CHAPTER 1

# What is E-Governance?

## 1.1 E-GOVERNANCE—AN OVERVIEW

E-governance is a form of e-business[1] in governance comprising of processes and structures involved in deliverance of electronic services to the public, viz. citizens. It also involves collaborating with business partners of the government by conducting electronic transactions with them. Besides, it entails enabling the general public to interact with the government, through electronic means, for getting the desired services. In other words, e-governance[2] means application of electronic means in the interaction between

1. government (G) and citizens (C), both ways (i.e. G2C and C2G),
2. government or businesses (B), both ways (i.e. G2B and B2G), and
3. internal government operation (G2G),

The aim, ultimately, is to simplify and improve governance and enable people's participation in governance through mail, and Internet.

E-governance is much more than just preparing some websites. It ranges from the use of Internet for the dissemination of plain web based information at its simplest level to services and online transactions on the one hand and utilizing IT in the democratic process itself, i.e. election on the other.

E-governance implies e-democracy[3] (Backers 2001), wherein all forms of interaction between the electorate (i.e. general public) and the elected (i.e. the government) are performed electronically. E-government, as distinguished from e-governance, comprises a pragmatic application and usage of the most innovative technologies in computer and communication technologies, including Internet technology, for delivering efficient and cost effective services, and information and knowledge to the citizens being governed, thereby realizing the vast potential of the government to serve the citizens.

Various manifestations of e-governance initiative will be in terms of the government delivering services to citizens of transacting business, offering general information, or conducting interactions with the general public and business using such IT tools as:

- E-mail
- Internet web sites publishing (including online interactive transaction)
- WAP application and publishing
- SMS connectivity
- Intranet development and usage
- Promotion of citizen access.

The advent of these other components and of Information and Communication Technology (ICT) as a highly leveraged enabling tool for delivery of services in the public and private sector has now been universally recognized. This has resulted in a redefinition of the fundamental concept of governance and also in recognizing its potential to change both institutions and delivery mechanisms of services for betterment of people.

### 1.1.1 Why E-governance?

The fundamental motivation for the campaign of e-governance in India and elsewhere is a slogan—**to provide SMART government**—"SMART" being an acronym for Simple, Moral, Accountable and Responsive Government, a laudable ideal, though difficult it may be to achieve in reality. Thus we may conceive a Smart Village or Smart Municipality or a Smart State, all very difficult, but ideal models. Notwithstanding the difficulties involved in achieving this, a clear objective of e-governance can be cutting the cost of governance and also minimizing the complexities of procedures by possible business process reengineering. The concomitant benefit is empowerment of people through what is called 'disintermediation'; in other words, eliminating the middleman or tout between the government and the people. For example, by doing so, property tax assessment and collection system can reduce the element of corruption in the system apart from increasing consumer convenience. The online system based on Internet will reduce contact with mediating officials, thereby reducing the possibility of malpractice. This does not however mean that the primary objective of e-governance is tackling corruption, even though it may be a fallout (though not necessarily).

Evidently, the objectives of achieving such e-governance go far beyond mere simple computerization of stand-alone back office operations in government offices. It should mean a drastic change in the way the government operates, and this means a new and redefined set of responsibilities for the executive, legislative and the judiciary. This requires bringing about a social catharsis, which needs to be done in a comprehensive, concerted and planned manner.

Historically, it was in Chile that a real e-governance initiative was taken up as early as in 1972, when the IT applications were unheard of in government and were limited even in business. They used techniques of IT not to just make government paperless or less of paper (as is presently being done) but to perform government work efficiently. They realized that transparency is the ability to regulate the conditions, not the transactions. Prof. Stafford Beer

implemented for President Allende of Chile, the first e-governance software that would help the government survive a severe crisis. The question that was asked to and answered by the software was whether the government would survive by getting adequate grip and control over the situation in time of a severe inflationary crisis due to economic blockade resulting from stopping of copper exports (which was accounting for 80% of the foreign exchange earnings of Chile). The software which was developed did help in restoring prices back to normal, thus making the government survive. Chile thus became the first country to have successfully implemented e-governance.

Even though the Chile experiment of the real e-governance early in 1972 was a success story, the subsequent efforts in implementing e-governance in various countries, including the developed ones, were not aimed at such profound or sweeping purposes of critical nature. Generally, the e-governance applications have been more mundane, simple and straightforward. As the winds of e-governance and e-government blow widely through public organizations across the world, more and more governments in different countries have been harnessing the Internet and the powers of IT to provide services of varied nature as follows:

- G-to-G (Govt. to Govt.—within and across the Govt.)
- G-to-C (Services by the Govt. to Citizens)
- C-to-G (Interaction of Citizens with the Govt.)
- G-to-B (Services of the Govt. to Business)
- B-to-G (Business interaction with the Govt.)

### 1.1.2 Issues in E-Governance Applications and the Digital Divide

Initially, the e-Governance activity starts with providing information services by the government departments to the public in terms of State websites. These websites provide information about the department concerned, its aims, objectives, citizens' charters, organizational details, facilities available and services provided to the public along with the fees payable, etc. However, as the role of IT in the specific organization increases, the web sites of government departments attempt at providing more advanced services such as dynamic information and also specific transactions such as making utility payments. Gradually, this e-interaction of the public with the government leads to organizational transformation, transparency of public services, speed of service performance, increased citizen participation in the government, and thereby greater facilitation of participative democracy. Ideally, as the public agencies such as government departments and public sector undertakings begin implementing e-governance and e-government initiatives, their performance improves and they are better equipped to interact with citizens and provide services over the Internet. Thus, the citizens are enabled access to government documents, file taxes, make payments as utility bills, obtain or renew licenses and permits of different kinds, make bookings and reservations for public

services, lodge complaints or file applications for various benefits, and even employment.

How much of these actually happen? What are the problems encountered in achieving them? The enthusiastic initiatives in e-governance and e-government are not without consequential problems, as any technological innovation has. These initiatives have the potential to create a digital divide[4] within the society, especially in the poor and developing countries. While the e-governance initiatives may benefit certain privileged sections of the society, the underprivileged, those who do not have access to Internet or not well qualified or equipped to use Internet will be all the more distanced from the government, leading to disenchantment. Also, this will aggravate even further the existing divide between the privileged and the underprivileged. Thus, it is essential that governments concerned ensure that all citizens of different socio economic and educational strata will have adequate access to the basic skills and infrastructure to participate in an increasingly technological society. As the digital divide becomes perceptible in different countries, public policy makers need to devise policies that would address issues of universal access and educational needs of their citizens, so as to match the requirements of an IT enabled e-government and e-society.

In addition, as the e-governments make Internet as the primary access point for all citizens to interact with the government, the issues that need to be focussed are:

1. How will the performance of the government departments/public bodies be improved by e-governance initiatives?
2. What are the organizational effects of e-government and IT?
3. What are the correct strategies for success in e-governance projects?
4. What are the skills that are required by the government employees in an e-governance environment in the Information Age?

While detailed research is required to address these issues, preliminary indications are already available that e-governance increases efficiency, speed, effectiveness and citizen satisfaction. However, these will be true only if the e-governance services provided to citizens are fool-proof, reliable and inexpensive. The structural effects of e-governance and IT in government departments and public agencies are yet to be identified, and their long-term effects and longitudinal effects are yet to be studied. More research is required to be taken up to answer questions as to whether e-governance leads to decentralized decision making, and whether it results or calls for business process reengineering in the government departments and public organizations.[5, 6]

IT implementations do indicate the required business process reengineering (BPR) within the concerned government department. However, whether such reengineering is viable, can be implemented without any repercussions, what legal changes is required—these issues are open for discussion. Often, the prerequisites for reengineering of the processes in the government are not easy to meet: radical changes in the processes or procedures are not acceptable as they may lead to considerable repercussions, sometimes too radical to be acceptable or implementable, with many side effects.

A number of organizations are involved in studying these issues. The e-governance initiative, a part of National Centre for Public Productivity at Rutgers University, Newark, New Jersey; Centre for Digital Government, a US National Research and Advisory Institute; Centre for e-government, an international body; Centre for Electronic Governance, IIM-Ahmedabad; Centre for Good Governance and also National Institute of Smart Governance, both at Hyderabad, India, Centre for e-governance at Department of Information Technology, and Ministry of Communications and Information Technology, Govt. of India, New Delhi, are some such institutions.

## 1.2 EVOLUTION OF E-GOVERNANCE, ITS SCOPE AND CONTENT

Even though historically it was Chile which implemented real e-governance solution as early as the seventies, the current interest and attention on e-governance applications all over the world has its roots in the "Information Super Highway" concept initiated by the US Vice President Al Gore in early 1990s. The Information Super Highway was defined largely in terms of the information infrastructure at the national level by many countries including the US, UK, Canada, Australia and India. The focus was then largely on development of components of the infrastructure, such as fibre optic networks across the States or Nations. Subsequently, the interest was widened to include socio-economic considerations encapsulated in the concept of *Information Society* or *Knowledge Society*, which naturally has to encompass e-governance. That is how e-governance concept came into being in a formalized and focussed manner, even though attempts to implement Information Systems in the government departments and other public organizations have been made with partial success in various countries including India. Such earlier attempts did not receive the state patronage on a broad-based manner while individual or stray attempts may be cited to have succeeded.

In general, during 1980s and 1990s, the governments all over the world lagged behind the commercial world in accepting and implementing Information and Communication Technology (ICT). The commercial world, including the industrial world, had gone far ahead of the governments all over the world in harnessing the potential of ICT in their core and also peripheral activities. Commercial enterprises utilized ICT increasingly to reach out to their customers and business partners, thereby impressively enhancing their service quality, speed and convenience. E-commerce thus became a big boom (even though the boom never reached the expected levels). However, visible success cases of ICT application include the 24 hours ATM (Automated Teller Machines) services, 24 hours call centres, electronic shopping on the Web, the use of DTV, integrating cable TV with Internet, etc. The list could be unlimited. Examples can be cited for typical information systems that run the 'back offices' in the financial and other sectors of business and industry. In fact, such 'back office' computerization could be even handled offshore in developing countries like India, where the skilled software manpower and also unskilled

operational manpower have been available at low cost. The cost-effective satellite communication infrastructure facilitated such remote development and maintenance of software of these banking, financial, aviation and industrial sectors. This formed the bulk of the 'software exports' activity in countries such as India, Ireland, Israel, and China. Similarly, in 1990s and 2000 till now, the IT enabled services (ITES) formed the major component of remote services such as call centres, data entry, etc. However, as indicated earlier, all these activities were not concerned with e-governance. Governments were the last in the bandwagon of institutions attempting to harness ICT in their activities. However, though late, the governments all over the world finally woke up to realize the potential of ICT in all their activities.

The initial efforts of e-governance simply resulted in only partial automation of the existing paper based manual procedures and did not result in any significant reengineering or optimization. While implementation of ICT in the business has resulted in good amount of Business Process Reengineering (BPR) as to move away from redundant and inefficient functional business units and to restructure organizations around processes that support core business, in the government enterprises such radical or significant changes have failed to happen to a large extent. This situation could be traced to various factors in government functioning such as conservatism, resistance to change, and rigidity of legislation which impedes the amendment of rules and procedures.

As a result, ICT based management methodologies[7] such as Business Process Reengineering, Supply Chain Management, Just In Time (JIT) methodologies, which had salutary effects in business and industry had left the government system practically untouched. The scope and extent of e-governance have been largely limited to simple applications with the maximum of computerized MIS and database management within the government departments along with gradually enhanced usage of simple ICT technologies such as e-mail, and limited usage of Internet and video-conferencing for government functions.

In addition to potentially delivering significant improvements in government services, ICT has been visualized by some as having much deeper and wider impact on society and even capable of affecting the quality of life and nature of democracy.

However, the significant issues that has become highly relevant for large scale implementation of ICT in governance are the issues of security, privacy, vulnerability of public ICT infrastructure to crime, potential for abuse, terrorism, and general crime, in addition to issues related to social cohesion, and social exclusion following what is popularly known as the *digital divide.*

Notwithstanding the issue of digital divide which basically refers to lack of access of poor people and rural people to Internet, the indirect benefits to all citizens from computerization and ICT in the government machinery will go a long way in improving the quality of life of people.

Thus, the scope of ICT implementation in government machinery can result in

- improvement of efficiency and effectiveness of the executive functions of government, including delivery of public services;
- greater transparency of government to citizens and business, permitting greater access to the information generated or collated by the government;
- fundamental changes and improvement in relations between citizen and the state thereby improving the democratic process; and
- better interactions and relationships amongst different
  - — wings of the same government,
  - — state or local governments within a country,
  - — countries whose governments are web-enabled.

Any e-governance activity/project involves appropriate

- hardware and corresponding system software,
- networking of the hardware identified above—both the Internet and Intranet environment, and
- application software along with appropriate database management software.

## 1.3 PRESENT GLOBAL TRENDS OF GROWTH IN E-GOVERNANCE

Press reports (during the end of 2002) indicate a trend of global growth in e-governance utilization by people in different categories. They indicate the following: The proportion of adults worldwide using the Internet to access government services or products during the past 12 months has increased by around 15 per cent, according to the findings of the second Government Online Study published by Taylor Nelson Sofres. Three out of ten citizens (30 per cent) globally said that they had accessed government services online compared with only a quarter (26 per cent) questioned a year ago.

Government online services are most commonly used to search for information (24 per cent of users) and to download information (11 per cent of users). The increased use of government online services is primarily due to the rise in the proportion of people searching for information (from 20 to 24 per cent during the period from September 2001 to September 2002). Globally, online government transactions increased from just 6 per cent to 7 per cent during this period and the percentage of those providing personal details to government increased from 7 per cent to 8 per cent.

In some countries, percentage increase has been significantly higher than in others. Among the most significant increases in the use of government services online are Australia (from 31 per cent to 46 per cent), Turkey (from 3 per cent to 13 per cent), the Netherlands (from 31 per cent to 41 per cent), and the US (from 34 per cent to 43 per cent). In contrast, in Japan, however, government online usage fell by 4 per cent (from 17 per cent to 13 per cent of citizens) between 2001 and 2002.

While security issues about accessing government services online were

the main concern for many countries during 2001, perceptions of safety improved globally during 2002. When 23 per cent of citizens worldwide said that they feel safe disclosing personal information such as credit card and bank account numbers online compared to just 14 per cent of citizens in 2001, representing thus an increase of almost two-thirds (64 per cent). As for the use of government online, the Scandinavian markets (Denmark, Finland, Norway, and Sweden), together with some South East Asian markets (Singapore and Hong Kong), have perceived the highest levels of safety (around one-third of users), in the system. In contrast, the greatest safety concerns were expressed by citizens in Japan (90 per cent said they felt accessing government service online was "unsafe"), Germany (82 per cent) and France (76 per cent).

### 1.3.1 Other Key Findings

Globally, government online use is more prevalent among men (33 per cent) than women (26 per cent), and among those aged under 35 compared with other age groups.

During the past 12 months substantial increases in government online use have taken place among 35–44 year-olds (from 22 per cent to 36 per cent) and 55–64 year-olds (from 2 per cent to 18 per cent). In contrast, use among those aged 65 and above decreased (from 7 per cent in 2001 to 5 per cent in 2002).

Globally, the proportion of Internet users who have made transactions using government services online is equal to the proportion of users who made online shopping transactions. Fifteen per cent of internet users have made an online government transaction and in addition 15 per cent have made an online purchase at least once during the past 12 months.

The percentage of Internet users who access government online services varies considerably across different countries from 16 per cent in Hungary to 81 per cent in Norway.

Wendy Mellor, Director, Taylor Nelson Sofres commented: The increase in the use of government online services at a global level suggests that the public see the Internet as a more acceptable means of getting involved in government activity at both national and local levels. However, significant differences exist between countries, may be due to, awareness of services, perceptions of safety, relevance of the site to users, and access to the Internet, among others.

In countries such as Singapore, Norway and Sweden, where the use of government services online is high, it is likely that a significant proportion of citizens feel comfortable with this approach of dealing with government. Yet in countries such as Britain, New Zealand and South Korea, where usage lags behind general Internet use, more needs to be done to assess why uptake of online services is slow and what steps need to be taken to address this.

All the above statistics on usage is time bound. Over the years there has been a definite rise in the usage of e-governance all over the world.

## *Conclusion*

While the growth in the use of e-government is encouraging, our research shows that the majority of this growth is from citizens searching for information online rather than making transactions or providing personal information to government. This may be due to perceived security risks but if the use of these services is to increase, messages about the safety of government online services need to be communicated effectively.

CHAPTER 2

# E-Governance Models

## 2.1 INTRODUCTION

In Chapter 1 we have defined e-governance fundamentally as application of ICT to governance activity. However, this can be manifested in multifarious ways and models. Models for e-governance, especially in the developing countries, are essential for a right perspective on e-governance implementation. In this chapter we shall survey some models for e-governance in developing countries.

## 2.2 MODELS OF DIGITAL GOVERNANCE

Models of digital governance[8] are still evolving in developing countries. A few generic models have shaped up, which are finding greater recognition and are being replicated. These models are based on the inherent characteristics of ICT such as enabling equal access to information to anyone who is a part of the digital network and de-concentration of information across the entire digital network, connecting all sources of information. In simpler terms, information does not reside at any one particular node in the Digital Governance Models but flows equally across all the nodes—a fundamental change from the more common hierarchical information flow model that leads to unequal distribution of information and hence skewed power relations.

Hierarchy is inherent in the government departments. Equity based information flow may not be always compatible with government functioning. Therefore, appropriate administrative reforms and some reengineering may be required before e-governance may be really implemented.

It needs to be noted here that these models of governance are fundamentally different from those which are popular in developed countries due to differences in basic conditions, and perspectives and expectations from good governance. The six generic models of digital governance in developing countries are:

1. Broadcasting/Wider Dissemination Model

2. Critical Flow Model
3. Comparative Analysis Model
4. Mobilisation and Lobbying Model
5. Interactive-Service Model
6. E-governance Maturity Model

These models exhibit several variations dependent on the local situation and the governance functions carried out through these models.

### 2.2.1 Broadcasting/Wider Dissemination Model

#### *Principle*

The model is based on dissemination of information relevant to better governance that is already in the public domain into wider public domain through the use of ICT and convergent media. The rationale behind the model is that a more informed citizenry is able to understand better the governance mechanisms and is more empowered to make informed choices and exercise its rights and responsibilities. Further, there is a greater likelihood that the society in which the individuals are equally informed will ensure that the agenda and forms of governance are not biased to favour a few.

The wider dissemination model opens up an alternative channel for people to access information as well as validate information available in the local domain from external sources. The widespread application of this model gradually corrects the situation of information failure and provides people with the basic government-related information to come to a common understanding and decide upon the future course of action.

#### *Applications*

1. Putting government laws and legislation online.
2. Making available the names, contact addresses, e-mails, and fax numbers of local governmental officials online.
3. Making available key information pertaining to governmental plans, budgets, expenditures, and performances online.
4. Putting key court judgements/judicial statements that are of value to common citizens and creating a precedence for future actions online, viz. key environment related judgements, State vs Citizen court rulings, etc.

Project GISTNIC[9] (General Information Services Terminal of National Informatics Centre) is an example of this model. In this project, the government agency (NIC) disseminates general information of about 25 subjects such as Economy, Education, Census, Tourism, etc. to general public. Government Orders (GOs) also are being publicised. However, after the advent and popularity of Internet, almost all government departments have been setting up or maintaining websites providing information about themselves to the public in general. The web sites of government departments can be reached through **www.nic.in**, a general government web site.

### *Evaluation*

This model is the first step to more evolved forms of digital governance models. It is also the most crucial one as it catalyses free access and flow of information to all segments of society and serves as the building block to better governance.

The model, however, loses its effectiveness where free-flow of information is not encouraged or is not an objective. Tight governmental controls and bids to censor the content being transmitted through this model would be the bane of the model. The onus is therefore both on governmental organizations as well as civil society organizations to ensure that such models continue to proliferate.

## 2.2.2 Critical Flow Model

### *Principle*

The model is based on channelling information of critical value to a targeted audience or spreading it in the wider public domain through the use of ICT and convergent media. The model requires foresight to understand the significance of a particular information set and use it strategically. It may also involve locating users to whom the availability of a particular information set would make a critical difference in initiating good governance.

The strength of Critical Flow Model is the inherent characteristic of ICT that makes the notion of distance and time redundant. This reduces the cases of exploitative governance possible earlier due to time lag between availability of information to different users.

### *Applications*

The applications involve making available

(a) information on corruption (by an appropriate legal authority) of a particular government ministry or government officials, to its electoral constituency or to the concerned governing body (e.g., the web sites of Central Vigilance Commission);
(b) research studies, enquiry reports and appraisals commissioned by the government to the affected parties;
(c) human rights violation and criminal impeachment records against government officials to NGOs and concerned citizens; and
(d) environment related information to local communities, for example, information on radioactivity spills, effluent discharge in rivers, green ratings of a company, etc.

### *Evaluation*

Critical Flow Model is more focussed in terms of its information content and its intended users. Due to critical aspect of information, the model exposes the weakest aspects of governance and decision-making mechanisms and informs

people about specific cases of state failure and bad governance to build up a case for concerted action. At the same time, by fuelling public unrest, the model exerts pressure on the concerned government institutions and individuals to take into cognizance the interest and opinion of the masses in decision making processes. The onus of creating such models may lie more with the civil society organizations to emerge as an effective watch guard to government policies and actions. The model will not work in cases where government mechanisms do not foster public debates and censure all information of critical nature. It will also fail where the government maintains a tight control over all information. There it remains restricted to top few levels of the government. Inherently the Internet is an open medium. Thus, restricted dissemination is only typical—only those interested may use the critical and subject based information lodged on Internet web sites for public access (as indicated above) as applications.

### 2.2.3 Comparative Analysis Model

#### *Principle*

The Comparative Analysis Model is based on exploring information available in the public or private domain and comparing it with the actual known information sets to derive strategic learnings and arguments. The model continuously assimilate new knowledge products and uses them as a benchmark to evaluate, influence or advocate changes in current governance policies and actions. The comparison could be made over a time scale to get a snapshot of the past and present situation (before-after analysis) or between two different situations to understand the effectiveness of an intervention (with or without analysis). The strength of this model lies in the boundless capacity of ICT to store information in a retrievable manner and transmit it almost instantaneously across all geographical and hierarchical barriers.

#### *Applications*

1. Guaging the effectiveness of current policies by gleaning learnings from government policies and actions of the past.
2. Establishing conditions of prior precedence, especially in the case of judicial or legal decision-making and use it to influence future decision-making. This could be useful in resolving patent-related disputes, public goods ownership rights, etc.
3. Enabling informed decision-making at all levels by enhancing the background knowledge and provide a rationale for future course of action.
4. Evaluating the performance record of a particular government official or ministry.

#### *Evaluation*

Developing countries can effectively use this model to their advantage as ICT

opens access to global and local knowledge products at a relatively low cost. Watchguard organizations and monitor groups could use the model to track the performance records of electoral candidates and share them in their constituency. The model is, however, dependent on the availability of comparative information sets and the ability of the users to analyze and bring out strong arguments or self-explanatory graphics from the analysis. The model however becomes ineffective in the absence of a strong civil society interest and short public memory.

### 2.2.4 Mobilization and Lobbying Model

#### *Principle*

Mobilization and Lobbying Model is one of the most frequently used digital governance models and has often come to the aid of civil society organizations in developing countries to impact international decision-making processes. The model is based on planned, directed, strategic flow of information to build strong virtual allies to strengthen action in the real world. It takes up the proactive approach of forming virtual communities which share similar values and concerns, promoting active sharing of information between these communities, and linking them with real-world activities.

The strength of this model is in the diversity of its virtual community, and the ideas, expertise and resources accumulated through virtual forms of networking. The model is able to effectively overcome geographical, institutional and bureaucratic barriers to shape concerted action. It also provides a strong virtual arm to several activities such as directing campaigns against a particular individual or decision-making body.

#### *Applications*

1. Fostering public debates on global issues, themes of upcoming conferences, treaties, etc.
2. Formation of pressure groups to pressurize decision-makers to take their common concerns into cognizance.
3. Amplifying the voices of marginalized groups such as backward classes or minorities who are traditionally marginalized from the decision-making process.
4. Encouraging wider participation in decision-making processes.
5. Developing global expertise on a particular theme in the absence of localized information to aid decision-making.

#### *Evaluation*

The Mobilization and Lobbying Model enhances the scope of participation of individuals and communities in policy issues and debates. The model also creates an effective deterrent for government bodies and individuals to be watchful in their actions lest they turn the opinion of local and global

community against them. This model could be effectively used by the Government to encourage public debates and to gauge public opinion on a particular issue as a part of good governance strategies.

### 2.2.5 Interactive-Service Model/Government-to-Citizen-to-Government Model (G2C2G)

#### *Principle*

Interactive-Service Model in many ways is a consolidation of the earlier digital governance models and opens up avenues for direct participation of individuals in the governance processes. This model fully captures the potential of ICT and leverages it for greater participation, efficiency and transparency in the functioning of government as well as savings in time and costs relating to decision-making.

The Interactive-Service Model makes possible various services offered by the government to be directly accessible to citizens. It creates an interactive Government-to-Consumer-to-Government (G2C2G) channel in various functions such as election of government officials (e-ballots), filing of tax returns, procurement of government services, sharing of concerns and providing expertise, conducting opinion polls on public issues, and grievance redressal.

#### *Applications*

1. Establishing an interactive communication channel with policy-makers such as videoconferencing and online dialoguing.
2. Conducting electronic ballots for the election of government officials and other office bearers.
3. Conducting public debates/opinion polls on issues of wider concern before formulation of policies and legislative frameworks.
4. Filing of grievance petitions, feedback and reports by citizens with the concerned governmental body.
5. Performing governance functions online such as revenue collection, filing of taxes, governmental procurement, payment transfers, etc.
6. Carrying out videoconferencing, and online discussion with policy makers.

#### *Evaluation*

This model is more embedded in e-governance initiatives in the developed countries and has often been proposed for implementation in developing countries. Such forms of solution transfer may not be very effective. The model is on the higher end of technology reliance as compared to the other models. This makes it difficult to replicate in developing countries in the absence of individual and secure ICT access. Various other issues also need to be considered carefully before such blind duplication can be attempted in the developing countries. However, the trend is definitely in this direction and