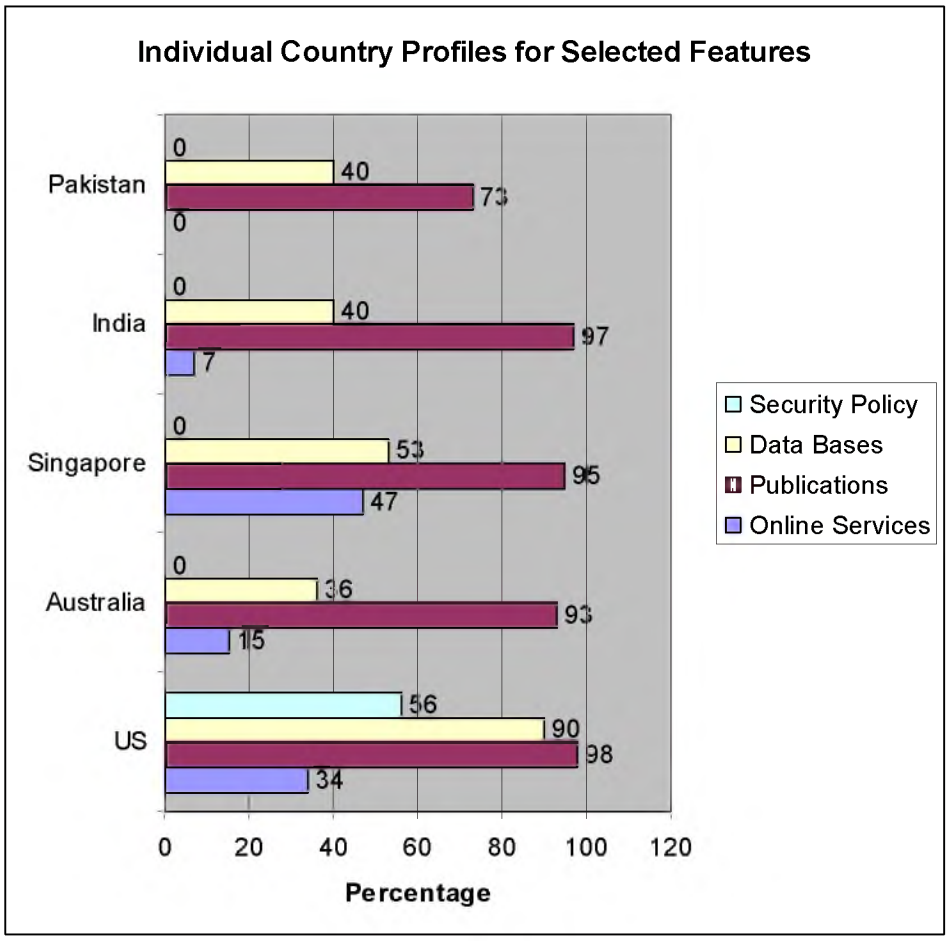
Every year a few projects falling in the above mentioned categories are implemented. The practical achievements so far include:

- Paksat-1 successfully commenced operations in January 2003 and high-resolution earth observation satellite, EOSS to be launched soon [PS (2003)]; and
- Pakistan's first web-portal "Online Citizen" <www.pakistan.gov.pk> has been created with around 11000 pages available and about 500 plus downloadable forms.

2.6. Pakistan's e-Governance *vis á vis* Others

It is important to point out that in the context of e-governances, number of databases available online, number of e-services given, online publications and security policies are crucial. Pakistan has, as yet, not evolved a single security policy and e-service, which is considered paramount for e-governance. In comparison, even India has seven e-services available, see Figure 4 below. Other than this, translating all paper data into online databases should also be one of the first steps in the transition to e-government.

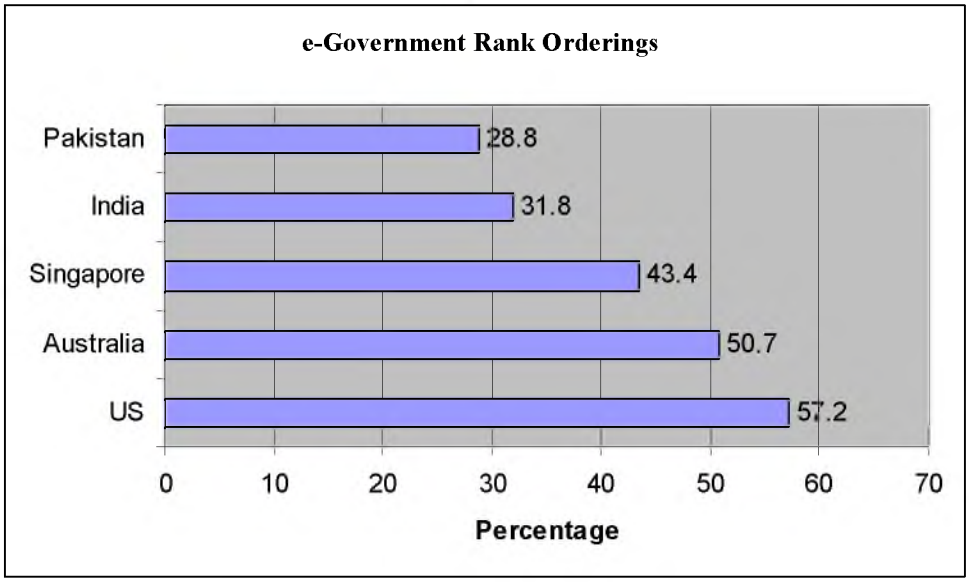
Fig. 4.



Calculations based on Table A-2 [WMR (2001)].

In 2001 a global e-government survey was carried out by World Markets Research Centre and Brown University, USA [WMR (2001)]. A 0 to 100 points scale was created and each nation's websites were ranked based on 22 features. USA was the top ranking economy with 57.2 percent and Pakistan ranked 28.8 percent, see Figure 5 below:

Fig. 5.



Based on Table A-1 [WMR (2001)].

3. A PHASED APPROACH TOWARDS e-GOVERNMENT FOR PAKISTAN

The significance of Jigsaw Model lies in the fact that it divides the journey of a government into an e-government into a number of stages each distinguished with milestones. In a similar fashion we have divided Pakistan's transformation into an e-government into four phases, each phase marking a significant improvement in the government's journey towards e-government. In the following lines these stages are looked upon in some details.

3.1. Phase One—the Awakening

This stage marks the realisation of the importance of ICT tools by the government and preparation of the vision for a nation-wide implementation. The government needs to layout a "master plan" with the aims and objectives together with strict timelines. Once the vision has been finalised the government can proceed with the implementation of the tools and technologies. Notwithstanding the vision, the government needs to implement a specific level of technology in the first phase uniformly through a broad array of its governance. The technologies would include the following:

- office LANs and Internet connectivity;
- official websites, email and information dissemination through web;
- electronic forms;
- periodic announcements;
- discussion boards for two way communication;
- process for digital data collection; and
- basic tools for help in decision making such as spread sheets.

3.2. Phase Two—the Preparation

The "phase one" simply lays the foundations for the upcoming momentous task; preparing the journeyer for an eye-opening adventure. Once the government has implemented majority of the technologies mentioned in the previous phase and developed a "master plan" for transformation into an e-government, the government will step into second phase with start of the development of e-policies and laws for regulating internet traffic and transactions. These policies and laws will set down the rules and procedures and their boundaries within which the country's e-economy would function. These laws are just as vital as any other national law such as traffic laws for governing traffic on a road. As there would be chaos on roads without traffic laws similarly there would be chaos on internet without its laws and regulations. These laws tackle a wide array of issues, such as: privacy, digital signatures, online transactions, digital piracy and so on. The development of the laws has to be done in a speedy manner as the real transformation of a government into an e-government only starts once these laws have been formalised. To remind here is the fact that e-governance is a tool for transparency and accountability and once the government embeds this concept in its e-governance, it would show its sincerity towards transformation into e-government. Simple procedures for monitoring the performance of civil servants and budgets of government offices have to be implemented. This can start with online official forums where the citizens launch their complaints against the departments, putting on the official websites and regularly updating the exact expenditures of government departments and giving the total official expenditures of different heads of departments. Last but not the least is the proper development of human resources, training and re-training. Although this will commensurate well with each step however, in this phase it has to be done on a greater scale to lay the foundations for effective transformation into e-government. This will coincide with capacity building of the concerned institutions.

In the second phase, efforts would have to be made to provide internet access to the masses. The technologies and procedures which would be implemented in the government offices would include the following:

- a government portal with short and easy address;
- e-services and intra-office networks;
- live chats;
- decision modeling tools;
- knowledge management tools;
- online citizen IDs, and
- importantly, adequate capacity building especially in terms of human resource development.

3.3. Phase Three—the Transformation

The government will step into the third phase when the first project of an e-service with e-transaction will be implemented indigenously guided by the laws and rules for electronic information. This will be the milestone which would mark the start of transformation of a government into e-government with tangible results. Main efforts of the government would be diverted towards the transformation of all of its services into e-

services, provide internet access to all of its citizens and automate transfer of inter/intra office data.

The mainstay of the e-governance—accountability and transparency—has to be remembered during the third phase as well. Government will need to enhance its procedures and technological base to this effort. The government can implement a web-based system wherein when a complaint is launched against a department, the system sorts through a database and sends the complaint to the official responsible and on the same time shows on a website the status of the complaint and the details of the official who is dealing with the complaint. If the official fails to comply with the complaint in due time a notification would be sent to him/her while the complaint would be forwarded to the next officer in the hierarchy. This system would not only improve the governance but also empower the citizen.

3.4. Phase Four—the Upgradation

When the entire government is integrated into one giant network with automated flow of information, the government would be considered in fourth stage. By now every governmental service would be available electronically. This stage wouldn't implement any new e-services but the concentration would be on upgrading the technology of existing e-services to meet the market demands such as m-commerce (mobile commerce). The other significant advancement in this stage would be the start of integration of different e-governments, the ultimate aim of today's e-governance.

4. A METHODOLOGY FOR e-SERVICE DEVELOPMENT

Implementation of different stages of e-government is possible with the use of Internet. But this dictates the transformation of government services into electronic platforms. To ensure the capability and quality of e-services a set of standards and procedures has to be followed during the development and implementation stages. Although there is a wide variety of software development methodologies available but for the development of e-services more specialised methodologies are needed. With this aim, we have developed a methodology which addresses the issues unique to the development of an e-service. The methodology consists of nine steps, which are as under:

(1) e-Service Plan;
(2) e-Service Analysis;
(3) e-Service Design;
(4) e-Service Development;
(5) e-Service Benchmark;
(6) pilot E-Service Deployment;
(7) e-Service Upgrade;
(8) wide Scale e-Service Deployment; and
(9) evaluation, Maintenance and Up-gradation.

4.1. e-Service Plan

The engineering process of an e-service begins in this step. First step is the creation of a strategic plan for the project before embarking on the development of the e-service. e-Service plan should incorporate following steps:

4.1.1. *Identify Manual Procedure*

Identification of the manual procedures is of utmost importance. The service which is to be turned into an electronic service has to be studied and analysed. The procedures included are the identification of data and data flows of the manual service.

4.1.2. *Identify Translatable Data Flows*

Next step is the identification of maximum number of data flows which can be transformed using e-procedures. This will give the developing team an idea of what is expected of them to be implemented.

4.1.3. *Identify Audience*

Last step is the identification of the audience for whom the e-service is intended.

4.2. e-Service Analysis

The aim of this step is to get a detailed analysis based on the data collected in the previous step. The data will be complemented with further analysis using techniques like interviews, document reviews, etc. This data will then be used for the development of the e-service. This step is also sub-divided, as follows:

4.2.1. *Procedure Analysis*

A detailed analysis of the manual procedures is carried out. This step requires complete understanding of the service. Data flow diagrams are utilised for the description purposes.

4.2.2. *Audience Analysis*

A detailed analysis of the audience is carried out. This is done to help in designing the interface of the service. Factors like demographics, geography, literacy, language, etc. are taken in consideration

4.3. e-Service Design

Third step is the design of e-service. Different tools and techniques are used for the design. There are number of methods, designing tools and modeling languages available which are to be utilised for the purpose of designing the e-service. The aim is not only to automate the flow of information but also to optimise the process reducing the redundancy and elimination of red-tape. During the design of the e-service an effort is to be made to make sure that after implementation of the e-service as much of the information as possible should be updated and maintained automatically. For example if the e-service is agriculture related, updating temperatures and water resource data should be done automatically—e.g. the website getting the data from a weather website and updating itself.

4.4. e-Service Development

Development of the e-service would make use of the latest available technologies

in order to stay with the ever-advancing world of e-commerce. Some of the important features that an e-service website needs to look into are:

- *information about the Organisation and e-Service:* this would include general, historical, working methods, employees, annual planner and budgetary information along with links to others, internships and jobs availability;
- *information Acquisition and Storage in Digital Format;*
- *digital Display of Information—E-Catalogs and Search Options;*
- *system Connectivity:* this would take into consideration the bandwidth of the targeted audience and their environment;
- *e-Transactions:* this would encompass the security procedures for transactions;
- *system Security:* this would be required for securing digital data;
- *interface:* the website has to be designed for ease and speed along with feed back channels;
- *information Updates:* the website should be intelligent enough to automatically update itself, wherever possible; and
- *analysis of Performance:* website should have analysis tools, e.g. hit counter.

4.5. e-Service Benchmark

After an e-service is developed it is to be benchmarked against similar e-services and if it is found lacking in some aspect it is to be upgraded before the final deployment.

4.6. Pilot e-Service Deployment

A pilot test of the e-service is to be carried out before any vast scale implementation. This will be done in following six phases:

(1) Pilot Testing Plan;
(2) Evaluation Process Criteria;
(3) Pilot Deployment;
(4) Pilot Run;
(5) Result Analysis; and
(6) Lessons Learned from Pilot.

4.7. e-Service Upgrade

Based on the results obtained from the pilot project changes would be made in the system and last step (4.6) is carried out again. This loop is to be carried out until a satisfactory system is achieved.

4.8. Wide Scale Deployment

After that the satisfactory results have been achieved from the Pilot e-Service the wide scale deployment is to be carried out in two steps, namely:

(1) Wide Scale Deployment Plan; and
(2) Wide Scale Deployment.

4.9. Evaluation, Maintenance, and Upgrades

The e-service and its system should be continuously monitored and upgraded as the technology advances. For example every e-service given on Internet in near future would have to be upgraded to cater for mobile connectivity.

5. CONCLUSION

Internet is a tool that is equally and easily accessible both by the poor and the rich. This tool also facilitates the development and transformation process coexisting with participation, transparency, and accountability. As President Bill Clinton said, "The Internet has the potential to strengthen our democracy and to make government more open, efficient, and user-friendly" [Birnbaum (2000), p. 244].

Developing countries need to tap the vast potential—employment, trade, and services—that the ICT sector offers in addition to bringing greater transparency and ease. The utilisation of the surging potential in the ICT sector is crucially linked with transforming governmental functions to e-governance albeit in phases and with pilot projects.

The technology available is neither expensive nor complicated. Development of e-services does not require complicated processes either. A functioning e-government is feasible. This paper has been an attempt in this direction.

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