Technology in Government: Some Lessons

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The explosive growth of Information and Communication Technology (ICT) during the previous decade has had tremendous impact on its cost-effective applications to Government sector. A new area of electronic governance, where almost all countries are making serious efforts to use ICT for providing better citizen services has come of age. Though the pace of activities for E-Governance has been hectic and the results noteworthy so far, increasingly, there is the realization that E-Governance is not just a one time change process, but an inevitable way of governance, that brings with it the promise of convenience and transparency accountability and effectiveness in governance. Also, it has been understood that the actual achievement of an E-Governance would not be complete without having proper laws, legislations, technology, standards and best practices in place. With significant efforts being made by the Government and its constituent offices across the state, there is now an impending desire to make clear the objective of using E-Governance as a tool for building a more capable state and not just as an end in itself. The Government of Gujarat through its E-Governance initiatives is thus proliferating the idea of building capacity and capability into the Government, oriented towards better delivery of services to the citizen. With well defined objectives, Delivery channels, Project framework and clearly defined implementation policies, the technology is used in the most efficient and effective manner in the state of Gujarat. This paper throws light on these efforts.

1. Introduction

We live in a world of constantly evolving Technology and its enabling power. Technologies can be one of the key enablers of citizen centric services delivery mechanism to create easily accessible interfaces such as one-stop, single-window, automated service delivery outlets or common public service centers, devoid of harassment or corruption, minimizing waiting time and inconvenience to the public. Technology can be used to reduce paper work, improve efficiency, transparency, accountability and expedite the decision making process. Technology can also be used to break down barriers between departments and bring about 'anytime, anywhere' government services to the citizen. However, using Technology is not just a matter of installing hardware and buying relevant software. In order to reap its benefits, its users – government, businesses & citizens - must be e-ready i.e. be able to skillfully exploit the opportunities provided by Technology. Over the past decade or so, we have seen islands of e-governance initiatives in the country at the National, State, District, Taluka and even village level. These initiatives have helped these states gain a head start in e-Readiness.

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2. Delivery Channel (with the use of Technology):

Governments have the option of employing a judicious mix of the following possible delivery channels to use for the delivery of services with the use of Technology:

- **Citizen Service Centers (CSCs):** Information dissemination, acceptance of service requests and delivery of services through CSCs involves integration of the backend applications of departments with CSCs. The CSCs have been taken as an electronic channel of delivery as they will be providing the services to the various government departments and their customers through a single interface using the electronic integration.
- **Internet:** Customers can use desktops and hand-held computers to connect to Government's web portal to request services and search for information, make payments etc.
- **Phone (Call Center):** Customers can dial the Government's hotlines and emergency center to request services and information. 'Phone' is considered as an electronic delivery channel due to the potential use of 'Call Center' and 'Interactive Voice Response' technologies.
- **Mobile Computing:** Customers can request services and information through mobile phones and hand-held digital personal assistants.
- **Kiosk:** It is computer based, ATM like electronic device, where customers can access Government's website over the Internet without the need to own personal computers.
- **Existing department service channels**: Providing all the services of a department through facilitation counters in a service oriented approach is the significance of this channel. This is important in certain departments where the interface and involvement of customers in availing the services is high for example transport department where obtaining a driving license would involve photography, driving test etc. Such services cannot be provided through the CSCs.
- **In future Digital TVs**: Using this delivery channel customers may be able to request services and information through their TV sets. However, it is essential for the policy makers to note that such a delivery exists for future.

3. Gujarat As a model state in Adoption of new Technology

Gujarat has been one of the frontline State in the implementation of e-governance policies & projects and setting up of key infrastructure for this purpose. Independent agencies have rated Gujarat as one of the most e-prepared State in the country. State Govt. has adopted innovative / progressive policies for promotion of e-governance in the State.

Major Projects/initiatives taken by Govt. of Gujarat towards more e-Ready state are as mentioned below:

- **Integrated Workflow and Document Management System** (IWDMS) is implemented across the Government Secretariat, which ensures standardization of application and database.
- **Hospital Management & Information System** (HMIS) is the computer-based medical information system for patient care and hospital management.
- **Value Added Tax Information System** (VATIS) is a generalized framework for revenue / taxation authorities to serve all tax administration needs while addressing the customer service requirements of taxpayers. It is configurable, upgradeable, maintainable and robust solution that supports the tax and revenue management life cycle at lower risk and cost.
- **Integrated Financial Management System** (IFMS) is an integrated solution which provides consolidated and consistent information about the state government expenditures and receipts across the state.
- **Home Department Integrated IT Solution** (HD-IITS) is the one stop solution for the state home department and its law enforcement agencies. The solution envisions creating a dynamic world class model police organization by providing innovative IT solution that would not only facilitate law enforcement for community safety but would also aim to build centralized crime and criminal information repository and deliver quality citizen centric services in a proactive and efficient

manner.

- **Gujarat State Wide Area Network** (GSWAN) created. As on today, more than 4,000 users of 127 Govt. offices at State capital Gandhinagar and more than 10,000 users of 2,800 District and Taluka level offices of different departments have been directly connected to GSWAN. More than 5,500 offices have been provided GSWAN voice facility.
- Two to three percent of the State Government budget is committed to IT related activities.
- To oversee implementation of IT strategies in the departments, each department has Chief Information Officer (**CIO**) who reports directly to Secretary of the department.
- To ensure smooth implementation of e-Governance projects, technical persons have been deputed as System Managers in key Government departments.
- All departments are in process of creating shareable databases of rules and other related information. This includes information such as budget, recruitment/service rules, plan achievements for various schemes etc.

4. Technology (Features):

- **IWDMS** is a J2EE based n-tier solution using MVC2 architecture. It can be deployed on any J2EE application server on any platform (Solaris, Windows etc). It is compatible with multiple RDBMS at backend. IWDMS architecture is built on component based approach. The main advantage of this architecture is that the individual parts making up the middle layer are reusable to a large extent and hence allows the system to be flexible, interoperable and easily maintainable.
- **VATIS** solution has been developed on open standards -Java/J2EE technologies using OOPS concepts which provide for easy replicability, scalability, maintainability, modularity, portability, better performance, stringent security and industry wide support. The entire solution is based on object oriented programming language (OOP) and is modular in nature. This provides for flexibility for adding additional taxes, integration with other systems and adding/modifying features, rules and regulations for acceptance in other systems. Also, depending upon the performance needs and number of users connected, the hardware can be scaled up by adding adequate no of servers. The modular nature and OOPs enable existing solution to incorporate changes in laws (which are expected to be large in number in the initial Phase) in the shortest possible time without affecting the working of other modules.
- **HMIS** solution is based on .Net framework, which can adapt to any database. The architecture of the HMIS application is completely modular in nature. Hence it can be replicated easily into any other Hospital environment by little change in particular modules. HMIS is 3 Tier Architecture, thus it is easy to modify or replace any tier without affecting the other tiers. Separating the application and database functionality means better load balancing and ease in replicability. Adequate security policies can be enforced within the server tiers without hindering the clients. Ease of administration. Scalability of Servers aid in replicability.
- **IFMS** solution is an integrated solution which provides consolidated and consistent information about the state government expenditures and receipts across the state. IFMS integrates the major functions carried out by Finance Department, Directorate of Accounts and Treasury, Directorate of Pension and Provident Fund, Treasury and Sub Treasury offices spread across the state.
- **HD-IITS** solution is based on JAVA/J2EE open standards using Spring & Hibernate framework making it compatible with multiple databases i.e. Oracle, my SQL, etc.

The most important component of the HD-IITS is **Crime and Criminal Information Management System**. It is centralized and secured database of crime, criminals and organized criminal gangs which will be accessible by various law enforcement agencies. It provides the criminal identification algorithms based on the biometrics data storage (finger print, iris and face etc.)

The **Head of Department (HoD)** computerization covers all their day to day functions as follows:

- **Police Station**: FIR Registration, Investigation, Court Disposal
- **SP-CP Office:** Visitor Registration, Passport & Visa Applications, Domicile & Police Clearance
- **Prison:** Prisoner Record Maintenance / Health Maintenance / Reform Welfare, Prisoner Escort, Jail Transfe**r**
- **Forensic Science Lab:** Receipt & Forwarding of Parcels, Case Allocation, Test result and Final Report preparation
- **SCRB:** Applications and reports which caters to data required for National Crime Record Bureau (NCRB)
- **Intelligence Bureau:** Information gathering and intelligent analysis
- **CID Crime:** Enquiry and Investigation of cases, Court case tracking, Cyber Crime, Worksheet, and Press Cutting.
- **Armed unit & SRP groups:** Deployment of SRP and reserved forces
- **Anti-corruption Bureau:** Inquiry, Trap/Decoy, FIR Registration, Prosecution Cases
- **Traffic:** Processing & Issuance of Memo, Notification Library
- **Training:** Preparation of Training Schedules, Processing on Nominations received, Training Results
- **Communications:** Purchase, Distribution and maintenance of wireless equipments and vehicles
- **Home Guards & Civil Defense:** Maintenance of details of Honorary Employees of Home Guards, Civil Defense, Gram Rakshak Dal and Border Wing and their state-wide deployment status
- **Prohibition & Excise:** Processing of various Licenses, Passes and Permits for Prohibited items
- **Sainik Welfare:** Ex-serviceman / Widow Registration, Employment Assistance, Financial Assistance
- **Police Housing Corporation:** Project Planning for New Police Line, Quarters, Offices, Police Stations

HD-IITS solution will make use of many state of art and highly sophisticated technological innovations. Major technological innovations are as follows:

5. Bio Metrics (Finger Print Recognition)

Solution supports Bio-Metrics based attendance and dynamic duty allocation through the same. This will eliminate the need of processing and maintaining register. The data would also be available as per need. Bio-Metrics data will also be stored for all the employees, officers, citizens (In whichever form they are interacting with police department like complainant, accused, witnesses, criminals, citizens applying for licenses, certificates, traffic rule violators). This would enable police department process, track and prevent crime in there respective zones.

6. Image and Iris Recognition

Image and Iris matching will also help the police department to crack down and detect the crime. Building up of personal data of citizens / application would eventually put together enormous database which would assist police department in sharing and make the most of it as and when need arises.

7. SMS, Email, IVRS, Bar-Code, Smart Cards

These kinds of technological innovations would continuously update the police department, its officers, citizens with the latest changes and news. E.g. absconding criminal data can be broadcasted sending SMS to all the citizens and police department or else it can be broadcasted on portal so as everyone is well aware and be more cautious and even help the police in nabbing them. Similarly barcode can be used to manage

inventory thereby getting rid of all the physical processes, also smart cards would be issued to employees, officers, honorary service providers and the same will be integrated with various other application like payroll, attendance etc.
In future, the solution can also offer following technological innovations

8. GPS / GIS / DNA Matching / RFID

As per need and infrastructure readiness, solution would also support GPRS based real time tracking. DNA matching would give precise and well timed results of data. Similarly RFID can also replace barcode to make inventory system more users friendly and fast.

9. Concluding Remarks

Thus, Gujarat has taken many initiatives for effective use of technology in Government to reap true benefits of e-Governance by using innovative technology solutions. The HD-IITS solution being implemented by Government of Gujarat is one of its kind project in India and enable creating a dynamic world class model police organization by providing innovative IT solution that would not only facilitate law enforcement for community safety but would also aim to build centralized crime and criminal information repository and deliver quality citizen centric services in a proactive and efficient manner.

About the Author

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