

# Impact of Cyber Security in Different Application of E-Governance

Arvind Goswami\*

MBA, MDU, Rohtak

-----X-----

## INTRODUCTION

**Cyber security** refers to the ability to control access to networked systems and the information they contain. Where cyber security controls are effective, cyberspace is considered a reliable and trustable digital infrastructure. The area where cyber security access controls are incomplete, absent and not designed properly then this is considered as the wild west of the digital age. Even those who work in the security profession will have a different view of cyber security depending on the aspects of cyberspace with which they personally interact. Whether a system is a physical facility or a collection of cyberspace components, the role of a security professional assigned to that system is to plan for potential attack and prepare for its consequences.

Once a term of science fiction based on the then emerging field of computer control and communication known as cybernetics, it now refers generally to electronic automation. The corresponding term "cyberspace" has definitions that range from conceptual to technical, and has been claimed by some to be a fourth domain, where land, sea and air are the first three. There are numerous definitions of cyberspace and cyber security scattered throughout literature. Our intent is not to engage in a debate on semantics, so we do not include these definitions. Moreover, such debates are unnecessary for our purpose, as we generally use the term "cyber" not as a noun, but as an adjective that modifies its subject with the property of supporting a collection of automated electronic systems accessible over networks. As well reflected in language-usage debates in both the field of cognitive linguistics and popular literature on lexicography, the way language is used by a given community becomes the de facto definition and so we request that our readers set aside the possibility that they will be confused by references to "cyberspace" and "cyber security" and simply refer to their own current concept of these terms when it makes sense to do so, while keeping in mind that we generally the term cyber as an adjective whose detailed attributes will change with the system of

interest. At a high level, cyber security is typically explained in terms of a few triads that describe the objectives of security professionals and their methods, respectively. Three that combine to cover most uses of the term are:

- Prevent, detect and respond
- People, process, technology
- Confidentiality, integrity, and availability

These reflect the goals of cyber security, the means to achieve cyber security, and the mechanisms by which cyber security goals are achieved, respectively.

**B. "E-Governance"** or "e-Gov" means using electronic media, particularly the web, to deliver public information and public services E-Governance applications empower citizens and businesses to transact Governance business on-line that might otherwise require "a trip downtown". Agencies benefit, too, from reduced paperwork, improved databases, and increased efficiency. Information and Communication Technologies can enhance the transformation of work culture by serving a variety of ends, better delivery of Governance services to citizens, improved Governance interactions with business and industry, citizen empowerment through access to information and participation for decision-making and more efficient Governance management. E-Governance is not meant only for introducing or using technological tools, it fundamentally strives to bring about a change in mind-set and work culture to integrate Governance processes and functions to serve the citizens better. In this process, it is crucial that the capacity of Governance to be open to criticism as well as the application of new social contract between all stakeholders, confirming a shared responsibility on the transformation processes. The interaction between a citizen and a Governance agency take space in a Governance office. With emerging Information and Communication technologies it is possible to locate service centres closed to clients. In

all the cases public traditionally look for information and services addressing his or her needs and in both cases quality, relevance and efficiency are of paramount importance. Therefore, the establishment of e-Governance requires a good knowledge of the needs that exist in the society and that can be offered using ICT. The effectiveness of ICT in Governance is closely related with the capacity of Governance to induce a culture change placing network within its institutions as instrumental to transparency and knowledge exchange and creation.

In E-Governance, Governance makes best possible use of internet technology to communicate and provide information to common peoples and businessman. Today, electricity, water, phone and all kinds of bills can be paid over the internet. All this is what Governance and citizens is using and doing. All are dependent on internet and when citizens depends on Governance internet services all that come is E-Governance.

There are four pillars of E-Governance:-

1. **CONNECTIVITY**:-Connectivity is required to connect the people to the services of the Governance. There should be a strong connectivity for an effective e-governance.
2. **KNOWLEDGE**: - Here knowledge refers to IT knowledge. Governance should employ skill full engineers who can handle the e-governance in an efficient way. These engineers also handle all kind of fault that may occur during the working of E-governance.
3. **DATA CONTENT**: - To share any kind of knowledge or information over the internet, there should be its database. This database should have the data content which is related to Governance services.
4. **CAPITAL**:-Capital can be on public or private partnership. It refers to money used by Governance to provide their services or to that sector of the economy based on its operation

#### i. E-Governance concept

The concept of an e-Governance system is to provide access to Governance services anywhere at any time over open networks. This leads to issues of security and privacy in the management of the information systems. Managing such issues in the public sector has different emphases than in the private sector. The broader e-Governance approach is socio-technical by nature, involving people and processes as well as technologies; hence, particularly in transitional countries, the social culture

and characteristics of the country are factors in successful e-Governance development. In the open literature there are four distinct aspects to E-governance. The remainder of this section gives an overview of this literature.

#### ii. Cyber security concept in e Governance

Cyber Security is traditionally concerned with information properties of confidentiality, integrity and availability. These properties underpin services such as user authentication, authorization, accountability and reliability. In the broader sense cyber /information security involves people as well as technologies. A small number of publications in the literature address the social acceptance of security technologies, known as the organizational security culture. Information security standards are well represented in the open literature. These standards attempt to describe the various processes and controls needed for successfully implementing an information security policy, rather than advising what the policy should look like. In general these standards have been developed through the experiences of leading technological countries...

#### iii. ICT

ICT programs such as e-Governance in developing countries fail with 35% being classified as total failures and 50% partial failures. The author attributes these figures to the gap between the current reality (physical, cultural, economic and other contexts) and the design of the ICT program - the greater the gap, the greater the chances of failure. Security has always been identified as one of an information system's important components. Contemporary information assurance management recognizes the imperative to include people and processes, as well as the more traditional technology security issues, in ensuring the quality of information in all modern organizations. To a large extent technological solutions for the majority of security issues have been previously developed. There are however still many application challenges, the people and processes components of information assurance management. This leads to the need for the socio-technical approach to focusing on these issues in the required context for technologically-developing countries. ICT in developing countries is generally underrepresented in the open literature. A few publications fleetingly concede that there can be major issues with transitional countries developing their systems, but the subject is not treated in any depth or breadth. Given the widespread prescription of IT, particularly e-Governance for developing countries, the urgency of their needs, and the often paucity of their economic resources, it would be useful to understand in depth the factors and issues that underpin them. Yet there are very few published empirical studies directly addressing the issue.

E-Governance is at the forefront of current public sector reform policies across Europe and the rest of the world where the use of information and communication technologies (ICTs) to digitize transactions and deliver public services is seen as a major leverage of public sector innovation. However, providing public sector information and services online also poses profound challenges to security and citizens' trust in Governances, including threats to identity, privacy and data systems. Thus, safeguarding data and systems is of pivotal importance since it can influence Governances' and users' willingness to adopt the online services offered.

#### **A. Application:-**

##### **Web-based recreation field and facility scheduling**

Online interactive maps shows city streets and neighbourhoods, including ball fields, tennis courts, and other parks & recreation facilities. Coaches, players, leagues, schools and individuals can visit the departmental web site from home or office, at any hour, weekends & weekdays. Users of the online system can locate facilities by name, neighbourhood or street address. They can query the database to find available fields, courts, etc. for specific times and dates. The interactive map can color-coded facilities, based on availability, simplifying the process of finding an available facility that is also nearby. Interactive maps are easily printed directly from the e-Gov web site. Advanced systems can accept reservations online, and collect appropriate fees paid via credit card.

##### **Online land ownership maps and tax valuation**

Online maps showing real estate maps, including streets, property boundaries and property descriptions. To find a parcel, citizens type a street address or navigate using an interactive Yahoo-like map. By zooming in on a street or parcel, users can see property boundary lines and descriptive information drawn automatically from public databases. Print a map and/or report about the parcel.

##### **Auto-notification of road repair & construction**

Online interactive maps showing up-to-date locations of current and projected road or other construction projects. This list and map is updated automatically as city staff add to or edit an online database. Advance notice can lead travellers to pick alternative routes, avoiding the annoyance, delays & pollution related to unexpected road congestion. Option: "Opt-in" auto-emails to alert nearby citizens/business if construction might affect them.

##### **Online stream quality monitoring**

Currently a variety of volunteer's survey stream or other waterway conditions. An interactive map system could collect their observations using online forms, then immediately update interactive maps. Turbidity, debris, and/or other stream conditions would be symbolized or colored differently based on survey values in the online database. The webbased interactive maps would illustrate stream conditions, helping stream "stewards" manage their waterways and helping educate young people about environmental affairs. Data-driven web map software would update the maps automatically, as database records are added or updated.

##### **Online harvest area maps and health warnings**

Create an online web map application, based on a database of fish or shellfish harvest areas. The web map system would allow users to interactively zoom in to see shoreline details, boat facilities, etc. or zoom back for a wider-area views. The data-driven map could use colours or symbols to graphically flag areas where the season is "open" and also areas affected by "red tide", industrial pollution, etc. Season and harvest conditions can change rapidly. The online system makes it possible to communicate changes immediately and efficiently. To maintain the map, Fish & Game or Health staff would update values in data tables in background database. The interactive web map software automatically refreshes the map based on the new information. Option: Auto-notification by email, for bait shops, boat rentals, license holders, public safety agencies, and any others who choose to sign up for optional alerts.

##### **Online Block Watch & Crime incidence maps**

Online maps let citizens navigate to their neighbourhood by typing an address, intersection, community name, or zip code. Users display maps of recent burglaries, car prowls, or other community safety events. The data-driven mapping system may automatically color-coded event locations by type of event, date/time, or modus operandi. Neighbours may print maps from their web browsers for offline use or to post at the corner store. Optionally, residents could register to receive auto-emails if, for example, there was an attempted break-in near them. Similarly neighbours could use online forms to quickly share information about everything from suspicious events, to abandoned vehicles, to neighbourhood yard sales

##### **E-Payment**

The E-Payment provides the capability for any ecommerce website to accept electronic payment methods. This service allows any web application to

enable its customers to make payments online. Features include:

- Design with Governance in mind
- Accepts major credit cards and e-checks
- Flexible batching/update of information
- Off-line payment processing
- Address verification services

#### B. E-Gov Application

- Public services and community statistics: Increase citizen participation and awareness by making it easy to obtain up-to-date maps and reports of services, facilities, and statistics.
- Health conditions and epidemiology system: The U. S. Center for Disease Control helps prevent disease and accidents by presenting incidence, mortality, and other statistics using this interactive web map system
- Interactive bicycle route maps:
- Polling place locator system: Encourage voting by mapping current polling places based on voter address.
- School bus route finder system: Improve customer service by letting parents find the nearest school bus route.
- Economic development system: Promote economic development by mapping & profiling available industrial & commercial sites.
- Tax rate locator: Improve tax return accuracy and increase tax collections by letting business map their locations vis a vis boundaries of Local Improvement districts and other special assessment zones
- Community services locator: Improve public access to existing services by mapping locations of elderly services, community health clinics, "little city halls", and community police offices.
- Assisted housing locator: Help families and elderly choose subsidized housing units by mapping available units & showing proximity to transit and other facilities.

## SERVICES OF E-GOVERNANCE

According to Backus, "the three main target groups that can be distinguished in e-governance (we call it e-Government) concepts are government, citizens and businesses/interest groups. The external strategic objectives focus on citizens and businesses and interest groups, the internal objectives focus on government itself" (Backus, 2001). In the following discussion, we include another one – Government to Constituencies (eDemocracy)

i. **G2C – Government to Citizen:** - G2C are those activities in which the government provides one-stop, on-line access to information and services to citizens. G2C applications enable citizens to ask questions of government agencies and receive answers; file income taxes (federal, state, and local); pay taxes (income, real estate); renew driver's licenses; pay traffic tickets; change their address; and make appointments for vehicle emission inspections and driving tests. In addition, government may disseminate information on the web; provide downloadable forms online; conduct training (e.g., in California, drivers' education classes are offered online); help citizens find employment; provide tourism and recreation information; provide advice about health and safety issues; allow transfer of benefits like food coupons, file flood relief compensation (as in the case of Hurricane Katrina in New Orleans, USA) electronically through the use of smart cards; and the list goes on.

ii. **G2B – Government to Business:**-In G2B, the government deals with businesses such as suppliers using the Internet and other ICTs. G2B includes two two-way interactions and transactions: government-to-business and business-to-government (B2G). B2G refers to businesses selling products and services to government. Two key G2B areas are eprocurement and auctioning of government surpluses. Government buys large amounts of MROs (Maintenance, Repairs, and Operations) and other materials directly from suppliers. In many cases, RFQs are mandated by law. The tendering system is essentially a reverse auction (buy-side auction). The Hong Kong government provides some good examples of B2G services. The major projects of the Hong Kong government include: Electronic Service Delivery Scheme (ESD), Interactive Government Service Directory (IGSD), the Electronic Tendering System (ETS), the HKSAR Government Information Center (enables people to view news, government notices, information on leisure and cultural



activities, and so on), and the HK Post e-Cert (this authority issues digital certificates to individuals and organizations). The ESD project provides 38 different public services through eleven agencies – transport department, immigration, tourist association, labour department, social welfare department, Inland Revenue department, registration and electoral office, trade and industry department, treasury department, rating and valuation department, innovation and technology commission.

iii. **G2G – Government to Government:-**G2G deals with those activities that take place between different government organizations/agencies. Many of these activities are aimed at improving the efficiency and effectiveness of overall government operations. Examples in the United States include Interlink (an intranet that carries classified information shared by different U.S. intelligence agencies), procurement at GSA (aggregating demand quantity for different units of the government), federal case registry (locating information about child support), and procurement marketing and access network (a searchable database that contracting officers in various government units use to find products and services sold by small, disadvantaged, or women-owned businesses)

iv. **G2C-Government to Constituents (E Democracy):-** E-democracy refers to online activities of governments, elected representatives, political parties and citizens for democratic processes. This includes political or current affairs discussion and online consultation between representatives and their constituents. During the 2004 U.S. presidential elections and 2006 midterm elections, both major party candidates had their own information portals and also sent e-mail messages to potential voters. In South Korea, since web surfers seldom read newspapers or watch TV, politicians have to rely on the Internet to recruit voters. Electronic voting is another important application within the domain of e-democracy. Manual voting processes are subject to error, manipulation, fraud, and rigging leading to losers calling for recounts. Voting faces a broad spectrum of technological and social problems that must be systematically addressed – voter registration to voter authentication to the casting of ballots to the counting and tallying of results. Such voting problems may result in major political crises, as happened in November 2004 in the Ukraine and the

Gore-Bush presidential race in 2000 in the U.S. The first country to fully computerize balloting, as of 2000, was Brazil. Electronic voting machines were used successfully in Indian state elections in the 2004 parliamentary election. More than 600,000 electronic voting machines were used. The Election Commission of India used two similar voting machines made by Electronics Corporation of India and Bharat Electronics. These machines are battery-operated machines which are portable, 'easy to operate,' 'reliable,' 'tamper-proof and error free.' The machines were operated by supervised officials at polling stations. The illiterate voters were able to vote based on pictures and logos of the candidates and the party they represented. It not only greatly reduced the counting process time but also saved tons of ballot paper. There were hardly any complaints against the use of this system in India.

## CONCLUSION

It is evident from above discussion that information security in an essential part of any e-governance initiative. In Indian e-governance scenario, however, the security aspects are not being taken as seriously. In large number of cases it is not difficult to see that the decision-makers in the Governance prefer to compromise when it comes to high end technology adoption, implementation and maintenance. Digital security is critical in e-governance initiatives. Confidentiality of any transaction or information available on the network is crucial. The Governance document and other important material have to be protected from unauthorized users in case of e-governance projects. Hence security is critical for successful implementation of such projects. E-governance coupled with security systems providing adequate protection is the requirement of any system design effort to beat the inertia.

## REFERENCES

- "History and development of e-Governance"  
[http://shodhganga.inflibnet.ac.in/bitstream/10603/2019/10/10\\_chapter-3.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/2019/10/10_chapter-3.pdf)
- "Key Cybersecurity Roles for Government"  
<http://www.govinfosecurity.com/9-key-cybersecurity-roles-for-government-a-2768>
- Jenifer L.Bayuk, Jason Healey, Paul Rohmeyer, Marcus H.sachs, Jaffrey Schmidt, Joseph Weies (2012). Cyber security policy guidebook first edition" copyright 2012 john wiley & sons Inc. published 2012 by john wiley & sons Inc.

Rahul Kumar MCA CCSIT TMU MORADABAD”  
seminar report on Role of cyber security in e  
governance”2014

Shailendra C. Jain Palvia and Sushil S. Sharma  
(1965). “E-Government and E-Governance:  
Definitions/Domain Framework and Status  
around the World” Computer society of india  
ESTD1965.

Shubham Kalbande, Sumant Deshpande and Prof.  
Mohit Popat (2012). Review Paper on Use of  
Big Data in E-Governance of India” EISSN:  
2349-7610

---

**Corresponding Author**

**Arvind Goswami\***

MBA, MDU, Rohtak

**E-Mail – [arvindak2222@gmail.com](mailto:arvindak2222@gmail.com)**