



E-Government in a State Public Work Department

Sudhir Kumar^{1*}, Anand Praksh², Arun Kundra³, Saurabh Sinha⁴ and Shubham Sinha⁵

ABSRATCT

Transparency in our day to day working is the need of the hour. Earlier with limited memory of human brain, and inability to quickly retrieve all the information's from the respective record/file, it was just not feasible to even think of complete transparency. Now we can go to any depth provided, we have the urge to design and implement the desired computerized management information system. This helps us to avoid decision making on whims and therefore, most accurate assessment of work or individual is possible now to provide the solution at the click of mouse. Various channel of management may or may not appreciate the idea, as transparency which is by-product of e-governance may kill their vested interests, but the top management should have the real urge to implement it in totality. Lack of proper leadership can make all the difference between success and failure of any e-governance project. Like-minded right people must be glued to plan, design, execute and implement their package. The project team must constitute members of I.T. Department, Planning, Finance, Construction, and other key departments. It is preferable that team leader must be a key technical person with in-depth knowledge of I.T. field. Efforts must be made to design and develop entire e-governance package in-house, by seeking consultancy only in the difficult areas, where in-house knowledge is not available. Efforts have been made to provide a totally user friendly web enabled database driven environment through website for a government department where information technology works of this magnitude have not been out sourced so far and top of it services provided are free of cost which needs recognition by CSI.

Keywords: E-Governance; Transparency; MIS; IT, Data Base, Gate way to Transparency

1. Introduction

Good governance through I.T is the need of hour. Surprisingly. Good governance is rapidly vanishing in almost every govt. department & undertaking. Even the top hierarchy in government machinery is finding himself in the state of helplessness and has started switching over to privatization of their dept. Governance through I.T is the perfect solution to regain lost name and fame of Government functioning. Good governance through I.T. may help us avoid decision making on whims and therefore, most accurate assessment of work or individual is possible at the click of mouse. Good governance through I.T. can

¹ Public Works Department; UP Government; India

² Lea Associates South Asia Pvt Ltd; 37 Qmes Circle, Toronto, M3b 3b9, Canada

³ Capitol City Travel, Tallahassee, Florida 32337, USA

⁴ Cogniscent Business Solutions Pvt. Ltd, Noida (U.P.), India

⁵ Sasken Communication Technologies Ltd., Bagmane Tech Park., Bangalore 560093, India

* **Corresponding Author:** (E-mail: sudhir1952@hotmail.com; Telephone: +91-1212662743, +91-9335262363)

provide total transparency and in turn complete confidence right from top to bottom adding enthusiasm, motivation, dedication at all levels of employees and thus adding to efficiency and profitability of any business house. Success of Good governance through I.T. depends on how quickly the benefits can be reaped from it.

Where governance through I.T: Governance through I.T does not imply that it is to be applied to any govt. department. governance through I.T means *electronic governance* which we can apply at even our house, small or big business, to monitor any project or group of projects, govt. or group of government.

We as human being have limited memory and intelligence; however advent of I.T. has provided each and every executive access to unlimited memory and intelligence. Our intelligence helps to develop an effective management information system. Now with computerized Memory, critical and key information's can be retrieved spontaneously. Fortunately, now, I.T. has provided means to design most efficient databases with the help of back software (like Oracle, Sybase etc.) to store A to Z of the information which we used to keep in our files, cardex or in our mind. I.T. has also given us most attractive and speedy retrieval of critical information by just click of mouse to make our decision making not only spontaneous but also equally correct and transparent manner (through front end tools like Visual Basic, Developer 2000 etc.)

Methodology of governance through I.T may differ from dept. to dept. In this paper we shall concentrate on only departments concerning construction industry.

2. Components of E-Government in a State Public Work Department

These are

- HRD or Personal Information System (PIS)
- Research & Design Softwares for construction industry
- Management Information Systems (MIS) for Planning, Monitoring
- Tendering & Estimation Softwares for construction industry
- Capital Resources or Equipment Information Systems (EIS)
- Project Management Software's
- Financial Information Systems (FIS) for work sites & corporate office
- Portal –The gate way to information to all

HRD or Personal Information System (PIS)

HRD or Personal Information System (PIS) as shown in the slides can be made in house on oracle or ms sql or even ms access using as back end and Developer/visual basic/crystal reports at front end. Purpose of this software is to select & place right person at the right job. It may be noted that selection and placement is key to success of any business activity and top executive must consider it to be his key assignment. Manager Personal post should be assigned to a person who can play with database on computer so that he could optimize the human resource accurately and precisely. Personnel packages already developed in-house on Oracle/Developer 2000 shall also be integrated in this package

Research & Design Software for construction industry

Beside AUTOCAD, STADPRO, STRUDS (Structural Analysis & Design software) use of relational database is necessary for quick and precise preparations of designs. Dependence to only MS Excel or MS Access makes the design process slow.

Management Information Systems (MIS) for Planning, Monitoring

Initially we are taking about 200 Projects spread all over India to be managed through I.T. About 200

physical and financial parameters on daily/weekly/monthly/yearly basis shall be monitored with database on Oracle8i at back-end and reports/MIS generated on Visual Basic/ Crystal Reports/Dev. 2000 at front end Each project In-charge shall be asked to visit the website at least once a week i.e. every Sunday and insert his Project Code No. (which shall be protected with a password) and a Project Management Book in Excel or Visual Basic will popup in which desired entries may be entered online (preferably offline preparations for data to be submitted shall be kept ready by the project in-charge and submitted online consequently) so that the entire data over the web space reserved for user is updated, which shall be downloaded by the system administrator at his convenience. All data, so received through website shall be merged into one key databank (initially manually). As such in initial stages, the excel data on web will have to be converted into oracle data but finally data entry will be done through web on Oracle itself and thus, merging into master oracle database shall be made automatic. Various Pictorial Charts, Bar Charts, Demand/Release of funds, PERT, weekly, monthly, yearly reports shall be generated automatically by single pick and choose press of button.

Capital Resources or Equipment Information Systems (EIS)

Major & minor Equipments, Centering & Shuttering, Materials management & Inventory have a vital role in the efficiency and profitability of any construction project. This is why database software must be made capable to handle this aspect precisely. At the moment no Gov. Dept or undertaking is taking due care to this aspect. Few slides of the strength of database software covering this aspect shall be explained.

Tendering & Estimation Software for construction industry

Provision shall also be made to automatically generate with single press of button the detailed working estimate prior to execution of the project by inserting basic data, rates of materials required with reference to bill of quantity so that future activities/progress of the project could be compared at any point of time and corrective actions taken. One can generate the estimates through in-house developed hyperlinked based Excel sheets. Attempt are being made to keep available stock position and rates of all the key materials supplier wise online through our portal so that transparency & uniformity in rates could be monitored/ensured Few standard tendering and estimation software are available in the market but it is proposed to get developed these features in the main database package of the organization for the purpose of ease in portability and integration of database.

Project Management Software

MS Project and Primavera are the key software used in construction projects. Few more standard packages like Construction Management Software developed by Softech and others are also available in the market. However it is recommended that the required features may be integrated in the main database software of the firm for the purpose of ease in portability and integration of database. Strength of MS Project and Primavera may also be utilized to crash the activities and to revise the programme to finish the project in projected scheduled time by adding/diverting resources and funds timely.

Financial Information Systems (FIS) for work sites & corporate office

Finance packages developed in-house on Oracle/Developer 2000 is also integrated in the database package as above. There is no use of limiting our self to standard accounting packages like tally etc unless data could be ported into it so as to ensure one platform and uniform environment throughout the organization for the purpose of ease in portability and integration of database. GPF/GPF/GIS statements must be generated automatically once pay bill is generated through database software. Similarly trial balances and merging of all the trial balances should be made possible.

Portal –The gate way to information to all

The portal/web site of any business house is most essential now not only to generate more and more business but also to provide standard guidelines/ information / ISO quality procedures etc at click of mouse

to all the officers and staff. It is recommended that portal/website must be dynamic and an upgraded CD must be made available every year to all the offices as most of the standard queries could be browsed off line.

Software

The software is Window based, Menu-Driven and is developed in Oracle-Developer 2000 (Forms 4.5 and Reports 2.5) and Visual Basic and MS Project. It is very flexible in nature and very much user-friendly and is developed entirely in Hindi and English languages. It is assumed that a person who operates this software will not necessarily need to be computer literate but he should be familiar with Hindi and English typing only. It is proposed that for Units/Sites/Divisions/Branches level entries data base software should be operative on MS Access which can be converted into Oracle database by head office. It is proposed to use the same customized software with portability features by all the Units/Sites/Divisions/Branch offices.

Detailed Procedure

First of all objectives are defined and a system study should be done to normalize and design the database. To avoid the duplication of data and, to design a paperless office, a Project Management Book should be designed by the people having experience of the line. For a construction project or firms or Govt. Department like PWD, Irrigation, Jal Nigam etc., a Project Management Book should in Excel/VB has already been designed, as per slides shown below. Project Management Book should be permanent record (to be maintained like a Measurement Book) which once issued by competent authority (say Project in-charge) should never be allowed to change. Hard and soft copy of Project Management Book should be kept as the most confidential documents of the organization. All the pages of Project Management Book have been hyperlinked to ease browsing and data entry. Photocopy of Project Management Book vis-à-vis its soft copy shall be provided only once in a financial year (i.e. 15th May each year) or within three month of the start of the Project. Each month only one sheet of data of each project indicating up-to-date values upto the month should be submitted to the system administrator and there shall be no necessarily of submitting data, already submitted to higher official any more. Data entry into the database is also an important activity. For this we have developed in-house software on Oracle/ Dev. 2000, demo of which shall follow now. Similar package may also be prepared on Visual Basic. Demo of software "GATEWAY TO TRANSPARENCY" shall now follow, in which all the standard queries have been put on various menus so that Key executives, of the organization may get the feedback on critical areas by simple press of button. However, provision has also been made to design on-line query by selecting few check boxes and radio button so that user may get the reply to his own query by just press of a "submit" button.

Project Management Book

Project Management Book should be permanent record (to be maintained like a Measurement Book) which once issued by competent authority (say Project in-charge) should never be allowed to change. Hard and soft copy of Project Management Book should be kept as the most confidential documents of the organization. All the pages of Project Management Book must be hyperlinked to ease browsing and data entry. Photocopy of Project Management Book vis-à-vis its soft copy shall be provided only once in a financial year (i.e. 15th May each year) or within three month of the start of the Project. Each month only one sheet of data of each project indicating up-to-date values up to the month should be submitted to the system administrator and there shall be no necessity of submitting data, already submitted to higher official any more. Data entry into the database is also an important activity. For this we have developed a in-house software on Oracle/ Dev. 2000, demo of which shall follow now. Similar package may also be prepared on Visual Basic.

3. The Demo Model

Online database driven website uppwd.up.nic.in has all the normal queries on various menus so that Key executives, of the organization and even public may get the feedback on critical areas by simple press of button. All the active server pages of this website has been developed by our team.

This site is capable to provide following Online forms, Opinion Poll and reports:-

- Create/Modify User Id.
- Upload/Download tender documents.
- Flash any News/Message and attach any documents.
- Create employees database and view list of employees designation, division, district, zone, caste category, date of joining wise etc.
- Create works database and view list of works with CL/Allotment/Physical & Financial Progress etc scheme, division, district, zone, MLA/MP constituency wise etc.
- Upload any photograph for any important technical event in Photograph from any where in the world.
- Create, modify & view telephone directory online.
- Upload accident-prone road chainages with road name highlighting citizens problem attaching photographs of site to emphasize the problem.
- Upload, delete & view latest GO's, Circulars, Transfers & promotions etc online.
- Caste your vote online on condition of UPPWD roads and see the results online.
- Manufactures/Suppliers can submit there rates online and users can view the rates & other details.



Figure 1: View of - Database Driven on Line Website - uppwd.up.nic.in

4. Lessons Learnt

Technical: Server is the key equipment as it hosts the database, but equally important is selection of backend and front end software. Next important item is networking. Network should be capable of accommodating new users and users who keep on shifting locations of their work site.

Clarity of objectives, deployment of right team: Various channel of management may or may not appreciate the idea, as transparency which is by-product of e-governance may kill their vested interests, but the top management should have the real urge to implement it in totality. Lack of proper leadership can make all the difference between success and failure of any e-governance project. Like minded right people must be glued to plan, design, execute and implement their package. The project team must constitute members of I.T. Department, Planning, Finance, Construction, and other key departments. It is preferable that team leader must be a key technical person with in-depth knowledge of I.T. field. Efforts must be made to design and develop entire e-governance package in-house, by seeking consultancy only in the difficult areas, where in-house knowledge is not available.

Training and Testing: Proper theoretical and practical training of staff is a must. I.T. people need to know the package architecture, tables, design and configuring. All source files and codes must be available in I.T. Department and they must be exhaustively trained to modify, update or alter the data structure or query to suit to day-to-day changing environment of the organization. e-Governance system must be finally thoroughly Beta tested with real data to ensure that it become operationally reliable.

5. Concluding Remarks

Online database website as above is being converted on web portal on asp.net platform and database presently in MS Access is being converted into MS Sql database. Also online functionality of Project Management Book is being embedded in this web portal. Through this web portal a to z of construction industry shall be available at a click of a mouse. Features like Talley for monthly accounting, features like MS Project & Primavera for project monitoring and GIS / GPS based road maps and road levels are to be incorporated to make this web portal more versatile. However it is strongly recommended that concept of global e-Governance guidelines to have unique global code and table structuring be adopted for which various government departments and local unit of National Informatics Centre (NIC) has to take key initiatives.

References

1. Kumar K. and Bhattacharya, K (2001), eGovernance; National Conference on Microcomputers : Theme, Era Of e-Revolution, Organized by CSI Lucknow Chapter & IIM Lucknow at Hotel Taj Residency, Lucknow on April 14-15, 2001.
2. Sinha, S, Sinha, S, Saksena, N and Solanki, V (2005), eGovernance; 40th National Convention on Microcomputers, Organized by CSI Hyderabad Chapter & IIIT Hyderabad at Hyderabad on November 10-11, 2005.
3. Kumar, S, Prakash, A, Kundra, A, Sinha, S and Sinha, S (2007), E-Governance Initiatives In Government Departments; 5th Inter National Conference on e-Governance, at Hyderabad on December 28-30, 2007.

About the Authors

Sudhir Kumar is a B.E. (Mechanical) IIT Roorkee'1973, ME (M/C Design) IIT Roorkee'1975, Graduate Dip. (Management) AIMA'1988, Lecturer Mechanical Engineering Dyalbagh 1975-76 against permanent vacancy, Life Member Computer Society Of India, Member Mechanization Committee Indian Road Congress' 2005 till date, Senior Engineer (Methods, Process & Corporate Planning, Auto Tractors Ltd' 1979-85, Project Manager/DPM/Manager (MIS) UPSBC Ltd 1989-2002, Project Coordinator Computerization Project UPPWD'2002-05. Presented a paper on e-Governance in 2000, 2005 & 2007 in an international seminar held by IIM & CSI etc. Short listed for RDBMS advanced computer training in Japan'2001.

Anand Praksh is a B.E. (Civil) IIT Roorkee'1960, PG Dip, MSc(Engg), CANADA, served UPPWD, Indian Railways up to 1968 and there after working in CANADA .

Arun Kundra is a B.E.(Mechanical) IIT Roorkee'1973, MS(Thermal Power) USA'1977, Served Thermal Power Sector IN USA' 1977-1991, Owner of Real Estate, Shopping and Hotel Business in USA.

Saurabh Sinha is a B.Tech.(Computer Science & Engineering) MD University Rohtak'2006, Serving M/S COGNISCIENT BUSINESS SOLUTIONS Pvt. Ltd, Noida. His paper as lead author on e-Governance under student paper contest was awarded 3rd prize and cash, in an international seminar held at Hyderabad organized by CSI and IIIT Hyderabad in 2005. He is life member of CSI.

Shubham Sinha is a B.E. (E&C) MIT, Manipal'2007, Worked for 6 months in HANZHOU, CHINA. Currently working with M/S Sasken Communication Technologies Ltd, Banglore as Software Engineer. His paper as co author on e-Governance under student paper contest was awarded 3rd prize and cash, in an international seminar held at Hyderabad organized by CSI and IIIT Hyderabad in 2005.