

PART III

GOVERNMENT-TO-CITIZEN (G2C) PROJECTS

Computerisation of Registry Department – CORD

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1. Goals and Objectives

Goals

The Project's vision is to improve the quality of registration service to citizens provided by the Directorate of Registration and Stamp Duty, the Government of West Bengal by optimizing the time as well as cost to deliver the service. The service should be prompt enough, of very good quality, free of hassles and affordable. The growing need of costly office space for preservation, maintenance and efficient retrieval of such invaluable government documents should be suitably addressed. Rich Management Information System (MIS) should be developed to provide a basis for effective and efficient planning for better citizen service, revenue growth and accountability. As a whole, the goal is to provide SMART governance to the registrant people by application of Information and Communication Technology.

Objectives

Based on the goals set, the following measurable deliverable objectives are laid down:

- **Improving the quality of services to the citizens**

This will enable citizens to register their deeds within a day. The post-registration service like providing a certified copy within half an hour shall be possible.

- **Bringing in total transparency in market valuation of properties**

The system should provide for unique market value of a property determined on the basis of a objective principle and the stamp duty and

various other government fees payable thereof for a type of transaction at least one month before the actual deed document is prepared and presented.

- **Automating tedious back-office functions**

The tedious and error prone back-office functions, like copying, indexing and searching of documents are to be automated as part of the Registration process removing the many hassles of manual system.

- **Controlling the need for growing office space for retention, preservation and tracing of documents**

The registers and volumes of copies occupy lot of physical space, usually not so well maintained backrooms. Conditions of those documents has deteriorated with age and repeated handling. It has become difficult to search a document or work with them when required for providing services like certified copies etc. The new system should take care of these old practices to solve the inefficiencies associated with the existing system.

- **Complete replacement of manual records**

The reliance on computerized records shall help in sharply decreasing the processing time of various cases enabling citizens to get services in a lesser and quickest possible turnaround time.

- **Seamless integration of all related systems**

Delays in data migration from one department to another shall considerably be reduced with the introduction of integrated systems, which will in turn, result in faster communication and enhanced citizen services.

- **Generation of meaningful MIS**

MIS for the Registration and other departments should be generated leading to faster and more comprehensive reporting. This shall enable administration in increasing accountability, thereby resulting in enhanced efficiency of services and controls.

- **Development of help desk facility for increasing transparency**

To provide the market value, stamp duty and registration fees payable authenticated market value assessment slip are to be system generated to hand over the registrant public instantly.

- **To speed up the registration process and delivery**

The following are to be done to speed up the process for delivery of the deed.

- Designing intelligent input forms to capture document details
- Maintenance of a transaction database (along with scanned copies of registered deeds)
- Auto generation of endorsement and signature sheets
- Scanning of the document on completion
- Auto generation of certificate sheet for completion of registration and,
- Calculation of delivery fees, if applicable.

- **Post-registration functionalities**

There should be a comprehensive search facility by name, by property particulars and also there should be provision for providing certified copies of documents very promptly to citizens.

- **Monitoring tools**

System should provide query facility to know the status of documents currently being processed.

- **Report/Letter generation**

Auto generation of daily, monthly, quarterly and annual reports including accounts details should be possible. System should generate forwarding letters for the depositing drafts with banks.

- **Error management tools**

Though all preventive measures are to be taken to avoid mistakes, there should a system to correct the mistakes made during the proceedings of the registration process and afterwards.

2. Spread of Project Service Users

All citizens are to be benefited out of this project. Deed executed among parties towards transfer of any immovable properties is to be registered as per provisions of law. People need to transfer properties due to various reasons.

Sharing of digital data with other government departments with interlinked issues may happen with greater speed and accuracy benefiting the involved government departments for providing quality service to the citizens.

The internal employees shall be benefited much as strenuous repetitive works involved shall be reduced to a large extent. They can complete the days work within the day.

Other stakeholders like stamp vendors, deed writers, copy writers, law clerks, and advocates, whose professions are interrelated with the improved services are to be benefited in terms of more business within a day.

3. Services Provided

1.	Registration of the following types of documents:
	1.1 Sale Deeds
	1.2 Settlement
	1.3 Gift
	1.4 Partition
	1.5 Lease
	1.6 Exchange
	1.7 Mortgage
	1.8 Partnership
	1.9 Decree
	1.10 Award
	1.11 Agreement
	1.12 Declaration
	1.13 Power of Attorney
2.	Collection of stamp duty and registration fees for the above by judicial stamps, bank drafts and Serialised Authenticated Bank Receipts(SABR)
3.	Issue of certified copies of:
	3.1 Documents (all enumerated above)
	3.2 Wills as per provisions of law
4.	Search and inspection (for sale etc.)
	4.1 Regarding encumbrances to land and properties
	4.2 Searching of records for the issue of Non-encumbrance Certificate (issued by Advocate)
5.	Determination of market valuation for immovable properties for governments and members of public
6.	Generation of assessment slips on the basis of 5 above.

4. Geographical Spread of Project Implementation

All the 237 offices located at 19 districts of the state and Kolkata are covered under the project. The offices are distributed district-wise as follows:

S.No.	District	Total no. of offices (to be covered)	Total no. offices (covered as on October 2008)
1.	Malda	10	10
2.	Bankura	11	11
3.	Howrah	10	10
4.	Birbhum	10	10
5.	Uttar Dinajpur	8	8
6.	Purba Midnapur	18	17
7.	Nadia	14	12
8.	North 24 Parganas	19	12
9.	South 24 Parganas	25	8
10.	Paschim Midnapur	18	17
11.	Murshidabad	20	16
12.	Jalpaiguri	7	6
13.	Darjeeling	5	2
14.	Burdwan	20	14
15.	Dakshin Dinajpur	7	7
16.	Cooch Behar	10	10
17.	Hooghly	15	8
18.	Purulia	7	6
19.	Kolkata	3	0
	Total	237	184

5. Project Timelines and Milestones

S.No.	Event	Start	Finish	Status	Key Milestones
1.	1st pilot	1999	2003	11 offices were semi-computerized; part process reengineering done	Employees acceptance verified, pain areas identified, promise of revenue growth noticed, citizen satisfaction varying from office to office
2.	2nd pilot	2004	2006	5 offices computerized	Market value generation automated. Biometric authentication introduced. Help desk created for prompt pre registration service
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3.	Market value data digitization	2005	2006	Completed	Market value of 4 crore plots of different uses completed
	RFP and DPR preparation	2005	2006	Completed	Project cost estimated and it is about 90 crores. PPP model for private investment for citizen service accepted by the government
	Selection of private partner	2006	2006	Completed	3 private partners were selected for 3 zones covering the entire state
	Legal changes	2006	Continuing	Continuing	Acceptance of PPP model by employees, deed delivery within a day mandated, high degree of citizen satisfaction, higher growth of revenue, satisfaction of private partners, much improvement of citizen amenities at the offices, better working environment at the offices, most of the offices shifted to new modern building/repared/renovated/reconstructed
	Office remodeling	2004	Continuing	Continuing	
	Actual Roll out	2007	Continuing	184 offices computerized	

6. Direct Cost and Time Savings to Avail Services

Cost Wise

S.No.	Cost component incurred by citizen avail service	Before computerisation	After computerisation	Remarks
1.	Payment to middleman for certified copy	Rs.100-150 per copy	Rs. 0-150.00	Attempt for gradual elimination of middleman going on
2.	Payment to middleman for Registration	In thousands	Nil	
3.	Payment to middleman for knowing market value	In hundreds	Nil	
4.	No. of visits by registrant public for registration	5-15 times	2 times	It may also be done on the same day

Time Wise

S.No.	Time component saved by citizen to avail service	Before computerisation	After computerisation
1.	For certified copy	7 days	30 minutes
2.	For registering a deed	Minimum 15 days, Maximum 10 years	Same day
3.	Search and Inspection of Deed	4 days	5 minutes

7. Direct Cost and Time Savings to Deliver Services**Cost Wise**

S. No.	Cost component incurred by government to deliver service	Before computerisation	After computerisation
1.	Consumables	Rs.30,000/- per office per annum	nil
2.	Maintenance of undelivered/ under processing deeds	Rs.50000/- per office per annum	Rs.5000/- per office per annum
3.	Facility Services (Generators, Comfortable sitting arrangements for citizen etc)	N.A. (If available, 1 lac/office/annum)	Available (at no cost)
4.	Modernisation of office	N.A. (If available 10 lacs/office one time, Rs.20,000 annual recurring cost)	Available (at no cost)

Time Wise

S. No.	Time component saved by government to deliver service	Before computerisation	After computerisation
1	Certified copy	7 days	nil
2	Registering deed	Minimum 15 days and maximum 10 years	30 minutes
3	Valuation of properties	30 days	15 minutes

8. Replication

It is being replicated for all 237 offices within the state. So far 184 offices are completed and rest shall be completed by the end of March 2009. This model has been adopted by Tripura. Meghalaya and Assam have also seen the model for which they have come and visited project sites several times.

9. Implementation Model

The project is being implemented under Private Public Partnership (PPP) model. The roles of the private partners and government are clearly defined. The strengths of government and the private agencies are exploited in the model followed. Based on the fact that technology adoption in government usually takes time, building technology and infrastructure and its upkeep is kept solely under the responsibility of the private agencies. The work related to data entry, scanning of deed, ensuring quality of text and image data are also kept with them. To enforce timely completion of the job, SLA has been drafted very carefully with adequate penalty clause.

The area of operation of the entire state has been divided into 3 zones based on the volume a deed gets registered in a year. The zones are divided in such a way that each zone registers more or less equal number of deeds per year.

We ensured that at least two agencies are selected for 3 zones. Finally three agencies are selected through an open tender. The responsibilities of the agencies include civil works, electrical works as per well thought-out layout in the RFP. Provision of generators was also made by the agency.

National Informatics Center, West Bengal State Center was entrusted to provide the technical consultancy, development and maintenance of the software “CORD”.

District level monitoring committee headed by the concerned district magistrate was formed for monitoring the progress and sorting out any issues that may come in the way of progress. State level departmental monitoring committee was formed headed by Inspector General of Registration for overall monitoring and management of the project. In every committee formed, NIC was made an important member. There are review meetings at least once in a month.

Capacity improvement programme for all the employees were done under the guidance and leadership of NIC. Each employee has undergone a five day full time course with 50% of the time kept for hands on. There was an evaluation test on the last day of the program to assess the effectiveness of the training and getting clue for further improvement of the course. Each trainee was given complete training material that included a detailed operational manual of the software CORD.

10. Technologies

While adopting suitable technology architecture for this job, the following points are to be kept in mind.

- 1) Social and cultural attachment of the people with the existing registration offices
- 2) Security and integrity of the digital deed and the related MIS data
- 3) Ensuring very high quality of digital text and image data
- 4) Coping with daily transaction of high volume image data
- 5) Coping with very high growth of image data.

As people are emotionally attached with an existing registration office, it is envisaged to convert the existing age old manual offices to technology-enabled registration offices at the existing location itself. Accordingly, based on the volume of transactions to be catered by an office, one entry level Intel based Xeon server with 4 or 8 number of Windows XP client systems was connected with a switch to form a LAN. Finger print scanner, high resolution Web camera, high speed Scanner, Laser as well as Dot Matrix Printers were also provisioned for each office. Windows Server 2003 is the OS and SQL Server 2007 selected for data management in a much secured way.

AES encryption technology has been implemented for the security of digital image of the deed.

For every 600MB of image data generated, the data is transferred to a CD-ROM/DVD. Three copies of the CD are prepared. One copy is kept in the respective office, one at district level and other at the state level.

NIC's WAN infrastructure up to district level is being used for providing software patches, database updates at the district level.

11. Capacity Building

All the staffs and officers of all the offices are provided operational training for five days on CORD. Apart from that, all departmental employees of each office are being provided with 15 days on the job training before computerised system goes live.

Every senior officer of the Directorate has attended workshops organized for this specific purpose. Video conference was arranged with district magistrates by

the Principal Secretary of the finance department to appraise about the project and actions to be taken.

Governance structure was formed at the districts and at state level involving all the stakeholders. Rules and policies to be changed are identified promptly for immediate action.

12. Process Reforms

S. No	Process Reform	Description
1.	Back-end	
	Post facto site inspection	The valuation of property is assessed as per declaration made by the citizen. Sample site inspection is done post facto. Selection of sample is made by the method of stratified random sampling.
	Development of market value determination business process	Business process to determine market value of properties located at rural, urban, corporation and various types of municipalities based on available amenities has been designed. Data has been collected accordingly from each office.
	Reduction of registration process cycle	In the new computerised system the Registration process has been reduced to 4 stages from existing 9 stages. 1) Help desk requisition form presented computerised assessment slip generation Authentication by ADSR and handing over to citizen. 2) Presentation of document deed is prepared and presented to ADSR within one month of the valuation received from ADSR paying the stamp duty as calculated. If any deviation new MV is calculated. 3) Fee receiving: After signing the signature sheet and endorsement, the head clerk receives the fees payable. Executant signs on the signature sheet, endorsement sheets are generated and these documents are added with the deed as part of the deed.
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		4) ADSR/DSR authenticates: ADSR authenticates the signatures and photo taken by the computer. Certificate of completion of registration is generated and printed and the same is put at the end of the deed. The deed with those additional pages are scanned and preserved in an encrypted form in the SQL database. The deed is handed over to the party.
	Reliance on computerized records Preservation of documents through scanning	Preservation of documents through scanning Digital deed has been made acceptable. Employees authorized to view the deed can do so by view menu of the software CORD. Indexing data as well as digital scan copy of the Deed document are being kept in CD/DVD format in multi copies. Copies are kept at the office, at the district office and at the state.
	Enhancing the authentication of the document	The authentication of the executants has been enhanced by taking their photo and finger print in an integrated manner by the software CORD. These are being reproduced in the signature sheet with the name, photo and fingerprint. This helps the executants to verify the photo against their name.
2.	Front-end	
	Development of help desk	To increase better citizen interaction and transparency, help desk facility has been created. One can collect requisition form from help desk to provide information about the schedule details, type of the proposed transaction etc in a very simple language so that one can fill it up without others help. Office people are there to help him, if required.
	Computerized assessment slip to registrant public	Based on the information provided in the requisition form, market value assessment slip is generated and printed and handed over under officer's signature. This slip gets a unique number and is valid for one month. Later on at the time of actual presentation of deed the schedule details are retrieved using this number.
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	Photo and Finger Print capturing of the executants	Photo and finger print are captured using digital camera and finger print scanner that are enabled by the software with suitable validation so that mistakes can be controlled as much as possible
3.	Legal Reforms	
		Change of Registration Rules Registration rules need to be changed with respect to the following: 1) Market Value The business process of arriving at the valuation was made legal. 2) Presentation of Deed Presentation procedure has been changed. It has been mandatory to submit assessment slip along with the deed. This has been made legal 3) Archival of Deed Digital archival of Deed has been made legal 4) Issuance of Receipt Computerised receipts has been made legal 5) Authentication of executants photo and finger print of the executant has been made legal 6) Scanning of Deed Digital scanning of deed for copy has been made legal 7) Automatic Indexing of deed by name and schedule has been automated in place of the traditional manual process. The process followed in the computerised system has now been legal. 8) Collection of Standard User Charge: Definition of Standard User Charge (SUC) has been given and the rule has been amended suitably.

13. Project Financials/Sustainability

S. No.	Project Financials	Total Requirement	Investment
1.	Capital Cost	82.74 crores	Total investment is shared between private partners and Government 72.74 crores are to be invested by 3 agencies selected Government shall spend 10 crores
2.	Annual Recurring Expenditure	AMC Hardware AMC of System Software Maintenance of Application S/W Salaries of Contractual employees	Private partners are to maintain hardware, contractual employees generator-power in absence of regular supply and stationary and consumable cost. Government shall maintain the Server OS software, database software only, cost of regular power and rent of the office space.
3.	Business Model	Per deed Rs.175.00 are collected from the public as user fee uniformly throughout the state. Out of which, agencies are being paid as per the rate quoted in the tender. Rates quoted by three vendors differ and the maximum rate quoted is 162/- + S.T. The excess amount is kept in the account of the respective office chief. Following simplified norms he was empowered to spend for additional clients, printers etc. At the end of the year the excess amount is deposited in government account.	
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4.	Revenue Generation	The project definitely is helping in efficient collection of stamp duties, registration fees and others. In fact revenue collection has gone up because in new business process one has to pay all the payable within the same day.	
5.	Citizen and Employee Satisfaction	Citizen has embraced the new system very much as it is giving them the much needed relief. The service they are receiving is hassle free, time bound mandated to be within a day, of improved quality, of enhanced transparency in valuation market value and various duties, fees payable. Cost of service is also kept cheap	
6.	Agency Business Model	Agencies are getting their payment very promptly from the office itself and find the project viable from their angle.	

Considering that all the major stakeholders are in win-win situation, sustainability of the project seems to be much assured.

14. Project Teams and Leadership

S.No.	Project team	
1.	Top Leadership Support	Principal Secretary (Finance) kickstarted the project and met all the district magistrates through video conference, and brought awareness about the program. On several occasions, Principal Secretary along with special secretary, senior officers, NIC officials visited to oversee the spot working procedure and came out with suggestions for bringing more speed, reliability and accuracy into the system. MIC (Finance Department) inaugurated the pilot project while MP, MLAs and several MICs of various other departments inaugurated the e-Registration offices and addressed huge public gatherings to appraise them about the the benefits of the computerisation and how it would change their life.
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2.	Project Team	District Level: District Magistrate, District Registrar, District Informatics Officer and other officials formed to overview the progress of the project, and market valuation of properties. The Committee is called District Level Monitoring Committee (DLCC) State Level: Principal Secretary, Inspector General of Registration, Project in Charge (NIC) and other senior officers of registration directorate and finance department formed to look after the progress of the project. The Committee is also called Departmental Monitoring Committee. This Apex Committee sits quite often, at least once in a month, to decide on various issues like improving the quality of service to the registrant public, quality of data and also future service.
3.	Governance Structure	There is a well defined organisation structure to administer. Inspector General of Registration and Stamp Duty heads the Directorate. He is supported by his Additional IGR, JT IGR, JT Commissioner of Stamp Revenue, Deputy IGR of various ranges, District Registrar of the districts, and District Sub Registrars and Additional District Sub Registrars of each 237 offices. Besides, around 3000 office staffs help in the entire governance of these very important functions of the government.

15. Key Lessons Learnt

CORD is a pioneering e-Governance project undertaken by the state of West Bengal. It has paved the way for others to follow. It has also embarked on a sustainable PPP model. This project has a very sound business model. The lessons learnt are the following:

- SLA implementation is very crucial for the success of the project
- Awareness creation of the stakeholders
- Employees should be involved from the very beginning. They should be taken into confidence for every step for the smooth implementation of the project
- Reaction of the citizen should be disseminated

- Business logic for market valuation should be made known to the officers, citizens, citizen representatives for resisting unnecessary misunderstanding at later stage
- The requirement for charging user fee should be informed to citizens in advance to avoid court cases
- No court cases on digital market value, whereas there used to be many court cases during manual regime
- More workshops should be conducted so that offices becomes conversant about the business process that has been re-engineered
- Post computerization stakeholders meet should be made often for feedback for improving the system
- Citizen should be empowered. To check misuse of their power exemplary fine should be imposed.

16. Service Users' Feedback

S.No.	Service User Feedback Mechanism	Description
1.	Through stakeholders meet	The districts that have computerized all its offices or 90% of its offices hold stakeholders' meeting comprising citizens' representative, all the officers of the district; officers of the other districts too attend the meet. IGR, representatives of NIC also participate in this discussion
2.	Reports from the office	Each office sends suggestion/constraints to the district registrar. Subsequently, request of each DR is put in the monthly DMC meeting for taking necessary action.
3.	Visit of the senior officers	DR, DIG, IGR, NIC visits the offices for inspection.

17. Implementation Challenges

S. No.	Key Challenges	How they are addressed
1.	Court cases from people of vested interests	Resistance from suppliers: Various suppliers who apprehended the impending change can disturb their business and wanted to stop the process. One Xerox service
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		provider filed case at High Court against the computerisation process. However, Advocate General stood personally for the case and judgment was issued in government's favour. Copy Writer: They have filed cases for employment and for stopping the computerisation process. They got favorable judgment from the High Court. Government filed SLP for those two cases. Supreme Court rejected the 2nd case i.e., stopping the computerisation process and issued favorable order for the state. However, employment-related SLP is still to be disposed off Owner of the Building: Owners of the building filed cases against the government for any proposal for shifting the office space for public convenience. Government fought for the case and got favorable judgment.
2.	RFP preparation, Employees are seriously worried of losing their job	Employees' agitation at the time of RFP preparation Employees got scared about losing their job and started agitation and demonstration. They were explained about the model being taken up and were convinced about their job security. Even officers were apprehensive. By repeated workshops the "To BE" system was demonstrated and their queries were answered by the authority.
3.	Diffidence of the officers to prepare market value of crores of plots	While preparing the market value assessment plot by plot, officers were not convinced that such a huge work can be done at all. They showed indifference in the beginning. However the constant monitoring and visits to the sites by the authorities helped in overcoming the situation.
4.	95% missing plots	The business process followed to assess the market value was to consult the value of already transacted plots for the last five years 1999-2004. It was seen that only 5% of the
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5.	Many agitations and demonstrations	4 crore plots were actually transacted during the period. The problem was found to be gigantic to assess the market value of 3.80 crores plot. Many demonstrations were made against introduction of PPP model. This should be tackled with much aptness.
6.	Government had to spent 10.5 crores to change office relocation	For relocation of office, new office space was hired at higher cost. Government had to spend 10.5 crores in this account. MIC, Secretary was convinced about the requirement. So the fund was made available very fast.
7.	Hotel owners, shop owners were against change of venue	District Magistrate, Sub Divisional Development Officer, local administrators had to intervene to resolve the issue.
8.	Problem varies from office to office	Each Office poses problems very unique to it. Authorities should be very watchful about it and act quickly to resolve.
9.	Citizen's acceptance about market value	Utmost care should be taken to listen to the citizens' reaction with the new system.
10.	Problem of 3 phase power	Computerisation required making 3 phase electric line at each office. State electricity board was persuaded and provision of fund for the work was taken up with much seriousness.
11.	Political parties, panchayats, people representatives should be made stakeholders	Political parties, panchayat members, people representatives should be made known about the process – how the market value is assessed. As citizens access to those authorities are more, this helps in building awareness to the citizen, which is effective.

18. Key Project Outcomes

S.No.	Component	
1.	Sustainability	This project is financially sustainable. The government, private entrepreneur and users, are all winners in this project. The huge acceptance by the public also confirms its future sustainability. The process reengineering followed is also favorable for sustenance. Software used (CORD) is a much scalable and a robust one.
2.	Usage	Very high. On an average number of deeds completed on a day has jumped from maximum 20 numbers to maximum 130. The 3 gencies have completed 4.15 lakh deeds between 9-2-2007 to 30-06-2008 in 164 offices.
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3.	Usability	This service is unique and every transaction of transfer of property has to follow this process by law as per government policy.					
4.	Satisfaction of the customer	S. No.	Component	Before computerisation (max 10)		After computerisation (max 10)	
		1.	Transparency	2		9	
		2.	Consistency	3		10	
		3.	Promptness	1		9	
		4.	Degree of Smoothness	2		9	
		5.	Citizen comfort at office	1		6	
		6.	Quality of Service	3		9	
				12(20%)		52(87%)	
5.	Satisfaction of the employees	S. No.	Component	Before Computerisation		After Computerisation	
				Description	Satisfaction	Description	Satisfaction
		1.	Time to square off accounts for a day	Average 2 hours after office hours	low	Well before office hours	High
		2.	Labor to prepare forwarding letters for deposition of draft, fees to Bank	Time consuming and prone to mistakes	low	Automatic	High
		3.	Consulting a registered deed	Time consuming, dependant on the record keeper	Medium	Online at anytime within office hours	High
		4.	Discretion to change market value	Subjective	Medium	Has to be passed through a body where District Magistrate is the chair person	High
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		5.	Correction of any mistakes made with the deed	Office discretion was high for correction	High	Has to follow a procedure involving higher officials based on the merit of the case	Medium
6.	Empowerment	The citizen was empowered as the process has been made much transparent. Market Valuation is being done immediately based on their results.					

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THIRTEEN

Jan Seva Kendra

Sonal Mishra

1. Goals and Objectives

“Make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency, and reliability of such services at affordable costs to realize the basic needs of the common man.” – National e-Governance Plan (NeGP).

With the above quoted aspiration, the Government of India has given district level e-Governance a high priority, by considering it as a Mission Mode Project under the National e-Governance Plan (NeGP). District-level e-Governance is also a high priority item for the Government of Gujarat. The state government has announced the Citizens’ Charter, covering over 70 essential citizens’ services. Gandhinagar is the seat of the government from where the state is administered through various departments and offices. The revenue department at the district level (District Collectorate) is headed by the District Collector. The District Collectorate handles almost 200 sub-branches for a range of public related works. Being the capital city of Gujarat, Gandhinagar posed a serious challenge to the district administration for efficient and effective public services delivery for its denizens mainly comprising elected representatives, government officials and other citizens. Gandhinagar has a population of 1.5 million people and comprises of four geographical sub-districts or ‘*talukas*’ – Gandhinagar, Mansa, Dehgam and Kalol. It has both a rural and urban population mix and the overall literacy rate of Gandhinagar is very high (76.59 per cent). Demanding citizens, coupled with ‘tumarshahi’ (red tapism) in revenue administration, resulted in a mismatch between the expectations of the people and the ability of the district administration to deliver. An effective application of Information and Communication Technology (ICT)-enabled Public-Private Partnership

has been designed and implemented to offer Government-to-Citizen (G2C), Businesses-to-Citizen (B2C) and Citizen-to-Citizen (C2C) services in a transparent, quick, fair and economical manner by the District Collectorate of Gandhinagar, Gujarat state. Jan Seva Kendra was envisaged as an integrated approach to development which focused on access to key services through the e-Governance infrastructure, anytime, any place, using ICT. This enabled the citizens to have a unified and simplified view of government services and information, and allowed government to access relevant information across all its offices seamlessly. The effort was to enable the citizen to cut the bureaucratic red tape and gain control of his application and related process. JSK has led to a significant decrease in time spent on applying for the desired services, costs incurred by the citizens and thus the frustrations associated with it (not getting the work done). JSK stressed the need to implement ICT-driven governance to improve service delivery at the front-end (for the citizens) and to increase the efficiency and accountability at the back-end (for the administration). The implementation was duly supported by robust government process reengineering and change management for efficient public delivery. The Vision of Jan Seva Kendra, District Collectorate Gandhinagar is as mentioned below – “To offer Government-to-Citizen (G2C), Businesses-to-Citizen (B2C) and Citizen-to-Citizen (C2C) services to people in a transparent, quick, fair and economical manner by way of effective application of Information and Communication Technology (ICT). To achieve this with Public-Private partnership and with the involvement of all the stakeholders.” Jan Seva Kendra (JSK)-Gandhinagar successfully delivers 97 types of public services to the district citizens considering following prime objectives.

- To offer G2C services of the issues covered under the Citizens’ Charter. To extend these services to cover other issues concerning health, education, agriculture, animal husbandry, etc.
- Focusing on people, process and infrastructure synergistically only deliver the intended benefits to the citizens in all G2C transactions.
- To break down barriers between departments and bring about ‘anytime, anywhere’ government services to the citizen.
- To bring governance to the doorsteps of people in remote places by way of online services offered through service outlets from all the *taluka* headquarters connected to the district level JSK.

- Faster, efficient and transparent services to the public.
- To maintain a central data record updated and used by all the departments at the district level. This includes the Revenue administration, panchayat, civil supplies, police, state electricity companies etc.
- To re-engineer work processes to increase speed and convenience helping citizens as well as officers.
- Involvement of all stakeholders including citizens, government officers, as well as the technology provider for continuous upgrade of the facilities, processes and quality of services.
- To minimize the use of papers with the help of online processing and direct transmission of the output to respective agencies.
- To create and implement a workflow management system at the back-end.

2. Spread of Project Service Users

The citizens of Gandhinagar district are the primary users of Jan Seva Kendra Project who approach the district administration for 97 types of everyday issues pertaining to land, civil supply, licenses, certificates, affidavits etc. All the 287 villages besides the 5 municipalities in Gandhinagar district avail services from the Jan Seva Kendra either at the Collectorate, *taluka* centers or in villages at the time of village camps. These citizens include men, women and children. Thus JSK caters to all the segments of population (both urban and rural) without any differentiation. Apart from the citizens, the bureaucracy in the district administration starting from the Collector and other officials in the Collectorate, the *Mamlatdar* and his staff in the *talukas* etc., are the beneficiaries of the robust MIS created by JSK. JSK acts as the *de facto* front-end of the District Collectorate. It allows the Collector and his subordinate officials' access to the service processing status details. They are enabled by JSK to provide G2C services to the citizens in the prescribed time limits and in the form and nature as desired by them. Retired officials and senior citizens who render their services on honorary basis to the JSK are also the indirect users of this system. Students of local ITI having studied IT and IT related courses are incorporated in JSK as operators after induction training by the District Collector and the technology supplier.

3. Services Provided

JSK evolved as a center for providing 97 kinds of citizen services under these three categories, namely the, The ‘*Tatkal* services’ are ‘While-U-Wait’ services which generally take twenty minutes to two hours to be completed. Such services, amongst others include, issuing affidavits, ration-card alterations, and land-revenue payments etc. (almost 20 per cent of all applications fall under this category). Another service category is of ‘One Day Services’ which takes twelve hours to complete – that get delivered on the same day (if submitted before 1 p.m.) or the next day. Such services include caste, income, birth, death, solvency, residence, creamy layer for OBC and other certificates etc. Approximately 40 per cent cases fall under this category. SMS intimation is sent to the applicant on completion of one-day services. For ‘Non One-Day Services’ prescribed time limit is from three to ninety days. Some issues related to land allotment, use of land for non-agriculture purposes, arms licenses, hotel licenses etc, were dealt under this category. For these services, JSK did all the follow-ups with related departments like – procuring No Objection Certificate (NOC) from Police, Roads and Buildings Department, etc., while the applicant did not have to visit different offices. Approximately, 40 per cent of the cases fall under this category. SMS intimation is automatically sent to the applicants on completion of their desired services. Apart from that, all required associated services are also made available at the JSK like webcam for instant photos, pre-formatted affidavits of 44 types, franking machine, photo-copier, coin phone, attested copies, lamination. The immediate effect of such a transparent system is the changed mindset of the citizens: By investing only 50-60 rupees and one hour of one’s busy schedule, led to the work getting done at JSK. The same work could earlier take anywhere between 1-4 days. This way JSK is saving more than 500,000 hours per annum of manpower, as almost 500 people are visiting daily.

Service Charges: A small service charge of Rs.20 is payable for every application. However, no charges are levied for below poverty line citizens, on Right to Information Act cases, and Land Revenue Payments. Revenue sharing per application was done as follows: (a) Rs.5 towards the software purchase price (b) Rs.9 towards the service costs (c) Rs.6 to the collectorate processes at JSK have been designed keeping customer convenience at top priority. The reengineered form (in Gujarati) supplied for various civic services consisted of information about the officer, department responsible, time limits stipulated as per the citizens’ charter, information about the required enclosures, basic

application text, and checklist for self-certification by the applicants. Nothing is charged for blank forms, which are made available at JSK/public offices/Xerox shops/and on the Internet. Barcode stickers are applied to every form before the submission. Help desks manned by retired officers are provided for filling up the forms. They also review applications before submission to make sure that they are complete. These retired officers offer their services without any costs. The District Collector motivated them to offer their expertise gained in working for the Government in helping the people coming to the JSK.

Green Channel: Green channel is a counter in a separate cabin where senior citizens, or physically challenged applicants are offered all services. Such applicants are given an application form and offered help to complete the form including photocopy or certification of copies. All possible arrangements in green channel are made to process the application while he/she is seated comfortably. At the JSK, a provision has been made to provide partly pre-filled forms to citizens by giving their fingerprint or registered government photo ID or the Citizen ID issued for JSK purposes. Thirteen basic fields are automatically filled up in the application form (from the data previously collected). On submitting the form computerized tokens are given to applicants. Every applicant is served on 'first come, first served' basis and there are no physical queues. As any work could be dynamically assigned to any of the service delivery counters, the computer and human resources were utilized optimally. The software issues a bar coded acknowledgement slip in two copies, one copy for the applicant and another to be attached with the application. The applicant-copy shows JSK's helpline number, latest delivery date and time.

The applicants can track their status –

- by calling JSK IVRS line 079-23242501(24x7 service)
- by sending SMS query on 997-997-2068
- on the Website: <http://jansevakendragnr.gujarat.gov.in>
- by telephoning or visiting JSK.

The benefit of computer assisted form acceptance is that only complete applications are accepted. As a result, there are no queries or delays due to incomplete applications. In a typical government system at least one week (may be up to ten weeks depending on the type of case) were consumed to know if the file is not moving due to unfinished applications. The departments

generally do not respond for deficiency related to incomplete applications. The applicant could find only when he enquired about the matter. The launch of JSK also introduced the concept of mobile government to citizens (service delivery through the mobile phone). Advantages provided by this widespread medium are adopted in a novel way at JSK by extending the benefits of remote delivery of government services for more accessible and citizen-centric service delivery. It is handled without human intervention, and alerts and responses to enquiries are automatically generated. This emerging trend in public service delivery via mobile called “Mobile Government” is for the first time implemented in Gujarat through the JSK initiative. The M-Government section activates the mobile enabled service, prompts the delivery channel automatically, and sends an SMS when the case is scanned for completion. So, the applicant can be sure of availability of documents. At the time of delivery, the bar coded acknowledgement is received and the papers are given to the applicant. If the applicant has shown the preference, at the time of submission, certified photocopies are also kept ready for delivery. If the applicant has opted for home delivery, the papers are dispatched to the applicant’s preferred address by courier at an additional cost of Rs.5/-. JSK offers mobile van based services and village camps to reach out to citizens in remote areas. Internet-based services are catered on spot. The citizens don’t have to travel to the government offices for their paperwork needs. Various types of reports are generated and are available on the system to show the performance of the system. These reports include checks on pending cases, lapses and delays, payment collection, reports on in-time processing of applications – department-wise, workload and performance operations, processing times, 48-hour reminders, department-wise work volume, and daily reports that are sent by SMS to senior officers.

4. Geographical Spread of Project Implementation

The geographical spread of the Jan Sev Kendra Project, District Collectorate Gandhinagar is coterminous with the extent of the Gandhinagar district itself. Gandhinagar district is the capital district of Gujarat. It has an area of 649 km², and a population of 1,334,455 of which 35.02% were urban (2001 census). [1] The district includes four *talukas* – Gandhinagar, Kalol, Dehgam and Mansa and has 287 villages. Gandhinagar district is bounded by the districts of Sabarkantha to the northeast, Kheda to the southeast, Ahmedabad to the southwest, and Mehsana to the northwest. The JSK project deals with providing 97 kinds of everyday issues to the citizens of Gandhinagar who come to the

District Collector for these services. Ordinarily, Collectorate deals with nearly 200 sub-branches. JSK encompasses the entire gamut of district administration. It also includes the subordinate offices at the sub district level or *talukas* (Offices of *Mamlatdars*) and also the villages (Village Panchayat Talati) under the Collector. In matters of obtaining NOCs (No Objection Certificates) from outside departments i.e., departments outside the Collectorate, JSK does the necessary follow up from the respective department and gets the documents within time lines as prescribed by the District Collector. These departments which also come under the JSK are – Roads and Buildings Department, Police, Health, Irrigation, Social welfare, State Electricity Board, Forest, and ONGC etc. In the second phase of JSK, District Collectorate, Gandhinagar when several B2C are to be undertaken namely for the Rail, Bus, Travel Reservations Employment Services, Buy-Sell Services Bill Collections Examination Results RTO Learners' Permits then the ambit of JSK would encompass departments of Education, Railways, State Transport, RTO, Employment, BSNL for telephony etc.

5. Project Timelines and Milestones

Ms. Sonal Mishra, District Collector Gandhinagar submitted a proposal to the state government to start JSK at an estimated cost of Rs.3.5 million. The state government approved the proposal and sanctioned Rs.0.9 million. Due to the efforts of the District Collector, citizens and organizations contributed Rs.2.6 million. The total project funding of Rs.3.5 million was organized initially to establish JSK at the district headquarters in September, 2006. The project was initiated with the concept of PPP in infrastructure and operations. The criteria for the selection of the suitable vendor for establishing the JSK were technology, creativity, manpower availability and experience. M/s Peach Computers, Gandhinagar was selected as the software and service vendor for the JSK. M/s. Peach Computers was required to develop the software, provide necessary hardware and operate and maintain the JSK at Gandhinagar and *taluka* centers – Dehgam, Kalol and Mansa through its employees for three years. The business model of the software was on BOOT basis. All the Service Providers' employees were trained for the usage of the software, the various government procedures, as well as the '*karmayogi*' practices to interact with the citizens. JSK, Gandhinagar commenced its operations on 16th October, 2006. The *taluka* centers at Dehgam, Mansa and Kalol were also made operational in February, 2007. Within the Collectorate premises, the unused parking lot area

was converted into a modern, fully automated JSK. It has 3500 sq. ft. of office space with the following facilities. Offices for the Deputy *Mamlatdar* and Service Supervisor, Server Room, Notice Boards, Seating capacity for 35 persons, Help Station managed by Senior Citizens etc. The first phase of the JSK Project was to render G2C services of over 97 types including all the services under the Citizens' Charter. The second phase which is under process and is focused on (a) the expansion of the citizen-oriented activities to B2C and C2C areas as well as (b) the introduction of G2G facilities (including tracking of work in process) for efficient administration. The third phase is to address citizen services in the areas of health, education, agriculture etc. In this manner, a comprehensive and single e-District solution is envisioned and being implemented at Gandhinagar. The chronology of the implementation of the JSK at Gandhinagar and *taluka* centers is as mentioned –

JSK – from Concept to Reality (Milestones)

- The proposal for setting up the JSK prepared on the guidelines of the General Administration Department, Government of Gujarat (January 2006).
- State government sanctioned grant of Rs.0.9 million. Public Private Initiative yielded contribution of Rs.2.6 million.
- Core committee for appropriate delegation after conceptualization was setup at the District Collectorate under the chairmanship of District Collector, Ms. Sonal Mishra, IAS.
- Completion of advanced and computerized JSK at Gandhinagar with approximately 3500 sq.ft. of furnished area (July 2006).
- MOU for technology and service delivery on BOOT basis.
- Strong consultative processes for Standardization of Procedures and Simplification of Forms with all stakeholders.
- Development of software to achieve the targets of transparency, efficiency and utility.
- “*Karmayogi*” training to the ITI trained operators.
- Formation of the District e- Society headed by the Collector.
- Conferral of the JSK to the public (October 16, 2006).
- Link-up of distributed service delivery centers at *taluka* places (sub district centers).

6. Direct Cost and Time Savings to Avail Services

Each application at the JSK costs Rs.20/ as service charges. BPL applicants are exempt from service charges and also no charges are levied for RTI Cases and land revenue payments. The allocation from service charge collected is made as follows: (a) Rs.5/- towards the software purchase price (b) Rs.9/- towards the service costs (c) Rs.6/- to the Collectorate. With the leveraging of ICT infrastructure with sound processes for service delivery, there is enormous cost-effectiveness embedded in all G2C transactions between the citizen and the district administration.

Cost Savings to the Users

- Savings in the direct costs incurred during repeated visits to the administrations for information and clarity on the process and enclosures.
- Savings in the direct costs incurred during repeated visits calls to the administration to expedite the processing of the application.
- Savings of direct cost of charges paid to the touts/agents.
- Mobile van based village camps helped the village people, in saving the costs of visiting the government offices.
- Indirect cost savings to the applicant due to speedy processing.

Impact on Effort, Time, Cost Incurred by the User

- Availability of blank forms through Internet, at Xerox centers etc. Citizens don't have to come to JSK to get forms. (Time, effort, cost)
- Help by retired experienced officers. Deputy *Mamlatdars* are deputed in the JSK to assist the citizens. Illiterate applicants don't need any agents or touts. (Cost)
- Clear instructions on the form. Only completed applications accepted. No queries and delays. (Time, effort, cost)
- SMS, IVRS based 24x7 status query. SMS alerts on completion of the paperwork. No need to visit officers for follow-up.(effort, cost)
- Home delivery of processed papers. (Time, effort)
- Auto-e-mail, online track and SMS alerts to officers resulting in speed of processing and in-time completion. (Time)

- Village camps are frequently organized to reach out to poor and illiterate people. Mobile Vans are also enable to reach out to people in far flung villages. Applicants don't need not go to district or *taluka* administration – Inclusivity (time, effort, cost)
- JSK does the follow up for NOC from different departments like Police, Roads and Buildings, Health, ONGC, and Banks etc. Citizens are not required to go to these departments. This has imparted tremendous credibility and citizen-centricity to the initiative.

Feedback, Grievance Redressal:

- Over 1000 feedbacks received. Every applicant is requested to give his/her feedback. Feedbacks processed by weekly monitoring meet resulting in process-reforms. Every feedback is reciprocated by a letter from JSK.
- Quarterly review meetings are convened by the Collector to review the feedbacks. This has enabled the administration in upgrading forms, re-scheduling timelines. Audit trails Reports on Department-wise pendency, Cases due within 48 hours, Overdue cases etc. MIS reports on department-wise, issue-wise processing time, track of work in process. This has led to increased accountability. Interactive platform for service delivery, one spot service for forms, acceptance and delivery. Interactive forms submission by kiosks or Websites is planned.

ICT based JSK has brought in a new outlook among the people towards government institutions by providing services in the nature and form as desired by the citizens in a cost-effective manner. Transparency has helped increase the confidence of the citizens in the administration. Significant time-saving for the public is possible e.g., processing time for all G2C issues has considerably reduced. From the citizen's point of view, the processes have now become cost-effective and prompt. For example, over 41,000 ration card cases have been processed within 2 hours (for alteration cases – changes in name, locality, members etc) and the average time for the issue of new ration cards is now 3 days. The following table compares the time taken for disposal of applications before and after JSK for select G2C Services.

The above illustrative snapshot of the JSK performance levels has significantly changed the perception of the common man about a government office. It is evident from over 95 per cent of the several hundred feedbacks received during the past one year, that JSK is changing people's outlook towards government

G2C Service: Issue of New Ration Cards (To Procure Essential Food Grains, Sugar, Kerosene from Fair Price Shops under the PDS System)			
S.No. Service	Time Saving (Day/s)	Reduction in Visit (No.)	Total Days
1. Issue of New Ration Cards	21 to <3	> 5 to 1 or 2	15 to 20
2. Alterations (additions or deletions of names, address change)	7 to <1	> 7 to 1 or 2	2 to 7
3. Certificates (Birth/Death, Income, Caste, Domicile, Solvency, Creamy Layer, Physical Handicap etc)	7 to <21	> 5 to 1 or 2	5 to 20
4. Licenses (Hotel, Cinema/Video Theatre, Petroleum/LDO/Kerosene/Naphtha Storage and Retail, Fair Price Shops, Firearms – Purchase/Sale/Storage/ Transfer etc) and Land related cases (use of lands for non-agricultural purposes, setting up of large industries etc)	30 to < 120 to <30	> 10 or 2	30 to 90

institutions and that the PPP model is working. Overall, the follow-up visits by the citizens at the District Collectorate, Gandhinagar and *taluka* places have reduced from >1000 to <50 per month. Service delivery time for affidavits reduced from few hours to 20 minutes. Service delivery time for one-day issues e.g., certificates reduced from few days to few hours! Queries due to incomplete applications reduced to <1%. This goes on to highlight that there is an unprecedented direct time savings to the citizens for their G2C Services. A feedback highlighted that JSK has minimized corruption as people do not have to chase government functionaries (primarily because of reduced discretion achieved through standardization, resulting from a single, systems driven, computer-based front-end interface for citizens). ICT-based system with anytime, automated and accurate alerts and responses to queries has increased the transparency and accountability of government functionaries. With the change in office-environment, and increase in efficiency, a notable change in the attitude of the government employed officers was also observed as some expressed pride in their work. A feedback that particularly catches attention is about the positive feeling of inclusivity in citizens where they felt that VIPs, illiterates and under-privileged citizens of rural areas were all treated as equals in the JSK system.

7. Direct Cost and Time Savings to Deliver Services

Cost Savings to the Administration

- Cost savings due to reduced communications with the applicant.
- Due to computer assisted operations and auto-generated alerts, several man-hours are saved.
- Due to accurate and instantly available information, the officers save a lot of their precious time.

Feedback, Grievance Redressal:

- Over 1000 feedbacks received. Every applicant requested to give his/her feedback. Feedbacks processed by weekly monitoring meet resulting in process-reforms. Every feedback reciprocated by a letter from JSK.
- Quarterly review meetings are convened by the Collector to review the feedbacks. This has enabled the administration in upgrading forms, re-scheduling timelines.
- Audit trails: Reports on Department-wise pendency, cases due with in 48 hours, Overdue cases etc. MIS reports on department-wise, issue-wise processing time, track of work in process. This has led to increased accountability.

On an average, 250 applications per day are processed at JSK and other 150 applications per day are processed at the *taluka* centers. District-level applications which are received at the *taluka* centers are forwarded to Gandhinagar. Almost 80% of the cases received at *talukas* are processed by the *Mamlatdars*. Since the inception, the JSK has successfully processed over 168,000 applications covering wide ambit of civic services with 90% on-time delivery record! The ICT leveraged automations in the e-Government processes at the Collectorate have resulted in efficient G2C transactions which directly benefit all the stakeholders – the citizens and the government officials. Speed of processing/ delays in service delivery:

- Over 90% of 168,000 applications processed in time
- Queries due to incomplete applications reduced to <1%
- Processing time for one day cases such as affidavits, issue of some of the certificates reduced from one-day to *Tatkal* (while-you-wait).

- Processing time for non one-day cases reduced by 30%.
- 48-hour alerts have helped timely completion of cases.
- Delays in service delivery due to queries and insufficient information have practically reduced to nil as –
 - a. The requirements are clearly stated on the form
 - b. The applicant self-certifies the enclosures before submission
 - c. The application acceptance is computer-assisted and systems driven.
- Significant saving in time by the government offices as they do not have to meet the people directly and as they receive all the applications in a completed manner.
- Involvement of retired government officers and senior citizens to help the illiterate and other needy people to complete their paperwork.
- The concept of citizen ID has helped minimize the paper work and data entry work in case of entering the application information.

Efficiency:

- Due to computer-assisted form acceptance, the officers receive applications which are complete in all respect. Officers save time and effort to send queries.
- As the applicant's personal follow-ups has reduced to negligible level, the officers can focus on the actual work.

Accuracy:

- Computer generated certificates, pre-formatted affidavits, use of pre-stored information have increased the accuracy.
- The Collector and senior officers get computer generated reports instantly. They get accurate data without having to rely upon the junior officers.

8. Replication

JSK, Gandhinagar won the coveted Stockholm Challenge Award 2008 in the Public Administration Category (<http://www.stockholmchallenge.se>). It also received the Best e-Gov Champion 2008 Award at the 4th Dataquest e-Gov Summit held in Mumbai, India on 11th March, 2008. The JSK Project, District

Collectorate, Gandhinagar has been short listed as one of the 10 finalists in the CAPAM International Innovation Awards 2008. The Award Winners would be announced in October, 2008 at the CAPAM Biennial Conference in Barbados, Bridgetown on 22 October, 2008. IIM, Ahmedabad has done a Case Study on the JSK Project, District Collectorate, and Gandhinagar. CAPAM Innovations – a quarterly publication of CAPAM has featured an article on the JSK, District Collector, Gandhinagar (Gujarat, India) (in the Vol. 14, No.3 dated September, 2008 issue of Commonwealth Innovations (<http://www.capam.org>)). This Project has been short listed among the top 6 best practices in the country for replication in all the districts by Deloitte Consulting on behalf of Department of Administrative Reforms and Public Grievances, Government of India. It has been assessed as a Model e-District by the Group of Consultants for the Department of IT, the Government of India and identified for replication in the country. Ms. Sonal Mishra, IAS gave the presentation on the JSK Project at the National e-Governance Summit for the Mission Mode Project – e-District at Hyderabad in January 2007. A Presentation was also made at the Wisitex IT Conclave organised by the Government of Goa in September 2007. The Gujarat state government has nominated this Project for the Hon'ble Prime Minister's Award for Excellence in Public Administration for the year 2007-08. IIT, Bombay as well as M S University, Baroda has done a technical Study on this Project. At present this Project has been replicated in several districts of Gujarat.

9. Implementation Model

JSK, District Collectorate, Gandhinagar is the front-end of the Collectorate Gandhinagar to provide 97 types of G2C services to the people of Gandhinagar in transparent, cost-effective and efficient manner. Despite being located within the Collectorate and pioneered by the District Administration under the leadership of Ms. Sonal Mishra, IAS the then District Collector, the JSK Project is unique in the sense that it acts as a single point interface between the citizen and the bureaucracy. This interface is enabled by leveraging ICT infrastructure and robust process engineering. The Project is undertaken with the help of a technological partner on BOOT basis. The JSK operators who are the point interface between the public and the officialdom are the pass out students from local ITI Gandhinagar (Industrial Training Institute). These students of e-Governance course specially introduced for JSK purposes have been rigorously trained in handling all the 97 G2C services. All the clients – VVIPs and the ordinary citizens avail services equitably, transparently and cost-effectively in

first come first served basis without any bias. Thus, JSK was set up with a capital investment of Rs.3.5 million within Collectorate and *taluka* centers in PPP mode. The necessary ICT infrastructure was set up with the technical support of the technology supplier. The connectivity is supported by GSWAN and Internet. The JSK operators have been imparted regular training by the Collector and the technology supplier. The manpower pool is made available by the local ITI. The Collector marketed the concepts of people-centric administration to local industries, organizations who have partnered with the JSK initiative by way of direct contributions, sponsorships for stationery, advertisements, etc. This Project is thus an actual outcome of PPP.

10. Technologies

Hardware: JSK began with 18 computer terminals and 6 computers with printers at the multi-storey building of the District Collectorate, Gandhinagar. It was then expanded to include the *Mamlatdar* Offices at the *taluka* headquarters in Mansa, Dehgam and Kalol. The center was also equipped with the necessary peripheral hardware – printers, photocopy machine, lamination machine, and Internet servers connected to GSWAN and Local Area Network (LAN). Other electronic accessories were added JSK, such as electronic display to announce token numbers, stamp franking machine, electronic trackers for registry etc to quicken the processing of services. Each counter was equipped with a barcode scanner to arrange applications at their proper places. All required services were made available at the center, for example webcam for instant photos, pre-formatted affidavits of 44 types, coin phone, attestation of copies etc. JSK has thus these hardware equipments:

- 18 Computer Terminals, 6 printers at JSK, Gandhinagar
- 6 Computer terminals with printers – 2 each at *taluka* headquarters
- Two High Performance Intel Xeon servers connected to GSWAN, Local LAN, as well as the Internet gateway
- Electronic displays to announce token numbers
- Barcode scanners for every desk
- Biometric finger print scanners to register citizens and auto fill forms
- GSM modem connected to the local server for automatic SMS
- Electronic trackers for registry
- Photocopy machine, lamination machine, coin telephone.

Stamp Franking Machine Connectivity

All terminals were connected in a 10/100 Mbps Ethernet LAN environment. A provision of backup server was made in a portable storage medium as well as the data storage space at the server farms. One of the two servers functioned in the mirrored mode and provided redundancy. Servers were connected to GSWAN network and *taluka* nodes. Through networking a continuous monitoring on pending, overdue cases and workload became possible. A Website of the center was also launched for form downloads information, status track and feedback by the customer.

Software: “Jan Setu” (means a bridge connecting citizen and government), the software was developed in ASP.NET and VB.NET on the Windows networking platform with database in SQL Server. The software allows for handling of all the issues and flexibility to add new issues; also supports online status monitoring, online issue of forms, feedback, etc. Other important features of “Jan Setu” were management of one single database forms for the citizens of the entire district, 24×7 connectivity with *talukas*, auto-SMS alerts, queries, auto-email, barcode based tracking, biometric fingerprint identification, electronic token-display based priority management, and an access to smart electronic registry devices. Thus, the software attributes are listed as below:

- Handling of all the issues and flexibility to add new issues
- Supports for the JSK Website which allows online status monitoring, online issue of forms, feedback, etc.
- Management of one single database for the citizens of entire district
- 24×7 connectivity with *talukas*
- Auto-SMS alerts, Queries, Auto-email, 24×7 IVRS based response
- Barcode-based tracking, Biometric fingerprint identification
- Electronic token-display-based priority management
- Smart electronic registry devices.

The technology provider regularly upgraded the software. An upgraded version had the following additional features: Distributed service provider outlets (franchisees) at remote locations, connected by the Internet to the central server, online submission of applications permitting applications by self, re-use of image

or paper copies of documents through central archives, direct e-transmission of certificates to agencies at the request of the applicants, parallel processing of a case by different officers, expanded activities to track the service delivery aspects for health, education, agriculture, etc.

Related Issues: Flexible and user-definable G2C, B2C and C2C issues. Use of biometrics for recording the attendance of officers and field workers. JSK primary operations are based on Gujarat State Wide Area Network (GSWAN). All the authorized users can access and use the system by entering their ID and password. The database has a separated ID and password which is encrypted in the software for normal use. The server is protected from malicious attacks and viruses by its firewall as well as that of the GSWAN. Data backup is maintained separately to ensure quick recovery of operations and data in case of any failure. Critical information is encrypted and saved in the database. For JSK mobile-van based and common service outlets based (proposed) service deliveries, 128 bit encryption of data stream has been planned. It is also intended to use dual band access where the user enters the user ID in the system and in response, the system dials user's cell-phone number which is used to key in the password. The password and user ID travel through separate routes to ensure total prevention of unauthorized access.

11. Capacity Building

JSK, Gandhinagar is the outcome of the strategic union of technology and positive governance. It is driven by innovative implementation of ICT and significant process reengineering by the district administration. The following strategy was adopted for the successful implementation of the initiative. As District Collector, I have provided strong leadership to the Project and have created well defined and robust institutional mechanisms (both at micro and macro level) with sufficient autonomy and delegation. All citizen-centric work at the Collectorate is handled through the JSK only and I personally ensured compliance. Jan Sev Kendra was made the *de facto* front-end of the District Collectorate, Gandhinagar. All reforms related to process changes have been formalized through office orders duly promulgated by the Collector i.e., myself. As Collector, I held weekly meetings of all the deputy collectors, *Mamlatdars* and JSK officers where the issue of overdue cases were reviewed and resolved. Feedback from the people was also discussed. Robust training and orientation of the JSK operators has helped in creating a dedicated team of Karma yogis who are passionate about their work. Change Management has ensured

maintenance of quality standards of performance despite the transfer of the Project Champion. As District Collector, I constituted seven core teams headed by Deputy Collectors to brainstorm with all the stakeholders – user groups, government departments, retired executives, local organizations and the technology supplier to decide upon the services to be offered, simplified forms for different services and the work processes to be followed at the JSK. With the result that –

- On basis of the specific need, short and simple forms were prepared which replaced long, general and complex forms. A seven page application form for ration-card alteration was simplified to less than two pages.
- Query for information which did not contribute to the decision-making was removed from the forms.
- Every form was standardized to include: Name and Number of the issue of service, description of service, name of the concerned office and concerned officer, time limit for processing, list of requisite enclosures, and self certification checklist to ensure submission of only completed applications. The formats for all the standard appendices or declarations were included with the form.
- The procedures for handling the applications were also standardized to minimize subjectivity.

Only those applications which were completed in all aspects would be accepted. After acceptance, there are no queries and delays. The Collectorate conducts systems-driven follow-up and alerts to ensure in-time completion of paperwork.

Core Committee: The core committee was headed by a senior deputy collector in the Collectorate with due representation of SDM, two *mamlatdars*, four deputy *mamlatdars*. The member-secretary of the committee was selected after careful screening of the senior deputy collectors in the district for people who had an understanding of and active interest in technology. The core committee was expected to: evaluate the vendors; finalize location; relocate offices/services; finalize services, forms (as listed by the branches), and the MOU with the short listed technology supplier; supervise interiors to be developed by GRIMCO (Gujarat Rural Industries Marketing Corporation Limited); and explore for sponsorships – both in the form of funds and needed

infrastructure. The Collector regularly monitored the progress made by the core committee, reviewed their recommendations, and acted upon the same through various office orders to achieve the various objectives that JSK was expected to accomplish. The core committee firstly came up with the objectives to be achieved by JSK. JSK aimed to provide ICT-enabled efficient, transparent, reliable, simplified, and cost-effective G2C services for issues covered under the Citizens' Charter. The basic idea was to bring good governance to the doorsteps of people in remote places by way of online services offered through *taluka* headquarters, common service centers as well as mobile vans. For implementing such an idea it was necessary to reengineer and simplify work processes, which would lead to speedy delivery of services to citizens and will be more convenient, both to the citizens and officers. Development of a central databank of all citizens was identified as a thrust area. Finally, the JSK was to engage all stakeholders – citizens and government for continuous upgradation of processes, delivery of quality services, and enhancing facilities.

Training: A training programme for 8-weeks (called *Karma yogi* training) was organized by government officers for those who were willing to take part in JSK and had a basic knowledge of computers. The philosophy of public service '*Sarvajana Seva Bhilashi*' was inculcated among the *Karma yogis*. The ITI trainers were made aware of the government processes and revenue related matters. Every computer operator drafted to work at JSK was properly trained. The training covered computer applications, government processes, as well as value systems necessary for public services. A series of trainings and workshops were arranged by the District Collector during the implementation phase of the project. This ensured that after implementation the systems can be handled by the government officers themselves in their respective departments.

Identification of the Location for JSK: The problem of location of the center was addressed in a meeting on 4 March 2006. It was decided that it should be near the entry gate and on the ground floor of the multi-storey building of the collectorate. Based on consultations with the staff and other stakeholders, two venues were tentatively short listed:

- Near the entry gate of the Collectorate – space of 3300 sq ft to be made available by shifting and relocating registry branch, zonal office, inquiry office of civil/electricity branch; or

- Outside the control room of the Collectorate on the Ground Floor in the open parking space (area 3500 sqft) by shifting and relocating the control room and the National Informatics Center (NIC) branch.
- Selection of the technology provider.
- Selecting a vendor for developing the software for JSK was a priority area.

The criterion for the selection of a suitable vendor was expertise in technology, creativity, manpower availability, and related experience. A few selected vendors were asked to make a presentation before all the deputy collectors, *mamlatdars*, and deputy *mamlatdars*. A technical vendor having capabilities in software design and development was selected as the software and service provider for JSK. They were asked to develop software, provide necessary hardware, and operate and maintain the JSK through its employees for three years. The business model was on the BOOT basis.

12. Process Reforms

Governance is a culture, which changes how citizens relate to governments as much as it changes how citizens relate to each other. The citizen focused JSK strives to provide to the citizens – secure, easy and greater access to the key services through the e-Governance infrastructure. It presents a unified and simplified view of government services and information to the citizens while at the same time allowing government employees access to relevant information across all its offices, seamlessly and effortlessly. The element of citizen-centricity is intrinsic to the JSK. The following major steps were undertaken to achieve maximum level of citizen-centricity through the robust process reengineering as mentioned below:

Stakeholder Consultation for Process Reengineering: The District Collector constituted seven core teams headed by Deputy Collectors to brainstorm with all the stakeholders – user groups, government departments retired executives, local organizations and the technology supplier to decide upon the services to be offered, simplified forms for different services and the work processes to be followed at the JSK, with the result that –

- On basis of the specific need, short and simple forms were prepared which replaced long, general and complex forms. A seven page application form for ration-card alteration was simplified to less than two pages.

- Query for information which did not contribute to the decision-making was removed from the forms.
- Every form was standardized to include: Name and number of the issue of service, description of service, name of the concerned office and concerned officer, time limit for processing, list of requisite enclosures, self certification checklist to ensure submission of only completed applications.

The formats for all the standard appendices or declarations were included with the form. The procedures for handling the applications were also standardized to minimize subjectivity. Only those applications which were completed in all aspects would be accepted. After acceptance, there are no queries and delays. The Collectorate conducts systems driven follow-up and alerts to ensure in-time completion of paperwork. Thus, process reengineering enabled the District Collector to improve transparency, efficiency, and convenience in all G2C transactions. Processes were revisited and finalized for all the services/issues that the JSK would provide. It involved simplification and standardization of application forms, enclosures, checklists, framing of and listing down of time limits for all services, charting back-end flow or movement of papers to facilitate and quicken the decision-making process etc. Necessary delegations were also made. For example, before JSK, citizens had to track the *talati* in the Land Allocation Branch of the Collectorate and only after multiple visits could pay the land revenue and other dues on the plots allotted to them. In JSK, forms were simplified, a separate counter was created and a *talati* was posted there to facilitate land revenue payments and premium collection for plots allotted. “A *talati*, though the lowest revenue functionary, collected land revenue worth Rs.17.5 million, premium amount worth Rs.846.6 million and penalty amount worth Rs.12.5 million in 2006-07. Land allotment letters were also finally given through the *talati* and it was increasingly becoming a concern to track and ensure the timely delivery of letters to land allottees. Moreover, random duties were allotted to *talatis*, without always provisioning for backup. All these problems were effectively addressed with the creation of a land revenue collection desk at the JSK and posting a *talati* there. This proved to be very popular with the common citizens and brought efficiency to a traditionally chaotic service.”

All the branches along with their branch heads, right up to the level of noting clerks were consulted and their views were obtained before finalizing

the processes to be followed at the JSK. In some cases, retired personnel of the Collectorate residing in Gandhinagar were called to provide insights emerging out of their long and varied experiences. The District Collector paid due attention on the types of grievances which were addressed to her during each Monday and Thursday (both were the declared public meeting days, where the public came to meet the Collector for grievance redressal). Media, NGOs, and the informal discussions which the Collector had with senior civil servants and non-officials residing in Gandhinagar contributed in broad basing the proposed citizen-centric JSK. Once the listing of the issues was done by the end of March 2006, all the branches were then given deadlines and firm instructions by the Collector to freeze the details regarding various services, time limits etc., so as to evolve the architecture of the software needed for the center. Ample time (April 2006 to July 2006) was provided to the branches for standardizing and simplifying their application forms, time limits, enclosures, and checklists etc. to help develop the software. After getting response from the branches, officers and staff of the Collectorate (selected deputy collectors, SDM, *mamlatdars*, and deputy *mamlatdars*) were drafted to work with the vendor to look into each and every service proposed to be offered – to check for scope for any addition/alteration in the service selected, timelines, forms, enclosures and checklists etc., and to give the same in writing to the vendor for appropriate action upon finalization. These reforms which were initiated within the Collectorate before the JSK system was put in place.

13. Project Financials/Sustainability

Business Model: The direct source of revenue for JSK is the fee charged for processing of an application. The indirect revenue is in the form of value added services like home delivery through courier, sponsorships for stationery with advertisements of the sponsors, kiosks, renting of hoardings for publicity etc. Revenue is also generated by commissions from the service providers who offer these B2C services through the JSK. JSK is considering launching distributed franchise service providers, which will reduce the load on the government to create office space and infrastructure. Franchisee model of JSK will deliver the administrative services at the doorsteps of people. It may also offer an employment opportunity to a youth, housewife or a retired person. JSK was set up with a capital investment of Rs.3.5 million within Collectorate and *taluka* centers in PPP mode. The necessary ICT infrastructure was set up with the technical support of the technology supplier. The connectivity is supported by

GSWAN (Gujarat State Wide Area Network) and Internet. The JSK operators have been imparted regular training by the Collector and the technology supplier. The manpower pool is made available by the local ITI. In fact, applying Change Management Principles has ensured maintenance of quality standards of performance at the JSK despite the transfer of the Project Champion, Ms. Sonal Mishra, IAS. JSK collects Rs.20 as service charges per application. This is shared between the Collectorate (40%) and the technology supplier (60%) to meet the recurring expenses. It has been running successfully since 16/10/2006 with an average daily inflow of 500 requests. Till date, it has processed over 120,000 applications with highly exceptional on time delivery (94%). The JSK model is being replicated in other districts of Gujarat where G2C service delivery are automated on the line of Gandhinagar (horizontal transfer). The technology supplier has provided open source products for customization. The business model of JSK counts on income generation from B2C and C2C initiatives such as employment handling, travel bookings, bill collections, call centers, buy-sell services, surveys, data sharing etc. Some financial support is achieved through value added services like home delivery through courier, sponsorships for stationery with advertisements of the sponsors, kiosks, renting of hoardings at the JSK for publicity etc. The District Collectorate, Gandhinagar is ready to launch distributed franchise service providers which reduce the load on the government to create office space and infrastructure. The strategy here is to count minimum on the collection from the basic G2C services. JSK, Gandhinagar has been selected as one of the five districts in the country in the Study Report on Assessment of Model e-Districts by the empanelled consultants – 3i InfoTech, Intel, PWC, TCIL and Wipro on behalf of the Department of Information Technology, Government of India for district level e-Governance. This Project has also been short listed by M/s Deloitte Consulting on behalf of the Department of Administrative Reforms, Government of India as one of the two best practices in the public administration category for replication and implementation in the entire country. This Project was conferred with the prestigious Stockholm Challenge Award 2008, Dataquest e-Gov Champion Award 2008, and has been nominated by the state government for Prime Minister's Award for Excellence in Public Administration for 2007-08. Since its launch in October, 2006 JSK Project has generated a surplus of Rs.600,000 with net inflow of Rs.2.5 million by way of service charge alone. This way, the Gandhinagar model is replicable in terms of technology, work processes, human resource requirements as well as financial sustainability.

14. Project Teams and Leadership

The JSK Project is the e-Governance initiative of the District Collectorate, Gandhinagar. The district administration is headed by the District Collector who is supported by deputy collectors to assist him. The districts are geographical divisions of a state comprising, on an average 200-400 villages in its fold. The service area is approximately 10 lakhs to 15 lakhs. Gandhinagar district comprises 4 sub-districts or *talukas* namely Gandhinagar, Mansa, Kalol and Dehgam. It has 287 villages and 5 municipalities (urban areas) in its territory. The population of Gandhinagar district is nearly 15 lakhs. Ms. Sonal Mishra, IAS was the District Collector of Gandhinagar who had conceptualized and implemented the JSK Project.

Role of the Nominee as Project Champion: In the capacity of District Collector, she significantly contributed at every stage, from concept to its implementation, with successful processing of over 168,000 cases in one year. The highlights of the contributions made by her are:

- Design of the basic concept
- Formation of a committee with participation from all the departments
- Selection of Software and Service Provider on a transparent merit-basis
- Approval of the MOU with the Technology Provider on BOOT principles
- Fund-raising through PPP
- Obtaining necessary approvals, stamp-franking facilities, etc.
- Weekly Review Meeting: Review of cases in process, feedback of people.
- Continuous reforms and process reengineering, including simplification of forms and procedures
- Grievance redressal

15. Key Project Outcomes

Today at the JSK, District Collectorate Gandhinagar, on an average, 250 applications daily are processed and other 150 applications per day are processed at the three *taluka* centers. *Taluka* places forward the district level applications to Gandhinagar, while almost 80% cases are handled at the *taluka* centers by the *Mamlatdar*. Since the inception, the JSK has successfully processed over

168,000 applications covering wide ambit of civic services with 90% on-time delivery record. JSK (Gandhinagar) is the outcome of the strategic union of technology and positive governance. The initiative is aimed towards bringing effective e-Governance at the district level, while introducing the transition from traditional governance to paperless, place-independent governance services in planned phases. It is a leap towards the achievement of e-Governance by the Government of Gujarat. About 97 everyday-issues like licenses/permissions under different Acts, various certificates and NOCs, 44 types of affidavits, pensions and grants-related issues, land matters, RTI cases etc., are handled everyday in a time-bound proficient manner at JSK. The services are delivered from Gandhinagar, Mansa, Kalol as well as Dehgam centers. JSK Gandhinagar combines the application of creativity and technology for the benefit of people. Some of the unique and effective practices at the Kendra are:

- SMS status check
- SMS reports and intimation
- Online status check and form download
- 24×7 automated phone response
- Document archives
- Auto-email
- Token system for minimum waiting time
- Barcode-based tracking
- Biometrics-based identity
- Involvement of senior citizens and retired officers
- Extended hours of operations
- Home delivery
- Special assistance to physically challenged, illiterate people, and senior citizens
- Weekly meeting for monitoring and process reengineering
- Village camps.

Some of the key Project outcomes of the Jan Seva Kendra Project can be listed as:

Mobile Camps: JSK conducts weekend camps at remote villages for on-spot acceptance and delivery of applications. This initiative is performed with the support of the local sarpanch and a notary. The issues covered under this drive are mostly concerning ration cards. These initiatives save money and time of the villagers. During March and April there is a heavy rush of students for different types of certificates. During these months the JSK at Gandhinagar remains open 7 days a week.

SMS Intimation: The computer system automatically sends an SMS to the applicant on completion of the processing of his/her application. Applicants at the JSK have benefited from the SMS messages they receive upon completion of their work. They don't have to make inquiries or make follow-up visits. The time-lines for each application are specified on the acknowledgement slips given at the time of submission. In most cases (over 90%) the work gets over earlier and the applicants get SMS alerts.

SMS Query: Applicants can know the status of their paperwork by sending an SMS to the JSK number. The system automatically responds with the status of the file.

SMS and Auto-Email to Officers: The system sends daily SMS to concerned officers to inform them about the activities during the day and the pending of various issues. SMS query by the officers is also supported.

Interactive Voice Response System (IVRS): Applicants can call the automated phone line enter the 12 digit number of their application, and check the status of their application. This has helped many applicants avoid cumbersome follow-up visits.

Home Delivery: The completed papers are home delivered by courier at a nominal fee of Rs.5/- to Gandhinagar city residents. Home delivery is also used in cases requiring address verification.

Bar-coded Applications, Acknowledgements and Certificates: Barcode is used from the issue of the form till the case is completed. At every stage, registry of a case is made using bar code scanner. Barcode scanning eliminates operator errors, increases speed, and helps to track the papers in process and helps identify papers archived.

Computerized Token System: The software intelligently estimates the time for each counter, and automatically assigns the counter to the applicant having the least waiting time. No queues are formed in the process.

Monitoring of Paperwork by the Officers: Officers have direct access to the database of the JSK and can review the status, and count of pending applications within their department. They can view the applications that are overdue and act on those accordingly.

Weekly Meeting headed by the Collector: The Collector holds a weekly meeting of all the deputy collectors, *mamlatdars* and JSK officers. The issues of overdue cases are reviewed and resolved on the spot. Feedback from people is also discussed. The collectorate has supported the initiatives of local ITIs to offer special courses to prepare the work force for e-Governance. The JSK project has brought in a new outlook among the people towards government institutions.

Some examples of the impacts on the public as well as on government employees are stated below:

- i. Drastic change in the perception of the common man about a government office. Significant time-saving for the public for availing different services offered by the different participating departments. For example, the processing time for several one-day governance issues has been reduced to less than two hours.
- ii. Significant saving in time by the government offices as they do not have to meet people directly and as they receive all the applications in a completed manner.
- iii. Involvement of retired people and senior citizens to help the illiterate and other needy people to complete their paperwork.
- iv. Notable change in the attitude of government employees due to transparent systems including tracking the work in process.

16. Service Users' Feedback Mechanism

Feedback and Grievance Redressal: In the process of transforming the government system onto a citizen-centric one, JSK collects feedback about the initiative. Over 1,000 feedbacks have been received. Feedbacks processed by weekly monitoring meet result in process-reforms. Every feedback is acknowledged and responded to by a letter from the JSK. JSK authorities give

due attention to negative feedbacks and take corrective actions. Though the feedbacks have been largely positive, some of the feedbacks and process reforms carried out as a result of those feedbacks include:

- JSK had a practice of removal of footwear before entering the premises. On the basis of feedback from citizens, shoe-racks were installed and a security guard was provided.
- A feedback indicated that every new service offered at JSK should be announced in the local newspapers. In response to this, JSK initiated the practice of issue of press releases for new services.
- Some feedbacks suggested improving the courteousness of employees. JSK started employee of the month award on the basis of discipline and customer-friendly service.
- JSK received feedbacks related to queries raised by the departments due to insufficient information. JSK made due reforms to minimize queries.
- Some feedbacks received have enabled the JSK administration to upgrade forms and rescheduling timelines. Feedbacks give power to the customer. Maganbhai from Gandhinagar wrote that “the Xerox line is too long and we have to wait for a long time to get our documents attested”. The effect was that a separate photocopy machine was installed and ‘an officer – a day’ was appointed to attest copies, which was earlier nobody’s assignment. A feedback that particularly catches attention is about the positive feeling of inclusivity in citizens where they felt that VIPs, illiterates and underprivileged citizens of rural areas were all treated as equals in the JSK system. The sample feedback form is made available in the reference material sent to the Computer Society of India by post.

17. Implementation Challenges

The biggest challenge was to realign the mindset of the bureaucracy within the Collectorate as well as in other departments like the Police, Roads and Buildings, and Health etc. The prevalent practice of the customers (citizens) physically approaching relevant government departments for G2C services and then after multiple follow-ups with concomitant frustrations and failures, the services were delivered with more exasperation than satisfaction. The attributes

in the bureaucracy that needed solution before the implementation of the JSK concept were, primarily,

- i. Resistance to change
- ii. Mindset of the officials towards e-Governance
- iii. Lack of exposure to technology
- iv. Issues of inter-departmental co-ordination
- v. Manpower deployment and training.

To replace the inefficient traditional system with automated JSK required persistent efforts to make the bureaucracy accept the new style of public delivery without having any interaction with the citizens. It was a cultural u-turn where the bureaucracy felt threatened with loss of authority and power. This was a major roadblock which needed deft handling from the perspective of the District Collector. Even in cases for obtaining various licenses/permissions where the Collectorate required NOC from the various offices, the citizens were not needed to move from offices to offices; instead, the back-end JSK did the follow-up. This was a major deviation from the existing system. ICT-based JSK empowers the Collector regarding pending issues in different offices. This information enabled the Collector to expedite delivery of services which in turn motivated the district officers to take work from their subordinates efficiently. Similarly, simplifying and standardizing various forms for different services were a big ask. Robust brainstorming with all the stakeholders was needed to keep the citizen in center of all planning. This necessitated that various offices give up their authority and eventually empower citizens. A paradigm shift in bureaucratic working, indeed! The project financing through public private partnership was a big challenge before the district administration. The Collector personally marketed the concepts of people-centric administration to local industries, organizations, NGOs etc. With only Rs.0.5 million grant from the state government, the remaining Rs.3 million for the project was managed through PPP mode. Thus PPP is instilled within the foundation of the JSK. Similarly, the *taluka* centers (sub-district) and village camps witnessed extreme transparency with the advent of the JSK. Instilling motivation and change in work culture amongst the village level functionaries was a very daunting task. Regular trainings and workshops along with strict supervision ensured that the empowerment of the citizens was complete in the real sense.

18. Key Lessons Learnt

Critical Success Factors: The District Collector had issued orders to the officers of the Collectorate to ensure that all the citizen-centric work is handled through the JSK only. The technology supplier has continuously evolved and upgraded the software to ensure the best performance. Officers monitor the issues at their departments and focus on eliminating over dues. Such combined teamwork has yielded success to the initiative. Implementation of ICT for e-Governance – Use of SMS for automatic alerts and on demand information, IVRS for 24×7 status information, barcode and smart electronic trackers for tracking, registry and error-free data entry, website for status track and form information, fingerprint biometrics for recognition have offered convenience, speed and transparency to citizens.

Citizen ID: The concept of Customer ID (Citizen ID) has helped minimize the paperwork as well as data entry work in case of entering the application information. Citizens re-use previously submitted documents in new applications to the JSK.

Taluka-Level Connectivity: The *taluka* centers use the same software and connect to the central database through GSWAN (Gujarat State wide Area Network). This has facilitated centralized monitoring, and has helped create a central data record for the entire district.

Service to the Remote Villages at the Doorsteps of Citizens: JSK offers mobile van-based services and village camps to reach out to citizens in remote areas. Internet-based services are catered on the spot. The citizens don't have to travel to the government offices for their paperwork needs.

- Project has front-end automation where service requests are accepted.
- Extensive focus on employee skill upgradation and employee involvement in the whole process of re-engineering and automation.
- In one-day governance, citizen has to get all the supporting documents signed by the concerned authorities and submit in the center. For one day governance, one Collectorate official sits in the JSK to clear all the requests of the citizens.
- If there is any application which has to get approvals from the departments beyond the Collectorate like the Police, Health, Panchayats etc., then it

is forwarded to the respective departments by JSK operator. The applicant does not have to visit these offices to get these clearances. Also, the Collectorate departments do not need to send the formal requests to these outside departments.

- Timelines are given to all the departments for the completion of the request (SLA with the departments). 48 hour deadline reminders are issued to the departments by the system.
- Close monitoring by the Collector on a weekly basis to review operational status.
- Over 1000 feedbacks received. Every applicant requested to give his/her feedback. Feedbacks processed by weekly monitoring meet headed by Collector resulting in process-reforms. Every feedback reciprocated by a letter from JSK.
- All the application forms are in the local language and have been simplified for the convenience of the citizens. Rupees 20 are charged per form. There are no charges for BPL (below poverty line) applicants.
- Services to the citizen in the *taluka* (sub-district center) are provided by the *taluka* JSK.
- There is no interaction of government officials with citizens as a result of which the time of both the officials and the citizens is saved.
- Unique citizen ID is created for each applicant.
- JSK collects money for the services and deposits in respective departments.
- For tracking of an application, a special barcode is attached to the application.

Project Contact Details

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FOURTEEN

e-Arik

Saravanan Raj

1. Goals and Objectives

- To assess the agricultural information needs of tribal farmers
- To experiment ICTs in agricultural extension services' provision to the tribal farmers
- To provide computer training and capacity building to the tribal farmers and others
- To assess the impact of ICTs in improved agricultural extension services' provision to the tribal farmers
- Working (Specific) Goals and Objectives
- Focused group discussion and ICT awareness programmes
- Farmers' information needs assessment
- Survey on ICT indicators and infrastructure
- Benchmark survey on farm communication input pattern
- Establishment of village knowledge centers
- Developing a prototype for agricultural knowledge information system
- Dissemination of agricultural information
- Locally relevant content development and website hosting
- Digital documentation of pests and diseases
- Documentation of farmers' orchard history
- Documentation of "Adi" tribes traditional homestead agro-forestry

- Farmer participatory multimedia preparation
- Farm advisory publications in project portal
- Information on governance, health, and education
- Computer literacy to the villagers
- Local market and weather forecasting information dissemination through project Web portal
- Organising farm multimedia shows at village knowledge centers
- Conducting village advisory committee and project review committee meetings
- Identification of ICT impact indicators and project impact assessment
- Consultative workshop and policy recommendations.

2. Spread of Project Service Users

First Level Users

- Yagrung villagers and the near by ones
- Village tribal people of east Siang district, Arunachal Pradesh' Farmers common public, youth and children, field level extension personnel of agriculture and rural developmental departments.

Second Level Users

- Tribal farmers and villagers of North-east India
- Extension personnel, subject matter specialist of KVKs in northeast India
- Scientists, farm and rural development administrators, policy makers and others.

3. Services Provided

- Agriculture and allied sector information dissemination through ICTs at e-Arik: Village knowledge centers and also through e-Arik Web portal
- Farm advisory services at the farmer's field
- Digital documentation of symptoms of pest and diseases for the benefit of farmers and other farm stakeholders
- Documentation of tribal farmers' crop history for ready reference
- Farm market and weather information

- Announcements and scroll messages on farm training programmes
- Information provision in the governance, health, and education through ICTs
- Digital publication and dissemination of farm advisory publications, survey reports, newsletters and farmers training reports through Web portal
- Computer education and awareness to farmers and school children
- Organising farm multimedia shows
- Organising on-farm training and demonstrations
- Arranging scientist field visits and farmer-scientist-project staff interaction sessions
- Facilitating farmer to farmer communication
- Developing village knowledge managers
- Facilitating multi-agency extension through village knowledge centers

4. Geographical Spread of Project Implementation

As a maiden experiment to develop e-Agriculture prototype in Arunachal Pradesh, e-Arik project covers 12 villages in the east Siang district. Based on the experience of e-Arik project the e-Agriculture prototype is to be duplicated to the entire state.

5. Project Timelines and Milestones

- August, 2006 – Project design and submission to the funding agency
- March, 2007 – Project approval from DSIR, MoS and T, GoI
- March, 2007 and April, 2007 – Selection of the villages
- April, 2007 and May, 2007 – Focused group discussion, group meetings, awareness programmes with villagers
- April, 2007 and May, 2007 – Farmers' information needs assessment
- April, 2007 and May, 2007 – Benchmark survey on farm input pattern
- April, 2007 and May, 2007 – Survey on ICT indicators
- June, 2007 – Establishment of Village Knowledge Center (VKC)
- June, 2007 to August, 2008/till date – Content development, interactive, farmer friendly website hosting and updating

- June, 2007 to August, 2008/till date – Digital documentation of farmers' field pest and diseases symptoms
- June, 2007 to August, 2008/till date – Integrated provision of agricultural information services through ICTs
- June, 2007 to August, 2008/till date – Awareness, training on ICTs and capacity building among rural youth, women and others
- July, 2007 to August, 2008/till date – Multi media-film shows/demonstrations/field days/group discussion to create general awareness

6. Direct Cost and Time Savings to Avail Services

Through e-Arik project, 500 tribal farmers are getting on-farm advisory services (minimum two times per month)/information from VKC, Yagrung village free of cost. Further, 100 school students had basic computer education and 500 farmers had awareness on ICTs at e-Arik VKC, Yagrung village.

Manual System: 500 tribal farmers for getting agricultural and other information from traditional method.

500 farmers $\times$ 24 times per year (minimum monthly two times) $\times$ Rs.100 (Bus fare to visit the nearest agricultural extension department) = Rs.12,00,000.

Through Arik Project: 100 school children imparted basic computer training and 500 tribal farmers imparted awareness on computers.

To get computer training and awareness at nearby computer center 100 school children per year $\times$ Rs.5,000 (for basic computer course) = Rs.5,00,000.

500 Tribal people (for computer awareness) $\times$ Rs.1000 = Rs.5,00,000.

Total cost saving by the users due to e-Arik system: Rs.22,00,000 (Rs.12,00,000+5,00,000+5,00,000).

Direct time savings existing system (e-Arik system): 1 farmer gets 24 advisory visits by e-Arik project staff/he/she can get information at his/her doorstep.

500 farmers $\times$ 30 min per visit $\times$ 24 numbers = 6000 hrs = 750 man days.

Manual system: One day required to visit the nearest agricultural extension department 500 farmers $\times$ one day for visiting nearest agricultural extension department at Pasighat $\times$ minimum 24 times per year = 12,000 man days.

Direct time saving through e-Arik project: 11,250 man days.

7. Direct Cost and Time Savings to Deliver Services

Through e-Arik project, 500 tribal farmers (contact farmers) are getting on-farm advisory services (minimum two times per month)/information from VKC, Yagrung village free of cost.

Cost incurred in the e-Arik system from

March 2007 to July, 2008 Manpower (Project staff) –	Rs.1,23,384
Equipment –	2,40,745
Consumables –	Rs.54,589
Contingency –	Rs.42,981
Computer Professional Charges –	Rs.15,000
Travel –	Rs.76,250
Power back-up, publication –	Rs.33,647
Over Head –	Rs.1,00,000
Total –	Rs.6,86,596

Manual system (in the Extension Agency-Department of Horticulture/ Department of Agriculture) Cost for one year.

Staff salary –	Rs.16,92,000
Vehicle depreciation –	Rs.50,000
POL –	Rs.2,25,000
Farmers training and demonstration –	Rs.2,00,000
Office maintenance/consumables/contingency –	3,00,000
Total –	Rs.24,67,000

Direct cost savings to deliver services: $24,67,000 - 6,86,596 = 17,80,404$.

Existing System (e-Arik system)

Man days = (4 facilitators+1 computer instructor+2 research fellows+1 Project Fellow)

8 personnel $\times$ 25 days/per month $\times$ 12 months = 2,400 man days or 19,200 working hours per year Manual system to cover 500 farmers at their field/orchards in the remote 12 tribal villages requires 30 extension personnel fulltime work.

Mandays= (30 Extension personnel $\times$ 20 days/per month $\times$ 12 months) = 7,200 man days or 57,600 working hours.

Direct time saving = 4,800 man days or 38,400 working hours per year.

8. Replication

As a maiden experiment to develop e-Agriculture prototype in Arunachal Pradesh, e-Arik project covers 12 villages in the east Siang district. Based on experience of e-Arik project, the e-Agriculture prototype is to be duplicated to the entire state or northeast India.

9. Implementation Model

The e-Arik project is a two year research project funded by the DSIR, and implemented by the College of Horticulture and Forestry, Central Agricultural University, Pasighat, Arunachal Pradesh. Project team in consultation with "village tribal council" (Kebang) implements the project.

10. Technologies

Dial-up Internet connection and other ICTs (TV, Radio, Telephone, and Mobile).

11. Capacity Building

Project members are trained by the experts from the College of Horticulture and Forestry, Pasighat. Project team also participates in workshops and seminar for capacity building.

12. Project Financials/Sustainability

From March 2007 to July 2008

Equipment –	Rs.2,40,745
Manpower (Project staff) –	Rs.1,23,384
Consumables –	Rs.54,589
Contingency –	Rs.42,981
Computer Professional Charges –	Rs.15,000
Travel –	Rs.76,250
Power back-up, publication –	Rs.33,647
Overhead –	Rs.1,00,000
Total –	Rs.6,86,596

Financial Sustainability: To ensure the financial sustainability of ICTs/e-Governance models in remote tribal areas, minimum first two years villagers and other stakeholders need to be demonstrated potential of ICTs for agriculture and rural development. Without having any awareness on potentials and benefits of ICTs, villagers may not pay for the services. Hence, as the first step, the e-Arik project is demonstrating potentials and benefits of ICTs in agricultural extension services and other information provision. However, farmers are contributing in kind, for example, villagers constructed a farmers' training center at e-Arik: VKC. Further, informal group discussion and survey indicates that the considerable proportions of the tribal farmers are willing to pay for the services of e-Arik project.

13. Project Teams and Leadership

- Project Team Principal Investigator
- Co-Principal Investigator
- Project Fellow
- Research Fellow
- Computer Instructor
- Farmer Facilitators

14. Key Project Outcomes

Sustainability

Financial Sustainability: To ensure financial sustainability the following components were identified during the e-Arik project implementation:

- Contribution of community members in KIND
 - Providing building/house/infrastructure to host VKC
 - Construction of low cost farmers' training center
- Registration fee from tribal farmers for providing farm advisory services (Survey conducted by the e-Arik project team indicated that majority of farmers are willing to pay a nominal fee for services of e-Arik project)
- Nominal charges for downloading and printing public utility forms
- Cost based digital photography
- Farm input unit for getting nominal revenue to VKC

- Collecting tuition fee for computer training to the school children, village youth and others.

System Sustainability:

- To make the system sustainable village advisory committee members are guiding the e-Arik activities and themselves getting the first hand experience of ICT initiative.
- Village Tribal Council – “Kebang” actively involved in the e-Arik activities and after the successful experimentation of e-Arik project, VKC will be handed over to village tribal council.
- The e-Arik Web portal will be continuously updated and maintained by the AV and ICT Lab, Department of Extension Education and Rural Sociology, College of Horticulture and Forestry, Central Agricultural University, (CAU), Pasighat.

Usage: The e-Arik project is used by the 12 remote village tribal farmers and extension personnel of developmental departments, other stakeholders of agriculture and rural development in Arunachal Pradesh. The e-Arik portal technical information was added for the benefit of the farmers of the northeast into the India Development Gateway (www.indg.in), C-DAC’s one of the National initiatives for rural development (http://www.indg.in/agriculture/crop_production_techniques/technologies-for-north-east-india/technologies-for-north-east-india)

Usefulness: For the following aspects e-Arik project beneficiaries stated high rating and approval:

- Creating general agricultural and rural development awareness among tribal villagers
- Imparting information on new technologies
- Promotes eco-friendly and sustainable technology dissemination and adoption
- Develops vocational efficiency among villagers
- Develops new farmers’ groups
- Develops local knowledge managers
- Helps villagers to make use of local resources.

Empowerment:

- a. Helps to make timely decision by the villagers themselves
- b. Suggests alternative ways to solve farming and other rural problems
- c. Provides information for tribal farmers' livelihood security.

15. Service Users' Feedback Mechanism

Regular feedback is digitally recorded at e-Arik village knowledge center and also e-Arik laboratory. Further, conventional method of register maintenance is also in practice by the farmer-facilitators.

16. Implementation Challenges

- **Power (Electricity) cut:** Chargeable batteries and inverters are used
- **Local Tribal Dialect:** Local farmers facilitators used for communication in ADI tribal dialect. Hence, farmer to farmer communication was adopted.
- Frequent power cuts, road blockage during rainy season, regular telephone out of order creates problem in sustaining continuous service. Hence, offline materials, village library were established at e-Arik – VKC at Yagrunge village.
- **Limited scientific resources for Arunachal Pradesh** – such as, advanced farm technologies and package of practices. Hence, expertise from multidisciplinary scientists of the College of Horticulture and Forestry was ensured for appropriate information dissemination.

17. Key Lessons Learnt

- Locally relevant content accelerates dissemination of the information through the ICTs.
- Due to novelty or innovation of ICTs, involvement of users in the maiden ICT initiative is high in the least developed tribal villages.
- Involvement of local tribal council members are essential for favorable opinion making among tribal villagers.
- To cope-up with the frequent power and dial-up Internet failure, VKCs need to have offline materials/village library.

- For knowledge dissemination among tribal farmers, variety of ICTs are to be used and important information has to be provided repeatedly in frequent intervals for better learning and reinforcement of the message.
- Village tribal council members, village opinion leaders (school teachers, progressive farmers...etc) play a pivotal role in creating awareness on ICTs among less educated tribal farmers/villagers.
- Integrated rural information provision and computer training to the villagers is necessary instead of single sector approach.
- Local facilitators and local tribal dialect play a crucial role in the information dissemination process through ICTs.
- To ensure the financial sustainability of ICTs/e-Governance models in remote tribal areas, minimum first two years villagers and other stakeholders need to be demonstrated potential of ICTs for agriculture and rural development.
- Along with ICTs, traditional extension communication methods need to be used during the initial stages of ICT penetration in remote and least developed tribal villages.

Project Contact Details

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Anytime Anywhere Office Application for Processing Office Files and Internet-based Interface – KM ATOM

Suresh Chanda and Jacob Victor Ganta

1. Goals and Objectives

- Transparency in government functioning through Internet-based citizen interface to office files
- A citizen can
 - view the location of file in the office
 - also view status of action taken on his representation
 - also view all public documents issued by office
 - also view noting in files except of those which are confidential files.
- System automatically publishes the information on Internet for viewing by citizens
- Simple and citizen-friendly Internet-based interface.
- Compliant with Right to Information Act – proactive disclosure of information
- Accountability in decision-making
- Providing anytime anywhere office facility for staff.

2. Spread of Project Service Users

- **Two departments:** Information Technology and Communication departments at AP Secretariat and EDS (e-Seva) are using the application

with full functionality. The other 9 departments in AP Secretariat are using the application only for the file tracking. Hence, the files of those departments are not linked to Citizen Interface.

- **External users:** Citizens.

3. Services Provided

- Internet-based access to office information on 24×7 basis from anywhere
- Access to public documents issued by office
- View Location of file in office and since what date at that location
- View status of action taken on papers received in office
- View noting in files except of those which are confidential files
- Proactive disclosure of information – no need to apply under RTI Act
- Compliant with Right to Information Act by disclosing information proactively
- Simple and citizen-friendly Internet-based interface – Citizen can locate file, view public documents, view note file, view status of action taken
- Mobile office – Officers can attend to office work on anytime anywhere basis.

4. Geographical Spread of Project Implementation

Two offices are using the application with full functionality. Other nine offices out of 34 offices in AP Secretariat are using the application with partial functionality. Total users are around 300. The same application is also being used by APTS, many collectorates and few HoD offices in Hyderabad.

5. Project Timelines and Milestones

- Implementation in IT & C department, e-Seva in June 2007
- Phase I – MAUD Department in July 2007
- Phase II – Home, I & CAD, Energy and Tourism departments August 2007
- Phase III – Higher education, environment forest science and technology, health, infrastructure and investment and industries departments April-May 2008.

6. Direct Cost and Time Savings to Avail Services

- **Saving in time:** Citizen can access information through the Internet on 24×7 basis from anywhere. No need to visit office for information or file application under RTI Act.
- **Saving in money:** Information can be accessed through the Internet on 24×7 basis from anywhere. No need to visit office for information or file application under RTI Act.
- **Saving in money in logistics:** Saving in travel time and cost. RTI Act fee.

7. Direct Cost and Time Savings to Deliver Services

- **Saving in time:** As information is available in public domain, no need to prepare and deliver information. Time savings for office staff.
- **Saving in money:** Savings in typing or photocopying information
- The government official/staff need not put effort in preparing and delivering the service. Thereby the official/staff have more time to concentrate on the core business process.

8. Replication

The pilot started in July 2007 and replication is in progress in other departments.

9. Implementation Model

Based on the feedback and failure of caring government implementation in AP Secretariat, simple KM-ATOM application is being implemented in phases. Initially application is being implemented at Level 1 (L1 Level) for file tracking. Once user gets familiar with application, they are encouraged to move to L2 Level. IT & C department and eSeva office are at L2 Level and nine other departments are at L1 Level.

10. Technologies

The application architecture is three tiers. The following technologies are used

- ORACLE – RDBMS
- Application server – IAS
- Environment – .Net framework

11. Capacity Building

- The application was developed by the technical team of AP Technology Services, GOAP organization.
- The users were given 30 minutes training by APTS staff. Applications being very simple, most of them were able to use the application without the need of second round of training. APTS provided one technical staff in each department for hand holding of users.

12. Process and Legal Reforms

Transparency in office process and compliance to RTI Act.

13. Project Financials/Sustainability

The application is centralized server-based application. Application is hosted on existing IT infrastructure without any additional cost.

14. Project Teams and Leadership

- The Project Manager
- Project Leader
- Team Members

15. Key Project Outcomes

- Transparency in government process
- Accountability in decision-making
- Simple and citizen-friendly access to office files
- Compliant with Right to Information Act
- Mobile office: Officers can attend to office work on anytime anywhere basis

16. Service Users' Feedback Mechanism

- The dashboard in the login screen gives the users the current status, thereby facilitating them to act effectively.
- Officer can attend to office work even when they are physically away from office.

17. Implementation Challenges

To convince the users to move from manual system to electronic system.

18. Key Lessons Learnt

- The user may/shall use any system if it is user-friendly.
- The user should see value in using the system.
- Simple user manual.

Project Contact Details

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Sankhyikiya Patrika: Internet-based Data Entry and Retrieval (SPIDER) System

Lautoo Ram Yadav

1. Goals and Objectives

India has undertaken measures towards globalization, liberalization and decentralization at grassroots level, to achieve vibrant economy, growth and development. The benefits of technology revolution need to permeate at grassroots level, which calls for a Bottom-Up approach. The ongoing decentralization process initiated by the 73rd and 74th Amendments of the Indian Constitution which gives greater responsibilities and powers to the Panchayats and Nagar Palikas as a third tier of governance offers a new era of opportunity for local planning, effective implementation and monitoring of various social and economic development programmes in the country. This will in turn help the weaker sections of the society to share the responsibility of governance at least at the lower level. The National Statistical System should assist the various developmental agencies in this challenging endeavour. The recent advances in the Information and Communications Technology (ICT) in compilation, storage, transmission and analysis of data should be fully exploited in the proper understanding of the conditions at the local level and programmes for social upliftment, health care facilities, educational opportunity and general development should be appropriately designed, implemented and monitored. A decentralized statistical system already exists in India. Data flows from grassroots level (village/village panchayat) to Community Development Block (CDB) level and *tehsil* level and from there to district and state/national levels and vice versa. There is a Village Proforma (VP) having information of all the 97942 inhabited villages, updated annually and are maintained in all

the 820 CDBs of the state since the year 1973. At the district and division levels there are *Sankhyikiya Patrika* (SP), updated and published annually. The SP has information on more than 3500 parameters of village, CDB, district (Rural & Urban) and division levels in the form of more than 100 tables, since the year 1976. It covers major sectors like agriculture and allied activities, industry, social sector, power, transport and communication, banking, urban facilities, rural infrastructural facilities etc. There are 15 sections in VP covering information on

1. Introductory details of village
2. Population census
3. Livestock census
4. Agricultural census
5. Educational facilities
6. Medical and health facilities
7. Drinking water facilities
8. Transport, communication and miscellaneous establishment facilities
9. Marketing stores and loan facilities
10. Other facilities
11. Availability of establishment facilities in different habitations of the village
12. Different economic information
13. Household industry
14. Agricultural statistics and
15. Total and irrigated area under main crops.

Village Level Basic Amenities (VLBA) data on 41 indicators i.e.,

1. Block headquarter
2. Village development officer center
3. Fare price shop
4. Source of drinking water

5. Agriculture service center
6. Rural bazar/haat
7. Agricultural mandi
8. Cold storage
9. Seed sales center
10. Fertilizer sales center
11. Insecticide sales center
12. Veterinary hospital/animal husbandry center
13. D-Category animal dispensary
14. Animal service center
15. Artificial breeding center/sub center
16. Co-Operative milk collection center
17. Primary agricultural loan cooperative Society
18. Sales/purchase cooperative societies
19. Government/cooperative purchase center
20. Primary school (Combined)
21. Senior basic school (Boys)
22. Senior basic school (Girls)
23. Higher secondary school (Boys)
24. Higher secondary school (Girls)
25. Non-Conventional education center
26. Allopathic hospital/dispensary/community health center/primary health center
27. Ayurvedic hospital and dispensary
28. Unani dispensary
29. Homeopathic hospital/dispensary
30. Family welfare center/sub center

31. Mother child welfare center/sub center
32. Pakka roads
33. Post office
34. Letter box
35. Telegraph office
36. Public telephone/PCO center
37. Railway station/halt
38. Bus station/stop
39. Agricultural cooperative and rural development bank
40. Commercial rural cooperative bank and
41. Post office/savings bank are available in every village of CDB.

Sankhyikiya Patrika (SP): Internet based Data Entry & Retrieval (SPIDER) System has been conceptualized to meet the following objectives:

- Computerization of SP.
- Standardization of SP formats at village, village panchayat, block, district, and division and state levels.
- Creation of Small Area Databases (SAD) to fulfill the objectives of the 73rd and 74th Amendments.
- Conversion of SP data in database form.
- Compilation, checking and updation of data at the grassroots level.
- Increasing the consistency and accuracy in the data.
- Reducing the time lag.
- Increasing the cost efficiency.
- To make the planning system transparent at all the levels.
- Integration of databases at different levels.
- Development of a Bilingual Unicode compliant SP Portal.

- Increasing the accessibility of data on 24x7 basis from anywhere by the citizens, planners, policy makers, administrators, researchers, institutions, universities, government departments, international agencies, NGOs, etc.
- Integrating the databases from all the States/UTs, a National Level Database (NLD) can be created as envisaged by National Statistical Commission (NSC), 2001.
- Development of computerised decision support systems for planning purposes.
- By integrating spatial and non-spatial, SP databases and adopting GIS techniques, decentralised planning process can be accelerated.
- A Data Warehouse (DW) based on SP databases can be created and by applying data mining tools planning process can be improved.

2. Spread of Project Service Users

The users benefited from the SPIDER projects are common citizens, planners, policy makers, administrators, researchers, institutions, universities, government departments, international agencies, NGOs, etc. Some important users are listed as below:

- Medical Sector Institutions
- CSIR Institutions
- ICAR Institutions
- ICMR Institutions
- ICSSR Institutions
- Public Works Department
- Civil Defence Department
- Industry Sector Institutions
- Election Commission
- Energy Sector Institutions
- Local Bodies of UP
- Jal Sansthan of UP
- Education Sector Institutions

- National Academy of Sciences, India
- Handloom Development Department
- National Informatics Center, GoI
- Development Authorities of UP
- Industrial Development Authorities of UP
- Energy Sector Institutions
- Financial Sector Institutions
- Pradeshiya Industrial and Investment Corporation of UP (PICUP)
- Accountants Department
- Telecommunication Department, GoI
- Printing and Stationary Directorate, Uttar Pradesh
- Registrar Firms, Societies & Chits, UP
- State Women Commission, Uttar Pradesh
- Banking Sector Institutions
- Insurance Sector Institutions
- Reserve Bank of India
- Planning Commission, GoI
- State Planning Commission, UP
- UP Jal Nigam
- Co-operative Sector Institutions
- Housing Sector Institutions
- Khadi and Village Industries Board (UPKVIB)
- Transport Sector Institutions
- Tourism Sector Institutions
- Social Welfare Sector Institutions
- Agriculture and Allied Sectors Institutions
- Forest Department

- Information and Public Relations Department
- Irrigation Department
- Planning Department
- Police Department
- Revenue Department
- Council of Science and Technology
- Biotechnology Park, Lucknow
- Lok Ayukta, Uttar Pradesh
- National Capital Region, Uttar Pradesh
- Central and State Universities
- Central, State/Other Institutions
- UPCAR
- NGOs (including local, state, national and international)
- UN bodies like UNICEF, WHO, World Bank etc.
- Public Representatives like MP, MLA and members of local bodies etc.

3. Services Provided

The major functions of Directorate of Economics & Statistics (DES) of Planning Department, GoUP are:

- Conducting sample surveys in collaboration with the NSSO on various socio-economic aspects and on other subjects of interest for the GoUP. The primary data through these surveys are collected and supervised by the field agency under the overall supervision of the state headquarters.
- Collection, compilation, tabulation and publication of data under Annual Survey of Industries from the factories registered under the Factories Act, 1948 in collaboration with the NSSO.
- Collection of industrial production data from selected registered factories and computation of the Industrial Production.
- Yearly collection of data relating to income and expenditure of local bodies in the state.

- To conduct economic census and the follow-up surveys in collaboration with CSO from time to time.
- Preparation of the estimates of State Domestic Product. The work relating to preparation of estimates of income for rural and urban areas separately has been started.
- Preparation of the estimates of district domestic net output of the commodity producing sectors.
- Preparation and publication of CDB, District and Divisional SP.
- Preparation of the State Economic Review on annual basis.
- To function as a clearing house of important statistics being collected and maintained by different departments before their publication.
- To supply statistical data and information to CSO, Government Departments, Semi-Government Organizations, NGOs and other agencies.

The services delivered and the growth in number of services added by the e-Governance project “SPIDER” to the users are as below:

1. SP formats for Districts/Divisions have been standardized in the last 13 years. Formats for the CDBs and Gram Panchayats are under finalization.
2. Village, CDB, district and divisional level SAD based on 3500 parameters of SP have been created from the years 1995-2007 and 2008 is in progress. About 2-3 MB data is being generated per district per year and till today about 3 GB data is available. Over the period, parameters have been revised as per the need of GoUP and advice of CSO. Currently, CDB and village panchayat-SP software are under implementation. Its implementation will strengthen the grassroots databases and the planning process.
3. Data compilation, validation, entry and updation etc. are being done at the grassroots level and there is no need of these operations at the higher levels.
4. Consistent, accurate, current and up-to-date information dissemination through the Bilingual Unicode compliant SP Portal on 24×7 basis.
5. Planning process has been strengthened by making available current and up-to-date information to planners, policy makers, administrators, government departments, international agencies, NGOs, etc.

6. Integration and interoperability at different levels of the information have become possible with this system.
7. Based on SP databases map based comparative status of districts and/or CDBs in different years for the last 13 years are possible as well as time series analysis can be done.
8. Based on SP databases, 4 types of queries (village, CDB, district and state level) are possible. First 3 queries can be done only on Infrastructural Facilities Databases available in the villages on 41 parameters for the last 13 years, while state level query can be done on the whole SP databases.
9. Almost all the departments at the CDB, district, and divisional, state and national levels have computers and are either already networked or being networked through the NICNET, SWAN, Private Networks etc. In this scenario, a mechanism can be evolved for online data entry/ updation and horizontal as well as vertical sharing of information.
10. State Planning Atlas has been prepared for the years 2003, 04, 05, 06 using GIS tools and the Atlas for the year 2007 is under preparation. Districts have been classified as backward and forward on a composite index based on following indicators:

a. Agriculture

- Gross value of agricultural produce per ha. of gross area sown (Rs.) at current prices
- Per capita (rural) gross value of agricultural produce (Rs.) at current prices
- Percentage of area under commercial crops to gross sown area
- Percentage of gross irrigated area to gross sown area
- Distribution of fertilizers per ha. of gross sown area
- Per capita production of food grains (kgs)
- No. of pump sets per thousand hectare of gross sown area
- Percentage of area irrigated by tube wells to net irrigated area
- Per capita milk production (kgs)
- Cropping intensity

b. Industrial Infrastructure

- Percentage of domestic industrial workers to total workers, 2001
- No. of workers engaged in registered factories, per lakh population
- Percentage of industrial sector to state domestic product at current prices
- Gross value of industrial produce per capita (Rs.)
- Invested capital per industrial workers (Rs.)
- No. of working factories, per lakh population
- Percentage of consumption of electricity in industry to total consumption

c. Economic Infrastructure

- Length of total pucca roads, per lakh population (km)
- Length of total pucca roads, per thousand sq.k.m of area (km...)
- Per capita consumption of electricity (kwh)
- Percentage of electrified villages to total inhabited villages
- No. of telephone connections per lakh population
- No. of post offices, per lakh population
- No. of scheduled commercial bank per lakh population
- No. of registered motor vehicles, per lakh population
- Per capita net product from commodity producing sectors at current prices.

d. Social Infrastructure

- Literacy rate (total)
- Percentage of enrolled boys in primary schools
- Percentage of enrolled girls in primary schools
- Percentage of enrolled boys in upper primary schools
- Percentage of enrolled girls in upper primary schools

- No. of polytechnics per lakh population
 - No. of ITI's per lakh population
 - No. of allopathic hospitals/dispensaries, per lakh population
 - No. of beds in allopathic hospitals/dispensaries, per lakh population
10. Lucknow District Planning Atlas for 2006 has been prepared on a pilot basis for the first time using GIS tools. Backward and forward, CDBs have been identified on composite index, based on 22 indicators. The same is being replicated in all the 71 districts.
 11. Integrating the databases from all the States/UTs, a NLD can be created as envisaged by NSC.
 12. By integrating spatial and non-spatial, SP databases and adopting GIS tools, decentralised planning process can be accelerated.
 13. There is a plan to develop a state GIS portal consisting of village panchayat, CDB, district and state level maps.
 14. A DW based on SP databases is under development for which the Planning Department has released Rs.12 lacs to NIC.
 15. Development of computerised decision support systems.

4. Geographical Spread of Project Implementation

A decentralized statistical system exists in India. Data flows from grassroots level (village/village panchayat) to CDB level and *tehsil* level and from there to district and state/national levels and vice versa. The geographical spread of the state is available in the following table.

Sr. No.	Year/Item	Division (No.)	District (No.)	Tehsil (No.)	CDB (No.)	Gram Panchayat (No.)	Inhabited Village (2001) (No.)	City/City Group (2001) (No.)
0	1	2	3	4	5	6	8	9
1	2001	17	70	300	809	52029	97942	689
2	2002	17	70	300	813	52029	97942	689
3	2003	17	70	300	813	52028	97942	689
4	2004	17	70	300	813	52028	97942	689
5	2005	17	70	300	820	52027	97942	689
6	2006	17	70	306	820	52002	97942	689
7	2007	17	70	312	820	52000	97942	689
8	2008	18	71			52000	97942	689

The SPIDER system is working on a web-enabled decentralised model. Currently the data entry/updation and report generations are being done in a decentralised manner from all the 71 districts, 18 divisional offices of DES/NIC/available Internet nodes. After functioning of the SWAN and computer systems availability in 820 CDBs and availability of Internet facilities, this system will be operational from all the 820 locations of the state, which is in pipeline. Later on when the Internet facilities will be easily available in the village panchayats, this system can be operationalized from the 52000 locations. Applying tools like, PDA for survey and local digitization work, this system can be further improved. There is a dialogue among NIC, Planning Department, GoUP and Ministry of Statistics & Programme Implementation (MoS & PI), GoI, that the SPIDER system can be implemented in all the states/UTs. If materialised, it can be replicated in about all the 600 districts of India.

5. Project Timelines and Milestones

After the successful “Computerization of Census”, 1991 by NIC and studying the DISNIC-DISPLAN of PC, GoI, NIC-UP started discussions about the “Computerization of SP (CoSP)” with the Planning Department, GoUP in the year 1993. With the approval of the Sub-Committee of NIC State Co-ordination Committee and DG (NIC), CoSP was initiated in collaboration with Planning Department, keeping in view reducing the time lag, increasing the consistency, accuracy, standardization of formats, creation of SAD and easy access to the citizens. A system study on prevailing SP (village, CDB, district, division and state), about the volume of the data consisting about 3500 parameters and the data flow from grassroots to state/national levels and vice versa was done. System Study Report was prepared within 3 months. It was noticed that the data are captured from various censuses (Population census, Agriculture census, Live Stock census, Economics census etc.), surveys and as a by-product of government departments. Based on these information, a Village Proforma, containing information of a village are annually maintained in the corresponding CDB since the year 1973, CDB and district level information are maintained in an annual publication i.e., Zila-SP from the year 1976, district and division level information are maintained in another publication i.e., Divisional-SP from the year 1981. By integrating these information from all the districts, State Statistical Abstract, Statistical Diary, UP are annually published by DES.

It became clear from the study that there was a lot of data redundancy, duplicacy and repetition over the period. For example, most of the censuses are done in an interval of either 5 or 10 years. In manual system all the data were typed every year, which increases errors, workload and reduces the accuracy of information. A software using, Foxbase+ and XENIX platform was developed and tested on Moradabad district/division. After testing the software, a one day state level workshop of NIC and DES personnel from all the districts and divisions, was organized and the software along with manual was distributed for its implementation at the computers available in the NIC district centers (DIC) from 1994. This software was used for preparing SP 1994-1997. Subsequently software was converted in Visual FoxPro & Windows environment. Manuals (operation, system & user) were prepared and distributed along with the software. Seeing the success of the project, PC provided hardware to State Planning Department, treating it as a special case in 1999. These systems were networked with the NICNET. 1998-2003 SPs were prepared. SP databases for 1995-2003 were collected at NIC-UP from all the districts, checked thoroughly and converted into SQL Server. Web-enabled software for access of SP databases was developed using Active Server Page (ASP) technology and SQL server at the back-end. The core objective of this application was to make available the information dynamically to citizens on 24x7 basis from anywhere. A map based SP giving comparative status of districts/CDBs in different years on the various parameters has been incorporated. Another query system on infrastructural facilities available on 41 parameters in the villages has also been incorporated. A module of data entry/updation was added in the web-enabled software, by which the data entry/updation can be done directly on a centralized server located at the data center of NIC-UP from districts/divisions in a decentralized manner. This application has been used for preparing SP-2004 and afterwards. Formats have been standardized in the last 13 years. About 2-3 MB data is being generated per district per year and till today about 3 GB data is available.

Over the periods, parameters have been revised as per the need of GoUP and advice of CSO. As per the recommendation of NSC for strengthening SAD, Block-SP and Gram Panchayat-SP module have been added during the year 2007-08 and are under implementation. State Planning Atlas has been prepared for the years 2003, 04, 05, 06 using GIS tools and the Atlas 2007 is under preparation. Lucknow District Planning Atlas for the year 2006 has been prepared on a pilot basis at the first time, using GIS tools. The same is being

replicated in all the 71 districts. Backward and forward, districts/CDBs have been identified based for a composite index. A Data Warehouse based on SP databases is under development for which the Planning Department has released Rs.12 lakhs to NIC. A GIS project of Rs.5 crore has also been sanctioned for creating GIS infrastructure under the Planning setup in all the districts of UP during the year 2007-08.

6. Direct Cost and Time Savings to Avail Services

The SPIDER System has been developed by NIC free of cost. The users have nothing to pay for availing selected services in the existing system because all the information related to SP are available on the portal, free of cost. For getting the information in manual system from different districts a person has to either contact different district's authorities or he has to move to different locations for collecting the desired information. No integrated system existed in the manual system from where the information of all the divisions/districts/blocks/villages can be collected from one place. Hence, the user has to spend money and time for getting desired information either in transportation or in correspondence or some other media.

If Internet facility is available with the user then in the present system time taken in availing services through SPIDER System is almost nil in comparison to the manual system. In manual system, the information available to user was about 5 years old while in the present system user gets up-to-date information very quickly.

7. Direct Cost and Time Savings to Deliver Services

GoUP is saving about Rs. one crore per year by implementing SPIDER System. The savings are due to:

- Reduction in paper cost
- Reduction in manpower for the same work
- Reduction in replication/duplication work
- No expenditure on stencil cutting
- Reduction in number of publications in districts/divisions
- Reduction of data entry/typing work
- Reduction in tabulation cost
- Reduction in travelling cost

- Reduction in meeting cost by using Video Conferencing facility of NIC, etc. GoUP is spending money only for procuring hardware, limited software and for maintenance.

If Internet facility is available with the user then in the present system, time taken in delivering services through SPIDER System is almost nil in comparison to the manual system. In the manual system the information provided to the user was about 5 years old while in the present system up-to-date information is provided very quickly.

8. Replication

This system can be replicated in all the States/UTs of the country. It is under the process of ISO Certification with the help of STQC, Ministry of Communications & Information Technology (MoC&IT), GoI.

9. Implementation Model

SPIDER System is based on government-owned model.

10. Technologies

The SPIDER System is already implemented in all the districts/divisions of UP since the last 13 years. The software has already undergone 3 major technological changes in terms of platforms. It is also Unicode compliant to support the Indian languages. The SPIDER-1.0 was developed in Foxbase+ and XENIX platforms during 1993-94. The SPIDER-2.0 was developed in Visual FoxPro and Windows platforms during 1997-98. This application utilizes the object and event models of Visual FoxPro. The SPIDER-3.0 was developed using Web technologies ASP at the front-end and SQL Server at the back-end during 2000-01. The objective of this application was to make available the SP information dynamically to citizens on 24×7 basis from anywhere. The SPIDER-4.0, integrated application using Web technologies ASP at the front-end and SQL Server at the back-end during 2003-04. The core objective of this application was to facilitate data entry/updation directly on centralized server located at the data center of NIC-UP from districts/divisions in a decentralized manner. In this system data and business logic were kept separately on different servers to avoid malicious attacks. The hardware and software interfaces are as below:

Hardware Interface Server

- Pentium IV and above
- Windows XP/2000/2003 Server

- IIS Web Server
- Front Page Explorer
- SQL Server 7/SQL Server 2000/2005
- Norton Anrti-virus for virus protection

SPIDER website software clients –

- Pentium IV and above
- Windows XP/Windows 2000
- Internet Connection
- System Screen Resolution – 800 x 600 pixels

Software Interface Server

No.	Name	Menmonic	Version	Source
1.	Operating System	Windows	XP/2000/ 2003	MicroSoft
2.	Database Management System	SQL Server	2000/2005	Microsoft
3.	Bilingual Support for Hindi	Unicode		Unicode Consortium
4.	Development Package	Frontpage	2003	MicroSoft
The SPIDER System runs on a Web based multi user environment. The client will be connected with the server via WAN. It utilizes TCP/IP protocol for communication among the clients and the server.				

11. Capacity Building

A decentralized statistical system exists in India. Data flows from grassroots level (village/village panchayat) to CDB level and *tehsil* level and from there to district and state/national levels and vice versa. The geographical spread of the state is available in the following table:

Sr. No.	Year/ Item	Division (No.)	District (No.)	Tehsil (No.)	CDB (No.)	Gram Panchayat (No.)	Inhabited Village (2001) (No.)	City/City Group (2001) (No.)
1	2	3	4	5	6	7	8	9
1	2001	17	70	300	809	52029	97942	689
2	2002	17	70	300	813	52029	97942	689
3	2003	17	70	300	813	52028	97942	689
4	2004	17	70	300	813	52028	97942	689
5	2005	17	70	300	820	52027	97942	689
6	2006	17	70	306	820	52002	97942	689
7	2007	17	70	312	820	52000	97942	689
8	2008	18	71			52000	97942	689

A state level co-ordination committee consisting Director, DES, Senior Technical Director, NIC-UP and Officers involved in this project from both the organizations has been formed. At the districts/divisional level a committee consisting of Divisional Deputy Director (DDD)/District Economics & Statistics Officer (DESTO) of DES and District Informatics Officer of NIC has been formed to co-ordinate as well as for smooth implementation of the project. A one day state level workshop of NIC and DES personnel from all the districts and divisions was organized in the year 1994 and the software along with manual was distributed. One week training of district/divisional officers as well as of staff were conducted from time to time as and when required. DIOs trained the district/divisional level personnel of DES for data entry/updation, report generation, data transmission etc., from time to time as and when required. Most of the activities are being handled utilizing NICNET facilities. Currently, meetings/instructions/project monitoring etc., are jointly conducted by DES & NIC through Video Conferencing as and when needed. After adopting the new system the manpower posted in the districts/divisions/directorate of DES has been redeployed as per need and requirement. A dedicated NIC & DES team at the state level is continuously working on this project and monitoring, doing necessary changes in the system and solving the problems as and when arises. In the manual system, SP at the districts/divisional levels was prepared and the necessary data were sent to divisional offices and directorate either through the post or through messengers. In the new system, the data at the districts are directly fed/updated, district level reports are generated there and divisional offices as well as the directorate are utilizing the data available on the portal. In this way the accuracy in the data has been increased, time lag has been decreased and to build a standard database has been enforced.

12. Process Reforms

In the manual system, SP in the districts was prepared and the necessary data sent to divisional offices and directorate either through the posts or through the messengers. The SPIDER System has already undergone 3 major technological changes in terms of platforms. It is also Unicode compliant to help support the Indian languages. The SPIDER-1.0 was developed in Foxbase+ and XENIX platforms during the year 1993-94. The data entry, updation and report generation were done on NIC system by the district staff of DES under the supervision of DIC. Consolidated district level data was sent to divisional

DIC either through NICNET or in floppies/cartridges and divisional DES staff was preparing Divisional-SP consolidating the data from all the districts falling in that particular division with the help of DIC. The SPIDER-2.0 was developed in Visual FoxPro and Windows platforms during the year 1997-98. This application utilizes the object and event models of Visual FoxPro. The data entry, updation and report generation were done on the system installed in the DESTO office by the district staff of DES under the supervision of DIC. Consolidated district level data was sent to divisional DDD/DIO either through NICNET or in floppies/cartridges and divisional DES staff was preparing Divisional-SP consolidating the data from all the districts falling in that particular division with the help of DIC. The SPIDER-3.0 was developed using Web technologies ASP at the front-end and SQL Server at the back-end during the year 2000-01. The objective of this application was to make available the SP information dynamically to citizens on 24×7 bases from anywhere. The data from all the districts/divisional levels for the years 1995-2003 was collected at NIC-UP and was converted into SQL Server and was made available to citizens through the SPIDER3.0 system. The SPIDER 4.0, integrated application using Web technologies ASP at the front-end and SQL Server at the back-end during the year 2003-04. The core objective of this application was to facilitate data entry/updation directly on a centralized data server located at the data center of NIC-UP from all the districts/divisional levels in a decentralized manner. In this system data and business logic were kept separately on different servers to avoid malicious attacks. As per the recommendations of NSC, and Expert Committee (EC) chaired by Prof. Abhijit Sen, Member, PC, 2006 for strengthening SAD, Block-SP and Gram Panchayat-SP software modules have been added during the year 2007-08. Currently, data entry/updation and report generation are being carried out in the district offices and it will be shifted to CDB as and when internet facilities will be available in the blocks.

13. Project Financials/Sustainability

PC provided hardware to State Planning Department for its district/divisional and headquarter offices in the year 1999, as a special case, which were networked with NICNET. The department itself has upgraded its hardware and system software as and when need arises. The annual recurring expenditure is borne by the department. In the manual system, SP at the districts were prepared and the necessary data were sent to divisional and directorate offices either through the posts or through the messengers. For computerizing SP, SPIDER system

was developed in the year 1994 at the first time and it has undergone 3 major technological changes in terms of platforms. It is Unicode compliant for support of the Indian languages. A web-enabled SPIDER system was developed using web technologies ASP at the front-end and SQL Server at the back-end, which facilitated data entry/updation and report generation directly through centralized server located at the data center of NIC-UP from districts/divisional levels in a decentralized manner. In this system data and business logic have been kept separately on different servers to avoid malicious attacks. The DES is saving about Rs. one crore annually by implementing this system through reduction in paper, tabulation, traveling and meeting costs, reduction in manpower for the same work, reduction in replication/duplication work, no expenditure on stencil cutting, reduction in number of publications in districts/divisions and reduction of data entry/typing work. The meetings and feedbacks are being taken regularly using Video Conferencing facility of NIC. The DES can charge money from the users making a Data Dissemination Policy similar to the many central government departments.

14. Project Teams and Leadership

A state level co-ordination committee consisting of

- Director, DES
- Senior Technical Director, NIC-UP and
- Officers involved in this project from both the organizations have been formed.

At the districts/divisional level a committee consisting of

- Divisional Deputy Director (DDD)/District Economics & Statistics Officer (DESTO) of DES and
- District Informatics Officer of NIC has been formed to co-ordinate for smooth implementation of the project.

This project is getting full support from the top leadership of both the organizations as per needs and requirements.

15. Key Project Outcomes

- System has undergone 3 major technological changes in terms of platforms.
- Formats are standardized and uniformity has been maintained over the periods.

- Census standard code directory has been used which absorbs the horizontal & vertical location changes from time to time.
- Sustainability, integration and interoperability of the databases.
- Data compilation, validation, entry and updation etc., are being done at the grassroots level.
- Consistent, accurate, current and up-to-date information dissemination through the Bilingual Unicode compliant portal on 24×7 basis from anywhere to the citizens.
- Addition of CDB and village panchayat SP Software is under implementation. This will strengthen the grassroots level data bases.
- Planning process has been strengthened by making available current and up-to-date information to planners, policy makers, administrators, government departments, international agencies, NGOs, etc.
- Planning process has become transparent.
- Map based SP databases comparative analysis enhances and improves the planning process.
- In spite of horizontal and vertical changes in the manpower, system remains unaffected. This system is working fine since last 13 years.
- Based on SP databases, 4 types of queries (village, CDB, district & state level) are possible. First 3 queries can be done only on Infrastructural Facilities Databases available in the villages on 41 parameters for the last 13 years, while State level query can be done on the whole SP databases.
- Almost all the departments at the CDB, district, and divisional, state and national levels are having computers and are either already networked or being networked through the NICNET, SWAN, Private Networks etc. In this scenario a mechanism can be evolved for “Online data entry/updation” and horizontal as well as vertical sharing of information is possible.
- State Planning Atlas has been prepared for the years 2003, 04, 05, 06 using GIS tools and the Atlas for the year 2007 is under preparation. Districts have been classified as backward and forward based on a composite index.
- Lucknow District Planning Atlas for the year 2006 has been prepared on a pilot basis for the first time using GIS tools. Backward and forward,

CDBs have been identified based on a composite index. The same is being replicated in all the 71 districts.

- All stakeholders are satisfied.
- Users are obtaining hassle-free information and are satisfied.
- This ICT application has empowered the society as a whole.

16. Service Users' Feedback Mechanism

Feedbacks from the users are continuously being received either through e-mails or letters or telephones or through direct contacts. Feedbacks are also being received through the meetings. Care is being taken continuously based on feedbacks.

17. Implementation Challenges

- Data captured from censuses (Population, Agriculture, Live-stock, Economic Census etc.), surveys and as a by-product of government departments, which have different formats.
- SP was analyzed and it was found that the total data available in the state was approximately 9.30 lakhs, out of which 3.20 lakhs obtained by calculation, 1.35 lakhs needed entry & checking only once (related to censuses) while 4.75 lakhs to be entered every year.
- Districts were using different formats like some were presenting *tehsil*-wise and others block-wise data.
- There were variations in years like calendar/financial.
- Inter and intra districts variations were also present.
- Variations were found in presenting data of different years in *tehsils* and districts.
- Inconsistency in data was found in presentation at village/CDB/district/division levels.
- SPIDER was modified from time to time to accommodate the technological changes as well as changes in tables, parameters and formats.
- In the beginning, there was a fear among the staff regarding computerization. The mindset was not computer-friendly.

- There was little ICT awareness to the user when project was started, hence, a number of training programmes, needed to be organized.
- There was a resistance among the field staff to adopt the new system.
- There was inconsistency in the data available at the grassroots level and at higher levels.

18. Key Lessons Learnt

- Winning the confidence of the user department.
- To create ICT awareness among the manpower involved in the project.
- Conducting various types of training as per requirement and knowledge of the personnel.
- Refresher courses must be organized from time to time on the basis of feedback based on which the system can be improved.
- Technological changes must be incorporated in the system as and when required.
- Proper co-ordination among ICT and user organization must be maintained for the success of the project.
- Web-enabled system is more democratic and absorbs the decentralized functioning of the government.
- Decision-making becomes faster and accurate after applying the technologies. For example, through atlas, backward and forward, districts, blocks, village panchayats and even villages can be identified, which a lay man can also understand.
- After completion of the DW project through mining techniques socio-economic and educational pattern can be obtained which will be very useful in formulating plans.
- Through ICT application consistency & accuracy in the data can be improved.

Project Contact Details

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Electronic Citizen Services – ECS

S N Jha and Narayanan Krishnamurthy

1. Goals and Objectives

The major goal of the Electronic Citizen Services (ECS) system is to transform the image of the District Administration of South Andaman District. The District Administration is commonly referred as “DC Office” and is headed by the Deputy Commissioner. This district is the most populous one in the UT and has a direct interface to the citizens residing in and near Port Blair. The ECS system has been conceived to provide friendly and transparent Governance to the citizens. The system uses ICT tools and technologies with state-of-the-art techniques to reach out to the citizens. The ECS system is targeted at services delivery at district and *tehsil* level, with interlinking of the two geographical entities through ICT based solutions. The primary objectives of the ECS system are indicated below:

- Process reengineering for improved service delivery
- Citizen as focus – rather than office
- Transparency in operations at every level
- Friendly interface to citizens through multiple means including Kiosk, IVRS, website etc.
- Timely and easier delivery of services to citizens with pre-defined service delivery levels
- Better monitoring through automatic alert and escalation systems at each level and officer
- Provide for an integrated delivery model with common database, structure and codes

- Provide for analysis of services actually delivered based on categorization, time lines, time and desk delays, peak and mean times, percentage of rejection of services etc.

2. Spread of Project Service Users

The ECS system is primarily focused on providing services delivery to the citizens of the South Andaman District. The ECS system is implemented at district and *tehsil* Levels in integrated environment. The citizens broadly comprise:

- Urban community residing in Port Blair
- Rural community residing near Port Blair

The other major users of the ECS system are the following:

- The other offices of the Andaman Administration (Government) like, Public Works Department through which certain applications for service are received by the DC office and services are delivered
- The District office of Nicobar district which utilizes the database of ECS from South Andaman District and provides additional services
- NGOs visiting the Tribal areas in Tsunami affected locations for Relief and Rehabilitation works avail the services of ECS in bulk manner
- Business persons who avail services like Permits, licenses etc., periodically from DC office.

3. Services Provided

The DC office provides services based on two broad categories:

- Services requested by citizens for their day-to-day activities, business, land and various permits and licenses. These services are categorized and classified by their nature.
- Services requested by citizens in general terms, public grievances, files received from other offices (Central Government/State Government/PSUs etc. These are generally referred to as routine “File Activities”. The DC office provides around 49 types of services to the citizens.

The services are provided at two levels:

- District level, and
- *Tehsil* level.

The primary users of all these services are the citizens residing in and nearby Port Blair. Other departments like PWD, DC office, Nicobar are also users of the software. NGOs also get serviced through the ECS system. Around 33,000 applications have been serviced through the ECS system from January 2007 till August 2008. Out of these about 26,000 services were delivered at the DC office and around 7,000 at the *tehsil* offices. In the ECS system, all the 49 services for citizens were identified under the overall scope of the project. Out of these, 26 services are offered at the DC (SA) Office and remaining 23 at the *tehsil* offices under the district. For some services, there is movement of information between the district and *tehsil* and this is also covered under the ECS system. However, they carry the same service number for uniqueness and continuity of the service. The 26 services offered at the District Office have been computerized with the ECS system, as follows. Many of the services have the sub service of (a) New service (b) Renewal of service and (c) Cancellation of service.

Services at DC Office	
S.No	Service
1.	Tribal Pass
2.	Arms License
3.	Auto Rickshaw Permit
4.	Tourist Permit
5.	Contract Carriage
6.	Stage Carriage
7.	Registration of Societies
8.	Registration of Companies
9.	Public Carrier Permit (Truck)
10.	Registration of CST
11.	Registration of Inland Vessels
12.	Registration of Firms
13.	Permit for Insecticides
14.	Permit for Storing Diesel and Petrol
15.	Permit for Crackers
16.	Bar License
17.	Registration of Marriage
18.	Money Lending
19.	Quarry Permits
Contd...	

Contd...	
20.	Petitioner Writer License
21.	Prohibition of Cow Slaughter Act
22.	NOC for Auto Rickshaw
23.	NOC for Four Wheeler
24.	Exemption of Set Back Permission
25.	Sale/Gift/Mortgage Permission of Land
26.	Registration of Land

The 23 services offered at the *tehsil* office has been computerized with the ECS system, as follows:

Services at <i>Tehsil</i> Offices	
S.No	Service
1.	OBC Certificate
2.	Islanders Identity Card
3.	Senior Citizen Certificate
4.	Land Valuation
5.	No-Dues Certificate
6.	Non Encumbrance Certificate
7.	Income Certificate
8.	Family Member certificate
9.	Dependent Certificate
10.	Vehicle Parking
11.	Unemployment Certificate
12.	Solvency Certificate
13.	Resident Certificate
14.	NOC for electricity/water connection (Encroachers/Land Owners)
15.	Local Certificate
16.	Sub Division of Land
17.	Diversion of land
18.	Allotment of Land for Departments
19.	Mutation of land
20.	Surrender of Land
21.	Disposition of land
22.	Demarcation of land
23.	Issue of Record Entry Maps

In addition, around 50,000 transactions relating to public grievances, information required by citizens, files received at the DC office have been tracked and monitored using the file monitoring system, which is another component of ECS, from March 2007 till August 2008.

4. Geographical Spread of Project Implementation

The UT of Andaman and Nicobar has three (3) districts and Nine (9) *tehsils*. At the vertical implementation level, the ECS system is implemented at the districts and *tehsil* levels. The ECS is live in the two districts of –

- South Andaman, and
- Nicobar.

The remaining district of North and Middle Andaman will be covered in the current financial year 2008-09. Presently, the ECS is implemented at the two pilot *tehsils* in South Andaman District. Implementation at the remaining *tehsils* will be taken up in future in a phased manner. At the horizontal level, the ECS is implemented at the following offices in Port Blair, with data sharing and interchange:

- Office of DC, Port Blair: Majority of the services are implemented at this office.
- Office of Public Works Department: Services relating to tribal pass are received, captured in database and transferred to DC office, where it is merged with the other applications as part of the flow.
- Office of transport department.

Seven (7) of the services listed above were initially with DC office and were implemented there. In December 2007, these services were transferred by the Andaman Government from DC office to the transport department. These relate mainly to permits for state carriage, public carrier, NOC for four wheelers etc., As such, the ECS software has been implemented at the transport office, Port Blair for these services.

5. Project Timelines and Milestones

An initial analysis was done to arrive at the project timelines for the architecture, design, development, implementation at pilot location and roll out. As the number of services proposed to be covered was 49, it was thought prudent to

identify some important services in the first phase and design, develop and implement the ECS system for them. However, the design and architecture was kept in mind to cover the overall scope of the ECS project, the goals and objectives, the process reengineering and cover all the remaining services without changing the basic features of ECS. The model was built on the concept of “Think Big – Start Small – Scale Rapidly”. The services identified during the first phase were based on following factors:

- Maximum utilization
- Minimum ambiguity in workflow, requirements
- Clear cut service delivery levels and timelines
- Maximum benefit to citizens
- Less chances of wrong delivery of services at initial stage.

Based on these, the following prominent services offered at DC office were taken up in the first phase of ECS system:

- Tribal Pass
- Tourists vehicle permit
- Stage carriage, auto rickshaw, public carrier permit
- Arms license
- No objection certificate for four wheelers, auto rickshaw.

6. Direct Cost and Time Savings to Avail Services

The ECS project does not impose any additional charges for availing the services offered, over and above what was charged in the manual system prior to ECS. The same charges were retained under ECS system also. As such, there is no additional cost to be incurred by the users (citizens) for availing the services under ECS.

The citizens are the primary users of the ECS project. The citizens are now able to get their services delivered in the quickest time possible. Every service (along with the sub-service) has a pre defined period by which time the service has to be delivered to the citizen. Any delays beyond the prescribed time limits are automatically escalated to the superior officers as part of ECS software, through automated alert and escalation systems. The citizen has to approach

the DC office normally two times only for a service requested by him, first for applying for the service in person (when his photograph is taken for some services) and secondly, for obtaining the final output of the service which is generally in the form of a signed order of the DC office. The citizen on submitting the application can track the status of his application through IVRS OR website OR Kiosk (which is also accessible through website) so that he need not visit the DC office. This results in a drastic reduction in the number of times as well as the actual time that the citizen needs to spend in visiting the DC office periodically to find out the status of his application for a service, as compared to the manual system.

7. Direct Cost and Time Savings to Deliver Services

The ECS project is wholly owned by the government and so direct costs are incurred by the government for delivering the services. The services are offered at the actual locations of DC office and *tehsil* offices. The existing ICT infrastructure is utilized at the offices. The Internet connectivity provided by NIC at DC office is utilized to extend the services through the Web. The existing officials of DC office use the ECS software for all the activities and functionalities covered as part of ECS.

In the manual system, for most of the services offered by DC office, there were a number of steps in which papers relating to the service keep going from one table to another. ECS has brought down the number of such steps as well as the frequency of such movement of papers between any two officials. This has been done through the process reengineering approach of ECS software in the project initiation stage itself. The DC office is therefore now able to provide the delivery of service to the citizen in much shorter time through the ECS system, as compared to the earlier manual system. The DC office is able to simultaneously track the status of any application for a service through the ECS software and is able to locate such applications. This process provides for much easier and much quicker method for proceeding with the work flow of the service delivery system as compared to the earlier manual system, when locating a application was a hugely difficult task for the DC office and the frequent action of the DC office used to be to ask the applicant to submit the application again. Also, the ECS project through the dissemination systems of Kiosk, IVRS, website etc., provides the citizens with useful information regarding the various services provided, the list of documents required to be enclosed

along with the application etc., in a friendly and transparent manner. This has reduced the cases where incomplete applications are submitted by the citizens which had led to further time delays in the manual system.

8. Replication

The ECS project has broadly two components:

- ECS at District level and
- ECS at *Tehsil* levels.

The ECS for Districts has been implemented at two out of the three districts in the Andaman UT till date. Efforts are on to extend the implementation to the third district within the financial year 2008-09. The ECS for *tehsil* has been implemented at 2 out of the 9 *tehsil* offices through out the UT. Efforts are on to extend the implementation to three more *tehsils* in the current financial year 2008-09.

9. Implementation Model

The ECS project is entirely government-owned. The project has been conceived, designed, developed, built, operated, maintained and implemented by the Government of Andaman and NIC in coordination.

10. Technologies

The ECS software has been designed, developed and implemented completely in:

- Web environment using Microsoft technologies
- Completely Web-based architecture, Services delivery systems
- Windows 2000 Server, O.S. ASP.net 1.0 for application development
- Crystal Reports 7.0 for GUI reports, SQL Server 2003 for RDBMS
- Capacitate type for Touch screen
- Kiosk Intel Dia Logic card for IVRS
- Power Connect software for IVRS.

The ECS project is the first project of its kind in the entire Andaman state, where state of the art technology, tools and practices, have been used in an integrated environment as below.

- Use of biometric devices for enhanced security (hamster model)
- Services delivery through Kiosk in dynamic mode (touch screen)

- Dissemination of services status through the Internet (ASP.net)
- IVRS based dissemination of status (Dia Logic/Power Connect)
- Electronic delivery of citizen services in integrated manner
- Process reengineering at different levels and functions
- Automation of work flow processes

11. Capacity Building

The ECS project is a joint effort of the A & N Administration and NIC, Port Blair. The office of the Deputy Commissioner (South Andaman) is the prime owner of the project. The Project team was formed with members from DC office and NIC for the ECS project. The team was involved in all aspects covering conceptual design, system architecture, work flow approvals, management of the project, training, implementation and roll out. Training and handholding was (and continues to be) an essential component of the ECS project that has resulted in the success of the project. As the entire ECS project has been implemented in house without external agencies or persons, the officials of DC office have been continuously trained by NIC on the ECS software. In addition, awareness programme on computers has also been held for motivating and familiarizing them with computers. Frequent interactions and meetings have been held with NIC and DC office for resolving issues, planning way forward and identify and remove bottlenecks in implementation. The top and middle management of DC office have been exposed to the different functionalities of the ECS software, and improvements were made in the ECS system etc. Change management has been an essential component of the ECS project. Making the officials of DC office accept the changes made in their working of ECS (compared to the earlier manual system) with new challenges like expected service timelines, targets, monitoring systems built in etc., was a difficult task. There was initial resistance from the officials, which were overcome by a combination of regular training, motivation, personal intervention of DC, appreciations for services rendered etc. The officials now consider ECS as part of the system for better office productivity and are ready to accept challenges in their job profile.

12. Process Reforms

A significant amount of process reengineering was carried out from the project conceptual stage itself to transform the work nature of the DC office. It was

observed during the analysis stage of the ECS project that for many services, in the manual system, the same papers were being moved out from one official (table) to another (table) many number of times. This was cut down so that one official needs to see the papers normally only once. It was noticed that the papers for a service move from the receipt level through the various levels in the work flow to the final approval level. In this process, there were number of intermediate levels, whose action is more of 'passing the paper' rather than 'making an informed judgment'. The process reengineering was so carried out as part of the system design to bring down the unwanted levels which lead to time delay and consequential service delivery delays. It was realized that though the DC is the final authority to deliver the Final order for a service (the output), it seldom happens, due to the heavy workload of the DC. The ECS software therefore provides for final approval to be done by the authorized officers of DC, so as to cut down the time delay. The help desk counter was established at the entrance of the DC office, where people arrive. The help desk is manned by an official with bilingual capabilities (English and Hindi). The help desk provides guidance to the people to obtain the services and the facilities available as part of ECS project that can be used by them. The Kiosk system was established at the entrance of the DC office, where people arrive, so that citizens can operate the kiosk themselves and get details of services, status of their application etc., in online environment. The kiosk is a part of the LAN of DC office. No legal reforms have been made till date.

13. Project Financials/Sustainability

The entire expenditure for ECS project has been managed with the in-house resources of DC office. No separate budgeting was provided for the ECS project. The existing server computers of NIC and DC office were used. Client systems were procured for the ECS application work flow as part of regular budgeting of DC office activities for office automation. Networking was established within the DC office. Internet infrastructure was established by NIC without costing the DC office. The Kiosk system was supplied by a willing NGO at no cost to the Government. The software was completely designed, developed and implemented by NIC, Port Blair. The capital expenditure incurred by DC office was for procuring the Intel dialogic card and power connect system software for IVRS support, costing around Rs 80,000 in total. There is no separate budgeting planned for recurring expenditure for ECS project as all ICT resources are planned to be covered under general budgeting of DC office itself. The ECS

project is entirely government-owned, in all respects of building, operating and implementing. There is no revenue generation as part of ECS project as separate user charges have not been levied for availing services through ECS. The existing charges have been continued in the ECS system also.

14. Project Teams and Leadership

The project team consists of –

- The Deputy Commissioner
- Additional District Magistrate
- State Informatics Officer
- District Informatics Officer and
- Technical Assistant in Andaman.

15. Key Project Outcomes

Sustainability: The ECS project has replaced the previous manual system of services delivery by the DC Office. No extra expenditure has been incurred for maintenance of the project as all activities are carried out by the same officials in the new system. The officials are given periodic training on the different features of the package in-house. The expenses incurred by the DC office for establishing the ICT infrastructure to support and manage ECS project are mostly one time investments and had been covered under the normal budgeting of the office. No separate budgeting had been done for ECS project. As such, ECS project is sustainable with the available ICT resources, with the support of the DC office and NIC for refinements and improvements. The officials of ECS project now have a fair sense of ownership of the project, thanks to the regular training, appreciation of the top management of the DC office and the general public. So the project can be expected to continue and further improve with constant efforts. The successful implementation of ECS project has created the awareness of the citizens regarding the services provided to them by the project. Any back tracking of the ECS project in future may not be easy, though still possible, without a public back lash. However, it has to be mentioned that there is absence of government notifications and legal reforms to this effect till date to ensure the continuity of ECS, which is being followed up with the government usage – After the implementation of this project all the applications for the services offered by the DC (SA) office are processed

through this software. The following figures indicate the extent of usage of the ECS software at various levels:

- Around 26,000 applications from citizens for various services were delivered at the DC office for the period January 2007 till August 2008.
- Around 7,000 applications from citizens have been serviced at the *tehsil* offices from February 2008 till August 2008.
- Around 50,000 files (including public grievances from citizens) have been tracked, monitored and serviced through the File and Grievances Tracking system, which is a component of ECS from January 2007 till August 2008. The figures may seem minimal compared to similar projects in other parts of the country but have to be seen in the perspective of the Andaman and Nicobar islands that has the total state population of less than 3.50 lakhs only.

Usefulness: There is a definite benefit to the citizens in availing the services through the project, as the number of times the citizen has to visit the DC office has been drastically reduced in the new environment. The citizen can ascertain through the different modes regarding the status of his application and visits the DC office only when the final approved order is ready for delivery. The digital copy of the order (unsigned) is available as easy download in the website, which can be printed and produced by the citizen to obtain the signed order from the delivery counter of DC office. The citizen finds the system extremely useful to avail the services in a time-bound, transparent and friendly manner. The DC office has benefited from the implementation of the ECS system. Automatic alert and escalation systems have been built at each level and whenever a login into the ECS software is successful for a user, the list of pending applications, applications rejected, waiting for service etc., are automatically displayed. Regular meetings are held by the DC office to find out the reasons of prolonged delays in services, for which suitable remedial measures are then taken.

Satisfaction: The ECS project has led to a high level of satisfaction among the major users of the software namely the citizens who avail the services offered as part of ECS.

Empowerment: After the implementation of the ECS software, the citizens do not have to run after the officials in DC office to track status of their application. The citizen can ascertain through the different modes like IVRS,

kiosk, website – the status of his application. The ECS project has empowered the citizens with information. Some of the information like IVRS is disseminated in Bilingual form (English and Hindi).

16. Implementation Challenges

The key challenges faced during the implementation of ECS project were:

- The backwardness of Andaman and Nicobar Islands: There can be probably no place in India which is more remote, more cut off from the mainland and with the bare minimum resources but ECS has still managed to provide for services delivery through ICT which can be compared on reasonable terms with similar projects elsewhere in the country.
- The islands have poor network coverage and Internet facilities. However, this cannot dampen the taking up of e-Governance projects.
- The islands are in a remote corner of the country with around 570 islands separated by sea. Internet services are not available at many of these islands while telephone facilities are available. Considering this, the IVRS facility has been implemented in the ECS software to benefit the citizens through out the islands. This means that where internet facilities are not available in the country, alternate means have to be conceived for public dissemination keeping the ground realities in mind.
- Creating public awareness of the e-Governance projects was a major task as people are easy-going in nature and do not demand for services readily in the islands.
- The models of PPP for Projects are not easily successful in the Islands due to the non availability of organizations in Islands for ICT sector.
- IT companies are virtually non existent in the islands. This has made the ECS project to go in for a government-owned, operated and supported delivery models of services and ECS project itself.
- As the officials of DC office keep changing with transfers etc., training is a continuous process and has to be faced as such.

17. Key Lessons Learnt

Some of the key lessons learnt as part of ECS project implementation in the islands are:

- The backwardness of a state/UT, its remoteness, non accessibility cannot be the determining factors for e-Governance not coming up. There can be no place in India which is more remote, more cut off from the mainland and with the bare minimum resources but ECS has still managed to provide services delivery which can be compared on reasonable terms with similar projects elsewhere in the country.
- The islands have poor network coverage and internet facilities. However, this cannot dampen the taking up of e-Governance projects.
- The islands are in a remote corner of the country with around 570 islands separated by sea. Internet services are not available at many of these islands while telephone facilities are available. Considering this, the IVRS facility has been implemented in the ECS software to benefit the citizens throughout the islands. This means that where Internet facilities are not available in the country, alternate means have to be conceived for public dissemination, as the ECS project has adopted IVRS facilities for online dissemination.
- Creating public awareness of the e-Governance projects is one way of ensuring the success and sustainability of the project.
- Government owned, operated and supported delivery models of services can be successful if the organizations of administration, technical and support systems work with common purpose and agenda.
- The “Think Big – Start Small – Scale Rapidly” model is good for many e-Governance projects.
- Improvements in systems and processes, regular monitoring by top management and periodic trainings and a look back of what has been achieved vis a vis the objectives and goals are necessary to keep going the implementation of a project.

Project Contact Details

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Nemmadi Telecenter Project

Vipin Singh and Jayateerth Gururaj

1. Goals and Objectives

- To create efficient and smart virtual offices of the state government in all the villages.
- To enhance the accountability, transparency and responsiveness of the government to citizens needs.
- To provide government departments and agencies, a means of efficient and cost-effective method of service delivery to citizens.
- Initially provide land records and 38 other services and scale up gradually to cover all the services of the departments either through work-flow driven or database driven procedures.
- The various services would comprise of land records, income certificates, caste certificates, birth & death certificates, social securities schemes, railway tickets, all ESCOM bill payments, etc. to name a few.

2. Spread of Project Service Users

Though *Nemmadi* project is essentially a citizen-centric project, the spin-off advantages from the project are many. The *Nemmadi* project aims to deliver citizen-centric services like issue of caste certificates, birth and death certificates to the rural citizen at the doorstep of the rural citizen. Under the *Nemmadi* program, the state government has deployed an infrastructure at *taluka* level, state level and a network of village telecenters that facilitates such a service delivery to the citizens.

- Decentralization of delivery of government services from the *taluka* offices to the village telecenters thereby helping rural masses to get services at their doorsteps.
- Provide a single window for request and delivery of e-Governance services to the citizens.
- Cost-effective, speedy and efficient interface between the government and citizens.
- Greater transparency, objectivity and accountability in delivery of government services.
- Empowerment of all the sections of society can be achieved through better knowledge of their rights and providing access to information.
- Capacity building, literacy and employment of rural educated youth through helping them acquire proficiency in computers.

3. Services Provided

The state government adopted a gradual approach to ensure success of the program. Initially only RTC (land records) were given from the telecenters and number of services were increased to 38. It identified two critical parameters; firstly, requirement of a robust application and secondly, a network of delivery centers for delivery of the services to the citizens. Prior to the rollout of the program in the entire state, the government piloted the program in one *taluka* for a period of one year. During this pilot, both the software and service delivery parameters were refined and the pilot expanded to 11 *talukas* in Mandya, Davanagere, Dharwad and Bangalore urban districts. The learnings from the pilot were incorporated in the rollout of the program in the entire state. Presently the services are workflow-driven except land records which are database-driven. However, on the second and subsequent requests for the same service, the certificate is delivered across the counter from the database created incrementally. The certificate is digitally signed at the back-office, obviating the need for a government official to be present at the telecenters for signing the certificates printed at the telecenters. An effort is being made to digitize caste data and birth and death data, which once done, will help us to deliver most of the services online. The lists of services which are being offered through the telecenters are as follows.

List of RDS Services	
S.No.	Services (Individual)
1.	Birth Certificate (Registered in current year January-December)
2.	Birth Certificate (Registered in previous years)
3.	Death Certificate (Registered in Current year January-December)
4.	Death Certificate (Registered in previous years)
5.	Census Certificate
6.	OBC Certificate for GOI Jobs
7.	Caste Certificate for Category-A
8.	Caste Certificate for other Categories
9.	Caste Certificate for SC/ST
10.	Residence Certificate
11.	Income Certificate
12.	No tenancy Certificate
13.	Addition of Name in Ration Card
14.	Deletion of Name in Ration Card
15.	Widow Certificates
16.	Living Certificate
17.	Agri Family Members Certificate
18.	Re-marriage Certificate
19.	Landless Certificate
20.	Surviving Family Member Certificate
21.	Income Certificate for Compassionate Appointment
22.	Endorsement for non availability of Birth/Death Certificate
23.	Unemployment Certificate
24.	No Government Job Certificate for Compassionate Appointments
25.	Agriculturist Certificate
26.	Small and Marginal Farmer Certificate
27.	Agri Labour Certificate
28.	Non-creamy layer Certificate (For education)
29.	Birth Registrations within 21 days
30.	Birth Registrations within one year
31.	Birth Registrations beyond one year
32.	Death Registrations within 21 days
Contd...	

<i>Contd...</i>	
33.	Death Registrations within one year
34.	Death Registrations beyond one year
35.	Old Age Pension
36.	Widow Pensions
37.	Physically handicapped
38.	BESCOM Bill Payments
39.	Telephone Bill Payments
40.	IRCTC Booking

4. Geographical Spread of Project Implementation

Karnataka's geographical (revenue) set up is as follows: The state has 27 districts and 177 *talukas*, 749 Hoblis. The *Nemmadi* telecenters have been established in each of 749 Hobli Head quarters. This apart, some of the Hoblis have been provided with additional telecenters to cater to citizens needs. There will be a maximum of 800 such telecenters across rural Karnataka. Apart from these telecenters, each *taluka* office has a back-office which enables delivery of e-Governance services which are work flow-driven. So a citizen who had to visit a *taluka* office to avail such services which are being offered in *Nemmadi*, by traveling on an average 30 km, will visit nearby Hobli telecenter to get same services which are just 5 km away. The citizen would get all the 38 services which were given earlier in *taluka* offices, right from telecenters. The citizen would also get other B2C services as well.

5. Project Timelines and Milestones

The e-Governance department (the Government of Karnataka) adopted a step by step approach to ensure delivery of 38 different services of the program as per the objectives. The other challenge is to ensure that there is no negative publicity due to initial technological problems. The project team identified important factors such as requirement of a robust application and a network of delivery centers for delivery of the services to the citizens. The application incorporated the following parameters:

- a. Adopting the process of delivery of services at the government offices, thus a work flow process has been adopted in the *Nemmadi* software which merges both paper and electronic work flow.

- b. It was understood that robust “always on” connectivity would not be available hence local queuing, store and forward technology using MSMQ and MSDE was adopted in the village telecenter. Prior to roll out of the program in the entire State, the government piloted the program in one *taluka* for a period of one year. During this pilot, both the software and service delivery parameters were refined and the pilot expanded to 11 *talukas* of Mandya, Davanagere, and Dharwad and Bangalore urban districts. The learnings from the pilot were incorporated in the rollout of the program in the entire state. Apart from physical inspection by the project team, the other feedback mechanism is its MIS reports. The online MIS reports give telecenter-wise day-to-day transaction in detail as well as monitor the uptime and attendance of the operators. Since an application has to go through six stages before a certificate is generated, pendency reports can be generated at each level. This report can be accessed by all the stakeholders such as telecenters, back-offices, district as well as *taluka* administration etc., and corrective action is taken immediately. All the certificates were signed digitally as per IT Rules 2000 and for which physical signature is not required. Karnataka IT Rules have been framed for providing a legal framework.

6. Direct Cost and Time Savings to Avail Services

A citizen who had to spend a whole day and a minimum of Rs.150/- to get services by way of travel cost and other miscellaneous expenditure, will have to pay just Rs.15/- as service fee to the telecenter operator to avail same services which were issued manually earlier. Since all the services are finally delivered from the telecenter itself, a citizen need not travel to *taluka* office at all. And hence the citizens are stopped from getting harassed by middlemen and other persons at *taluka* office.

In manual system, though all the services were provided free of cost to the citizens, they were supposed to come to *taluka* office or district headquarters for services thereby spending at least 2 hours in traveling to and fro from his village. As the delivery of these services were person dependent, the time a citizen spends in *taluka* or district headquarters is nothing less than 3 hours, before he gets the required service. In other terms, a farmer/citizen had to spend an entire day for government services. But now 769 telecenters have been established at the Hobli head quarters. A citizen will not travel more than 5-10 Km

to avail services. Since these telecenters are located outside government offices, a citizen is not at the mercy of officials and moreover services are delivered online. Citizen will not spend more than 5 minutes at the telecenters.

7. Direct Cost and Time Savings to Deliver Services

In manual system, all the services were delivered to citizens free of cost except in case of birth and death certificates which was again very nominal. The indirect cost incurred by the government in earlier system were, field verification by concerned authorities authenticate the applicant's claims and stationery used to create office note and certificates. In the present system, entire data has been digitized and have been verified and vetted by concerned officials. Since the certificates are given online (from the database) to citizens, there is no need for verification by the officials once again thereby cost saving for the government indirectly.

Though the Village Accountants and Revenue Inspectors had different and varied responsibilities, most of their time was spent in issuing various services. This had affected the administration as they were not getting enough time to look at developmental activities. So much so, in many cases the certificates were issued even without any field verification of the data by the concerned officials. In *Nemmadi* Project, objective is to give most of the services online through the database thereby reducing human intervention. Once the digitized data is verified by Village Accountants and Revenue Inspectors, they have no role to play in delivery of the certificates.

8. Replication

Nemmadi project is one of its kinds wherein services are delivered online from 769 virtual government offices (telecenters). Many such initiatives in the past have failed for the lack of support from government for such PPP projects. *Nemmadi* Project as such stands out for the successful PPP Project.

9. Implementation Model

While the *Bhoomi* program tremendously benefited the farmers there was a demand for establishing delivery centers for land records at the village level itself. The need for decentralization of *Bhoomi* catalyzed the development of the "*Nemmadi*" program of the Government of Karnataka. The objective of *Nemmadi* is that IT-enabled government services should be accessible to the common man in his village through efficient, transparent, reliable and affordable

means. In the period from May 2004 to September 2006 the *Nemmadi* model was piloted in 13 *talukas* of 4 districts of the state and services were delivered to the citizens through about 70 village telecenters. The experience of the pilot helped in understanding the various issues in scaling the program in the entire state. The state government understood that it could not establish and operate computer centers at every village and hence decided to establish these centers in the villages under a PPP model. It was also apparent that a telecenter in a village would be a single channel of delivery of various government services to the rural citizens and act as a virtual government office. In September 2006, the project was awarded to the private partner through a transparent tendering process and by April 2007 about 769 telecenters were established in the entire state.

10. Technologies

For delivery of the current set of e-Governance services comprising Bhoomi (delivery of land records) and RDS, GoK follows a mixed architecture, i.e., the service is available both at the *taluka* office (where they have been traditionally available) and a network of village telecenters. This mixed architecture also adds to the complexity of deployment. The e-Governance service delivery infrastructure comprises the following components.

- a) State data center
- b) VSAT network connecting each of the telecenters to the state data center
- c) VSAT network connecting the state data center to the *Nemmadi* back-offices in each of the 177 *talukas*
- d) *Nemmadi* telecenters
- e) Departmental servers at the *taluka* office

State Data Center (SDC): Karnataka has been one of the first states to create a state data center for both – hosting all e-Governance applications of the state and acting as a disaster recovery center. The state data center is the only means for delivery channels to connect to the departmental servers thereby, isolating them from the various kinds of security threats that can take place if these departmental servers were directly connected to the Internet.

VSAT Network – 203 distributed primary databases of *Bhoomi* in the *talukas* replicate to the state data center every day to update the centralized *bhoomi* land records database at the state data center. This is accomplished through a VSAT network and an innovative customized replication mechanism due to many to one replication schema and limited bandwidth available. Each of the telecenters has a VSAT connectivity to VSAT hub and then a leased line connectivity from the hub to the state data center. This ensures an assured connectivity to the telecenters.

Taluka Servers – The *taluka* servers are both primary repository of data and additionally data updation due to many of the work flow processes for both *Bhoomi* and RDS services takes place at the *taluka* server. While theoretically it is possible for users to connect to a central location (State Data Center) however given the poor state of data connectivity from remote *talukas* of the state at the moment this is not practical. The above architecture of *taluka* servers connected to the state data center has many advantages. Firstly, the *taluka* servers can be remotely managed from a central location making trouble shooting, application management and deployment easy. Secondly, external users can connect to the *taluka* servers only through the SDC isolating the *taluka* servers from various security risks. Additionally the SDC also functions as a disaster recovery site for the *taluka* server.

Nemmadi Telecenters – Village telecenters are the nodes for the citizen to make requests and access various e-Governance services. In most cases these village telecenters comprise one or two computers with associated peripheral devices like printers, scanners, Web cameras and they connect to the Internet through various dialup technologies. There are many challenges in the establishment of village telecenters in terms of ownership of the village telecenters, operations of these telecenters, viability and service portfolio to be delivered through these village telecenters. Over the last 5 years, across the country, there has been a range of experimentation with regards to the ownership model of telecenters and it seems clear that these village telecenters can't be owned or operated by government agencies and need to be privately owned and operated. Additionally, these village telecenters need to deploy a range of both e-Governance and e-Commerce services to be

financially viable. A corollary to this is that state governments need to increase the basket of e-Governance services and not just deploy 1 or 2 services that can be delivered from the village telecenters so that village telecenters established by private entrepreneurs are financially viable.

Taluka Back-office – A back-office at each of the *taluka* receives requests from the telecenters and processes it. The back-office ensures each request has been field-verified for correct data and generated the final certificate which is digitally signed by the *Tahsildar* through his smart card. The certificates once signed queue up electronically at the telecenter for printing and delivery to the citizen. It is shortly planned to introduce biometric authentication and principle of FIFO in back-office operations.

11. Capacity Building

Entire project is driven by Directorate of Electronic Delivery of Citizen Services as per the address mentioned below:

Director, Directorate of Electronic Delivery of Citizen Services
Room No. 110,
Gate No. 2,
1st Floor, MS Building,
Dr. Ambedkar Veedhi,
Bangalore-560 001.
e-mail: director-b1@karnataka.gov.in
Fax: 080-22259109
Phones: 080-22370281, 080-22370282, 080-22032645.

The Directorate of EDCS works under supervision of e-Governance secretariat details of team for the nominated project:

Sri. B L Sridhar Pr. Secretary, e-Governance, the Government of Karnataka.

Sri. Vipin Singh, Director, Electronic Delivery of Citizen Services, the Government of Karnataka.

Before the start of delivery of services to citizens it was made mandatory for every stakeholder to go through the training program. E-Governance Secretariat organized not only training program both at district level as well as state level, but also organized Video Conference at *taluka* level for proper implementation of the project.

12. Process Reforms

The village telecenter will adhere to the following security techniques:

- **Nemmadi Application:** Application supports offline mode operation for some of the RDS (Revenue department's services). However a limit has been placed on the number of offline transactions to minimize the impact of data loss due to machine crash.
- **Admin Access:** An Operator at village level does not have administration privileges on the machine at the telecenter. Only authorized personnel of the agency will have administrative privileges of the telecenters.
- **Deployment of 3rd Party Software:** The testing of all the new software will be done on a test set up to see that the software is compatible with *Nemmadi* application.
- **Non Pirated Software:** There will not be any pirated software and only licensed software can be used.
- **Soy ware, Ad ware, Malicious Programs:** The agency has deployed latest anti-virus, anti-spyware and firewalls in the telecenter machines.
- The agency has been given only minimal access privileges to the *Nemmadi* databases and servers at the *taluka* and SDC which will enable him to function as per the application requirement and day to day operations. The certificates delivered at telecenters will not have physical signature. This has been done by making *Nemmadi* application PKI-enabled which will enable the Operator to issue certificate at the village itself. A physical signature would require the applicant to travel to the *taluka* office for collecting the certificate. This was mitigated through the use of Digital Signature by the authorized officer. The signed hash of the electronic record is printed on the certificate as a 2D barcode. The authenticity of the document can be verified online. Besides the 2D bar code, the certificate will be printed on a watermark stationery, a certificate ID and a hologram to ensure its authenticity. Each certificate also carries 2 seal impressions and the signature of the telecenter operator in accordance with the provisions of the IT Act 2000. To ensure the technological sustainability, the following technology and application have been used in *Nemmadi* project.
 - *Nemmadi* application is multilingual rich client that has been developed using .Net Platform on Windows XP Professional Platform.

- The architecture is N-tiered, scalable, secure and is based on the concept of Service Oriented Architecture (SOA).
- *Nemmadi* application uses SQL Server 2000 Enterprises edition as back-end in *taluka* server and State Data Center.
- In the telecenters, *Nemmadi* application uses MSDE (scaled down free version of SQL Server) to store master and some configured data. Such storage helps in avoiding frequent hits to database at SDC and *taluka* server.
- *Nemmadi* application supports offline functionalities and uses MSMQ support provided by Windows XP Professional to ensure durable, reliable and secure and in order delivery of data related to offline mode requests.
- Telecenters are village level – connect to central hub at the State Data Center (SDC) using a dedicated VSAT connection. The SDC connects to the *Nemmadi* back-offices at *taluka* office again through dedicated VSAT link. The *Nemmadi* back-office at *taluka* connects to local *taluka* server on LAN.
- RDS application uses a custom communication framework based on .Net Platform to ensure data between *taluka* Server and SDC are in sync. Custom framework has been developed to encapsulate data routing.
- Transaction handling, in order and reliable delivery on low bandwidth. Unlike bandwidth-hungry options like RDBMS based replication or log ship communication designed for *Nemmadi* project uses less bandwidth and can take care of unreliable network and offline mode.

13. Project Financials/Sustainability

Nemmadi project has been developed on PPP basis. Entire capital recurring cost has been borne by PPP Partner. The Government of Karnataka has provided 200 sq.ft spaces in each of the *taluka* offices for establishing back-offices to support telecenters. The PPP partner would earn his revenue from –

- Share of the user charges for e-Governance services: The user charges are different for different category of services and also different for slabs of a given category of services.
- A transaction charge for bill collection for utility companies, panchayat property tax etc.

- Fees from the Government of Karnataka for providing services under various government programs like *Sarva Shiksha Abhiyan*.
- Data entry charges for operations like crop updation or for digitization of data of various government offices.
- Hiring of hand held devices for departments of the Government of Karnataka
- B2C services for which the telecenter agency would need to work with various content and service providers.
- Other IT and Internet-based services like computer education, DTP work etc.

Though the Government of Karnataka is putting all efforts to include many government services of various departments, it is assumed that the telecenter project cannot sustain only on government services and hence there is a provision for the telecenter Operator to provide even B2C (Business-to-Citizen) services from these telecenters like following services.

- a. Cell phone bill payments and prepaid cell phone recharge top-ups
- b. CET training
- c. Insurance premium payments
- d. Private bus operators' ticket bookings
- e. Computer education
- f. English speaking courses.

14. Project Teams and Leadership

Nemmadi Project Team is consisted of various consultants led by Director, EDCS under direct supervision of Secretary, e-Governance.

15. Key Project Outcomes

The project started on 1st October 2006. At present, 769 telecenters out of 800 telecenters are operational. There are two distinct types of services delivery. First, RTC (land records) which are delivered are issuing land records. 60 *talukas* are delivering nearly 38 different government services to citizens. Apart from government services, the citizens are getting the B2C services also at their doorsteps. The district-wise statistics of transactions that have taken place are as follows.

RTC and RDS Transaction Report from November 2006 to September 2008				
Month	No. of Transactions	Amount	No. of Transactions	Amount
2006				
November	18001	222616	0	0
December	94827	1367708	0	0
2007				
January	102775	1563221	0	0
February	92595	1372669	0	0
March	122924	1822367	0	0
April	147097	2178311	100556	1267473
May	285398	4555787	194922	2799610
June	419214	6301545	2122394	2970525
July	549350	8239976	205134	2659037
August	533739	8006115	215164	2696932
September	302316	4534740	92086	1200376
October	310283	4654245	77847	695966
November	266161	3992415	84019	1080449
December	272456	4086840	95832	1279195
2008				
January	387205	5808075	126095	1753440
February	181257	5718855	84645	1139267
March	438914	6583710	91933	1583064
April	359427	5391360	64293	917998
May	311302	4669530	182208	2668435
June	503097	7446455	316073	4630382
July	902669	13540035	309413	4461731
August	680330	10204950	179307	2541324
September	550530	8257950	174573	2402444
Total	7831867	120519475	4716494	38747648

16. Service Users' Feedback Mechanism

The *Nemmadi* Project is governed by set of well defined Service Level Agreements (SLAs) to ensure fool proof timely and efficient services to citizens. As the services delivered from these Telecenters are very crucial for citizens especially for farmers, any delay or deviation from set pattern will create

problems for everybody. Hence any feedback from citizen or official is given utmost priority to resolve the issue. Following are some of the SLAs.

- Entering of Revenue Inspector/Village Accountant's comments and generating office note within 2 days of RI handing over the document
- Deployment of extra computer at telecenter in case of more than 7500 transactions per machine in a quarter.
- Machine Uptime of over 95% for computers for each *taluka* on a monthly basis.
- Printer uptime of over 95% for each *taluka* on a monthly basis.
- Operator attendance of 95%: An Operator will be marked half a day leave for coming more than 30 minutes late for more than 3 days in a month and marked absent if he comes late than 2 hours on a day.
- At least 50% telecenters will successfully log in to SDC at any one time.
- Each telecenter will login at least 75 times in a month with no week with less than 12 logins.
- A telecenter should login at least 2 times in any period of three days i.e., the maximum gap between any two logins should not exceed 58 hours after subtracting number of days during which telecenter was allowed to be closed as per RFP condition.
- Payment of user fees to GoK as per the procedure by 2 pm on the following working day.
- Fulfillment of stating norms of the telecenter Project. The telecenter agency has established a help desk which receives all the hardware and software problems. Online support team is based in Bangalore which will give online support for software related issues. Each district has a district coordinator, one software support engineer and one hardware support engineer. All these issues will be supervised by an Area Manager who will support few districts. All the issues – be it hardware or software – will be tracked in Issue Tracker Software which also gives the status and problem resolution date on line. There are 3 methods by which the *Nemmadi* operators can access the help desk for reporting and registering complaints.

- e-mail – Operators can send their complaint by email to help desk.
- Telephone – Operators are provided with mobile phones under CUG group so that they can make free calls to help desk.
- Chat – There is a chat service running on the Jabber framework and all Operators have access to this chat service from the telecenters. When Operators report specific problems, either about the software installed or the hardware the operators are un turn given a ticket number. This is the number by which all future correspondence with the operators take place. The first level helpdesk will try to solve the problem for the operator immediately if it is through phone or else if it is a problem which cannot be resolved on line, then the ticket will be issued to the second level support team who are specialized for solving a specific type of problems. The second level team does the back-end function to solve the issue and then sends the ticket to the lower level support tem to inform the operator. This support person calls up the Operator and confirms that the problem has been resolved from his side and asks for acknowledgement from the telecenter to close the issue.

17. Implementation Challenges

The challenges/bottlenecks and their resolution were as following

- **Non-availability of a citizen's database for provision of the services:** This was resolved by developing software that adopted the manual workflow system and did not require the government servants to spend much time on the computer. Also a citizen's database was created on an incremental manner.
- **Poor connectivity between village telecenters and Data center:** This was resolved through using technologies like MSDE and MSMQ for local storage at the village tele center and transmission to the data center on resumption of connectivity.
- **Requirement of a physical signature on the certificate:** A physical signature would require the applicant to travel to the *taluka* office for collecting the certificate. This was mitigated through one use of Digital Signature by the authorized officer. Such digitally signed electronic document is finally printed at the telecenter itself for delivery to the

citizen. The signed hash of the electronic record is printed on the certificate as a 2D barcode. The authenticity of the document can be verified online.

18. Key Lessons Learnt

From the citizen's point of view, this project has helped him get all the revenue departmental services at his doorstep saving time and money. From the government point of view, the project has helped to showcase greater accountability and transparency. Since the certificates are signed digitally, there is no need for physical transfer of documents. The *Nemmadi* telecenters are a single window system for all the government services at the village level. Another benefit accrued by bridging this digital divide is empowerment of all the sections of society by facilitating them to gain knowledge about their rights and privileges. The important outcome of this project is employment generation in rural areas as well as increase in government revenue. The major learning from this project is radical change in government service delivery mechanism. The citizens in general and rural farmers in particular were used to age old system of availing government services. Initially, even government machinery at *taluka* offices was apprehensive about success of the project and was reluctant to adhere to the norms. The success of this project is due to sustained government support at the decision-making level and the entire project team who worked hard. The biggest learning is that any projects of this magnitude require will from the government.

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Dynamic Integration of Property Registration and Land Records Administration (HALRIS)

Ghan Shyam Bansal and G S Saini

1. Goals and Objectives

- To dynamically integrate property registration system and land records administration system in a secure environment.
- Improved delivery of Government to Citizen (G2C) services related to land administration.
- To provide authenticated and secure ROR (Nakal of Record of Right) services a citizens.
- To provide access to Jamabandi Nakal (ROR) through Internet on anytime, anywhere basis.
- To implement a complete integrated solution for the management of land records and property registration work in the state.

2. Spread of Project Service Users

- Farmers, Business community and other general public
- Revenue and Judicial Courts, Officials of revenue department
- Government departments for planning activities
- Financial Institutions and Banks.

3. Services Provided

Revenue department provide the following services related with revenue records:

- Property registration

- Nakal of revenue records of rights
- Mutation activity
- Deed writing through licensed deed writers.

This project provides of the following services:

- Property registration to general public at *tehsil* and *sub-tehsil* level.
- Nakal of revenue records (namely *Nakal* of *Jamabandi* (ROR), Mutation and Khasra Gridawari) of rural land to public at *tehsil* and *sub-tehsils* level.
- Mutation related services to land owners at *tehsil* and *sub-tehsil* level.
- Standard deed templates provided in the system, the project is providing computerized deed writing services.
- Integration of property registration and land records providing online mutation service
- Automatic generation of new *jamabandi*
- Availability of ROR on Internet.
- In 2000 only one service i.e., property registration service (service No. 1) was there. In the last 6 years scope of the project is extended to provide 6 more services (service no. 2 to 7)

4. Geographical Spread of Project Implementation

Project has been implemented at all 67 *tehsils* and 46 *sub-tehsils* of Haryana. It covers all 21 districts. The service is being extended to 1159 rural CSCs (e-DISHA Ekal Sewa Kendra), which will cover the entire state of Haryana.

5. Project Timelines and Milestones

- Pilot implementation of property registration part at 5 locations in June 2000
- Roll out of property registration to all 113 locations in March 2001
- Data porting of land records from legacy system to current system in June 2001
- Initial data entry of ROR data at 20 locations completed in 2003

- Backlog mutation entry at 20 locations started in 2004
- Development of integrated solution for property registration and land records in 2005
- Implementation of project at *tehsil* and *sub-tehsils* level in 2006
- Integration with 2-D barcode and hashing technology in 2007
- STQC Quality Certification in year 2008
- Linkage of spatial and non-spatial data, exercise has been initiated on pilot basis at Sirsa district.

6. Direct Cost and Time Savings to Avail Services

- Earlier, deed writers were charging the public at their own will for preparing the deed; now people can go to HARIS counter and get their deeds prepared by paying the fee fixed by the government.
- In the manual system, people were supposed to go to the photographer for getting their photo clicked; in the existing system there is no need for the photographer as photo is captured by the system during the registration process.
- In the manual system, there is no timeframe fixed for giving the registered deed, so they have to come number of times to the *tehsil* office for getting the documents. Now in the existing system registered deeds are being given within 1-2 days.
- Earlier for getting a copy of ROR (Record-of-Right) citizens were to contact village *Patwari* and to pay substantial fee and had to visit *Patwari* a number of times. Now, copy of ROR is available at HALRIS Center, by paying government fixed fee and within less than an hour.
- In the manual system no timeframe was fixed for delivering the registered deeds; in the new system deeds are being given within 1-2 days.
- In the manual system, *Patwari* entered the mutations on receiving the *parcha* registry, which took number of days and sometimes months to reach the *Patwari*. In the new system, mutations are being entered at *tehsil* level and in cases where mutation is triggered by the registration process, it can be generated immediately after the deed has been registered. So this has reduced the time spent in mutation entry to a great extent.

- Now the copy of RoR and mutation notices are available to citizens within hours; earlier citizens were spending weeks together.

7. Direct Cost and Time Savings to Deliver Services

- The system is being implemented on self-sustainable service charge model by outsourcing through District Red Cross (DRC) society and District IT Society. Government is not spending any money to run HARIS and HALRIS centers. In every district DRC/IT societies are taking the service charge from the users, thereby making the project self sustainable.
- The workloads of revenue officials and Patwaries have been reduced to a great extent. The time saved is being utilized on other office works.
- IT enablement has helped reduction in revenue court cases, thereby helping in saving the time of SDM and Divisional Commissioner.
- Increase in revenue stamp duty collection has been recorded upto 40% after implementation of the system.
- In the manual system, people visit the *Patwari* for getting the *nakal* and he writes the *nakal* by hand and certifies it, whereas, in the new system *nakals* are generated by the software and printed with laser printer. So this has reduced the time.
- In the manual system lot of mutations were pending due to which there was delay of 1-2 years in the preparation of the new *jamabandi*. In the new system, software always keeps the record updated and when the *jamabandi* of a particular village is due, *Patwari* only takes the printout of the *Jamabandi* and submits it to the record room after verification.
- By making the system *tehsil*-centric from being *Patwari* centric work load on *patwari* has reduced and it also increased the availability of the service. Earlier, if the *Patwari* is not available for 1-2 days people could not get the service from any other source. They had to wait for the *Patwari*.

8. Replication

- Property registration (HARIS) has been replicated in Delhi, Orissa, Himachal Pradesh and Uttranchal.
- The states of Karnataka, Kerala, Punjab, Maharashtra, Delhi have shown interest in the dynamically integrated system of Haryana.

- The 2-D Barcode solution can be very easily used as an add-on module by other states for authentication and verification services without making major changes to their existing land records software.

9. Implementation Model

Project is owned by the revenue department, and at field level district IT societies are running the show. Service charges are collected from the users and all the project requirements are met from this fund.

10. Technologies

- Multi-tier architecture has been used.
- Vernacular language interface.
- Security features such as Biometric and 2D encrypted barcodes on RORs.

11. Capacity Building

- Dedicated development team from NIC-HRSC
- Long-term ongoing implementation support at districts by NIC-DIOs
- District Revenue officer is the nodal officer at the district level
- Training of the staff working on the project at Patwar training school
- Workshops to discuss the implementation issues
- State level project monitoring committee headed by Director, Land Records.

12. Process Reforms

- Committee to suggest legal and process reforms has been formed under the chairmanship of FCR.
- Revenue department issues guidelines and instruction from time to time.

13. Project Financials/Sustainability

- Self-sustainable model of implementation
- Financing through service charges
- State government is generating Rs.5-6 crores per annum as service charges.

14. Project Teams and Leadership

- Chief Secretary to Government of Haryana
- State Informatics Officer, NIC-HRSC
- Joint Secretary and Director Land Records Department, Haryana
- Scientists of NIC-HRSC
- Deputy Commissioners, district revenue officers, district informatics officers, *tehsildars* and other revenue officials at state and district headquarters.
- Full-time project team includes members from the NIC and Revenue Department.
- Part-time team includes contractual manpower engaged for the data entry operations.
- CS and FCR is overall reviewing the project implementation.

15. Key Project Outcomes

- For sustainability District IT Society (DITS), again headed by Dy. Commissioner and DIO, NIC-HRSC as Member Secretary, has been formed in each district. DITS are responsible for the management of the service charge collected under this project.
- Project is being used to provide the service to the people in cost effective and time bound manner. Government revenue such as stamp duty collections is also increased due to restructuring of collector rates as a result of implementation of this project.
- Project is also useful for the revenue staff as it has reduced the task of Revenue record maintenance. Now they can generate the new *jamabandies* at the click of the button.
- The services are available to citizens in a transparent way by paying less cost and spending less time.
- Deputy Commissioners have been empowered to issue relevant orders related to HALRIS for their district.

16. Service Users' Feedback Mechanism

- Help desk at all HALRIS centers and district level e-Disha centers users can give their feedback at helpdesks or to *tehsildar* at the *tehsil* and *sub-tehsils*.

- DCs are holding monthly *darbars*, citizens are visiting DCs and giving feedback.

17. Implementation Challenges

- *Infrastructure* – Initially infrastructure was the major roadblock in the implementation. At most of the places there are power-cuts. So to outcome this challenge, gen sets were provided to the sites where power-cuts are frequent.
- *Training* – Training of Revenue staff is also one the biggest challenges. In the initial stages they were also offering resistance to the project. So training and workshops were conducted to change the mindsets of lower level revenue functionaries.
- *Process Reforms* – Reforming the existing process is also the one of the challenges. Meetings were held with the senior revenue officers to explain them the need for the process reforms.

18. Key Lessons Learnt

- Initial data entry verification and validation is very important step in the project implementation.
- Procedural reforms in the existing land records rules are required to implement the project.
- Training of revenue staff is the biggest key for successful implementation of the project.

Further Improvements

- To reduce the dependency on the contractual staff, revenue department should have their cadre of technical manpower.
- State data center and State wide area network are required to provide anytime anywhere service.
- Linkage of spatial and non-spatial data is required to achieve complete implementation. This exercise has been initiated on pilot basis at Sirsa district.

Project Contact Details

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Computerized Monitoring of PWD-WSS (Water Supply and Sanitation) Activities [COMPWSSA]

Ghan Shyam Bansal and Neeraj Singal

1. Goals and Objectives

COMPWSSA (Computerized Monitoring of PWD-WSS Activities) has been developed primarily for Asset Management and monitoring physical and financial aspects of various construction works undertaken by Haryana PWD-WSS (Water Supply and Sanitation) Department. At present, the application is simply G2G with limited G2C extension. However, the data that has been collected through this application has tremendous long-term and short-term financial benefits, which are manifold, more than just monitoring of works. Based on data it is now possible to prepare budget projections for the next Five-Year Plan. These projections can be formulated based on current water demand per village of given present population. Based on census projection, it is possible to calculate the future demand and hence the infrastructure that needs to be developed to meet that demand. This will lead to preparation of self-estimates and budgetary requirement in the next Plan. In terms of short-term financial objectives, it is possible to identify the key areas that require more attention. Therefore, need based planning can be done to meet requirements on preferential basis. Regarding very short-term benefits, it is possible to prepare annual plans and monitor flow of funds during the financial year. COMPWSSA has been used to name and uniquely codify each element that has been used as a part of Waterworks, Sewer Treatment Plant and Storm Water Disposal. The parameters of each element are now available which act as tool for designing future facilities. The unit cost based on existing infrastructure can be worked

out and more realistic estimates for new works can be prepared. Of these, certain elements like pumping machinery are being operated manually presently. The department intends to use SCADA (Supervisory Control and Data Accusation) to replace the manual intervention with remote control of machinery at selected locations. Besides the financial and physical benefits, the system has several administrative benefits too. Based on the need and requirement, it is now possible to select the most optimum water source for each village because quantified parameters of each adjoining water source is available in database. In addition, the underlying network of abandoned pipelines can be reutilized as the history of connections can be retrieved from database. This software has capabilities to integrate with modules of Voucher Level Divisional Accountancy Software and Inventory Control Software being developed separately.

2. Spread of Project Service Users

Horizontal and vertical expansion of works and variety undertaken by the department can be estimated by the fact that Haryana PWD (Water Supply and Sanitation) department is responsible for construction, upgradation, operation and maintenance of Water Works (WW), Sewerage System (SS), Sewage Treatment Plants (STP) and Strom Water System (SWS). All these systems collectively work for supply of fresh drinking water to 2 crore population in 6745 villages and 74 towns of Haryana, besides disposal and treatment of sewage and storm water from each locality of 44000 sq km of the state's area. At micro level, each of the above system is further comprised of vast network of tube wells, pipelines, boosters, water storage reservoirs, water carrier channels, drainage systems, treatment plants and many more things. For construction structures and maintenance of these assets, a large number of agreements are executed with various construction agencies. Such a huge public utility system providing drinking water supply, sewerage and drainage facilities to the whole state is in place for more than 60 years of existence of the state. Total quantum of data involved in whole process can be estimated by the fact that at present, there are about 5400 water works (4200 tube well-based, comprising 7000 tube wells and 1200 canal-based), that is supplemented with 500 boosters in rural and urban sectors of the state. On STP/SS front, there are more than 54 STP/SS and 70 sewage disposals. For proper drainage of storm water, there are 35 SWS and 24 SW disposals. At present total number of small and large agreements involved in construction, operations and maintenance of all infrastructures is

around 2600. The amount involved in the current construction activities is of the order of 1283 crore rupees. It is presently G2G, G2C type of Web Enabled Workflow Application. Basic physical data about any installation (Waterworks, STP etc) and work (Proposals, Approvals, and Agreement details, Physical Progress, Penalties and Work closing) is entered from XEN offices. Head office prepares the agenda for Sanitary Board meeting (Every work has to be approved from Sanitary Board prior to execution). This all-important activity is done online. Once the Sanitary Board's recommendations are updated, then several reports based on ongoing works are generated by the software. These reports are used by all officials of the department as well as the state government. As a part of G2C extension, public can see the list of ongoing works and their progress in the village/town of their interest.

3. Services Provided

COMPWSSA facilitates asset management of all the installations, monitoring of works, monitoring of agreements, preparation of SB agenda, inter department transaction of assets, site inspection and reporting system, SMS based data capturing of selected installations (SS Tank). It also acts as a tool for decision-making in the selection of the type of source and design of water supply system.

4. Geographical Spread of Project Implementation

Since the system is Web-based, it is installed at central server of NIC Haryana. But it is being used by all the levels of officials in Haryana PWD (WSS) spread throughout Haryana. Besides the EIC office located at Panchkula, there are 12 circle offices headed by Superintending Engineers and 45 divisions headed by XENs. The department has 145 sub divisions and more than 500 JEs spread all over Haryana who are all using this system. The System is also being used by state government by generating required reports.

5. Project Timelines and Milestones

After the success of IMPACT (Integrated Monitoring of PWD B&R Activities), PWD-WSS department floated the proposal of implementation of a similar system in their department. The project was initiated way back in August 2006. But on preliminary study of working and requirements of PWD-WSS department, it was seen that IMPACT cannot be replicated in any form in this department. In July 2007, the project was started from the scratch. Initially, it was planned only for monitoring of works. Later, it was observed that asset

management is an integral part of works in PWD-WSS department. At the time of initiation of the current system, a large number of installations were already commissioned. Assets in these installations were already in place. Several hundred works of different kinds were in physical progress after getting due approval from SB and large number of schemes were in the pipeline awaiting approval at different stages. To deal with all, the software was developed in four sections to accommodate all type of installations.

1. **Already Commissioned:** In this section, data is entered for all the WW/STP/SS/SWS that were already commissioned at the time of implementation of software.
2. **Ongoing Works:** This section is for the works that have already been approved by the SB. These works may/may not have been started/allotted at the time of implementation of software.
3. **Agreement and Physical Progress:** This section deals with linkage of agreements with individual installations and their components/elements. The provision of enhancement of agreement amount to accommodate more scope of work and extension of time limit are made through this section. Also penalties and clauses against the delays on the part of the contractor are imposed through this section.
4. **New Estimates:** New estimates, right from SB proposal preparation are initiated from this section. The proposal of SB agenda is prepared. The approval is accorded after SB meeting. This section has works that are initiated after the implementation of software. In the later stage of software development, other modules viz Inspection Reporting System, SMS based data updation and Strata Charts Repository were developed.

6. Direct Cost and Time Savings to Avail/Deliver Services

Since this is G2G application, service user and service provider are both government. So the cost saving to avail service and the cost saving to deliver service is both with respect to government only. In context to COMPWSSA, since there was no computerization in the department at any level, the department was incurring a lot of amount for monitoring of works in the form of FAX, Postage, TA/DA of messenger in case of urgent requirement of reports. Despite all this, it was not possible to get prompt reports as and when required. As a part of ICT implementation computers were purchased for all offices up

to division level. Recurring cost is also incurred to avail Internet connectivity. However, after implementation of COMPWSSA, there is no cost in service delivery or service usage at anytime. In G2G context, any citizen can see the list and progress of works online without incurring any cost. This service was not available earlier.

In context to G2G, the time saving can be enumerated in the manner that since the system is online, workflow based various actions like work allotment, action on defaulters, requirement of additional funds and material etc can be taken without delay. A lot of time used to be wasted by the department for execution of these tasks earlier. These delays used to result in cost escalation and overall project cost. In addition, the delay in preparation of various reports has been saved. In G2G context, the citizen need not waste time in seeking required information from the department. It is now available with the click of a key.

7. Replication

Since, the flow of work of most of the similar departments is identical, therefore, with some customization; COMPWSSA can be replicated in all departments dealing with water supply and sanitation. Reports can be changed as per local requirements.

8. Implementation Model

Government in-house implementation: The software is owned by NIC Haryana, the Government of India. It has been developed by combined efforts of NIC and PWD-WSS, the Government of Haryana.

9. Technologies

Web enabled software is developed in ASP.Net (framework 2.0) for front-end and SQL Server 2005 as back-end database. Application is Windows 2003 based and requires Internet Explorer 6.0 (preferably). Role based password protected users have been created to access pre defined modules of the system.

10. Capacity Building

The project was envisaged by the then Principal Secretary (PWD-WSS) the Government of Haryana. State Informatics Officer Haryana provided all administrative support during the development of the project. The key person in the formulation of the project is Engineer-in-Chief of PWD-WSS department who provided detailed domain knowledge for system at every stage. One senior

Systems Analyst from NIC was engaged for design and formulation. One programmer has been hired for coding and development of COMPWSSA. Training and user suggestions were undertaken by 2 XENs of the department. There have been several training sessions for officials at various levels. In order to implement suggestions given by users, one module for accepting user suggestions was developed. All the suggestions have been implemented immediately in continual manner.

11. Process Reforms

Prior to implementation of this system there was no method to identify any of the elements installed in water works. Now every element has been uniquely codified and named. There was no record of any abandoned tube well. Now the same are available at anytime for re usage. Strata charts and village plans are now available on the Net.

12. Project Financials/Sustainability

About 200 computers were purchased for implementation of software at field level at a cost of 8 lakhs. The department received grant from the Central Government. Amount of Rs.50000 per month as recurring cost on Internet usage is being incurred by the state government. Any future cost on the project will be incurred by the state government as a part of policy of ICT implementation.

13. Project Teams and Leadership

1. Chief Secretary to the Government of Haryana.
2. State Informatics Officer, NIC-HRSC
3. E-in-C. PWD (WS&S)
4. Scientist of NIC-HRSC

14. Key Project Outcomes

COMPWSSA is fully sustainable system. The system has been designed keeping in view of long-time requirements. Any type of incremental parameter has been accommodated in database. With the passage of time, the system will become stronger and more useful as the history of attachment of various waterworks with villages will provide useful clues for reutilization of abandoned infrastructure. The system is being used by all levels of officials in the departments as per their requirements and roles. Since the implementation of the project, it has been found highly useful in terms of cost cut, timeliness and

proper management from top level. Usage is continual in nature as there is no periodicity of data entry in most of the modules. Requirements of reports based on waterworks, reporting of inspections, entry of new proposal, approvals etc., is as and when. All the beneficiaries of COMPWSSA have expressed their satisfaction, as everyone is being benefited from the system in some or the other manner. It is evident from the response and feedback that is pouring from all the officials for the betterment of COMPWSSA.

1. COMPWSSA system helps in extensive data analysis through pie charts, bar charts, line graphs etc., showing various trends and tallies at a glance. This kind of analysis is helping the government in pinpointing the bottlenecks and to take all-important decisions.
2. The system has emerged as a highly effective tool for enhancing the efficiency, bringing transparency and cost effectiveness in the department. After achieving tremendous success in G2G domain, the online query system with requisite features is now being prepared for access to public (G2C interface) as a part of total transparency in the department.
3. As COMPWSSA has become an integral part of PH activities, the system is being used by all the circles and divisions for data entry purpose.
4. All the officials at HO and at field level are using the system on daily basis for monitoring of works. Now the latest status of each individual project is available to decision-makers on anytime anywhere basis.
5. Extensive data analyses capabilities has helped the decision makers to take corrective measures about abnormalities in terms of excessive cost and speed of execution of works.
6. The system has tremendous potential for horizontal replication in the departments having similar type of working.

15. Service Users' Feedback Mechanism

One module has been developed to get the feedback of users. Through this module the user can give his feedback and suggestions to the development team. Also, phone numbers of key members of development team were provided to users during training sessions. All the suggestions are being addressed at the earliest.

16. Implementation Challenges

COMPWSSA was initially taken as replication of IMPACT (Integrated Monitoring of PWD-B&R Activities), one of the highly successful systems running in PWD-B&R, a sister department of PWD-WSS. However, on detailed study it was felt that the flow of work in both the departments is very different. Therefore, the idea of replication was dropped and the new system was initiated. It was entirely on new platform.

Various challenges faced during design, development and implementation stages can be listed as given.

- A. **Complexity of Process:** On detailed study of the process, several complexity factors were found in manual system.
 - I. During the process of total execution of work from the time of approval to completion, the lifeline is very complex. One single work may involve different tasks of New Construction, Augmentation and Maintenance. One work may be executed on different installations. One work may involve construction of varying number of elements of different components like booster, tube well, OHSR, CWT, etc. Then different element-installation combinations can be allotted to different agencies as distinct agreements, all forming part of same work. Physical monitoring of work is done at element level while financial monitoring is done at agency level.
 - II. Any work can be permanently deleted from database only when all the agencies involved in that work have finished all the works allotted to them. This forms a huge complex chain linking agreements and works.
 - III. In case of new construction, different elements can be commissioned at different time and can further be used for Augmentation purpose, even before the parent work is completed totally.
 - IV. There can be frequent shifting of installations from one division to other. Village can be shifted from one installation to other. Any element can be shifted from one parent installation to the other and so on. In all cases, history of transfers needs to be maintained.
 - V. The method of dealing with under performing agencies in the form of risk and cost is quiet complex.

- B. **Quantum of Data Entry:** At the initial stage of implementation, there was need for data entry of all the installed Waterworks, STP and Storm Water Systems. Also, data entry of all the approved and ongoing work was to be done. Total quantum data involved in whole process can be estimated by the fact that at present, there are about 5400 Water Works (4200 Tube well based and 1200 Canal Based), that involve 7000 Tube wells and 500 boosters in Rural and Urban sectors of the state. On STP/SS front, there are more than 54 STP/SS and 70 Sewage Disposals. For proper drainage of storm water, there are 35 SWS and 24 SW Disposals. At present, total number of small and large agreements involved in construction and maintenance of all these assets is around 2600. This put a lot of work initial pressure on the users of the department.
- C. **Basic Data not Available:** COMPWSSA emphasize on recording various measurable parameters of each structure so that the query system can be used to retrieve specific information based on capacity of each structure. Since the manual system had no such data, there was need to first generate this data. This was again a Herculean task.
- D. **Transparency:** The acceptance of the system in view of total transparency was another problem. There was reluctance in acceptance as the new system demands time-bound reporting of physical and financial progress of any month.
- E. **Computer Literacy:** Level of Computer literacy in the department was very low and there was always reluctance shown in adopting the new system.
- F. **Challenge Addressing:** All these challenges were addressed by proper formulation and designing of system, persuasion of users to carry out data entry, frequent trainings and providing strong feedback mechanism.

17. Key Lessons Learnt

The software was initially started keeping in view the works monitoring part but later it was enhanced to asset management. Also, the modules of inspection reporting and strata charts were included at later stages. Provision was later done to integrate it with Inventory Control and Divisional Accountancy module. Considering computer literacy level of end user of the system, the system has been made highly user-friendly. User friendliness has been given preference

over the aesthetics of software. One module of user feedback was included to get their suggestions. Training factor was given top preference in initial stage of implementation.

Project Contact Details

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NREGAsoft-MIS for National Rural Employment Guarantee Act, Delhi

Madhuri Sharma

1. Goals and Objectives

- Make all documents of NREGA like job card, muster rolls, demand for work, employment register available in public domain across the country
- Track fund movement from Ministry of Rural Development to the pocket of a person across the country
- Develop a database of assets created under NREGA across the country since the NREGA act has come in force

2. Spread of Project Service Users

- Citizen
- Worker
- Gram Panchayats, Block Panchayats, Zila Panchayats
- Line departments executing works of NREGA
- Administrator at Block and District level
- State NREGA Department
- Ministry of Rural Development
- Administrators in the Government

3. Services Provided

- Registration of Worker
- Issue of Job Card (G2C)

- Register Demand for work (G2C)
- Issue of acknowledgment for Demand for work (G2C)
- Generate work allocation sheet (G2C)
- Generate muster rolls (GtoG)
- Generate pay slips (G2C)
- Generate Registration application register, job card register, employment register for panchayat (G2G)
- Generate cash book (G2G)

4. Geographical Spread of Project Implementation

Across the country up to Gram Panchayat level except in Andhra Pradesh.

5. Project Timelines and Milestones

Project is already developed and is in implementation. National Rural Employment Guarantee Act was implemented in 200 Districts in 2006-07 and 130 more districts are added in 2007-08 and is in application to whole country in 2008-2009. As on date NREGAsoft is implemented in 25 states, 344 Districts, 2857 Blocks, and 83079 Panchayats and expected to cover whole country by March 2008-2009.

6. Direct Cost and Time Savings to Avail Services

Since, workers are financially weak, all services are made free for them. But apart from cost saving, what is important is to make sure that money reaches the right hands. Reduce corruption in the system by making it more transparent as the Government of India is spending huge money of the order of Rs.16000 crores in the project.

Job Card and pay slips can generate quickly. Acknowledgment for demand of work can be got immediately which ensures the right of a worker. Action on the complaints registered can be got as soon as it happens.

7. Direct Cost and Time Savings to Deliver Services

There will be cost saving in the issue of job card, pay slips etc., saves amount and time in generating the registers that need to be kept at various locations.

Rather than time saving, it is mainly bringing the systems in place. Removing bad practices like *Kachha* muster roll, part payments etc., are the

goals achieved as on yet. Locations where computer have reached in gram panchayat, the system has helped in quickly generating the job cards and timely acceptance of the demand for work and issuing the acknowledgment of receipt of demand for work.

8. Replication

Replicated in all Districts of the country, except Andhra Pradesh.

9. Implementation Model

Project is government-owned but some states have involved external agencies for data entry at block level.

10. Technologies

- Front-end: Microsoft .Net technologies for online version of NREGAsoft. Microsoft as well as open source technologies for offline version of NREGAsoft
- Back-end: Microsoft SQL Server2005 in online and MSDE2000 in offline. Any Internet browser can be used to access the NREGAsoft through the NREGA portal <http://nrega.nic.in>

11. Capacity Building

The central team has trained the state NIC team who acted as master trainers for District NIC team and District NREGA staff. The District NIC team has trained Block NREGA staff and data entry staff. Certain combined training programs including the District/Block NREGA staff and the persons of external agencies involved in data entry work of NREGAsoft are conducted at state HQ by the central NREGA team also. Regular video conferring with states and districts by the central team has helped a lot in clearing the doubts of the implementers and incorporating the local requirements of the states/districts.

12. Process and Legal Reforms

National Rural Employment Guarantee Act (NREGA) is a new Act. So process reform is not required.

13. Project Financials/Sustainability

NREGAsoft is created by NIC for Ministry of Rural development and is continuously maintained also. It is a collaborative effort involving Panchayats, Blocks, Districts, States and Ministry of Rural Development. Content management

of NREGS in NREGAsoft is being met by state governments as part of administrative cost available in NREGS funding.

14. Project Teams and Leadership

- Senior Technical Director
- Technical Director Project coordinator
- Officials of NIC-DRD Informatics Cell
- State/District NIC Centers in implementation of project

15. Key Project Outcomes

- **Sustainability:** It is sustainable as it is meant to keep account of Rs.12000 crores which is going from the Government of India for the betterment of job seeker.
- **Transparency:** To reduce all bad practices and protect the rights of workers. Bring the documents like job card, muster rolls, expenditure and fund flow under NREGA in public domain.
- **Usefulness:** Workers now have complete details of when they have demanded job, when they worked and how much money is paid to them along with muster roll number on the job card. So there is a tight linkage between the muster rolls and the job card. A citizen can track each and every paisa spent under NREGA. It does complete record keeping for panchayats and administrators at all level.
- **Satisfaction:** Stakeholders are satisfied as monitoring of such a big program becomes easier. Citizens who are generally kept out of the IT systems are the integral part of system and can see all information. In a way it has facilitated the social audit.
- **Empowerment:** Empowerment of all stakeholders by providing information. Providing space to them to enter their grievances and making the report on action taken on grievances in public domain.

16. Service Users' Feedback Mechanism

- Feedback option on NREGA portal
- Grievance Redressal System of NREGAsoft: This system captures the grievances from all stakeholders and issues a complaint number and

also tells the complainant to whom his complaint has been marked. Depending upon the type of complaint and the agency against whom the complaint has been made it decides to which officer it has to go for redressal. When that officer opens his page, a pop up window comes on this screen giving details of all grievances addressed to him. He can take action by clicking the grievance from there and in this way can quickly respond to the grievances. If the officer does not take action in the specified time the grievance automatically moves to the next higher level.

17. Implementation Challenges

- **Internet Connectivity:** Internet connectivity is quite poor at block and Panchayat level. So online as well as offline modules have been developed and they are synchronous to each other. A location can move from offline to online and vice versa without any problem.
- **Local Language:** The software is Unicode enabled and thus has overcome the language barrier.
- **Technologies Used:** The online version is on Microsoft technologies but offline version is in Microsoft as well as open source technology.

18. Key Lessons Learnt

- There is need to standardize the location code and further changes are recorded and handled by change event management. As every year many new districts are formed, new Panchayats are formed, new villages are formed or villages move from one Panchayat to another Panchayat.
- As the IT infrastructure in India is quite poor in block, Panchayat and village level it is necessary to have online and offline versions of software which are synchronous to each other. NREGAsoft implements on this strategy.
- Local language interface is mandatory when developing software for villages. NREGAsoft has local language interface.
- The IT systems should be simple and near to actual implementation.

Project Contact Details

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Integrated Workflow System for Paperless Admissions to AICTE Approved Courses in Haryana

Ghan Shyam Bansal and Susheel Kumar

1. Goals and Objectives

- To bring in 100% transparency in conductance of entrance test and allotment of seats
- To minimize travel burdens on candidates and their parents by making the system online (G2C – part of the project)
- Minimizing human interference in processing of results and preparation of inter-se-merit
- Facilitating candidates to appear in the entrance test on dates and centers of their choices
- Providing enough time to counselees for submission, change, delete, re-ordering of multiple choices from anywhere anytime
- Online availability of required information, addressing queries, generation of reports at different levels (G2G – part of the project)
- Secured and controlled data access at different levels
- Online reporting/admissions/document verification of selected candidates in the respective institutions using their respective User-ID and Password, ensuring that the right candidate is seeking admission. (G2E and G2C part of the project)
- Above all the most significant objective was to make available a seat, which is vacated by a candidate due to sliding, to all candidates who are

in queue and have opted for that seat as per merit and eligibilities. Instead, in manual system such seats were made available only to the next candidate in queue

- Low cost solution peak project duration remains during the admissions i.e., from May-August. All the above objectives have been met within the prescribed project schedule and cost.

2. Spread of Project Service Users

- Directorate of Technical Education (DTE) the Government of Haryana
- Haryana State Counseling Society (owner of the project)
- National Informatics Center, Haryana and Headquarters New Delhi
- Participating Institutions (PI) and their staff members across the state
- The Punjab National Bank and Axis Bank (CBS) branches
- Fee Collection Gateway
- Candidates/students and their parents.

All candidates who intended to seek admission in the following technical courses across the state: B.E./B.Tech & B.E./B.Tech (Lateral Entry) – MBA, MCA, B. Pharmacy & B. Pharmacy (Lateral entry) – Hotel Management – Diploma Level Courses (4 courses).

3. Services Provided

Online state level entrance test was conducted for 5 courses (MCA, B.Pharmacy, B.Pharmacy Lateral entry, B.E./B.Tech Lateral Entry & Hotel Management) at 7 designated institutions across the state in 4 shifts a day. Afterwards Online – off-campus Internet-based counseling was conducted for all 11 courses;

- Services were provided to candidates by login into public websites <http://onlinetesthry.nic.in> and <http://theadmissions.gov.in> using their respective user-ID and passwords assigned to them during registration phase
- Services for online admitting of candidates, verification of documents, updation of records and monitoring of entire process was provided to the institutions and the Haryana State Counseling Society through and intra website secured on IP addresses <http://intrascbh.nic.in>

Services provided through well designed dynamic websites having public interface are as follows –

- No barriers of time and location for counseling by the candidates because of round the clock availability of online Internet-based counseling system from any Internet point.
- Online deposition of token fee/entrance fee/counseling fee by the candidates in the CBS branches of PNB and Axis Bank across the country.
- Online registration by candidates from any Internet point for Entrance tests.
- Filling of choices of examination center, date and shift by the candidates for appearing in the entrance test.
- Allotment of entrance test center on the basis of choices filled by candidates.
- Online downloading of admit card for appearing in the test.
- Publishing of inter-se-merit on the project website <http://onlinetesthry.nic.in>
- Online choice filling while registering for counseling from any Internet point.
- Change, delete, add choices with respect to courses and institutions.
- Seat allotment and publishing of result for candidates and institutions as well as for Haryana state counseling society.
- Downloading of seat allotment letter online from any Internet point.
- Online verification of documents in support of seat allotment by the concerned institute.
- Online admission of the reporting candidates as per their allotment by the concerned institutions.
- Various reports with respect to the participating candidates about allotment, withdrawal of admission, category-wise allotments, seat vacancy position etc were also made available online.

Actual counseling sessions were held at one of the institutions free of cost. Entrance exam rank data for B.E/B.Tech and MBA was taken as of AIEEE – 2008 conducted by CBSE and MAT data – as conducted by AIMA respectively. For

remaining diploma level courses OMR sheet-based entrance test was conducted at state level. Counseling for all 11 courses was conducted on rank data.

4. Geographical Spread of Project Implementation

1. As far as participating candidates are concerned, for them there was no geographical barrier; they could participate from any Internet point using their user-ID and Passwords. On the other hand all 548 participating institutes across the entire state of Haryana were able to access through intra website using their individual user-ID and passwords for admitting the students.
2. The Directorate of Technical Education, Haryana and Haryana state counseling society could access public as well as Intra websites using their Super user ID and Passwords.
3. In this manner all related offices at state level and institutions in the filed of Haryana state could get controlled and role based access to the system.
4. Not even a single functional location point is left without access of services.

5. Project Timelines and Milestones

The following time lines containing actual time schedule for broad activities and milestones of the project are given below:

1. Freezing of software requirement specification with Haryana State Counseling Society – One month/April 2008. Core committee finalized the specification.
2. Development/customization/revision of the software as per the specifications – 1½ months/15 June 2008, NIC team.
3. Hosting of state counseling society website for procedural information – ½ month/15th May 2008, IDC at NICHQ.
4. Security audit of registration module by Cyber Security Division at NIC-Hq – 1½ months/15th June 2008 Hosting, IDC at NICHQ.
5. Preparation of Digital Question banks of 5-6 thousand questions for each course and testing of every question – 1½ months/20th June, 2008, DTE/HSCS Haryana.
6. Preparation/customization of training manual – ½ month/10th June 2008.

7. Training at 3 Places to PI's approximately 1000 officials and counseling society – 5 days/10-15 June 2008.
8. Conducting online registration process for candidates – ¾ month/20th June, 2008, on test website.
9. Conducting online test at identified institutes for 5 courses – ½ month 30/6/08 to 14/7/08 DIO/DIA of NIC and institution's faculty.
10. Hosting of counseling application website for only registrations – ½ month/ 1st June 2008, IDC at NICHQ Delhi.
11. Finalization of seat matrices masters, institution and course masters for the use in application up to 17/8/2008, DTE/HSCS Haryana.
12. Getting AIEEE-2008 rank data as well as of MAT rank data up to 17/8/2008.
13. Hosting and launching of complete counseling application website for online counseling choices – submission by the candidates.
14. Online counseling for all 11 courses: Registration and choices submission once only. The Seat allotment shall be done in 3 subsequent phases; after every phase reporting/admissions online vacancy updation shall be done by PIs – 2 months/1st July to 31st August, 2008.
15. Report generation, support and technical analysis activities for the user department and SIGN OFF the project upto 31/03/2009. User department keeps on asking several types of queries/reports on counseling data, since this project has been developed/customized/ operationalized and implemented successfully for 3 years across the state and completely Internet-based centralized solution.

Major Achievements Follow as Under

1. Admissions done for more than 81000 seats in more than 548 institutions by electronically processing more than 1.5 lacs applications submitted online by the candidates along with more than 5 millions choices under different courses. Project is successfully implemented for 3 years with 100% transparency and satisfaction among parents, students, institutions and administration.

An excerpt from message of Hon'ble CM, Haryana "The Haryana is the first to introduce "online off-campus" counseling for all technical courses including postgraduate, undergraduate and diploma education...the efforts put in by NIC and the Department of Technical Education, Haryana and Haryana State Counseling Society for conducting transparent and hassle-free admissions deserves appreciation..."

2. Sharp rise of more than 40% in number of admission-seekers after modernization of admission system
3. No human interference in admissions resulted in 100% transparency
4. Strengthening and optimal utilization of existing ICT infrastructure in the participating educational institutions across the state
5. Students and their parents are major beneficiaries; they have got enough time for submission of their choices of courses and institutions for admission and appearing in exams on the dates and time suitable to them without much traveling and waiting
6. Provision of mock test and mock counseling for students to make them conversant about the modern system of admissions
7. Digital Question bank for 5 courses has become an asset to the department
8. e-readiness increased among technical institutions in the state, manpower-wise as well as infrastructure wise. More than 1500 officials of various technical institutions were imparted special ICT operations training.

6. Direct Cost and Time Savings to Avail Services

1. In the manual counseling system, candidates along with their parents had to travel to the counseling places. Therefore cost involved in traveling, lodging and boarding were to be borne by the candidates
2. In the current system, it all could be done from their homes, designated institutions where free of cost Internet services were available. Few candidates could do it from near by cyber cafés or other Internet points by paying nominal fees
3. In case of postal delays, candidates had to rush to state head quarters for collecting their admit cards for test and other related documents
4. In view of above the cost borne by candidates for availing services in the current modern system has come down.

Since the system is Internet-based and available round the clock and accessible from any Internet point, there is time saving for the participating candidates, as they can do hassle-free counseling anytime during the prescribed time schedule. The system/server/website remained available round the clock during the prescribed time schedule with *zero* down time.

7. Direct Cost and Time Savings to Deliver Services

Huge cost benefits to the government DTE/HSCS on account of the following in conducting paperless admissions.

- Resources mobilization for conducting of entrance test and counseling manually
 - Printing of question papers
 - Evaluation of question papers
 - Payment to the staff involved in operationalization
 - Postal charges in dispatching
 - Physical security
 - Getting analyzing the manual information and dissemination of information to public
 - Saving on media communication
 - Existing ICT infrastructure of Participating Institutions strengthened and used during entire project, no additional or new hardware was asked for.
 - NIC/NICSI being a government organization only charged Rs.13.45 lakhs as facilitation, software hardware and site auditing and hosting charges for the project.
 - A very low cost, effective, transparent, responsive solution.
1. All documents namely prospectus, Seat matrices, counseling procedures etc relating with the online admission system remained available on all counseling related websites and were freely downloadable. It resulted in easy availability of all required documents/procedures/information to the participants from the website within ZERO time.
 2. Counseling-related services like submission of application form, download of admit cards, submission of choices for counseling, change in choices, download of seat allotment results, taking admission, verification of documents etc., all activities are online.

3. In a nutshell ZERO time taken by the government/DTE/HSCS in delivering the services after adopting the current online of counseling.

8. Replication

- The system already has covered the entire state of Haryana
- The Haryana model of counseling has been replicated in Punjab and Rajasthan from this year
- The system is so flexible that It can be replicated in any state in the country after localization, customization in the states reservation policy of seat allotments.

9. Implementation Model

- This project is designed/developed/operationalized by NIC/NICSI
- Owned and Implemented by Technical Education Department, Haryana State Counseling Society (HSCS), the Government of Haryana with the assistance of NIC Haryana State Center and participating Institutions across the state
- Centralizing Monitoring of and control of Intranet and information remains with the DTE/HSCS at state level
- Control of online admission and document verifications remains with the participating institutions under controlled access.

10. Technologies

Hardware

- Blade servers of the latest configuration at IDC NIC NEW Delhi for hosting of 11 databases and website
- High-end development client system for software development/customization system software
- MS visual studio 2005
- .NET Framework and Java as development tool
- MS SQL 2005 database (for counseling) and PG SQL (for entrance test) as database.

Connectivity

- 2 Mbps leased Line at DTE/HSCS to access the website along with 1 Mbps broadband connection as backup
- The same connectivity at participating institution level
- 4 Mbps exclusive and 100 Mbps shared band width at NIC Haryana State center
- 100 X Mbps shared connectivity at NIC Hq.
- 3-tier Web-based application accessible from any Internet point for candidates and controlled secured access using range based IP for Pls and SCBH.

11. Capacity Building

- **Conceptualizing the Idea:** To improve upon the above situations the Department of Technical Education, the Government of Haryana took a bold step for reengineering of the processes to make the system citizen-centric and easily transferable with the help of NIC and decided to implement the ICT driven Web-based solution for conducting “Paperless admissions”.
- **Institutionalization of the Project:** Creation of HSCS (Haryana State Counseling Society) by the state government for project execution, management and monitoring under Chairmanship of Financial Commissioner and Principal Secretary to the Government of Haryana with all VCs of the Universities in the State as members along with other prominent people and Director Technical Education as Member Secretary. Some other committees for standardization of the software and its implementation constituted relevant officers. Office of HSCS has been equipped with 1-2 Mbps connectivity and required number of systems and manpower.
- **Technical and Software Support:** NIC designed, developed, tested and implemented the Web-based solution having access to all students – candidates from any Internet point and anytime as per the schedule could go for online registration, downloading and printing of admit cards and viewing of results.
- **ICT Infrastructure and Services Delivery:** The students especially of rural areas who did not have Internet access at home or nearby Cyber-Cafés

were facilitated for utilization of existing ICT infrastructure of University Departments/Engineering/Polytechnic colleges across the state for online entrance test and submission of choices for counseling. Existing ICT Infrastructure was strengthened and utilized optimally. Each institutions is connected with at least 1-2 Mbps broadband/leased line connectivity of BSNL.

- **Capacity Building and Human Resources Training:** Existing manpower of technical institutions were utilized for execution of the project and service delivery in the remote institutions. They were imparted operational training for handling of the systems and to further cope with the visiting students for test/counseling and for resolving their project-related queries/problems.
- **Back-end Databases Creation:** The Department of Technical Education Haryana got question banks developed in the digital form through the concerned eminent professors. Now it has become an asset with the government. Through online registration, important databases of students, institutions and courses got created.
- **Secured and Controlled Access to Data:** The Participating institutions and DTE responsible for data uploading and updation could access the system through IP-based secured network of NIC for controlled, verifying, authentication and updation of admission status with regards to a candidate from their premises across the state on the central data server.
- **Payment Gateways:** To deposit the fees by the candidates/students, CBS branches of PNB and Axis Bank were utilized. One to this facility, candidates could deposit fee in any CBS branch of PNB from anywhere.
- Call center of capacity 25 has been established for replying to the queries of public/candidates.

12. Process Reforms

- To ensure the quality of teaching-learning process in technical institutions, right from the entry of the student through competition, streamlining of admissions is one of the important parameters. With this view and to resolve the generic problems faced by the candidates, their parents and state administration during entrance test/counseling/

admissions in all technical courses in the state government decided to make admissions in B.E./B.Tech/B.Arch on the basis of inter-se merit of AIEEE conducted by CBSE instead of conducting test at state level.

- The state government also decided that counseling/admissions for MBA courses shall be on the basis of MAT conducted by AIMA.
- Admissions to the rest of the courses were decided to be made on the basis of merit of state entrance tests.
- To bring in 100% transparency and to make the admissions highly cost effective and to minimize the travel by the candidates and parents, it was decided to give up the manual counseling system and adopted modern Web-based Online Off-campus multi counseling system
- on the other hand it was also decided to conduct online paperless entrance test for MCA, Pharmacy, Hotel Management and Lateral Entry Courses (Engineering and Pharmacy) for conducting state level entrance tests for enhanced transparency and efficiency for making merit based admissions under the aegis of newly constituted “Haryana State Counseling Society” (HSCS).
- Online verification of documents of candidates on the basis of those who they have taken admission.

13. Project Financials/Sustainability

- This Government owned project is a low cost solution as the system has been developed/customized and being operational zed by NIC/NICSI on nominal costs
- HSCS, the counseling society has income from the fee received from the candidates
- Project is easily sustaining financially for the last three years.

14. Project Teams and Leadership

- Financial Commissioner and Principal Secretary, Technical Education Department, Haryana
- State Informatics Officer, NIC-HRSC
- Director Technical Education Department, Haryana

- Technical Director, Scientists of NIC-HRSC
- Nodal Officers of Technical Education Department, Haryana
- DDG, STD, PSANIC, Headquarters New Delhi
- Project leadership by FC & PS Technical Education and Director Technical Education, Haryana
- Full time NIC-Haryana team, supported by part time staff members at IDC NIC HQ, responsible for making the website/database access available and highly secured
- Software development/customization team of NIC Haryana State center, 2-3 officers of NIC supported by 3 part time job work manpower
- For implementation, the staff members of participating institutions in the field and of HSCS at state level.

15. Key Project Outcomes

- **Sustainability:** Project is self sustainable for the last three years. Because the cost involved in execution of the project is very nominal as charged by NIC/NICSI available ICT infrastructure of Participating Institution's is used. Therefore no additional burden of up keeping of Infrastructure comes on the head of DTE/HSCS alone. Nominal counseling fee and entrance test fees as charged from the candidates that help in sustaining the project financially. Transparency may be another factor helping in sustaining the project
- **Usage:** Hassle-free round-the-clock services to the participating candidates in facilitating them for low cost counseling
- **Usefulness:** Required/related information is available online; since all data is available in digital form helps in analyzing various types of data queries required by planners within the department/government. Electronic data records are easily portable, storable, replicable and highly secured
- **Satisfaction:** All stakeholders are highly satisfied with the, performance, security and availability of the system, because the system with the above parameters meets the requirement of all stakeholders. e.g., a candidate sees his own seat allotment result by using his own passwords, but at the

same time for comparison, he/she can compare his own result with others to see the violations of merit, if any by the system, etc. The government is worried about security of information/data that is also met.

- **Empowerment:** All stakeholders are empowered by the knowledge of information made available to them by means of the project websites.

16. Service Users' Feedback Mechanism

- through call center established by HSCS at state level with toll free numbers
- using e-mails and mobile phones
- through Participating Institutions.

17. Implementation Challenges

- This was real Web-based online solution, developed and implemented for the first time in the region, rather in the country – Large publicity was required to meet with low awareness in terms of e-readiness amongst the candidates and parents (especially among ruralites), who faced some problems in operations of the website – government/Participating Institutions were asked to help such candidates.
- All 11 courses taken up simultaneously, resulting in problems accessing of Web server sometimes in peak hours from remote areas – Server strength was increased and code of application was optimized.
- Due to lack of proper e-readiness amongst the candidates especially from rural areas, fear of misuse of the passwords/user-IDs by the cyber cafés and other commercial Internet Points – No solution yet.
- Fear of lost of user-IDs and passwords by innocent candidates which is the key to submit their choices and accessing counseling website – Making them available through call centers after verifying their credentials.
- Chances of forgotten the “locking” of submitted choices, which was mandatory for seat allotment – Issues sorted out through call centers
- Probability of not updating the reporting/admission status of the candidates in time by the participating institutes for admissions due to any reason resulting in delay in seat allotments for subsequent phases because of non availability of exact position of vacancies—Candidates,

instead of reporting to the allotted institutions after every counseling, now report at allotted institution at the end when the need for document verification and admission comes.

18. Key Lessons Learnt

Minimize, rather don't accept any changes in the software project once it is audited and launched for the public.

- To start with take up start as pilot
- Due to lack of proper e-readiness amongst the candidates especially from rural areas, fear of misuse of passwords/user-IDs by the cyber cafes and other commercial Internet points where they go for counseling
- System should be highly secure and available.
- For such a major project we should have proper backups of manpower and ICT tools
- Facilities management is a must as one may have to work during nights also.

Project Contact Details

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e-Gram – Viswa Gram Project

Varesh Sinha and Vipul Mittra

1. Goals and Objectives

Mission e-Gram – Viswa Gram provides for electronic issues of certificates which include certificates of birth, death, income, caste, domicile, property, residence proof, agriculture, tax collection, marriage, family information and land ownership. A digitalized databank is in operation for issuance of the above mentioned certificates at the village level, which is the lowest administrative unit of Indian Governance. In a phase-wise manner of the e-Gram mission, all 13693 village panchayats are in a position to provide basic and very important services to their citizens in Gujarati vernacular language with the availability of VSAT connectivity. To leverage IT resources at the village level, e-Grams are being operated through Village Computer Entrepreneur (VCE) on a revenue sharing basis under Public Private Partnership model. This innovative mechanism is ensuring prompt services to the citizens; providing opportunity of an additional income to the village panchayats and generating self-employment opportunities for the rural youth. VCE also provides commercial services through computer, Internet and telephones. In a nutshell the e-Gram along with Internet connectivity operated through a VCE – the e-Governance business model of Gujarat has started functioning as a Village Knowledge Center or Common Service Center as conceived by the Government of India.

Effectiveness: Some important perspective shifts in delivering the services are the backbone of this Office of Development Commissioner's initiative. "Every rural citizen matters agenda" brought the universal coverage of the initiative, and the timely execution to ensure responsiveness of the government guided the implementation of the e-Gram. Within a time span of three years, this initiative has covered 13693 Gram Panchayats (GP) equipped with personal

computers to provide basic e-services and in the month of January 2008 Asia's Biggest VSAT Connectivity Project for public was rolled out which covered all 13693 Gram Panchayats with broadband Internet connectivity.

2. Spread of Project Service Users

Project is intended directly involving rural citizens so that they receive services at their doorstep.

3. Services Provided

Currently all the Village Panchayats (Gram Panchayats) i.e., 13693 are equipped to provide the following services through broadband connected PCs

- Birth certificate
- Death certificate
- Farmer's status certificate
- Document for caste certificate
- Income certificate
- Tax collection receipts
- Application forms for various development schemes
- 100% Gram Panchayats already provided e-Gram facilities in the year 2007-08. There is all roll out of 6000 Common Service Centers which will act parallel with e-Gram putting special emphasis on roll out of B2C Services through these centers. Gujarat is the leading state in India which rolled out and implemented Common Service Center Program of the Government of India.

Now rural people of Gujarat are also getting Business-to-Customer (B2C) services as follows:

- e-Ticketing of Railways, GSRTC, Airlines
- Utility Bill payments (Electricity, Telephone, Mobile etc)
- Licenses, permits, NOC, Insurance selling
- Employment forms, computer education documentation service for various schemes
- Telemedicine

- Market linkages for Agri Commodities
- RTO licenses, property cards

4. Geographical Spread of Project Implementation

The project is intended directly covering all 13693 Gram Panchayat Offices, 225 *Taluka* Panchayat and 26 districts of Gujarat.

5. Project Timelines and Milestones

The project was initiated in March 2003, by providing 700 computers with the help of Public fund and state government fund in the districts Kheda and Anand. Action Achieved –

- Hardware and accessories – computer (with laser printer and UPS): Up to Village Panchayat – 100%
- Direct Digital Reception System: (“C Band”: Up to *Taluka* Panchayat) (“Ku Band”: Up to Village Panchayat) – 100% 7400 already deployed
- Touch Screen Kiosk (Up to *Taluka* Panchayat) – 100% 4 Furniture Deployed
- Laptop and Projector (Up to District Panchayat) – 100%
- Video Conference Facility (Up to District Panchayat) – 100%
- GSWAN Connectivity (Up to *Taluka* Panchayat) – 100%
- Technical Manpower Support (Up to *Taluka* Panchayat) – 100%
- Technical Support & Training Service Provider (Up to Village Panchayat) 100%
- Gujarat Rural Accounting Management (GRAM) ‘Double Entry Accounting System’ for Village Panchayat – 100%

6. Direct Cost and Time Savings to Avail Services

Previous to this project, rural citizen had to come to the *taluka* and district headquarter to get services of daily uses which not only consumed their money and time but also 100% service would be unpredictable.

As Gujarat has large geographical spread and many places like Kutch, Banaskantha and many more villages are far away from the *taluka* or district headquarter, it would consume much of time as services were provided manually. Today, from the rural citizen point of view, there is ease in services.

7. Direct Cost and Time Savings to Deliver Services

Previous to this project, in manual system rural citizen was coming to *taluka* and district headquarter to get services of daily uses where there is always long queue and government staff is already flooded with lots of certificate issues work and hence either government had to put additional staff or effectiveness of work was suffering. But after the availability of e-Services at Gram Panchayat level through e-Gram project this work is now effectively happening at the Gram Panchayat level itself.

Since forms and services are now digitally available, manual system does not have any value any more. No more long queues and less pressure on government servants has facilitated more productive work and planning.

8. Replication

This project is unique in the sense that there is provision of e-Services delivered by the same village citizen (Village Computer Entrepreneur), availability of digital direct reception system for information dissemination as well as capacity building, to taking care of rural IT infrastructure. There is Technical Training and Training Service Provider (TSTSP) whose main responsibility include technical support and training service. So there is no other project replicated so far in this sense.

9. Implementation Model

The relevance of the e-Gram – Viswa Gram which is implemented as rural Gujarat's public service delivery mission mode for citizen's engagement and service delivery. It fulfills the constitutional mandate of delivering quality public services up to the lowest administrative unit i.e. village panchayats. The political and financial commitment from state and central government is worth mentioning to fulfill the objective of developing village panchayats by providing necessary financial allocations and basic infrastructure as the delivery point of e-services of different government departments. This in turn is bridging the information and technology gap between the urban and the rural dwellers by providing easy access to communication and information and involving rural masses in the process of service delivery.

10. Technologies

- 40 computers to each district panchayats supplied with operating system and SQL software.

- All 226 *Taluka* Panchayats equipped with 2 PCs, CD writer, laser printer and a touch screen kiosk.
- All 25 District Panchayats & 224 *Taluka* Panchayats connected through Gujarat State Wide Area Network and well equipped with Video Conference facility.
- All 13693 Gram Panchayats equipped with Computer, Printer covered through VSAT Connectivity and VoIP phone along with Web camera.
- 7400 Gram Panchayats have Ku Band facility and well connected to Bhaskaracharya Institute for Space Application and Geo Informatics (BISAG) Gandhinagar for two way audio and one way video facility.
- Capturing accounting details of all Gram Panchayats at the *Taluka* Panchayats with Gram Rural Accounting Management Software (GRAM).
- Social audit through informative kiosk.
- Information centers: touch screen to provide information on schemes, works and beneficiaries.

11. Capacity Building

To implement the program effectively, e-Gram initiative has promoted and implemented capacity building measures for all the stakeholders. It includes providing technical support and training support to personnel at all the four levels i.e., state, district, block and Gram Panchayat. Its main responsibility includes backstopping panchayat offices and imparting training programs for village computer entrepreneur. Training modules were specially designed in the vernacular language and all user employees of the PRIs have been provided hands on training in the use of applications in Gujarati. Professional computer training has been provided to nearly 10000 VCE with special focus on e-Gram and close to 6000 revenue officials trained under e-Gram specific training module on e-Gram panchayats. To follow up and build up on the past capacity building measures, a sustained training and technical support through competent organizations is planned for the next three years to assist the PRIs in e-Governance. An ambitious e-Governance and capacity building program to cover all elected representatives of all district panchayats, *taluka* panchayats figuring close to 19000, will be completed in the current financial year. This will provide basic e-Governance orientation to the public representatives and also enable them to use computers for retrieval of information.

12. Process Reforms

As process is very large in manual-based, it is a typical task to streamline all forms digitally. Now, in the near future application forms will be available on the Web too.

13. Project Financials/Sustainability

For this, the department of panchayat, created separate IT budget under regular budget and funds are diverted to implement that. Also for capacity Building, central government grant is utilized. On an average per village is now equipped with Rs.1.15 lakh IT Infrastructure.

14. Project Teams and Leadership

To make this endeavor successful, GoG has established e-Gram Viswa Gram Society, an autonomous body, as a nodal agency for smooth and speedy roll out of e-Gram Services. Political commitment at the highest level is ensured by bringing Gujarat's Chief Minister as Chairperson and under his guidance, a monitoring cell is dedicated to coordinate the day-to-day progress of the e-Gram mission. Principal Secretary along with the Development Commissioner with the help of Officer on Special Duty are seeing this project from state level, whereas in districts respective District Development Officer along with e-Gram Nodal Officer are seeing that at District headquarters, whereas *Taluka* Development Officer and Talati are responsible at *taluka* and village level for project implementation.

15. Key Project Outcomes

This initiative targets to promote and sustain the village panchayats, the basic unit of governance of rural India as the delivery point/conduit of e-services for various government departments. This initiative adopts the Five Es in Governance viz –

- Ease
- Economy
- Efficiency
- Effectiveness, and
- Ethics

This initiative aims at bridging the digital divide between the urban and the rural Gujarat by ensuring citizen's rights to information and translating it to a reality through access to digital information. This in turn is empowering rural community through access to global communication and information. Now there is no waiting period in issuance of various certificates, documents and application forms and these are available at nominal fees at their doorstep. This is also effective in the quick redresses of grievances that used to take a long time before this intervention. In the future this initiative is set to provide commercial services to the rural community.

16. Service Users' Feedback Mechanism

Any service which is used by user can be measured that how many certificate issued so far.

As for example, Land Right Records Status as on August 2008:

Month/Year	7/12 Certificate Issued	8A Certificate Issued	Total RoR Issued	Income Generated
April 2008	13723	5872	19595	100020
May 2008	30285	13909	44194	225105
June 2008	32373	13198	45571	231365
July 2008	37836	14977	52813	268415
August 2008	31095	12454	45549	221805
Total	145312	60410	207722	1046710

Certificate	No. of Certificates Issued
Birth and Death Certificate	1,34,215
Character Certificate	78,133
Farmer Certificate	14,272
Other Certificate	32,992
RoR (Through Dial-up line up to March 08)	1,40,184

Electricity Bill Collection Center through Gram Panchayat

In the state, there are 238 e-Gram Panchayats which are collecting electricity bill.

17. Implementation Challenges

In a nutshell, it can be summarized that the e-Gram initiative has learnt key lessons while implementing it in a mission mode. Involvement of line ministries and determining incentive mechanism for the village level revenue officials,

connectivity issue, transition/switching from a manual and free system to a transparent and paid service, identifying kiosk operators and setting up PPPs were the key challenges faced. By overcoming these hurdles, the road ahead for the e-Gram mission is to reach a level where all the rural villagers specially Below Poverty Line (BPL) families are issued land records, notices, receipts, collection centers for utilities like electricity, telephones, etc; and finally to emerge as IT hub for all administrative and commercial services at the village level with provision of State of Art State Data Center being established at Gandhinagar to cater safe and secure e-services.

18. Key Lessons Learnt

This Project which is integrating now-a-days with other key department services as much as it can. Now there is need of inclusion of the latest encryption technologies as well as digital signature. So the verification process can be more accurate and fool proof. Technologically now this project also requires replacement of old hardware with the latest one.

Project Contact Details

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Rojgar Wahini

Kavita Gupta

1. Goals and Objectives

The web portal Rojgar Wahini, <http://ese.mah.nic.in> has been developed for the Department of Employment and Self-Employment (DE and SE) and is hosted on the NIC Network – NICNET. The primary objective of the portal is to provide a forum for coordinating services that can link citizens, especially the unemployed candidates to the businesses and other forums including government having potential to give them employment, and also link them to private citizens who would like to engage them in the informal sector. The employment exchanges feed in the data of the unemployed citizens who come for registration. This data is available online at the touch of a button at the user's home/office. The dynamic, portable, UNICODE enabled portal provides access to this data of over 32 lakh registered candidates. The portal design has six major sub-sites, Candidates' Corner, Employers' Corner, Self-Employment, About Us, Right to Information (RTI) and Virtual Exchange (Kamgar Katta). The portal is a single point contact for all services provided by the department. The pages are designed and displayed in Marathi or English, as appropriate to the subject matter.

2. Spread of Project Service Users

Rojgar Wahini portal is an e-Governance application, forming a link between businesses and other forums including the government and citizens (B2C) and (G2C) and between private citizens who would like to engage the unemployed in the informal sector (C2C). The portal also builds a bridge between the government and business (G2B) through the employer module G2C because the candidate need not come to the employment exchange personally as the '*Candidate module*' of the portal allows an unemployed person

to register with a particular exchange on the Web. It facilitates candidates' to renew their registration and view, print their registration information, send a request for change of address and view their submission details. The portal publishes vacancy advertisements of departments of the Government of Maharashtra, Central Government and Private Sector. The portal provides information to candidates' on competitive examination coaching classes, books and magazines on career guidance and competitive examinations, TV and Radio programmes on career guidance and list of useful web sites on employment and career guidance. One can also view candidate submission list for any exchange for the vacancy notified after January 2003. The '*grievance redressal*' related link gives contact information to citizens about whom to call or write to for obtaining a service or place his grievance. The portal's '*Self-employment sub-site*' provides information, guidance and advice on self-employment schemes, small scale businesses they can take up and trainings on self-employment. The portal's '*Employer Corner*' allows employers to search the candidate database to find suitable candidates. There is a full sub-site on the '*RTI proactive disclaimers*' giving all the applicable information, including employee contact details. The portal's *Kamgar Katta* provides anyone to upload his biodata and anyone can upload his requirement of services. It is like 'classified advertisements' one gives or sees in any newspaper. It is a platform for informal service sector to service giver and taker without any intervention of the employment exchanges. It is C2C because it provides services to and from citizens. The portal provides G2B linkage because the employers can register or update their profile with an exchange online. Registered employers can submit quarterly returns (ER-I & II) on '*Employer Market Information*' (EMI); they can post their vacancy order notifications and get list of required candidates from the exchanges. Other government agencies such as the scheme implementing agencies, banks and other government organizations are using this portal information (G2G).

3. Services Provided

The portal provides the following services:

- Candidates can register and update their registration details online. However, the candidate has to report within a specified time period to the employment exchanges for verification of his educational qualifications and other details submitted by him. Even then they get their seniority as on the date of registration online. Due to this verification,

the portal is one of the only available portals where authenticated information is available regarding the candidates.

- Candidates can view job advertisements.
- Candidates can know their submission details i.e., in the event of notification from employer, a list of suitable candidates is provided. Here the names of the candidates are submitted. Thus, candidates know their submission details through '*mazi pathavanichi mahiti*' tab where he knows as to how many times their names have been submitted and to whom they were submitted.
- Employers can search suitable candidates from database of authenticated 32 lakh registered candidates.
- Employers can submit statutory returns ER-I & ER-II and vacancy order notifications online.
- Detailed information about schemes, businesses, training programmes, loans, NGO, Self Help Groups (SHGs), and banker's schemes for avenues is available on self-employment subsite.
- Informal sector workers or '*kamgars*' such as nurses, domestic helpers, construction workers, masons, drivers can post their biodata or search their requirements. The job provider too can post their requirements or search suitable persons according to their requirement.
- '*About Us*' contains information about the organizational structure, role and responsibilities of department and its personnel and the office locations, phone numbers, e-mail ids of the Department of Employment and self-employment.
- The *RTI* (Right to Information) sub-site provides access to the 17 proactive disclosures made by the department as per the Act. The contact details of the information officers, appellate authorities of the department are also made available.
- The *Bankers' Corner* gives advice on loans and related processes. Details of NGOs working for self-employment; and the details of seva societies registered with the department are also available here.

4. Geographical Spread of Project Implementation

It is a Web-based portal and is being used across the State of Maharashtra for coordinating the employment available with the employable persons. The USP

of the portal is the availability of a vast authenticated data. It can save immense cost to the employers and at the same time facilitate employment of the employable persons, thereby enhancing State's productivity. For self-employment related activities, the information can be used by anyone from anywhere.

5. Project Timelines and Milestones

- Project Initiation – 2005.
- Pilot roll out – 2006.
- Full-fledged version – June 2008.

6. Direct Cost and Time Savings to Avail Services

No additional cost incurred by the users for availing selected services in the existing system as compared with the manual system. The portal can be accessed free of cost through net connectivity. The portal can even be accessed from service delivery points in rural areas. Therefore, candidates need not travel to employment exchanges for registration. A candidate can also get most of the self-employment related information from a single point. He need not travel to agencies and/or banks to collect this information. At the time of manual working – registration/renewal/updating qualification, a candidate had to visit along with his testimonials to the employment exchange. He had to travel. Xerox copies of testimonials were collected, preserved and used for vacancy submission. In respect of employer he needed to visit exchanges for notifying vacancies/ submission of ER-I & ERR-II returns or collecting list of suitable candidates. Due to portal, vacancy notification, ER-I & ER-II statutory returns can be submitted online. And list of suitable candidates can be obtained online. Hence, not only candidates but also an employer has saved his time and money.

Estimated Calculation for Cost and Time Savings –

- a. Taking into consideration, the mobile registration facilities made available to candidates at *Tehsil* levels, an average distance of 10 km was covered by a candidate for registration/updating/renewing his registration. Supposing for him to register once, update qualification once in a year and renewing registration after three years, he will have to spend Rs.10/ – (minimum) on traveling for registration or renewal of registration or updating his biodata. He will have to spend 2 hours (average minimum) time on each count.

- b. Considering employers are at (average) distance of 10 km from the district place, an employer, needs to file quarterly statutory return ER-I (once after three months) and ER-II biennial return (once after two years) and a vacancy notification as and when there is a vacancy. He is required to visit an exchange 4 times in a year (on an average). He has to travel 10 km distance. He will (as an average) have to spend Rs.10/- rupees for a single visit. He will have to spend 2 hours time every time.
- c. At the end of year – 2007 – live register – 36, 08, 459 and 6,16,720 (fresh registration) in the state. And till June 2007, there are 25,786 employer on employer live registers.

Some of the regular and major activities of the employment exchanges such as registration, and submission have been computerized. Before this portal, candidates needed to queue up in front of the exchanges to register themselves. Now the portal is available online on 24 × 7 basis. Candidates therefore need not travel to exchange and wait in queue for his registration or renewal. They need not come to the exchange to renew their registration or update their qualifications and change their contact information. All details about periodic bulk recruitment in governments like constables, other police personnel, gram sewaks is displayed on this portal. Candidates can even download the application form.

Activities related to self-employment were not computerized. No manual or computer based system was available which could disseminate such massive and collaborative information in a local language. The Directorate used small booklets listing government schemes and other self-employment opportunities. These booklets were sometimes inadequate in quantity and needed updating. Candidates who came to exchanges, banks, loan disbursing agencies could get only partial information and would therefore fall prey to the illegal agents to get loans. Now all this information is available online and they know whom to contact, where to go, what to bring with them and what to do before they start from home.

7. Replication

The following features enable the portal to be replicated to other geographical location with very little modification.

- Adherence to Localization Standards for e-Governance issued by NIC. Uses Unicode, in script keyboard and targets the rural users.

- Database driven information of the organization: The data in respect of candidates, employers, schemes, agencies and training is massive and dynamic. So, a complete database driven solution is provided in PostgreSQL. Data Volume is 120GB.
- Keeping in view the rural candidates, the portal is designed in Marathi (local language, Devnagari script) using Unicode. Since a Unicode based design is adopted, no proprietary fonts are required to be downloaded to view the portal. Mangal font has been used throughout the site. All image buttons use the GIST font.
- Portability: The design is such that the portal can be enabled for any language without any programming effort. The Website can be converted to a particular language by translating the content to the desired language, all dynamic data stored in a database is to be entered in the given language and all static information like labels, messages and help accessed from common include files is to be converted to the target language. The portal is developed on the Open Source Platform.
- Maintainability: All care has been taken so that the site can be easily maintained by the user department. All information displayed on the Website is from a database and a facility is provided to authenticated users to add, update and delete the data elements as per the permissions granted to them. Style sheets are used to give uniform look and feel to all pages, facilitating easy maintainability. All labels and messages and the colour scheme used are defined in common files.

8. Implementation Model

Rojgar Wahini is Web-based portal, with central database of 32 lakh unemployed candidates from 45 exchanges across 35 districts of the state of Maharashtra. There is two way synchronization between the central server and the server at exchanges. The data related to registration, Renewal, updating and transfer is collected in data packets and downloaded and merged at the exchange server. Similarly, the data from the exchange server is uploaded and merged at the central server. This activity is done at off peak hours through utilities. The contents of the portal are maintained using Web maintenance module. Specific roles and responsibilities are given to the employment officers to add/update/modify the data.

9. Technologies

The portal has been developed using Open Source Technologies. It is developed on LINUX platform with PHP on the front-end and PostgreSQL at the back-end. Apache Web server is used to host the Website. Other components used for development are JAVA script, HTML, CSS.

10. Capacity Building

Project Team: Specification Gathering Team – Department of Employment and Self-Employment and NIC Design and Development Team – NIC Testing/Implementation – Department of Employment and Self-Employment Training:

- **Implementation Team – Training by NIC Duration:** 5 days training to exchange staff in 2005, 3 day workshop for Deputy Directors in 2005, 2 day workshop to core group on data porting in 2005, 10 days workshop for troubleshooters in 2004, 5 days training for 3 batches of exchange staff during 2004 contents: Computer Awareness MS Office, e-mail, Internet familiarization Web page design, Hosting, Web server concepts Database concepts, IBM DB2 Networking, e-security, e-Governance System Level familiarity with the Rojgar Mitra Redhat Linux OS.
- **Exchange Staff – Training by Core Group Duration:** At each Exchange, staff has been trained for 2 days by core group during implementation of the *RojgarMitra* software (January-June 2005). The objective is to train each individual completely so that knowledge is disseminated:
 - **Contents:** Complete *RojgarMitra* software backup and security. Two persons from each work area are identified as troubleshooters.
 - **Skills:** Linux Administration DB2 UDB Administration *RojgarMitra* Application S/W Installation.
 - **Data Porting Role:** Each troubleshooter supports the nearest districts in his allocated work area troubleshooter arranges a periodic training at the nearest divisional office/district location as needed.
 - **Policies:** NIC has followed the policies of DE and SE, GOM.
 - **Standards:** We have followed NIC Standards for designing and development of application.

11. Process Reforms

Designed new logic for submission procedure. Submission procedure is the procedure to shortlist suitable candidates as per employer's requirements.

12. Project Financials/Sustainability

DE and SE has incurred one time cost on hardware procurement and has paid NIC the operational charges. The software has been developed by NIC free of cost.

13. Project Teams and Leadership

Team DE and SE

Commissioner

ESE 12 officers from the department 7 Programmers on contract basis

NIC: Senior Technical Director

5 technical persons

1 Documentation officer

2 Trainers.

14. Key Project Outcomes

- First portal on self-employment for the tiny sector in local language
- Citizen-centric
- Single window access
- Minimal touch points
- Dynamic – Database driven
- Unicode Based – No proprietary fonts used to display *Devnagari* fonts
- User intention based design
- Pages in easy conversational Marathi
- Data collected from grassroot level
- Can be enabled for any other language
- Data of 35 lakh unemployed youth available online
- Useful even for other government departments and NGOs
- e-Inclusion

The portal has achieved the objectives it had started out with. The self-employment sub-site has been accessed by over 10,000 viewers since it has been launched. Positive feedback about the site has been received from all quarters.

Strategy Adopted for Gathering Information and Specifications: To develop and implement this e-Governance project department experts are involved from the initial requirement study stage. A core group of about twenty expert persons was formed. For self-employment it was found that the information is held by various agencies like scheme implementing, training, licence and permits, NGO, Banks etc. The main task was to interact with these agencies and collect and compile their information. This core team collected the information from various agencies. The team interacted with agencies, banks, successful and unsuccessful entrepreneurs to gather information. This group met at regular intervals to approve specifications and test for usability. The portal was developed after gathering requirements from the users.

Interoperability: The portal has been developed with the Open source technology to facilitate interoperability. Three elements of LAMP (Linux, Apache, MySQL and PHP) i.e., Linux, Apache and PHP have been used in the system. DB2 was used as the back-end as per the policy of the Government of Maharashtra. Now data is ported to PostgreSQL database. Unicode was used to display *Devnagari* so that no proprietary fonts are to be downloaded to view the portal. It also helps to convert the portal into any Indian language.

User friendly: 80% of the candidates registered with the employment exchanges in Maharashtra are SSC or HSC passed/failed/dropouts and not conversant with English. They possess few employable skills. Hence we decided that the content and lay-out of the site needs to be designed to communicate with them in a friendly and positive manner using their idiom and language. Intention based design has been adopted by grouping the information such that it is convenient to the users.

Accessibility: The portal can be accessed from Service Delivery Points in rural areas. It has simple, easy to use, graphical user interfaces in local languages to service semi-literate and even illiterate people. Interaction with the portal is through the click of a mouse with minimal or little interaction with the keyboard. It has interactive guidance as users navigate through the pages making them simpler and quicker to use.

Search Ability: In each sub-site, numerous searches are provided to help the user to zero into their nearest requirement. Candidates can search suitable vacancies available, suitable scheme for them, bank loans, project report, business matching their requirements, training needs, etc. Most of the information displayed on the portal is stored in database and is thus searchable through numerous search facilities. The searches are built as per the requirements of the visitors.

15. Service Users' Feedback Mechanism

A demonstration of the portal was given in all exchanges to the candidates visiting the exchange for different purposes. Feedback was taken from the candidates and after compilation by DE&SE they were incorporated in the system.

16. Implementation Challenges

- Local language support – Made portal with Unicode support
- Huge database – Prepared central server to cater to huge data
- User friendly interface and language – 80% of the candidates registered with the employment exchanges in Maharashtra are SSC or HSC passed/failed/dropouts and not conversant with English. They possess few employable skills. Hence we decided that the content and lay-out of the site needs to be designed to communicate with them in a friendly and positive manner using their idiom and language, Spoken language used in the pages, and minimal keyboard/mouse interface provided
- Gathering information and specifications: This core team interacted with various agencies, NGOs, successful and unsuccessful entrepreneurs to collect information
- Reaching the unreached – The portal can be accessed from Service Delivery Points in rural areas.

17. Key Lessons Learnt

- Prefer Open Source Technology.
- Follow Web security policy to develop secure systems.
- Address the performance issues from the design stage of the system and not the implementation stage.

- Choose the technology and platform which is best suited for your system. Do not go after the latest technology.
- Involve the user department officers from all levels as they give the right information and feel responsible for the product under development.
- Try to train maximum staff of the user department for different tasks. It helps a lot in project testing, roll out and maintenance.

Project Contact Details

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Dhan Kharidi-Online

B S Ananth and Somasekhar A K

1. Goals and Objectives

- **Easy paddy procurement from farmers with instant cheque delivery to farmers:** Under the decentralized procurement of paddy in Chhattisgarh, paddy is procured from farmers at Minimum Support Price (MSP) so that farmer gets value for his produce. The purpose of the system is to ensure that the payment to the farmers is made instantly. The paddy bought by farmers is weighed and details are directly entered into the system so that 'receipt' and 'cheque for payment' are immediately generated through computers. 1532 Purchase Centers have successfully used computerized system and issued computer generated cheques to 7.8 lakh farmers.
- **Checking leakage and diversion of paddy and rice, resulting in savings for the government:** Paddy procurement involves multiple stakeholders and millions of transactions. Manual reconciliation of paddy procured at purchase centers, stored in storage centers, milled through millers and receipt of CMR by CGSCSC and FCI is near impossible task. Hence diversion and leakages are most common in the system. The main purpose of the system is to computerize the whole process to check the leakage and diversion.
- **Better inventory control and better management of milling resulting in optimal capacity utilization and savings:** The information about daily procurement at different centers and its movement is now available to the decision-makers at all levels so that they can take informed decisions for better inventory control and optimal capacity utilization. The procurement

and movement details of paddy in 1532 purchase centers located mainly at village panchayat level are now available on Web within 24 hours.

- **Process reengineering for the purpose of better management:** The purpose of the system is to reengineer some of the processes and implement them uniformly throughout the state.
- **Transparency and citizen interface:** The system provides all reports on Web for everyone to access, there by creating transparency in the procurement for any citizen can access the information and be vigilant against corruption and mal practices.
- **To check fake or forged delivery orders and rice acknowledgements:** All the delivery orders and acknowledgements are accepted only after availability of the same electronically in the system. It double verifies the genuinity of the documents and eliminates chance of fake or forged documents.

2. Spread of Project Service Users

- Secretariat of Food, Directorate of Food and District Collectors (18 users)
 - Shall access monitoring reports to know paddy procurement and millin status and complaint redressal status through a Web-based application. Managing Director (MARKFED)
 - In addition to accessing monitoring reports, inter district paddy lifting permission is given through the module. District Food Controllers (16 Districts)
 - Registers mills online and grants permission for milling through a Webbased application. District Marketing Officers (16 Districts)
 - Enters into an agreement with millers who have got permission from food controller
 - Generates delivery orders as per the security in the form of Bank Guarantee, FDR or advance CMR received. System automatically gets CMR acknowledgement details from the CGSCSC and FCI – CMR receiving modules
- Paddy storage center in-charge (50 Storage Centers)
 - Receives paddy from purchase centers
 - Issue to miller as per DO or to FCI

- Paddy Procurement Centers (1532 Procurement Centers) Form based standalone module is used to
 - To register farmers
 - To receive paddy from a farmer
 - To print cheque for payment to farmers
 - To issue paddy to millers as per DO
 - To transport paddy to FCI and storage center
- CGSCSC, CMR receiving centers. (75 Centers)
 - To receive CMR as per the agreement made by DMO and create acknowledgement
- FCI, CMR receiving centers. (35 Centers)
 - To receive CMR as per the agreement made by DMO and create acknowledgement
 - Online application for registration
 - Can get his business details with government on Internet
 - Provided separate account for each registered mill. Farmers (7.8 lakhs)
 - Gets computer generated cheques towards payment to the paddy sold, at the same time on the same day. 7.8 lakh farmers received computer generated cheques during 2007-08 Kharif season.

3. Services Provided

Farmer

- Receipt of paddy through computers
- Payment through computer generated cheques.

Miller

- Online application for mill registration.
- Change of mill representatives through Internet.
- All business details in Web. Runners appointed to transfer data from PACS to Web and vice versa.
- Uploads and downloads data from server at any Internet access point.

Food Controller

- Mill registration
- Grant of permission for milling District Marketing Office
- Agreement with miller
- Delivery order creation. MARKFED storage center
- Receipt of paddy from PACS
- Issue of paddy to FCI or Miller PACS
- Procurement of paddy from farmers
- Issue of paddy to FCI, miller or storage center.

Centers

- Receive CMR from millers
- Receive levy rice from millers and traders. MARKFED Headquarters
- To issue inter-district paddy lift permission.

4. Geographical Spread of Project Implementation

The project is fully operational throughout the state. It covers the following offices.

- 1532 Paddy procurement centers which are mainly located at village Panchayats
- 50 MARKFED storage centers of paddy
- 75 CGSCSC-CMR receiving centers
- 35 FCI- CMR receiving centers
- 16 District Managers' offices of CGSCSC
- 16 District Marketing officers of MARKFED
- 16 Food Controller's offices
- CGSCSC Headquarters
- MARKFED Headquarters
- Directorate of Food

- Secretariat of Food
- 25 FCI Open Storage Centers were not included in the Kharif Marketing Season (KMS) 2007-2008. These centers will also be included in the KMS 2008-09.

5. Project Timelines and Milestones

Project Start:	10.06.2007
System Study:	11.06.2007 to 10.07.2007
Development and Testing:	11.07.2007 to 01.10.2007
Training:	02.10.2007 to 19.10.2007
Full Dress Rehearsal (Test Run):	20.10.2007 to 30.10.2007
Dhan Kharidi Project Operational:	01.11.2007.

6. Direct Cost and Time Savings to Avail Services

All the services are free to the user in the manual system as well as present system. The quality of the service is improved due to computerization.

Farmers used to get their payment with 3 to 6 days delay after sale of their produce in the manual system after making two or three trips to the society. In KMS 2007-08, 7.8 lakh farmers have received computer generated cheques on the same day immediately after paddy is sold.

7. Direct Cost and Time Savings to Deliver Services

NIL. But there are indirect cost savings to deliver services due to reduced leakage and diversion.

- Cheque preparation has become automatic and instant.
- All documents – Millers Registration letter, Permission Letter for milling, Agreement, Delivery Orders, Delivery Memos etc. are generated by the system with no delay.

8. Replication

- The project is implemented through out the Chhattisgarh state for state government procurement and milling.
- FCI, Chhattisgarh has become ready to implement the system for its milling operations also in KMS 2008-09 in a similar fashion.

9. Implementation Model

The project is government funded. The Government of India (GOI) pays 2.5% administrative charges for decentralized procurement of paddy at MSP on behalf of GOI. The total expenditure for hardware, infrastructure and manpower including the permanent loan given to PACS for purchase of hardware is within the administrative charges given by GOI for a single year. Software has been designed and developed free of cost by National Informatics Center (GOI) with the help of hired staff on contract.

10. Technologies

The PACS are mainly located at village panchayat level and connectivity is not available at most of these centers. Hence a form based standalone module has been developed for online purchase of paddy and issue of paddy to millers, storage centers and FCI. The application is in c# with back-end as MS ACCESS. Paddy receipt to farmers, cheques and delivery memos are printed on computer at real time. Special importance has been given to on-the-spot generation of cheques on computers, as it reduces the delay in payment to more than 7 lakh farmers. An interesting innovation of data transmission through motorcycle riders has ensured near real time data transmission from purchase centers to the central server and vice versa. V-SAT based NICNET connectivity is available in Chhattisgarh at block headquarters in the offices of Janpad Panchayats. 250 Motorcycle riders have been hired to carry data everyday from procurement center computers to block headquarters, where they upload the data on the central server through the Internet. Similarly, any new version of software or other information is downloaded from the server at the block level by these motorcycle riders, and carried to the procurement centers. All operations carried out by the district level offices such as collector office, DMO of MARKFED and DM of CGSCSC as well as headquarters are computerized through Web-based applications using ASP.NET as front-end and MS SQL server as back-end. At each of 50 storage centers of MARKFED, 2 computers were installed with a form based module to receive and issue paddy. The transfer of data used Web services. 70 Custom Milled Rice (CMR) receiving centers of CGSCSC and 35 CMR receiving centers of FCI are initially loaded with a standalone module to accept rice and generate acknowledgement report. The data transfer between these centers and server is done programmatically through 'ftp' without manual intervention. Later, it has been converted to Web-based application when good connectivity is ensured at these centers. At all the

65 CGSCSC Warehouses, 50 MARKFED Storage Centers, 16 District Food Controllers' Office, 16 District Manager's Offices, CGSCSC headquarters and directorate of food, VSATs were installed for connectivity by taking on lease from BSNL. All the VSATs were put under MPLS, so that access to Web application becomes accessing through intranet. MPLS increased speed of access considerably. Broadband or other connectivity also obtained at these places as a redundancy wherever available. 4 High-end servers are maintained at NIC Chhattisgarh state center –

- Application server
- Database server
- ftp server, and
- Backup server, with hourly backups from production servers

11. Capacity Building

All the field level officers have been involved in the system design and development from the very beginning, by way of conducting frequent workshops and meeting either in person or through VC. 1532 Data Entry Operators and 250 runners were recruited who are local to societies. About 2500 man days of training has been given in the operation of the system in addition to on-job training given at work places. By reaching village panchayat level and training the personnel there, this project has actually contributed to the development of human resources in the state – 7.8 lakh farmers saw computers and a local person (well-known to them) working on the computer with dignity and good earning. A certain percentage of these farmers must have decided that their children also should be trained on computers. This benefit is intangible and contributes to reduction of digital divide.

12. Process Reforms

- Mill registration made compulsory.
- Computerized procurement at PACS made compulsory. Special approval from Managing Director is required for manual procurement at PACS which will be given only for 3 days at a time.
- Computer Generated Delivery Orders and Delivery Memos etc., are made legal.

13. Project Financials/Sustainability

Capital Cost 18 crores

Recurring Expenditure 2 crores per year.

14. Project Teams and Leadership

Mr. Vivek Dhand, Principal Secretary (Food, Civil Supplies and Consumer Affairs)

Mr. D.K.Srivastav, MD, MARKFED and CGSCSC

Dr. B.S.Ananth, Commissioner (Food, Civil Supplies and Consumer Affairs)

Mr. Sanjay Alung AMD, MARKFED

Mr. Manoj Kumar Mishra, SIO, NIC Chhattisgarh, *sio-cg@nic.in*

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Mr. Rajeev Jaiswal, Deputy Director, Food, Civil Supplies and Consumer Affairs Development Team

Mr. Manish Koachar NIC

Mr. Satyanarayana Pradhan

Ms. Sheena

Ms. Nidhi Agrawal

Ms. Pushpa Jain

15. Key Project Outcomes

Sustainability: The project is fully functional throughout the state. All the documents – millers registration letter, permission letter for milling, agreement, delivery orders, delivery memos etc. – are being generated through the system. Farmers have enjoyed the quick payment towards their sale due to computerized system. No one can afford to face the farmer's dissatisfaction in delayed payment in case the computerized system is stopped. Millers are benefited with uniform and transparent treatment due to computerized system. National Informatics Center, Government of India is committed to give life time support. Hence the project is sustainable.

Usage: All the operations involved in paddy procurement, milling and receipt of CMR are computerized involving six different organizations. The usage is better understood with the following figures about transactions made through the system.

No. of farmers registered – 18 lakhs

No. of farmers who received computer generated cheques – 7.8 lakhs

Total payment made to farmers – 2392 crores

Total credit recovered – 352 crores

No. of mills registered – 1422

Quantity of paddy purchased – 31.5 lakh tonnes

Quantity of rice received – 16.5 lakh tonnes.

Usefulness

- Time gap in giving cheques as payment for the paddy procured from farmers is reduced. It is the GOI scheme to procure paddy from farmers at Minimum Support Price (MSP) to ensure that farmers get proper price for their produce. In Chhattisgarh, state government procures paddy from farmers through MARKFED and PACS. Earlier to computerization, there was a delay of 3 to 6 days to prepare the cheques and give to the farmers. During Kharif season 2007-08, cheques were generated through computers on cheque roles and the generation of cheques was instant. 7.8 lakh farmers were benefited during the season by receiving computer generated cheques.
- Centralized miller database and uniform procedures: Computerised millers registration was introduced in this season to check execution of agreement with fake millers. Giving permission for milling, execution of agreement and generation of delivery orders are done through Web-based application. In the manual methods it was very difficult to ensure that uniform procedures are followed in all the districts. Computerization resulted in ensuring uniform procedures throughout the state.
- Process reengineering has been done after a complete study of paddy procurement and milling in consultation with all stakeholders including

state government, MARKFED, CGSCSC, Food controllers in the districts, district cooperative banks, PACS, and rice millers.

- Real time reconciliation of stocks has been possible and possibility of fraud has been minimized.
- Web application leads to micromanagement of inventory, resulting in quicker milling, less damage to rice and paddy, and substantial savings.
- Details of farmer-wise paddy procurement and payment to farmers, details of agreement with millers, delivery of paddy to millers and Food Corporation of India, receipt of rice from millers, payment to millers etc., are all available on our website with full access to all citizens resulting in total transparency. *cg.nic.in/dcppedsmis* – MARKFED Headquarters' Module
- Complaint monitoring system increased the speed of action on different complaints due to close monitoring.
- Call center operating to accept complaints on department of food has many success stories in controlling diversion.
- Operational convenience has been the obvious outcome of this computerization as all the processes involved in the food grain supply chain were computerized.
- Facilitating ICT-enabling/e-Governance: The whole food grain supply chain involving 6 different organizations (Department of food, MARKFED, CCB, PACS, CGSCSC, and FCI) has been computerized and ICT is used in different ways to make the governance nearer to the citizen.
- Empowerment Transparency: The following details are available online for increasing transparency.
 - Details of 7.8 lakh farmers who sold paddy to different societies.
 - Procurement of paddy by different societies and its transport to FCI, miller or storage center.
 - Details of stock at storage centers.
 - Payment details to farmers.

- Mandi purchase details.
- Rice procurement – CMR and levy
- Details of CMR and levy rice received by CGSCSC centers.
- Details of registered mills, permission granted for milling and agreement executed.
- Complaint lodging and its status: Call center – Most of the information is available online which is accessible through Internet. People who do not have Internet access, can get the information through a call center by calling a toll free number (1800-233-3663). Call center can also be used to lodge complaints or give suggestions and get any kind of information regarding the department. The information available on Web and call center, made the citizen empowered.

16. Service Users' Feedback Mechanism

- Online Website FOOD FORUM is used as a medium for giving feedback and getting technical solutions. *cg.nic.in/food status*
- Call center is used to lodge complaint on VSATs and other H/W related problems.

17. Implementation Challenges

- **Lack of connectivity at paddy procurement centers:** Paddy procurement is done in 1532 procurement centers at remote places of the state. Connectivity is not available at these places and daily procurement details are required to be available at state level. An interesting innovation of data transmission through motorcycle riders has ensured near real time data transmission from purchase centers to the central server and vice versa. V-Sat based NICNET connectivity is available in Chhattisgarh at block headquarters in the offices of Janpad Panchayats. 250 Motorcycle riders have been hired to carry data everyday from procurement center computers to block headquarters, where they upload the data on the central server through the Internet. Similarly, any new version of software or other information is downloaded from the server at the block level by these motorcycle riders, and carried to the procurement centers.

- **Unreliable power supply at procurement centers:** Anticipating bad power supply at procurement centers, generators were made available at each center. Proper earthing and UPS are provided for computers for voltage stabilization.
- **Lack of connectivity at storage centers and CMR receiving centers:** VSATs are taken on lease from BSNL. Whenever SWAN is operational we will discontinue VSAT lease and use SWAN for connectivity.
- **Lack of sufficient speed with VSAT for using on line Web application:** This was a serious problem. Due to lack of sufficient speed, 100% computerised operations could not take place. The problem was solved by establishing MPLS and putting all the computers at centers and servers on intranet.
- **Font compatibility for Hindi data:** The common problem in storing Hindi data is its compatibility as different people tend to store the data in different fonts which are mutually incompatible. From the very beginning, it was decided to use Unicode only for storing data in all modules. Thus compatibility is achieved.
- **Lack of trained manpower:** More than 2500 man days of training and workshops were conducted to meet the challenge.
- **Coordination between different departments:** Six different organizations are using different modules of the system and they are inter-dependent. Coordination between these organizations is a major challenge. Secretary, Department of food took personal interest and coordinated with almost daily meetings and monitoring.

18. Key Lessons Learnt

- Experience shows that process computerization is more sustainable than an MIS where data is entered after process is over through manual methods.
- Connectivity should be addressed first.
- Training and capacity building is the key for successful implementation of the system.
- To make a project successful, top level management should accept system generated reports only. Manual reporting should not be accepted.

Project Contact Details

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Krishinet

D N Sharma and Kamal Kumar Jain

1. Goals and Objectives

- Informed farmer is empowered farmer – To insure that every farmer has an easy and round the clock access to all possible relevant information at their doorstep.
- To equip farmer and field level worker with advance information on weather, anticipated pest problems, probable market trends to minimize the risk and optimizing the returns.
- To develop an end to end online help desk for providing information of various departmental schemes and programs.
- To reduce the time, cost and energy spent by farming community for registering and tracking their application status and soil testing results.
- Effective monitoring and evaluation of departmental schemes and programs.
- To develop realistic actual demand estimation system for accessing requirement of agricultural inputs from village level and to ensure their quality and timely distribution.

2. Spread of Project Service Users

- Citizens, specifically farmers' community
- Related agencies
- Related societies and NGO
- Trainings centers, students and research workers

- Traders and Processing industry
- Agriculture Universities and *Krishi Vigyan Kendras*
- Government and extension workers
- Policy makers

3. Services Provided

1. Citizens (Farmer and Agriculture labour):

- Transformation of Information and easy and flowing access to related Information of –
 - Agriculture recommendations
 - Packages of practices
 - Farm Management practices
 - Rate, supply and availability of agriculture inputs like seed, fertilizer, pesticides, implements and bio-products
 - Model projects and successful practices adopted by other farmers
 - The weather, rainfall, temperature and natural calamities through respective links, possible warning of expected effects and advises
 - Instant availability of *Mandi* and market rates of farm produce through respective links
 - Different departmental schemes and programs.
- Effective and need base interaction with the extension worker, and scientist.
- Online soil testing reports and recommendations.
- Online information, of departmental training programs.
- Grievance redressal services to reach out different departmental functionaries.
- Registration and tracking of applications for assistance through unique ID under various departmental schemes.
- Alert and information of pest incidences forecastings, departmental drive and new releases.

2. **Business:** Easy and 24×7 access and availability of information related to
 - Agriculture statistics (area, productivity, quality, rate and availability of Agriculture produce)
 - Rate, supply and availability of agriculture input like, seed, fertilizer, pesticides, implements and bio-products.
 - Contact information of departmental functionaries and related institutions.
 - Various acts, regulations, policy and procedures of Department.
 - Online application formats for related transactions.
 - The weather, rainfall, temperature and natural calamities, and related advises.
 - Instant availability of *Mandi* and market rates of farm produce.
3. **Government:** Increased efficiency and effectiveness of departmental functionaries by –
 - Real-time communication
 - Real time reporting of progress of various departmental programs and schemes
 - Reduced paper work in preparing reports, collection and maintenance of various data allow focusing on field working
 - Improve image by transparent and quick disposal of citizen related transactions
 - Information related to rate, supply and availability of agriculture input like seed, fertilizer, pesticides, implements and bio-products
 - Contact information of departmental functionaries and related institutions
 - Information of related acts, regulations, policy and procedures of department
 - Information related to the weather, rainfall, temperature and natural calamities, the possible effects and advises
 - Online availability of record and reports of human resource for efficient management and deployment of manpower available. All information

and interactive advisory and extension services of DFW&AD are available through portal.

4. Geographical Spread of Project Implementation

The implementation includes more than 750 departmental offices spread throughout the state. All 07 divisions, 48 districts, 99 SDAOs, 81 ASCOs and 313 block offices are included in the project and are provided computers, printers and UPS with minimum one hour backup. BSNL is providing connectivity up to block level. More than 4000 employees up to grassroot level have been trained in different operational modules to operate the portal and deliver intended services. 'Krishinet' is the only 24×7 portal in Hindi, specifically addressing the information and advisory needs of more than 70 lakh farming related families (About 75% of total population) of MP and can be accessed from any place having Internet connectivity.

5. Project Timelines and Milestones

S. No.	Task Details	Timeline Achievement
1.	System study, analysis and design	January-March, 2007
2.	Approval of system design document.	February-August, 2007
3.	Development of user interface and information utility for portal.	March- September, 2007
4.	Development of MIDSSs modules based on the approved design document	August, 2007 to March, 2008
5.	Input of data (master and transactional) from various locations	August, 2007 to May, 2008
6.	Final implementation of project as per approved system design and architecture document	August, 2007 to July, 2008

6. Direct Cost and Time Savings to Avail Services

Once the information is freely available anytime, the cost of traveling to the block office for inquiring and availing the services is saved.

Online registration utility ensures the registration of claim for assistance under a particular program/scheme and therefore transparency is saving follow-up traveling costs.

Timely availability of critical information leads to reduction of risk. This will help to improve productivity and ultimately return on investment on agriculture enterprises.

Information is available at farmer's convenience. This has reduced the time taken in enquiring about the desired information.

7. Direct Cost and Time Savings to Deliver Services

The following administrative costs has been reduced.

- Communication (Phone and Fax)
- Travel (time and money)
- Stationary
- Time and energy of employees in computation and communication
- Saving of time, energy and money due to reduction in monitoring and review meetings
- Expanded reach reduce the cost of exploring suitable beneficiary.

This has saved up to 65% of efforts used for preparation, collection and compilation of reports at block, district and state level. Real time reports are generated at district, zonal and head office

8. Replication

- The project is designed to accommodate any number of schemes, components, input, reporting locations.
- The monitoring and management of demand generation, distribution and availability of inputs can be further scaled up to incorporate private agencies/dealers.
- The MIDSSs and EMS models are replicable to all those government departments having functional similarity in hierarchy and execution of schemes.

9. Implementation Model

The project is government-owned with an idea to integrate all relevant information and departmental services at one logical platform without duplicating the effort. A total sum of Rs.780.61 lakh has been approved by GOI. The state government shared the responsibility of providing all the basic infrastructure and manpower.

Component Implementation Partners

- Customized Application Software Development CRISP, Bhopal
- Training CRISP, Bhopal
- Data Entry CEDMAP, Bhopal
- Connectivity up to Block level BSNL
- Project and Technical Consultants – Sri Dwarika Singh and Sri Ajay Kumar.

10. Technologies

The source code to entire utility is with the department along with its sole ownership. Application development environment is using ASP.NET Database and MS SQL Server.

Scalability and Replicability

- The project is designed to accommodate any number of schemes, components, input, reporting locations.
- The Monitoring and management of demand generation, distribution and availability of inputs can be further scalable to incorporate private agencies/dealers.
- The MIDSSs and EMS are replicable to all those government departments having functional similarity in hierarchy and execution of schemes.

11. Capacity Building

1. For implementation of the entire project, a three tier structure was envisaged –
 - a. Project Steering committee at apex level under chairmanship of PS, DFW&AD supported by high-end technocrats for policy decisions, necessary assessment and approvals.
 - b. Executive committee in the chairmanship of Directorate Agriculture supported by high end technocrats for periodic monitoring and reviews of implementation.
 - c. Nodal officer heading implementation team for day-to-day execution and coordination.

2. Implementation plan was prepared with the following components.
 - a. Identification of services and accordingly modules to match the project objectives. Orientation and sharing workshops for implementation managers were organized at different levels. RSDs (Requirement Specification Documents) were prepared for each module and software development was outsourced to CRISP.
 - b. Capacity building and training-needs assessment. Based on training-needs, training modules were designed and an initial plan to train 4000 staff is implemented. So far 4241 participants have undergone training under different training modules to match their requirement.
 - c. Assessment of hardware requirements up to blocks level.
 - d. Infrastructure requirement up to block level to establish a *Kisan Gyan Kendra* with proper electrical connection, earthing and furniture.
 - e. After discussing with the Government of Madhya Pradesh on status of SWAN, BSNL was selected to provide connectivity up to block level till the SWAN became operational.
 - f. Backlog dataentry work was assessed and outsourced.

12. Process Reforms

In the first phase, the objective is to make the system more efficient, responsive and transparent by using technology as an enabler.

13. Project Financials

The fund approved by GOI under Agrisnet for implementation of this project is:

	(Rs. in lakh)
H/W and System S/W	319.63
Application Software	102.42
Dataentry	101.00
Networking	6.60
HRD (Training)	180.00
Misc.	70.96
Total Approval	780.61

- State Sector Scheme during the 11th year plan (2008-2012) to further support the recurring expenditure for operation, maintenance, consumables, training, service support and delivery of services through *Krishinet* component.

- Provisions under RKVY for further infrastructure support to upgrade, enhance and integrate the Application with further requirement of the department.

14. Project Teams and Leadership

1. Administrative Team:

- a. Concept Leader and Chairman, Project Steering Committee
- b. Team Leader and Director, Agriculture
- c. Nodal Officer and Additional Director, Agriculture
- d. Assistant Director, Agriculture

2. Technical Team:

- a. Developed by dedicated team of technical professionals from CRISP, Bhopal
- b. Consulted by
 - Shri. Dwarika Singh, Independent IT Consultant
 - Shri. Ajay Kumar, Independent IT Consultant

15. Key Project Outcomes

1. Sustainability

- a. State Sector Scheme during the 11th year plan to further support the recurring expenditure for operation, maintenance, consumables, training, service support and delivery of services through KRISHINET
- b. Provisions under RKVY for further infrastructure support to upgrade, enhance and integrate the Application with further requirement of the department.

2. Usage Number of hits during 2008

- a. April – 2,81,469
- b. May – 5,50,062
- c. June – 3,45,804
- d. July – 6,88,508
- e. August – 9,13,216 (up to 27 Aug'08)

3. Usefulness and Satisfaction

- a. The information can be provided to farmers at no cost through '*Kisan Gyan kendra*' at 313 block offices thus reducing their time of travel and easy access to information – Broad geographical coverage.
- b. The agricultural advisory services, availability and rate of agricultural input, information on various schemes and programmes, day-to-day agricultural activity, market prices and meteorological information, etc., can be provided to more farmers frequently and intensively at one interactive platform.
- c. Feedback and grievances can be resolved frequently.
- d. The transaction entry at the block level ensures better monitoring and management up to micro level of execution.
- e. The communication channel between block and other offices of Agriculture is more IT-friendly, quick, secured and efficient now, due to e-mail facility.
- f. Block offices can readily access the decisions and guidelines of the higher offices including targets and allotments.
- g. The ready availability of Information in Hindi regarding package of practices of commonly growing crops in Madhya Pradesh, new varieties and their availability and various crop management technologies will bridge the gap between farm and laboratory. This not only helps farmers but the extension workers can also update themselves with the latest happenings in the sector. Practically, this is the first crop season after the launching of the portal. A systematic evaluation study is proposed after 2008-09 Rabi season.
- h. Empowerment bridging the digital divide by addressing the information need of over 70% rural population of state. Informed farmer is empowered farmer.

16. Service Users' Feedback Mechanism

1. Online utility for suggestions and feedback under public grievances is built in the portal.
2. For G2G services, questionnaire and survey during training and workshops.

3. Evaluation study is proposed under project scheduled during the next season in April-May, 2009.
4. Creation of farmers' user groups and orientation training of *Kisan Mitra and Kisan Didi* (Resource farmers) is planned during the next season.
5. Register at departmental farmer information centers for recording feedback of user farmers.

17. Implementation Challenges

The greatest implementation challenge is the geographical spread of the number of outlets/offices where the project has been implemented. The co-ordination and monitoring of progress of different components of project was the key challenge. The existing e-readiness and IT literacy status of departmental officers, employees was another big issue. The general attitude of rejecting and questioning the success of new technology in rural condition has created road blocks during requirement collection and implementation of the project. Unawareness often leads to the resistance/ignorance towards IT. Initially the project envisaged the provision of connectivity through SWAN upto the block level offices and service delivery mechanism through proposed CSCs under NeGP. Since the implementation of above is still under process, this has to be supplemented by a revised proposal to GOI. Infrastructure support at *Kisan Gyan Suchana Kendra* at all block level departmental offices are further supplemented under RKVY which take their own time and ultimately delay in project progress.

18. Key Lessons Learnt

1. More intense and user interaction should have been done before finalizing the requirement specification.
2. Since the service delivery mechanism and connectivity up to the lowest level of execution was envisaged to be provided by SWAN and CSC, it has been felt that first year provisions for connectivity should have been kept in the project itself.
3. Actual requirement from respective users start coming only after the pilot testing of project. It has been felt that more intense orientation is required prior, during and after finalization of the requirements.

4. Provision of awareness campaign and creation of farmer's user group should have been kept during project planning itself.
5. Availability of sufficient infrastructure at different offices at execution levels is critical after training, as operation of portal requires specific skills which demand considerable practice after training.

Project Contact Details

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Chhattisgarh Online information for Citizen Empowerment – CHOiCE

Aman Kumar Singh and Mounika Nandyala

1. Goals and Objectives

The basic goals and objectives of implementing CHOiCE (Chhattisgarh Online Information for Citizen Empowerment) Project are:

- To develop a robust system which can handle at least 30,000 named users and 3,000 concurrent users.
- To establish electronic citizen service centers across Chhattisgarh State to deliver more than 131 e-Governance services.
- To ensure the stability, availability, and security of the service centers with a strong Server end support.
- To introduce a ‘single window’ experience for residents, enabling them to pay tax, electricity, and water bills, search for property records, and apply for passports online.
- To improve communication between government administrators and citizens by building an interactive Web portal to disseminate information and submit grievances.
- To adopt transparent, best-practice business guidelines, ensuring staff and residents track the progress of a payment or query and enhance efficiency and productivity as a result of automating manual processes.
- To lower the costs by adopting a centralized architecture, enabling the platform to be administered and supported from one location.

- To create a centralized database to store critical business data for accurate and correct information since these applications have legal implications and was to handle personal and private information of the citizens.
- This system is also destined to provide easy access to information by enabling senior managers and staff to access data across different departments via a Web-based interface.
- This system also has one goal that data duplication by creating a single data entry point is also achieved.

2. Spread of Project Service Users

CHOiCE is a One Stop Window and integrated with other government departments like Municipality, District Collectorate, Urban Development Authority, Regional Transport Office, Panchayat, Rural Development Department and Social Welfare Department, Public Welfare Department, Education Department, Health Department, Electricity Department, and Police Department. Presently, more than 30 G2C and numerous G2B secured services for all the requirements of citizens are being provided. CHOiCE agents appointed by the concerned district collector work as notary and an extension of government Office as per rules framed under IT Act 2000. It is the only project which is fully in compliance with IT Act 2000. The entire workflow involving citizen interaction with government has been designed to flow electronically so that 24×7 availability of government is ensured through these CHOiCE agents.

3. Services Provided

Services provided Under CHOiCE Project

- **Certificates:** Creation and distribution of certificates for income, domicile, caste, birth, death, etc.,
- **Public Distribution Services (PDS):** Issue of ration card etc.
- **Grievance Handling:** Related to unfair prices, non-availability of doctor. Online filing and receipt of Information relating to the Right to Information Act.
- **Link with other e-Government Projects:** Registration, Land records, driving licenses etc.

- **Information Dissemination:** Disseminating information relating to government schemes, entitlements etc.
- **Utility Payment:** Payments relating to electricity, water bills property taxes etc.

4. Geographical Spread of Project Implementation

In CHOiCE, Web based application has been developed which is easily scalable upto the limitations of Internet availability. CHOiCE has an ability for an increasing number of organizations like Municipality, District Collectorate, Urban Development Authority, Regional Transport Office, Panchayat, Rural Development Department and Social Welfare Department, Public welfare Department, Education Department, Health Department, Electricity Department, and Police Department to easily share a single distributed system.

5. Project Timelines and Milestones

Project Timelines: The “CHOiCE” Project was formally inaugurated by the Hon’ble Chief Minister of Chhattisgarh along with Minister (IT), Secretary (IT) and CEO (CHiPS). The event was well publicized in all the national and local newspapers. The project was formally inaugurated at Raipur at the Collectorate Office on 30th October 2004.

Project Rollout: The project has been successfully rolled out in the city of Raipur and very soon it will be rolled out in the remaining parts of the state.

Current Expansion: The project has been rolled out in five districts of Chhattisgarh viz.

- Rajnandgaon
- Durg
- Bastar
- Bilaspur
- Surguja

Future Expansion: In future the project will be rolled out in remaining 12 districts of the state.

Milestones

- CHOiCE is the biggest open source e-Governance project in our country.
- Digital workflow of documents from one office to another.

- The project is the first of the sort in the country to use three level security which includes bio-metric authentications and digital signatures.
- For the first time in the country, Private Citizens (CHOiCE Agents) have been notified as Public Servants under IT Act, thereby enabling them to process government documents – Robust Application Software has been tested for 3000 concurrent users.
- The project is IT Act 2000 compliant and provides legal validity to its electronic transactions. More than 2 lacs certificates are already issued.
- Rural CHOiCE is also under implementation in the state as CSC project.

6. Direct Cost and Time Savings to Avail Services

Cost savings to avail services: The cost incurred by the user to use the services is provided by CHOiCE; the government of Chhattisgarh exercises the powers conferred under section 90 read with section 6 of the Information Technology Act, 2000 (No. XXI of 2000). It has made rules to carry out Electronic Governance with respect to the Notified Citizen Services to provide any appointment, functions, regulation and liabilities of Authorised Citizen Services Agents, and to provide incidental or related matters thereto. The service charge for the Notified Citizen Services involving not more than one page each of the application or the appropriate desired document – the charges to citizen are limited to Rs.15/- to be made at the time of making application and Rs.5/- at the time of printing the certificate. For Information Services and Public Grievance Redress Services, the charges are Rs.10/- and for using application status enquiry services through these agents Rs.2/- needs to be paid by the citizens. For each additional document, the agents are authorized to charge Rs.2/- extra.

Time savings to avail services – availability of 24×7 online government services: This is in line with the true spirit of citizen-centric governance. Normally, accessing governmental services is not an easy and pleasant experience. For some work, one has to visit offices repeatedly. Availability of services online at all time is a great effort in creating a responsive government.

7. Direct Cost and Time Savings to Deliver Services

Cost Savings to Deliver Services

Administrative and operational cost savings by streamlining the activities with vendors/suppliers is given in the following Table.

Type of Transaction	Charge to Citizen	Choice Agent Share	Government Share	Utility Provider
Certificates	Rs.20.00	Rs.18.20	Rs.1.80	Rs.0.00
Utility Collection (Electricity)	Rs.2.50	Rs 5.00	Rs.0.00	Rs.2.50

Time Savings to Deliver Services

- Faster decision-making/less of file movement.
- CHOiCE initiative has curtailed the waiting time for certain documents from 15-20 days to just 1-2 days.

8. Replication

After Raipur, the project has been rolled out in five districts of Chhattisgarh viz.

- Rajnandgaon
- Durg
- Bastar
- Bilaspur
- Surguja

In future the project will be rolled out in remaining 12 districts of the state.

9. Implementation Model

CHOiCE has been designed as a solution for all citizen needs. It is implemented on decentralized PPP model where any private person with requisite infrastructure and qualification can be declared as CHOiCE agent.

10. Technologies

The entire development of CHOiCE is on Open Source Technology which is platform independent, based on n-tier architecture which supports –

- Linux environment
- Localization (Unicode) support
- Authentication framework through smartcard and biometric (fingerprint) devices
- Public Key Infrastructure (PKI) along with smart card for Privacy, Authenticity, Integrity and Non-repudiation

- MVC (Module View Controller) Payment gateway Support for Payment Services
- IVRS (Interactive Voice Response System) implementation for Status Inquiry etc.
- ENS (Electronic Notification Server) for alert messaging
- NMS (Network Management System) for network monitoring.

The CHOiCE system utilizes an Oracle Database on the Sun Solaris operating system and is integrated with the back-end applications of 10 government departments. Robust authentication features ensure the security of confidential information. The system also supports interactive voice response (IVR) capabilities and cell phone text messaging. The application is also required to be portable enough on Thin Client on Linux environment along with biometrics, PKI and smart card.

11. Capacity Building

A very important feature witnessed by the implementation of the CHOiCE project in the state has been attitudinal change amongst service officers and citizens. Now, several government functionaries from different departments are collectively working on the same network to service citizens in an integrated fashion. This activity is changing attitudes of government administrators, who earlier suffered from apathy and low morale in their work. It was imperative for the success of the project that the staff became emotionally involved in the project. The strategy is to send home the message that the individuals selected for CHOiCE have a very special responsibility on them – that of taking the state to the next millennium. The self-esteem and image of the workers went up substantially, as they now perceive themselves as computer professionals working in an excellent environment. The citizen attitude towards the government has also changed as a result of an increased sense of trust and reciprocity developing between citizens and the state. With CHOiCE, the government is seen as being providing a reasonable level of service without corruption.

12. Process Reforms

The CHOiCE system utilizes an Oracle Database on the Sun Solaris machines, with Linux operating system and is integrated with the back-end applications of 10 government departments. Robust authentication features ensure the security of confidential information. The system also supports IVR capabilities

and cell phone text messaging. The application is also required to be portable enough on Thin Client on Linux environment along with biometrics, PKI and smart card. Back-end processes of government functioning has been completely automated and there is no paper transaction at all. Movement of documents is also on electronic mode. For the first time in country, private citizens have been notified as public servants under IT Act. This enables CHOiCE agents to process government documents.

13. Project Financials/Sustainability

- The project is on open source, hence there is no additional licensing cost for horizontal proliferation of project;
- There is political and administrative support in the implementation of the project; more than two lakh certificates have been transacted through this portal and the project seems to have achieved the critical mass.

14. Project Teams and Leadership

CHOiCE has two authorized committees – the project directing committee and the project steering committee to carry out the project and for any consultation with relation to the stakeholders. The project directing committee is headed by district collector and the project steering committee is headed by the secretary urban administration. All the stakeholder departments such as panchayat, education etc. have their representatives in these committees. Even the agents are invited in the meetings of these committees for their feedback. The main functions of committee chaired by the district collectors as Project Director are as follows:

- Coordinate various activities between government departments/agencies/bodies, CHiPS, CHOiCE agents and other stakeholders in the project.
- Review progress of utilization of CHOiCE services by various departments.
- Issue orders etc., for effective implementation of CHOiCE.
- Appoint CHOiCE agents for setting up of CHOiCE centers.
- Execute Agreement with CHOiCE agent.
- Publicize CHOiCE services offered and CHOiCE agents.
- Monitor the performance of CHOiCE centers through MIS reports/other mechanism and issue periodic guidelines/instruction on the same.

- Ensure a fair and transparent system at CHOiCE centers including handling of cash, sharing of revenue, display of services with rate list etc.
- Any other issue pertaining to implementation of CHOiCE in the respective districts.

The main functions of the state Project Steering Committee are:

- To monitor the implementation and usage of CHOiCE services.
- To take decision with regard to effective implementation of CHOiCE services.
- To decide on timeframe for sunset on manual procedure.
- To decide on further inclusion of services under CHOiCE project.
- To coordinate between various stakeholders at state level.

The following technological parameters are observed by the Technical Committee

- Environmental change and forerunners of the technology change
- Substance of such technology changes as well as report and identify possible consequences.
- Measure and observe the speed and direction of the new technology.
- Timeframe and future roadmaps of new technology change.

15. Key Project Outcomes

1. **Sustainability:** Any IT solution is successful only when it is sustainable with a wide range of audience and so is CHOiCE. Though CHOiCE is intended to serve the purpose of the general public and address all the services very efficiently, it is sustainable because it is indirectly enabling all the government dignitaries at various levels to be abreast with the latest technology and thus in-turn is also helping them to erase their fears of losing their jobs to the tech savvy generation.
2. **Usage:** Reduction in corruption, increase in transparency and accountability of the government.
3. **Usefulness:** Designed to improve program and management effectiveness, efficiency and accountability.

4. **Satisfaction:** This is in line with the true spirit of citizen-centric governance. Normally, accessing governmental services is not an easy and pleasant experience. For some work, one has to visit offices repeatedly. Availability of services online at all times is a great effort in creating a responsive government.
5. **Empowerment:** Through CHOiCE, the e-literacy level at grassroots has increased and also CHOiCE helps to bridge the digital divide between the rich and the poor.

16. Service Users' Feedback Mechanism

- As and whenever official/casual meeting of officers is arranged, oral feedbacks are collected.
- CHOiCE helpdesk center has been successfully running in CHiPS office.
- Feedback is also collected by feedback form.

17. Implementation Challenges

The main challenge for the state was to create a system through which state citizens may avail services from public offices with care, courtesy and utmost ease. CHOiCE kiosk centers are to provide a wide range of services including connectivity, information, IT education, e-Governance and e-commerce. The project involves a complete 360-degree view of all citizen-government interactions and offers citizens choice amongst modes of payments, obtaining information of forms, submitting the same, tracking them and getting delivery of the end service/products in a variety of ways including in person, through authorized nominee, through phone, through fax, through the web, through the post or through private franchised intermediaries operating from street-corners. This mainly includes establishing efficient centralized database to facilitate easy information retrieval and eliminate data duplication.

18. Key Lessons Learnt

- **A comprehensive feasibility study required for a project of this scale:** This particular project started as office automation project and later scaled up to a fully fledged e-Government project. For proper scheduling, impact assessment, resource planning, resource allocation etc a comprehensive feasibility study is required. In absence of such a study, there is a danger of project missing direction, desired objectives etc.

- **Proper scheduling using networking techniques to be done before starting the project:** This is very much required to keep project on track. There are good networking techniques available like Critical Path Method (CPM), PERT etc. Scheduling also helps in planning and allocation of resource, budget allocation etc. In CHOICE project, there was time overrun of almost two years. This could have been avoided had there been proper scheduling of various activities of the project.
- **Activity wise resource planning and allocation very much required to avoid cost/time overrun:** As discussed in the above point, this is an important part of project planning and execution and should be done properly.
- **Importance of a 'clear cut plan':** The government should have a clear, coherent and rational plan for an e-Government application. The government should prioritize areas based on services with large citizen interface, amount of tax revenue, some prior involvement of IT etc.
- **Effective change management the key to success for such projects:** Of all the factors that contributed to the success of the project, this is one of the most important. In fact, a successful e-Government project can attribute, in time and effort distribution, 45 per cent to change management, 35 per cent to the re-engineering of processes, a mere 15 to 20 per cent to other factors. To circumvent predictable and formidable opposition from the intermediaries who stood to lose from these changes, the project did not confront them directly, rather dealt with them tactically and strategically. Care should be taken not to antagonize the lower rungs of bureaucracy. The government should decide that such projects in the future will be led only by public administrators who have been trained to understand technology rather than by technical specialists trained to manage.
- **Importance of Infrastructure and Choice of Technology:** Appropriate physical infrastructure is absolutely necessary for the application of IT solutions. The choice of software is very important. An e-Government application should design to be flexible and scalable to accommodate new services, statutory changes in registration Perdue and new computing environment. Also, making a successful transition from a manual to an electronic process demands changes to a number of established work procedures. Process re-engineering in most effective manner is needed

to realize the promised benefits and deal with the challenges of the new medium. Also related elements, such as legislation, had to be updated.

- **Change Control System and Configuration Management:** Because of their adverse effect on project cost schedule objectives, project managers usually resist changes. As a result, disagreements over the necessity for changes and the impact of changes on project scope, cost, and schedule are a common source of conflict with functional managers and clients. Often these disagreements have to be resolved by upper management and require renegotiation of contracts. One way to reduce the number of changes and their negative impact on project performance is to employ a formal system for change review and control. Since changes, like other aspects of project work, must be defined, scheduled, and budgeted, the process of drafting and implementing changes is similar to the original planning process. To quickly process and communicate the many changes a large project can generate, a formal change control system is used. The purpose of this system is to review and authorize design and work changes, weeding out all but the necessary ones, and to make sure that related work is also revised and authorized.
- **Designing a Citizen-Centric Service Delivery Mechanism:** The number of access points have to be sufficient to be within easy reach, and citizens also need to be trained to use the service delivery portals. Local language interfaces need to be built. States with significant illiterate populations have to create access points where assistance is provided. Intermediaries such as volunteers, kiosk owners, etc., often play a positive role in applications where information is disseminated to illiterate population. The design of website is critical. It should be simple to search for information and the information should be complete. Citizens should not have to follow up a web site access with a visit or a call. If several departments have web sites, then there should be a common look and feel, which minimizes learning on par with citizens.
- By ensuring shared values with advocates of change, a sense of ownership can be generated amongst employees. Participative design where employees' feedback and involvement helps shape the new

initiative and system can contribute to greater acceptance. Training and education of all levels of employees can help mitigate fear of the unknown and reduce resistance.

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Emergency Management – EMRI

Anil Jampala

1. Goals and Objectives

Emergencies can happen anytime, anywhere and to anyone.

In India:

- More than 3 lakh people face a medical emergency each day
- 2.4 m deaths due to health diseases; suicides/accidents; thefts/murders/sexual assaults
- 80% of deaths in hospitals happen in the first hour of admission.

Thus to establish a proper emergency response service required a lot of researching and innovative thinking. The first step was to study already established EMS systems and adapt them to our environment. It was in this context that EMRI was born, the brainchild of Mr. B. Ramalinga Raju, Founder and Chairman of Satyam Computer Services – a center which provides free emergency service in Public-Private Partnership (PPP) (police, medical and fire) with a call to a single number (108), accessible from both fixed (land lines) and mobile phones and made toll free across the state for all emergencies. Envisaging a comprehensive coverage of Medical, Police and Fire emergencies through PPP, the Government of Andhra Pradesh recognized Emergency Management and Research Institute (EMRI), a not-for-profit institute, as the nodal agency to provide comprehensive emergency management services by a MoU signed in April 2005. Presently, the Government of Andhra Pradesh has committed to this project fully, and through another MoU under the Rural Emergency Health Transportation Scheme, has handed over 732 ambulances and 15 first responder two wheeler vehicles, which are operationalised by EMRI.

EMRI's other focus is on Research and Analytics. The increasing incidence of various types of emergencies is a cause for concern. This is a fully established wing, with the following objectives:

- Analyze, interpret and estimate the trends of technology, education systems, training standards on the speed and quality of patient care in emergencies
- Help in policy making (level of health care institutions, integration of hospital facilities, public education and public health)
- Integrate developments impacting policies and resource deployment
- Transfer of knowledge (Publications, conferences)
- Understand patient impact (significant reduction in morbidity and significant reduction in mortality, treatment at hospital and cost effective health care) EMRI Vision 2010 –
 - a. Respond to 30 million emergencies and save 1 million lives annually – We propose to achieve this by establishing “108” services across the entire nation by 2009. We have already scaled up our operations to six states as on date and will cover at least another 4 states by the end of this year. By 2009, we hope to cover the entire nation.
 - b. Deliver services at global standards through leadership in collaborations, innovation, technology and research for prevention and training – With global partners, we are imbibing the best practices from these service providers and adapting them to our operations. At present we have 12 global partners in various fields of emergency management, comprising of, pre and hospital care, communications, research and training.
 - c. Recognized as best-in-class – we are benchmarking ourselves with the best emergency service providers.

2. Spread of Project Service Users

- **External**
 - a. The entire nation covering 1.1 billion population will be benefited from ‘108’ services. At present about 147 million people have benefited from our services.

- b. 40,000 lives have been saved. And EMRI believes that when one life is saved, the members of the family are also impacted. One can say that most of them have been given a fresh lease of life.

- **Internal**

- a. We have been able to provide employment to about 8,500 people till date. By 2010/11, we hope to provide employment to 100,000 people.
- b. Enhancement of skilled training to our employees.

3. Services Provided

- Emergency Response Services through a single toll free number '108'
- Training hospital doctors and nurses regularly as part of our effort to increase skill in emergency care
- First responders training to the public as part of our effort to create awareness and encourage people to provide first aid till medical help arrives
- Research projects to understand the highest occurrence of various types of emergencies in the Indian scenario.

4. Geographical Spread of Project Implementation

We started in the state of Andhra Pradesh on 15 August 2005. Today, "108" services are available in 6 states and 4 more states will be covered by our services by the end of 2008, covering 147 million till date. "108" services will be accessible to the entire nation by 2009 covering a population of 1.1 billion people.

5. Project Timelines and Milestones

By 2010/11, 1.1 billion population to be served with 10,000 ambulances, 25 call centers and 5 research and training institutes. EMRI will employ 100,000 skilled personnel.

- Emergency Number 108 has been made toll free across the entire state of Andhra Pradesh, from both land line and mobiles.
- We have entered into Public-Private Partnership with various agencies: We have signed MoUs with several state governments (are already operational in 6 states and ready for launching our services in a few other states by end of this year). Apart from these, we have 12 Global

partnerships in various areas of emergency management and care, including research and training.

- Total of 40,000 lives were saved since inception till 31 August 2008.

6. Direct Cost and Time Savings to Avail Services

There is absolutely no cost to the user. Any person in distress can access '108' number either by mobile or landline. This number is toll free. Any person availing our services is provided free pre-hospital care and shifted to a hospital. (Sheet attached)

Our services are available to the person in distress within 15 minutes and patient is provided professional medical help within an average of 35 minutes.

7. Direct Cost and Time Savings to Deliver Services

Because of our partnership with the state governments, the operational expenses have been absorbed by the respective governments. This kind of service is generally available only in developed countries. However, cost of call taking is less than 1\$ in India as compared to 43\$ in USA. Ambulance service costs about 10\$ per trip against 400\$ or so in other countries. Many developing countries can afford this service.

Since there was very little scope for professional medical help to reach the remotest areas, advent of '108' operations has minimized the emergency to a great extent, thus reducing maternal mortality (a major cause of death in rural India).

8. Replication

The project is highly replicable. In fact, the model was implemented in Andhra Pradesh and has now been operationalised in 5 other states (Gujarat, Uttarakhand, Goa, Rajasthan, Tamil Nadu), with 4 more to follow by the end of this year.

9. Implementation Model

Emergency Management Research Institute (EMRI) is a Non Profit organization having PPP (Public Private Partnership) framework as the Implementation Model.

10. Technologies

EMRI is using high level technology architecture for ambulance tracking, maintaining patient records, attending patients in ambulance etc.

- Computer Telephony Integration
- Voice Loggers
- GIS/Maps
- GPS/AVLT
- Mobile Communication
- Application software for Sense, Reach and Care
- ePCR (Electronic Patient Care Record) Also with Satyam as our Technology partner, we continue to “Renovate” and “Innovate” to serve EMRI’s core mission.

11. Capacity Building

Emergency Medicine Learning and Care (EMLC) business is responsible for Capacity Building. Having realized the importance of advanced paramedics, EMLC, in collaboration with Stanford University, is offering a two year PG Program in Emergency Care (PGPEC). Stanford teams train the trainers as well as the students. In addition,

- Emergency Medical Technicians and Pilots (drivers): Every ambulance needs three each. Thus, 10,000 ambulances across India would need 30,000 EMTs and 30,000 Pilots to be trained, often times at a short notice. This Herculean task is accomplished by starting EMLC centers in each of the states as well. Even Pilots are put through a 7-day program that includes soft skills and first aid/CPR.
- Training to hospital doctors and nurses regularly as part of our effort to increase skill in emergency care.
- First responders training to the public as part of our effort to create awareness and encourage people to provide first aid till medical help arrives.
- Volunteers are trained as well.

12. Process and Legal Reforms

We have innovated in 9 areas:

- Process (S – R – C)
- 1-0-8

- Infrastructure
- Technology
- Ambulance
- Human Resources
- Partnerships
- Analysis and Research
- Training.

13. Project Financials/Sustainability

The project cost works out to be Rs.15/- (approximately) per person per year! Having seen the tremendous impact, 7 governments have agreed to fund upto 95% of the operational expenses (and 100% capital expenses) where as EMRI contributes the remaining 5% as well as other leadership and research costs. Thus, this PPP model is win-win for all.

14. Project Teams and Leadership

The driving force of EMRI is its following board members

- Chairman-Emeritus of EMRI
- Founder and Chairman, Satyam Computer Services, Chairman of EMRI
- Co-Founder and CEO, Satyam Computer Services
- Chairman, ISB Board
- MD and CEO, ICICI Bank
- Tarun Das, Chief Mentor, CII
- Carnegie Mellon University
- Harvard Business School
- National Co-ordinator, Lok Satta
- Chairman, Suchitra Group
- Former President, NASSCOM
- CEO, EMRI EMRI also believes that each and every member of the organisation is a key player in its success.

Thus we have about 8,500 employees, who play a crucial role in our operations.

15. Key Project Outcomes

With a vision in a timeframe, EMRI is slowly but steadily working its way to realize this.

- Thus within 3 years, we have established '108' services in 6 states and 4 more will be covered by the end of this year.
- Our sustainability and scalability is evident by our expanding operations in other states. Our beneficiaries expressed the satisfaction that '108' services have been provided to those, who have felt the need for these services.
- Empowerment is reflected by the fact that the state governments have entrusted the operationalization of '108' services in their respective states
- In a country where pre-hospital care has not been given much attention, EMRI offers skilled pre-hospital care to persons in distress. Our role does not end with providing this care. After handing over the patient at the hospital, a 48 hour follow-up is done to confirm if the patient has recovered.

16. Service Users' Feedback Mechanism

These are the various feedbacks we received showcasing some of our success stories.

Respected Satyam Computers Ramalinga Raju uncle, My Namaskarams. I am A. Teja studying in 5th Class. On September 30th I reacted to some medication that I took to control vomiting and had convulsions. It was 11.00 PM and my parents were very worried. The government hospital is 10 kilometers from our place. They immediately called 108, I was taken at once to the hospital, my condition improved and I am now good. 108 services are very good. I am happy that you are from Krishna District. I wish that the Vijayawada Goddess Kanaka Durga will shower her blessings on you at all times. I shall study well at school. When I grow up I shall do good work like you. I wish to become a collector.

Neonatal Nandigama – midnight – A newborn baby (4 hours old) – umbilical cord along with small intestine (25 cms) exposed – With ERCP advice –Umbilical cord covered sterile gauze, shifted to Govt hospital Vijayawada – Baby survived.

3 hour Neonatal (baby girl) Buried – Narayanapeta – Mahabubnagar – 8th July, 07 – 3 Hour New Born was buried by parents (3rd girl child) – Sarpanch rang up 108 – Ambulance reached the spot took the baby out –

Cleared and maintained airway – Stabilized in the local PHC and shifted to Nilofer Hospital, Hyderabad.

Appreciation comes in the form of following awards too:

- Best CSR Award – Award by ITM Business School and DNA (Daily News and Analysis) – 19 January 2006
- TERI Corporate Award for the best CSR initiative of Satyam Computer Services Ltd. – May 2007
- Presidential NENA Award for 108 Emergency Services in Andhra Pradesh – June 2007
- 2007 Microsoft Citizenship Partner Award to Satyam Computer Services – Best application developed for EMRI- Award of USD 50,000/- to EMRI
- Pink Slip Award in March 2008
- Computer World Award in June 2008).
- e-India 2008 Award for “Best NGO Initiative”.

17. Implementation Challenges

Since this was a new concept in India, some of the foremost challenges were:

- **External Resources** – Initiating and sustaining the PPP.
- **Scalability** – from a fleet of 30 ambulances we are now operating 502 in Andhra Pradesh, in Public Private Partnership. We have started with 51 ambulances in Gujarat which will soon become 400 in 2008 to cover the entire state.
- **Co-operation from government** – Due to sustained collaboration and our own success in running the ‘108’ services, the governments have begun extending support including financial assistance.
- **Awareness** – Educating the masses across the state on ‘108’ services. For example, we display short capsules in all the movie theatres across Andhra Pradesh.

- Conducting awareness programs across the state with the help of volunteers drawn from various fields of different economic and social background, through our VoICE (Volunteer in Case of Emergency) program.

Internal Resources

- **Manpower** – Recruitment of the right people at all levels, particularly for field operations (medical technicians). The mission of EMRI (Saving Lives), is being realized by these individuals who are passionate about the service being rendered, and perform their work with patience and professionalism.
- **Technology** – With Satyam as our Technology partner, Integrated Systems were developed from scratch with no prior experience in Emergency Management. We continue to “Renovate” and “Innovate” to serve EMRI’s core mission.

18. Key Lessons Learnt

The most effective way to realize our vision is to:

- Synergize Leadership, Innovation and Technology and thereby make things happen.
- There is no better way to serve the public than with Passion, Patience, Performance and Professionalism
- Key partnerships in crucial areas of our operations are essential. Hence, we have 12 global partnerships.

Project Contact Details

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PART IV

GOVERNMENT TO BUSINESS (G2B),
GOVERNMENT TO GOVERNMENT (G2G),
GOVERNMENT TO EMPLOYEES (G2E)
PROJECTS

Computerization of Mantralaya

M Vinayak Rao and Prakash Rao

1. Goals and Objectives

Madhya Pradesh is the second largest state in the country. It has 50 Districts, 313 Development Blocks, 23,044 Panchayats and 55,393 Villages. Mantralaya, located at Bhopal, the State Capital, houses office of the Chief Minister, office of the Chief Secretary and offices of Secretaries of all the 52 departments. Mantralaya is the nerve center of policy and administrative decision-making. Policy formulation and its implementation, Initiation and effective implementation of various developmental Schemes & Programmes and their Constant Monitoring, Inter Departmental Co-ordination, Co-ordination within Departmental Units and field level offices like Districts are the challenging tasks in Governance in such a large state. Thus, the thrust is on the availability of the right data at the right time, as it is the key to prudent decisions for effective management. Information and Communication Technologies (ICT) have thrown up several new possibilities to meet out these challenges and make the Governance more effective. The major challenges in introducing the ICT in Governance were lack of appropriate Computer and Network infrastructure, lack of Computer awareness and the resistance of the staff to change. Thus, the goal is to overcome these challenges and achieve maximum automation through computerization of each and every process within all Departments at Mantralaya, so as to avail real throughput using IT in governance and usher in an era of less paper governance. The Infrastructure created in terms of Network Nodes as part of Local Area Network (LAN), Computers, and Awareness Programmes conducted and the number of Beneficiaries, Applications developed and its utilization, e-mail & Internet usage, Video Conferencing sessions conducted are measurable parameters to assess the success of the project.

The Government is the direct beneficiary of the project as it helps them in effective governance. The various stakeholders of the project vary from the highest administrative authority in the administration to common man. The direct beneficiaries includes Hon'ble CM, Chief Secretary, Departmental Secretaries and their subordinates upto section level staff at the Secretariat besides the Directorates, Commissioners, District Collectors & District level offices of the Department. The Public has derived immense benefit due to these ICT initiatives because of the effective implementation of various welfare schemes, which are primarily meant for the public and the speedy disposal of public grievances.

To fulfil the computerization needs of the Mantralaya, National Informatics Center, Madhya Pradesh State Center has established its sub center at Mantralaya in the year 1990. A Local Area Network (LAN) of 700 nodes was established at Mantralaya for this purpose in the year 2000 and subsequently



Internet & e-mail facility was made available. Video Conferencing facility was also made available to facilitate interaction with the Revenue Districts/Divisions. Development of number of ICT applications is taken up to meet the functional needs of the Departments. Most of these applications are developed and deployed while few of them are in the process of development. The works completed are as follows:

Computerization of the Office of the Hon'ble CM

- **Monitoring of Public Representations & References:** It is estimated that about 200 letters/references from the Public and its representatives are received daily in the office of the Chief Minister. These are categorized and forwarded to the concerned Department for taking the necessary follow-up action. The Management Information System (MIS) is developed to generate the appropriate note sheet for forwarding reminder letters and various other statistical and detailed reports for the purpose of monitoring. It has resulted in reduction of workload of preparing the note sheet; reminder letters etc., and has facilitated effective monitoring thereby, resulting in speedier disposal of references.
- **Monitoring of Public Announcements of Hon'ble Chief Minister:** Various public announcements are made by the Hon'ble Chief Minister. One of the important tasks of the office of the Chief Minister is to ensure the implementation of these announcements. MIS is developed to keep track of each of these announcements. The system also facilitates generation of various statistical and detailed reports for monitoring purposes. This has facilitated close monitoring and thereby effective implementation. More than 76% of the 5000 announcements made were completely implemented while others are in the process of implementation.
- **Monitoring of the Implementation of the Election Manifesto:** Hon'ble Chief Minister periodically reviews the implementation of the election manifesto of the party in power. MIS has been developed to monitor its implementation. The system generates various detailed and statistical reports for effective monitoring. This has facilitated effective implementation of the manifesto of the party in power.
- **Monitoring of File Movement:** Various departments put up a number of files to the Hon'ble Chief Minister for decision. These files, being large in number, were difficult to manage. Thus, the system was introduced

to effectively monitor the incoming and outgoing files. This has helped the office of the Chief Minister in effectively dealing with the files.

- **Monitoring of CM Relief Fund and Discretionary Fund:** Lot of people and organizations submit applications for the relief under CM Relief Fund/Discretionary Fund. These applications are submitted at one of the following places (a) Directly to the CM on which he gives the directions straightaway (b) District Collector who verifies and forwards the application along with report to the office of the Chief Minister for further necessary action (c) Directly in the Office of the Chief Minister, which forwards the application to the concerned collector for verification, and submission of report. On submission of the report, it is examined by the Secretary and put up to the Hon'ble Chief Minister for order. MIS has been developed to monitor the application right from submission to the grant of relief.

Computerization of the Office of the CS

- **Monitoring of Movement of Mails:** Large numbers of mails are received daily in the office of the Chief Secretary. These are categorized and forwarded to the concerned department for taking the necessary follow-up action. The Management Information System (MIS) is developed to generate the appropriate note sheet for forwarding, reminder letters and various other statistical and detailed reports for the purpose of monitoring. It has resulted in reduction of workload of preparing the note sheet; reminder letters etc., and has facilitated effective monitoring thereby resulting in speedier disposal of mails.
- **Monitoring of Implementation of Cabinet Decisions:** Chief Secretary monitors the implementation of cabinet decisions. The MIS is developed for the same. The system provides various reports for the monitoring purposes. This has helped the office in speedy implementation of the decisions taken in the cabinet.
- **Monitoring of File Movement:** Various departments put up a number of files to the Chief Secretary for decision. These files, being large in number, were difficult to manage. Thus, the system was introduced to effectively monitor the incoming and outgoing files. This has helped the office of the Chief Secretary in effectively dealing with the files.

Departmental Monitoring System (DMS)

There are about 52 departments in the state. The offices of the Secretaries/ Principal Secretaries of all the departments are in Mantralaya. These Offices deal with various issues such as CM References, Cabinet Decisions, CM Announcements, Manifesto Implementation, Departmental Enquiries, Court Cases, Administrative & Personnel matters etc. With the establishment of Local Area Network (LAN), it has been made possible to access various databases created by the Office of Hon'ble Chief Minister and Office of Chief Secretary. Departmental Monitoring System (DMS) is developed to facilitate access these databases and update the status of CM/CS References, CM Announcements, and Manifesto etc. This has enabled the departments to continuously monitor their issues and take appropriate action from time to time.

File Movement Monitoring System (FMMS)

On an average, about 10 to 12 lakh letters/mails are received at different levels in Mantralaya in a year. These are processed in a file and the appropriate communication is sent to the sender of the letter. To monitor the movement of mails/files, appropriate registers *viz.*, *awak panji*, *javak panji*, Case Register, UO File Register etc., were maintained by the Officers/Sections. The complete manual process of maintaining these registers is automated thus, paving a way in the reduction of workload besides effective monitoring and tracking of files at Mantralaya. Introduction of File Movement Monitoring System has resulted in the elimination of about 500 different Registers. Further, it has resulted in saving of almost 30,000 man-hours per year for maintenance of these Registers. It has considerably reduced the time for tracking the file. Now, any file may be tracked within five minutes.

Chief Minister Monitoring Programme (Performance Management System)

The system has been designed to capture the performance of various departments against their set goals and targets. At present the programme covers only 28 departments. In the beginning of the financial year, based on the budget allocations, with mutual consultation, physical and financial targets are set for the department. The department in turn further subdivides the targets to various field offices. The software supports feeding of data from various field offices directly into the system. Based on the data, detailed analytical reports, graphs, PERT charts and thematic maps are generated for effective monitoring of the

performance of the department. User friendly thematic and graphical depiction of key indicators has made monitoring at the CM's level very easy and on an average it takes hardly 10-15 minutes to review the key indicators of the department. The Secretaries and HODs can drill down, analyze and monitor in depth. Plan utilization has improved thereby improved the implementation of various schemes and execution of projects.

Samadhan Online (Public Grievances Redressal)

The website www.mpsamadhan.org is maintained by the Government of Madhya Pradesh for redressing the Public Grievances. The public grievances are registered through this website. To sensitize the officials for speedier public grievance redressal, an innovative programme called Samadhan Online was introduced in February 2006. It is conducted on First Tuesday of every month. A website is designed, developed and hosted by the NIC through which about 20 to 25 applications, selected carefully and confidentially from the database of the above site, are sent to the concerned officials for submission of report on the same day. The report is submitted online by the Officials to the Office of Hon'ble Chief Minister. These reports are reviewed by the Hon'ble Chief Minister along with the complainant and the concerned officials through the Video-conferencing facility. All the Departments and District Officials are asked to remain in the Office for clarifications, if required. All the Districts participate in this programme through the Video-conferencing facility set up by the NIC whereas, the Departmental Secretaries participate from Video Conferencing Hall set up at Mantralaya. This programme has sensitized officials for public grievance redressal. As a result there has been tremendous improvement in the disposal of public grievances and considerable improvement in the quality of the disposal. Pendency of public grievance which was increasing at the rate of 20000 petitions every year and had almost touched 60000 in 2005 has come down to less than 1000. Thus the programme has not only resulted in the increase in the disposal of cases but also an improvement in the quality.

PARAKH (Basic Services/Amenities Management System)

There are 55,393 villages in the state. The management of Basic Amenities/Services such as Drinking water facility, Electricity, Education, Health, Women and Child Development, Distribution of essential commodities through Fair Price Shops, Agriculture Services & Veterinary Services, Distribution of Oldage and Social Security Pension and the Disposal of Revenue Cases is the responsibility

of the state government. The web-based 'Basic Services/Amenities Management System (PARAKH)' is developed to effectively monitor the same. This has facilitated better monitoring at various levels i.e., the CM, CS, departmental Secretaries and Directors at the state level and collectors at the district level and thereby, improve the delivery of Basic Amenities/Services in the rural areas of the state.

Establishment & Accounts

Budget Management in the General Administration Department is computerized. Payroll of about 2500 Employees, Processing of Medical Bills and the Maintenance of Departmental Provident Fund (DPF) are also done through the Computers. There are about Seven lakh Government employees working in the State. Software is developed to generate the Gradation List of all cadres of all the Departments in the State and the generation of the same is in active progress.

Dissemination of Information Pertaining to Employees

- **Payslip**

There are about 2500 employees working at Mantralaya. Payslip pertaining to each of the employee may be seen at the Government of MP portal under General Administration Department.

- **Circulars**

Various Circulars are issued by the General Administration Department, Government of Madhya Pradesh. These circulars are disseminated.

- **Gradation List**

One of the contentious issues amongst the employees being the Gradation list, it is proposed to disseminate it over the Net once it is created through the Software.

Internet & E-Mail

Internet facility is available in all the chambers of the Officers. It is also available in all the 172 sections. Using this facility, they access various applications viz., Basic Services/Amenities Management System (PARAKH), Performance Management System (CMMP), Proposal to Government of India Monitoring System etc., for various purposes besides the mailing facility.

Video-Conferencing

- Usage of the Video-Conferencing facility has increased tremendously over the years. About 2 to 3 video-conferencing sessions are conducted daily. The facility is being regularly used by the Hon'ble Chief Minister, Chief Secretary, Departmental Secretaries & Others for reviewing the progress of implementation of the Projects through Performance Management System (CMMP), redressal of Public Grievances through SAMADHAN ONLINE and management of Basic Services and Amenities in Rural Areas through 'PARAKH'. The state government is using video-conferencing extensively for the purpose of monitoring. It has conducted around 670 Video-Conferencing sessions by the end of August 2006 alone and saved Rs.25 crores on account of TA/DA, besides enabling effective monitoring. The high usage of the facility has found a place in the LIMCA BOOK of records.

4. Geographical Spread of Project Implementation

There are various systems developed under Computerization of Mantralaya. MP. The geographical spread of each of the System is as follows:

Sl. No.	System	Geographical Spread	Remarks
1.	Computerization of the Office of the Hon'ble CM for monitoring (a) Public Representations & Issues (b) Announcements (c) Implementation of Manifesto (d) File Movement (e) CM Relief Fund/ Discretionary Funds	Office of the Chief Minister, All District Collectors	The data pertaining to Public Representations, Announcements & Manifesto is accessed by all the 52 Departments for entering the follow-up action taken up by them. The Office of the Chief Secretary also shares data. The system pertaining to monitoring of Public Representations & Issues is also integrated with the File Movement Monitoring System. Follow up action taken by the Districts on the announcements made by the Hon'ble Chief Minister is also entered by the District Collectors.
2.	Computerization of the Office of the CS for monitoring of Mails Files Implementation of Cabinet Decisions	Office of the Chief Secretary	All the 52 Departments access the data pertaining to Mails & Cabinet Decisions for entering the follow-up action taken up by them. The Office of the Chief Minister also shares data. The Mail monitoring System is also integrated with the File Movement Monitoring System.
Contd...			

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3.	Departmental Monitoring System (DMS)	All 52 Departments, Office of the CS and Office of the CM	The system access the databases created by the Office of the Hon'ble CM & Chief Secretary.
4.	File Movement Monitoring System	All 172 Sections at Mantralaya	It also access the databases created by the Office of the Hon'ble CM & Chief Secretary.
5.	Performance Management System (CM Monitoring Programme)	28 Key Departments and their field Offices spread over throughout the State, Office of the CS & Office of CM	The system is used by the field offices to enter the performance while it is being used by the Secretaries, Chief Secretary & Hon'ble CM for monitoring purposes.
6.	Samadhan Online	All 52 Departments and their field Offices spread over through out the State, All 50 Districts	The system is accessed by all the Departments & Districts to know their cases to be taken up during Samadhan Online. It is also accessed for entering the subsequent follow-up action taken on them.
7.	Basic Services/Amenities Management System (PARAKH)	11 Departments providing the Basic Services & amenities, all 50 Districts	Information about the status of Basic Services and Amenities is collected from all the villages every month
8.	Establishment & Accounts	Mantralaya	—

5. Project Timelines and Milestones

(These may, preferably be given from project design to implementation, pilot to roll out, highlight the achievement of key milestones)

Sl. No.	Milestone Activity	Proposed/ Actual Start Month & Year	Proposed/ Actual End Month & Year	Remarks
1.	Establishment of LAN with 700 nodes (Officers upto the Secretary level & in sections) & installation of Terminals alongwith Servers	Oct' 1999	Jan' 2000	
2.	Establishment of Video-Conferencing facility at Mantralaya	Dec' 2003	Feb' 2004	
3.	Replacement of Unix based Terminals with Window-based Computers	May' 2005	Aug' 2005	
4.	Computerization of the Office of CM, CS & Establish & Accounts, Development of Systems for monitoring the movement of files, Public Grievances & Basic Services & Amenities, Performance management & Departmental monitoring	Jan' 2005	Mar' 2008	Computerization of the Office of CM & CS was done in 1993 & 1995 respectively in Unix. Subsequently, it is redeveloped under windows.
<i>Contd...</i>				

<i>Contd...</i>				
5.	Training	Jan' 2000	Continued	Subsequently, Update Training is also provided from time to time
6.	Strengthening of LAN with 3500 nodes	Aug' 2008	Nov. 2008	Under implementation
7.	Development & Implementation of systems for monitoring Court Cases, work flow automation pertaining to Vidhan Sabha Questions & personnel matters such as transfers, promotions, leave, Departmental Enquiries etc.	Mar' 2008	Mar' 2010	

6. Direct Cost and Time Savings to Avail Services

The Mantralaya Sub-Center is connected with other major Government Buildings through the Optical Fiber/RF-Link and Divisional/District HQs are connected through 2 MBPS Leased Line. Therefore, Users other than the Mantralaya need only a Client and Internet connection at their premises/location to avail these services. Video conferencing is also established at Mantralaya and at District Headquarters to facilitate interaction between different levels of administration. Various Management Information Systems have helped the administration in effective monitoring, planning and decision-making by capturing of information through remote locations also and through face-to-face normal meetings and virtual meetings through Video-Conferencing. It has improved the governance and has allowed the administration to cut many administrative costs on coordination, travelling and exchange of information. It has helped in completion of various Projects/tasks in time thereby, avoiding cost and time over-run. It has also helped in effective implementation of various welfare schemes.

Earlier, in the manual system, the Government Departments used to call for the relevant information from the concerned Offices. The information was collected, compiled and presented to the senior officers for decision-making. It used to take minimum 5 to 7 days, and even more than that in some cases in the process. The advent of Information and Communications Technology has made it feasible to collect and analyse the data even from the remotest corner in a short time. This has resulted in reduction of time in data capturing and its compilation in different forms. Further, the Video-Conferencing facility has helped the administration in conducting virtual meetings. Implementation of Management Information Systems at Mantralaya are helping in effective implementation of several schemes besides completion of various Projects on

time thereby, avoiding cost and time overrun. Since, the computerization of Mantralaya has integrated with the regular administrative structure and all the data captured is owned by the respective departments of the state, the sustainability is also ensured apart from time saving.

7. Direct Cost and Time Savings to Deliver Services

Users at Mantralaya are availing the services at their own location as NIC has set up a Local Area Network (LAN) of about 700 nodes at Mantralaya. The expenditure of Rs.1 crore on establishment of LAN was borne jointly by the Government of India and Government of Madhya Pradesh in the ratio of 60:40. Presently, there are about 500 No. of Windows-based clients on the LAN. Further, the upgradation of LAN with 3500 LAN is in active progress. This will facilitate Internet access at the table of each and every employee. The Clients are to be procured by the state government. Internet/e-mail/Application Software are provided free of cost at Mantralaya by the NIC. Since, no recurring operating expenditure is involved, the budget constraints are not there.

Monitoring, the key element in Governance, has been made easy through the introduction of electronic means. This has helped in collation of massive data and its in-depth analysis. All the information is available on fingertips. The computerization has helped in making the availability of right data at the right time, which is the key to right management decision for effective management.

8. Replication

The functional needs of the Mantralaya in almost all the States throughout the Country, are the same and thus the Project has an excellent potential to be considered for replication throughout the Country.

9. Implementation Model

The project is implemented by the state government with the technical support of National Informatics Center, MP, which is a premier Information Technology Organization under the Ministry of Information & Communications Technology. The Software support is provided by the NIC whereas, it is implemented by the state government using its own resources. The direct capital investment is made for procuring the clients for the sections. The existing systems are also used for the implementation of the project. The web-based systems developed by the NIC; M.P. is hosted on the NIC web server at Integrated Data Center

10. Technologies

NICNET SETUP AT MADHYA PRADESH

The diagram illustrates the network architecture for the NICNET setup in Madhya Pradesh, showing connections between various locations and the central NIC(HQ) in New Delhi.

Central Hub and Connections:

- NIC(HQ)** (New Delhi) is connected via **PAS10/Intel-SAT** to a satellite.
- The satellite provides a **4x2 Mbps LL/MLL/Channelized E1 to NIC, New Delhi**.
- The central hub is also connected to **NIC-MPSC** (Madhya Pradesh State Centre).

Local Network and Connections:

- NIC-MPSC** is connected to a **DAMA Phone** and a **VC Setup (128/384 kbps-VC)**.
- The **VC Setup** is connected to a **Router (STM)**, which is also connected to a **Firewall** and a **LAN Switch (L2/L3)**.
- The **Router (STM)** is connected to a **UTP** (Unshielded Twisted Pair) network.
- The **UTP** network is connected to various servers and services, including **IDC, WWW, Mail, DNS, ISA, AVS, WWW, RDBMS**.
- The **UTP** network is also connected to a **Vidhan Sabha** (Legislative Assembly) and a **LAN**.
- The **UTP** network is connected to a **RF-Link based Inter-building LAN**, which is connected to **Satpada Bhawan**, **Academy**, and **NVDA**.

Other Locations and Connections:

- Mantralaya** is connected via a **VC Setup & VSAT Backup Link** to a **DAMA Phone** (128/384 kbps-VC).
- Mantralaya** is also connected via a **11 MBPS RF Link to Mantralaya** to a **UTP** network.
- Mantralaya** is connected via a **11 MBPS RF Link to Mantralaya** to a **UTP** network.
- Mantralaya** is connected via a **11 MBPS RF Link to Mantralaya** to a **UTP** network.
- Mantralaya** is connected via a **11 MBPS RF Link to Mantralaya** to a **UTP** network.

Additional Connections:

- 2 Mbps I.L. from DIC to NIC, Bhopal** (Inter-Light Link).
- 2x2 Mbps Channelized E1 SPO, Panjab, Census, etc.** (Satellite Orbit Positioning).

NIC, MP State Center has conducted several in-chamber demonstration cum training programmes for the officers at the level of Secretary and above, during the year 2000. It has helped in sensitization of the senior level officers.

Further, about 50 employees were selected as master trainers and trained in the usage of various packages and subsequently, conducted a series of in-section training to about two employees in each section. These two employees were further entrusted with the task of training other colleagues in their section. A Computer Training Center has also been established in Mantralaya to provide computer training to its employees. As a result, at least 3-4 computer trained employees are now available in each section.

12. Process Reforms

Emphasis from the highest authority is on the computerized report and the same is monitored on the screen. The action taken on the announcements and references is called online from the concerned. Points for draft speech of HCM are also called online. Further, the maintenance of manual registers are discontinued following the introduction of File Tracking System.

13. Project Financials/Sustainability

Investment is only for the purpose of procuring the Hardware and for establishing the Network. Thus, it is a one-time expenditure. Further, the recurring expenditure on account of Printer Ribbons, Stationary etc., is minimum. The impact of the project is tremendous as it has improved the entire decision-making process. It has integrated with the regular administrative mechanism and thus making the system sustainable.

14. Project Teams and Leadership

Shri Anurag Jain, Secretary to Hon'ble Chief Minister and Information Technology, Government of Madhya Pradesh and Shri Manohar Dubey, Deputy Secretary, Office of the Chief Minister is looking after the Computerization of Mantralaya. Shri M Vinayak Rao, Senior Technical Director who is the State Informatics Officer, MP State Center is the Project Manager. NIC MP State Center has established a subcenter with Shri Prakash Rao, Technical Director as the Officer-in-charge and the Project Leader. The Video-Conferencing and the Network Division is providing the VC & Network Services.

15. Key Project Outcomes

- Most of the functional needs of the Mantralaya are computerized. Thus, Project has helped in achieving reasonable amount of computerization at Mantralaya, MP paving a way for effective monitoring besides creating the IT culture at Mantralaya.
- Plan Utilization is much higher.
- The pendency of Public Grievances has come down from 59,896 at the end of the year 2005 to 632 at the end of September 2008 due to the SAMADHAN ONLINE.
- Introduction of File Movement Monitoring System has resulted in the elimination of about 500 different Registers. Further, it has resulted in saving of almost 30,000 man-hours per year for maintenance of these Registers. It has considerably reduced the time for tracking the file. Now, any file may be tracked within five minutes.
- The state government is using video-conferencing extensively for the purpose of monitoring. It has conducted around 670 Video-Conferencing sessions by the end of August 2006 alone and saved Rs.25 crores on account of TA/DA besides enabling effective monitoring.

16. Service Users' Feedback Mechanism

The NIC has got an excellent feedback on the various MIS developed under the Computerization of Mantralaya. These feedbacks are obtained from time to time.

17. Implementation Challenges

There are a number of challenges in implementing e-governance projects. Among the various challenges involved from an e-Governance perspective, software is just one part of it. E-Governance is about transformational change, leadership, and visualization, re-engineering and inspiring people to adopt a new system. These things cannot be achieved by software alone. Pushing up the Computerization up to the last employee in the Government Hierarchy is very vital to accomplish the desired goal. There are many issues/challenges such as resistance of the employees to part with the information, awareness about computers, Budgetary constraints etc., which needs to be overcome in order to push up the computerization. Thus, we have taken one small step ahead at a time towards achieving the ultimate goal. Automation is done of the

existing manual procedure. This has helped in reducing the employee workload besides capturing of the data for the monitoring purposes. Several rounds of in-chamber & in-section training are conducted to create computer awareness amongst the lower staff. Further, forward movement is done once they are accustomed with the new system. Implementation in local language is another challenge in the state of MP as compared to other states which have no problem in implementing in English. Additional resources and efforts are required.

18. Key Lessons Learnt

There are a number of challenges in implementing e-governance projects. Among the various challenges involved from an e-Governance perspective, software is just one part of it. e-Governance is about transformational change, leadership, visualization, inspiring people to adopt new system. These things cannot be achieved by software alone. System such as Work Flow automation (actual file movement) is feasible but a distant reality. Thus, it is better to take one small step ahead at a time towards achieving the ultimate goal i.e., whatever is the existing manual procedure, automate only that part ensuring that their workload is decreased. It will help in capturing of the data for the monitoring purposes. Any further fine-tuning is subsequently possible and easy, once they are accustomed with the new system.

Project Contact Details:

State Government

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New Pension Scheme Accounting System

M S Paikara, S B J Cladius and Rama Prasada Rao Devarakonda

1. Goals and Objectives

The requirement is initiated as a result of the state government order that employees recruited on or after 1.11.2004 shall be covered under the new pension scheme, which has come out in January 2006. The Government authorized the Directorate of Treasury Accounts & Pensions (DTAP) to maintain proper accounting and record keeping and to ensure employee contribution to commence from November 2004 along with the salary of April 2006. As per the order 10% of Basic Pay + Dearness Pay of employee is to be made as contribution towards pension fund. An equal amount of contribution will be credited to the employee's account every month. An annual statement is to be provided to the employee so as to maintain transparency. If the employee desires, the fund will be invested in mutual funds or securities so as to ensure substantial returns at the end of service of employee.

- To create and maintain the data of New Pension Scheme (Contributory Pension Scheme) beneficiaries' data accurately with respect to their personal information, contributions, transfers from time to time and promotions
- To maintain error free accounting on monthly basis of employees
- To maintain yearly balances of Accounts of employees under NPS scheme and provide annual electronic account slips to employees
- To provide actual position of contributions information to government on a monthly basis.

2. Spread of Project Service Users

- Employees
- Drawing and Disbursing Officers
- Treasuries
- Departments.

Services Provided

Employees

The project is a G2E initiative made by the department aimed at a timely service to the beneficiaries, besides maintaining accurate accounting

- To facilitate immediate crediting of contributions to the employee's account, a unique Permanent Pension Account Number (PPAN) is generated on a written request through DDOs at the state level by DTAP.
- This data is maintained at a central server and linked to various modules for necessary validations.
- Payroll package is specially designed for NPS beneficiaries for implementation at DDO offices who prepare the data and submit the soft data in CD media at treasuries for necessary processing. The payroll package incorporates the PPAN number of the employee.
- Necessary validations take place viz., checking of employee code, PPAN number with an additional facility of namewise checking to ensure whether the data submitted by the DDO is correct or not. For instance, as the payroll software is of stand alone in nature, it is possible that PPAN number or employee code is erroneously mentioned in the payroll data. The data submitted by DDOs will be validated by dedicated modules incorporated in treasury software with the database at the central server with respect to the employee code and PPAN number and rejected across the counter while bill submission in case of any errors.
- Care is taken to track the transfers of employees such that the salaries could be drawn only when the DDO code and PPAN combination matches with that of at the central server.

- All these steps are taken to ensure that there is no missing credit of the employees
- For the employees whose salary is not drawn from treasuries, separate module is designed for capturing the subscription details at DTAP
- All the employees thus covered are provided with annual electronic account slip besides being facilitated to view their monthly contribution data
- PPAN number can also be verified by the employees on Internet immediately after the generation to avoid any communication delay and hence, to enable timely withdrawal of salaries
- Care is taken to ensure timely final payment of CPS to the family of the deceased employee.

Drawing and Disbursing Officers (DDOs)

- On formal request to DTAP, PPAN number(s) is/are allotted to employee(s) under the DDO and communicated. Even in case of any communication delay, DDOs can search for the employee's PPAN number through Internet and incorporate in the payroll software. This is required because mentioning of PPAN number in payroll software is made compulsory as per Government directives.
- Payroll software specially designed for NPS beneficiaries helps DDOs to compile the salaries of employees within no time.
- The payroll software provides all the required schedules reports, saving the salary bill preparation time. The salary bill is generated incorporating all the relevant codes, head of account. DDO just needs to take the printout, sign and submit at treasury along with soft copy.
- DDOs can access the CPS related reports on a daily basis after being uploaded by treasuries for necessary reconciliation.

Treasuries

- Special routines are developed to extract the salary data submitted by DDOs into treasury database duly validating the PPAN number, employee code, DDO code with central server database to ensure employee subscriptions are properly credited and also to ensure the concerned employee's salary bill is not drawn at any other place.

- Daily/monthly schedule is provided for required verification.
- Facility for uploading to central server is provided on a daily basis, enabling necessary consolidation at the state level by DTAP.
- Treasuries can verify whether proper uploading is taking place and reconcile accordingly with DTAP on requirement basis.
- Other required reports are provided duly linking with treasury payments and receipts information.

Departments

- At DTAP, facility is provided for departments, DDOs or DTAP itself shall enter the data of fresh recruits for allotment of PPAN number.
- Separate module is provided to capture the contribution data of employees whose salaries are not drawn in treasuries. The contributions of these employees are informed at DTAP through separate communication by respective DDOs.
- The combined data then forms the complete database of CPS beneficiaries and verified against the hard copies of monthly schedules submitted by treasuries as well as against the data captured already.
- Separate modules are provided to calculate interest and prepare annual account slips for necessary communication to employees.
- For the cases of final CPS payment of employees at treasuries, the authority number is maintained at the central server and communicated to treasuries/sub-treasuries in addition to local maintenance.
- Payment at treasuries is ensured such that, authority number, PPAN number, amount are validated against the central server data.

3. Geographical Spread of Project Implementation

All the NPS (CPS) beneficiaries about 21000, 3700 DDOs of 52 departments across the state are covered

4. Project Timelines and Milestones

Initiation

January 2006: NIC was requested to develop software to take care of CPS accounting on all aspects as per the guidelines of the Government of India. The scope requires proper integration with treasury software so that, treasuries account the NPS information on a day-to-day basis and upload to central server. The existing VSAT based treasury intranet is to be used effectively for the purpose. The NPS (CPS) scheme is to cover the employees who are recruited on or after 1.11.2004. It was also desired that, the recovery of deductions shall be retrospective from November 2004 and on a monthly basis. The target for implementation was given as 1st April, 2006. NIC team took up the feasibility and system study.

Acceptance Test

An Acceptance Test was conducted on the software developed by the NIC team. After carrying out the required modifications, the test implementation took place in District Treasury, Raipur for 15 days and then was rolled out for implementation in other districts.

Stabilization and Improvements

Practical on field problems have been sorted out and finally the software is stabilized by July 2006.

November 2007: This module has been integrated with the module of salary linkage system of all other state government employees. Necessary rectifications are carried out in the software and database at table level.

5. Implementation Model

The project is fully owned by the government.

6. Technologies

The technology used has three layers:

1. **DDO Level:** Payroll software (stand alone) developed in VB/MS Access environment is distributed to all DDOs across the state for implementation in their respective offices. This is due to the lack of Internet connectivity in remote places where offices work. The DDOs use the software to prepare payroll on a monthly basis, prepare data files, copy in CD media and submit at treasuries.

2. **Treasury Level:** Treasury software popularly known as e-kosh is suitably modified to accept the data submitted by the DDOs, process, consolidate at treasury level and upload to the central server. This software is designed VB/Oracle environment being implemented in client-server architecture where server is of Windows 2003 with XP/VISTA clients.
3. **Directorate Level:** All the data uploaded by treasuries is consolidated at the state level at this place (DTAP). Facility is given to compile separately the contributions' data of the employees whose salaries are not drawn through treasuries. The software at this level is designed in web-enabled model so as to enable target users to view respective reports, statements etc. The environment includes ASP.NET, PHP/Oracle 10g EE/Linux AS/Windows clients.

7. Capacity Building

Governance Structure: Chief Minister and Hon'ble Minister for Finance → Principal Secretary, Finance → Commissioner, DTAP.

Project Teams: Commissioner, DTAP → Addl. Director, DTAP (Project implementation coordinator w.r.t administration) → State Informatics Officer (NIC) Project Manager, (NIC) → Scientist-D (Project coordinator for Design, Development and Implementation (technical)) → DIOs of NIC and Dist. Treasury Officers → Sub-treasury Officers at district/sub district level for implementation.

Training: DIOs are trained as trainers by NIC state center. The DIOs provide necessary training w.r.t to data entry, service provision to the identified staff at district level.

Change Management: User department requests NIC for any change in requirements. NIC team undertakes the job, designs and modifies the software as per the new requirement and then asks the department to perform acceptance testing and report feedback. The performance testing is done to the level of satisfaction of the user department and then the new version of the software is released through Project Management Portal for implementation at field level. Sufficient time will be given for adopting the new version. Further, it is ensured through centralised version management that uniform version is being implemented among all the treasuries and sub-treasuries after the given date.

8. Process Reforms

The online treasury computerization was already under implementation and DTAP has decided to straightaway initiate the computerization process with minimum manual record maintenance. The government approved the proposal of the department and accordingly, the project implementation is initiated from April 2006. All the required reports, statements are made available in electronic form to the target users.

9. Project Financials/Sustainability

Dedicated manpower was sanctioned by the government to monitor the CPS accounting at DTAP. The staff are dependent on the system generated reports and statements from time to time. Further, they can rise any requirements and get the same developed by NIC team. Manual records do not exist at all for the accounting of NPS (CPS). Hence, the project has to run to fulfil the requirements along with treasury project with which it was integrated. Hence the project is sustainable.

To ensure proper accounting, the following procedure has been adopted.

- Allotment of unique PPAN number to the employee.
- It was decided that, w.e.f. April 2006, no CPS beneficiary shall be allowed to draw the salary without PPAN through treasuries.
- Earliest communication of PPAN to DDO/department/employee/treasury to be ensured
- Payroll software shall incorporate PPAN number, CPS contributions and deduction of earlier months
- The retrospective deduction of contributions is to be on a monthly basis. i.e., salary drawn for the month of March 2006 is to include contributions for the month and backlog contribution of November 2004. Similarly April salary covers deductions of December 2004 and so on, till the recovery is complete up to February 2006.
- While accepting the CPS data, it is to be ensured that deductions are populated automatically in to the software without allowing manual entry
- Contribution data of employees whose salary is not drawn through treasuries shall be sent by DDOs to DTAP for necessary data entry, integration with other data and compilation at the state level.

10. Project Teams and Leadership

Project Teams – Policy level: Principal Secretary (Finance) → Commissioner, DTAP → Addl. Director, DTAP (Project implementation coordinator w.r.t administration) → State Informatics Officer (NIC) (Project Manager, NIC)

On Requirement basis: Commissioner, DTAP → Addl. Director, DTAP (Project implementation coordinator w.r.t administration) → State Informatics Officer (NIC) (Project Manager, NIC).

Fulltime: Addl. Director, DTAP (Project implementation coordinator w.r.t administration) → Scientist-D (Project coordinator for Design, Development and implementation (technical)) → DIOs of NIC and Dist. Treasury Officers → Sub-treasury Officers at district/sub district level for implementation. The project is running successfully since April 2006 and that speaks the excellent top level support for the project.

11. Service Users' Feedback Mechanism

Departments, DDOs can directly give their feedback to DTAP as well as treasuries and anyone concerned can send their feedback through the option provided in the *ekoshonline* portal.

12. Implementation Challenges

As the users at the implementing locations *viz.*, DDO offices and treasuries were already acquainted with Payroll/treasury software by the time, this software took off; no major challenges have come across for implementation of the project.

13. Other Information

The team from NSDL visited the department and a formal commitment from the department was made to keep NSDL as Central Record Keeping Agency (CRA) for maintaining NPS (CPS) data on a long-term basis.

June/July 2008: The Department initiated contacts with LIC Housing and SBI Mutual fund agencies for investing the funds contributed by the employees and as per the choice of the employee on a long-term basis. It is expected that employee will get high return on investment of his contributed amount towards CPS at the time of his/her retirement. The Department entered into an agreement with NSDL in September 2008 to maintain the record-keeping requirement.

Project Contact Details

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EVERALERT – Online Medical Inventory cum Cargo Management

B V Selvaraj

1. Goals and Objectives

Introduction

The Union Territory of Lakshadweep is a group of 36 coral islands and islets of which eleven are inhabited. These islands are scattered randomly in the Arabian Sea about 220 to 420 kms of the Malabar Coast. Geographically isolated, each island behaves almost like a country by itself. Lack of adequate transport facilities and deficiencies in communication in these islands pose a major problem for the masses. It takes around eight days during normal season and fifteen days during monsoon to go to the head quarters island of Kavaratti to avail the service and return to one's Native Island. To virtually integrate these far-flung islands, Lakshadweep Administration has implemented several e-governance projects with focus on delivering service to anywhere in Lakshadweep.

EVERALERT is an online Medical Inventory cum Cargo Management system that interconnects all the hospitals, Primary Health Centers (PHCs), Community Health Centers (CHC) in various far flung islands and Medical Directorate at Kavaratti and the Medical Store at Kochi in Kerala.

Objectives

- By using ICT tools to improve the efficiency of the Health Department especially in the Management of Medicine
- To keep every medical officer/para medic 'Alert' about the stock position of medicines in various Hospitals/Community Health Centers/Primary Centers

- Centralized stock management of medicines and appliances
- Cargo Management of medicines/appliances under transportation
- Consumption Analysis of medicines and appliances
- Automated 'Supply Order' Generation
- Automated e-mail alert about the major transactions of receipts, payments and stock transfers
- Generation of MIS Reports for supervision and corrective action.

2. Spread of Project Service Users

Operational Users

- Director, Medical and Health Service
- Medical Officers of all Hospitals/Primary Health Centers/Community Health centers
- Chief Pharmacist/Pharmacists of all Hospitals/Primary Health Centers/Community Health centers
- Store superintendent of Hospitals/Community Health Centers /Primary Health Centers and other users
- Citizens of Lakshadweep.

3. Services Provided

- Supply order generation
- Preparation of distribution list
- Bill generation against supply of items
- e-mail alert about the stock position of vital medicines
- Cargo Management (Online Tracking of Consignments of medicines and appliances)
- e-mail alert of expiry dates of medicines
- Annual Consumption analysis of medicines
- Indent management—Proposed enhancement in service

- Automated Estimation of annual indent of all the hospitals
- Integration with Lakport Project—to streamline the cargo management.

4. Geographical Spread of Project Implementation

- Entire union territory of Lakshadweep spread over 400 kms in the Arabian Sea
- All inhabited Islands of Lakshadweep
- All hospitals including Allopathic, Ayurvedic and Homeopathic branches
- All Primary Health Centers
- All Community Health Centers.

5. Project Timelines and Milestones

Starting – February 2007 Commissioning: 26th January, 2008													
Sl. No	Activity	Month											
		I	II	III	I	V	V	V	VII	I	X	X	XI
					V		I	II	I	X		I	I
1.	Preparation of SRS												
2.	System design												
3.	Software development												
4.	Web hosting & testing												
5.	Implementation & Training												
6.	Backlog Entry												
7.	Pilot Roll Out												
8.	Commissioning												

6. Direct Time Savings to Avail Services

As mentioned earlier, the communication and transport facilities are inadequate and in this scenario of distance and remoteness, the online service provides substantial advantages in terms of time savings through the services offered by the 'EVERALERT' system. When compared to the existing traditional system, the percentage of time savings is more than 100%.

7. Direct Time Savings to Deliver Services

In the midst of communication and transport bottlenecks, the online service provides substantial advantages in terms of time saving to avail the services. Compared to the old manual and conventional system, direct time savings is more than 100 percent.

8. Replication

Can be easily replicated to any State/Union Territory with minimum customization of the software application according to the rules, regulations etc., of the state/UT concerned.

9. Implementation Model

Government owned.

10. Technologies

Web-Based Technology

- Application Platform: ASP.Net
- Data base: MS SQL Server
- Web server: IIS.

11. Capacity Building

- Constitution of High Level Monitoring Committee to monitor all the activities of the project 'EVERALERT' for the smooth implementation and effective execution

- Training

Phase – 1

Conducted Introductory training for the users from all islands and locations

Phase – 2

Onsite: Hands on training in all locations/islands

Phase – 3

Booster training programme for the required users in different locations/ islands.

12. Process Reforms

As part of implementation of ‘EVERALERT’ system, the Administrative procedures have become more transparent.

- The registration of suppliers/vendors in the ‘EVERALERT’ system has been made mandatory
- All the manual supply orders are replaced by system generated ‘Supply Orders’ thus eliminating adhocism
- The intake of medicines and appliances in all the stores in Kochi and hospitals/CHCs/PHCs are made only through the ‘EVERALERT’ system
- Only the system generated reports are accepted as valid documents of transaction
- The expiry dates of all medicines are duly recorded and expired medicines will not be admitted.

13. Project Financials/Sustainability

1. Implemented as part of e-governance initiatives of the Hon’ble Administrator of the UT of Lakshadweep under the direct motivation, guidance and monitoring from the level of the head of the State
2. All elected representatives, Panchayat leaders duly involved for participation of stakeholders.

14. Project Teams and Leadership

1. Project Manager: Shri B V Selvaraj IAS, Hon’ble Administrator, UT of Lakshadweep
2. Project Team:
Shri Jose K Puthur, State Informatics Officer, NIC Lakshadweep,
Shri K P Mohammed Koya, Technical Director, NIC Lakshadweep,
Dr. K P Hamzakoya, Director, Medical and Health and Medical Officers,
Dr. M S Sayed Ismail Koya, Director, IT, UT of Lakshadweep.

3. Software Professionals, NIC (3 members): Medical Officers, Kavaratti. Chief Pharmacist, Kochi.

15. Key Project Outcomes

1. **Sustainability:** The Geographical layout of Lakshadweep leads to design the online applications and finally implemented the prestigious 'EVERALERT' project. The system is sustainable and can be further empowered by enhancing the number of services to the existing system.
2. **Usage:** In terms of Usage, the system is operational round the clock, as hospitals are the essential services. The system can be accessed over the web even in the case of failure of local communication set-up.
3. **Usefulness:** As Lakshadweep islanders are totally dependant on Government hospital, the usefulness of the system is universal (There are no private hospitals and clinics in Lakshadweep).
4. **Satisfaction:** Level of satisfaction of 'EVERALERT' is very high as, this is one of the key projects, benefiting larger sections of people of Lakshadweep.

People of Lakshadweep are highly health conscious and cohesive family support for the ailing member, makes it a family project.

16. Service Users' Feedback Mechanism

- e-mail feedback
- Interactive/review meeting with all concerned
- Correspondences.

17. Implementation Challenges

1. **Communication set up (Internet connection):** Being an online system; the back bone of the system is Internet connectivity. Lakshadweep islands are not supported with any broadband or leased line connectivity so far. The available source is the limited VSAT connections provided by NIC. As part of EVERALERT implementation using LAN extenders, all the hospitals are provided with Internet facilities from the nearest NIC VSAT Hub.
2. **Training:** Except medical officers, all the users are new to computers, and because of that, exhaustive training was given to these users from

the basics of computers to the latest online applications and e-mail. The hospitals are of essential services; the officials are not in a position to move out from the offices, hence, NIC conducted onsite training to all officials in their respective locations.

3. **Master data creation:** Creation of Master database of all items, especially ayurvedic and homeopathic is a tedious task, as there is no formal data available in this area. With the help of specialist in the field, master database of all items created.

18. Key Lessons Learnt

- Strong top-level administrative commitment and support of political opinion
- Leaders in the fundamental determinant
- Use of right technology in the right place with appropriate administrative decision benefits the masses
- Web services are most suited for hinterlands and scattered remote places like Lakshadweep and other geographically isolated territories
- Geographical isolation can be minimized using the proper use of Information Communication Technology
- Making ICT tools succeed in Administration is a herculean challenge
- Managing the change
- It is no less than revolutionary administrative reform, accepted in the remote locations
- Mantle of e-governance.

Project Contact Details

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Public Distribution System – Online

B S Ananth and Somasekhar Kesava Ayyagari

1. Goals and Objectives

- **To reduce fake and duplicate ration cards:** In April 2007 the State decided to make a unified computerized database of ration cards. It is very important that ration card database was not created by entering data about ration cards after preparation of the cards. Ration card data was first entered into the database and ration cards were printed from the database. Thus, 36 lakh ration cards were prepared based on the details available in different lists (like BPL List etc.) The data was put on web for transparency and social audit to identify fake ration cards. Ration cards were cross-verified by local bodies before issue. Thus, about 1 lakh ration cards were identified as fake and removed from the database.
- **To eliminate irregularities in grant of allotment to FPS:** Automatic calculation of allotment by a computer eliminates irregularities and bribe in granting allotment. Chhattisgarh could successfully eliminate these irregularities with this computerization.
- **To reduce delays in communicating allotment up to FPS:** A study says, there is sometimes 14 days delay in communicating the allotment figures to the end point i.e., FPS. The system eliminated the delay, the allotment details are reaching the same day to the end point. The allotment details of each shop of every month are available on web for public view as well as all officers concerned. In addition, a SMS is automatically sent by the system to the FPS owner (whoever has a mobile) for immediate dissemination.
- **To reduce delay in food grain availability at FPS:** Delayed availability of grains at FPS not only creates inconvenience to the beneficiaries but

also a major opportunity for diversion. The objective is to make the food grains available at all FPS by the 6th of every month. From January, 2008, since which the system has been operational, there is gradual improvement in the availability of commodities at FPS by the 6th of every month. The availability is 87.5% in August '08 and 99% can be achieved before December '08.

- **To check diversion and leakage in PDS commodities:** Main purpose of this computerization is to eliminate diversion and leakage in the delivery mechanism. This is achieved by creating transparency, citizen participation and continuous monitoring. It is evident that the diversion has been reduced after the implementation of the system due to various reasons. But, third party study is essential to find out exact achievement.
- **To reduce delays in complaint capture and redressal:** Call center with toll free number to capture PDS related complaints and Complaint Monitoring.
- **To increase transparency in operations:** Transparency is the only known solution to check corruption. All the reports are made available to citizens on web for social audit. Giving automatic SMS alerts to the registered users about truck dispatch to their FPS of interest is an innovative way of ICT use in creating transparency.
- **To ensure timely availability of lifting information.**

2. Spread of Project Service Users

Secretariat of Food shall access monitoring reports to check lifting status and complain redressal status through a web-based application. Directorate of Food, in addition to accessing monitoring reports, it is responsible for release of monthly allotment before the 15th of every month. Directorate shall enter per ration card parameters (How much quantity of rice, wheat, sugar and salt) are to be given in a district. The system automatically calculates the allotment based on a number of different types of ration cards attached to FPS. District Food Controller enters monthly allotment to other welfare schemes which are not card-based. Block Educational Officer enters monthly allotment to Mid Day Meal scheme. Woman & Child Development District Officer enters monthly allotment to Integrated Child Development Scheme. In addition to monitoring, creates transport orders for inter district transfer. CGSCSC District

Manager's Office, in addition to monitoring, creates transport orders for inter district transfer. CGSCSC Godown issue of PDS commodities to FPS and all related operations through a web-based application. FPS Owner gets SMS alert when allotment is released and uses the information generated by the system. Citizen/Beneficiary is a very important stakeholder. Receives SMS alerts (to registered citizens) and uses information generated by the system to be vigilant on PDS.

3. Services Provided

For the department of Food:

- Creation of new ration cards to the eligible applicant
- Cancellation or suspension of FPS
- Automatic calculation and release of monthly allotment of PDS schemes to 10400 FPSs
- Data capture of monthly allotments of other welfare schemes.
- Receipt of demand draft and issue of delivery order and truck challan to FPS to deliver PDS commodities from CGSCSC distribution center
- Total stock management with online receipt and issue of PDS commodities at CGSCSC godowns
- Transport orders and execution of the orders for inter-district and intra-district movement of PDS commodities
- Transfer of truck photograph along with latitude and longitude to server through a mobile application to ensure that the truck reached the godown on that particular day and time.
- Trucks carrying PDS commodities are tracked using GPS technology. This service is under pilot run to FPS Owner.
- SMS alerts to FPS owners regarding allotment details.
- SMS alerts whenever trucks are dispatched to a FPS to all registered citizens (registration is free for everyone on 'citizen interface' website *cg.nic.in/citizen*)
- Online complaint registration and status enquiry through 'citizen interface' website

- Complaint registration and status enquiry through a toll free number (1800-233-3663) to a call center
- Any kind of information related to the department of Food, to any one through a call center is provided. Information available on web for public access for transparency

Ration Card database: About 34 lakh ration cards have been prepared through computers in 2007-08. The data is available in a database, which is a base for the computerization of PDS. The data is made accessible to the public on web.

Public can access the following:

- Village-wise, ward-wise or FPS-wise details individual ration card holders along with his/her name, father's name and type of ration card
- Village-wise, ward-wise, number of beneficiaries
- FPS Inspection and action taken details
- **Fair price shop details:** 10400 FPS details are available online
- **FPS-wise allotment details:** Allotment of commodities for PDS schemes are automatically calculated by the system. Allotment for other welfare schemes like Mid Day Meal, ICDS, Hostels etc., are entered by District Food Controllers every month. FPS-wise number of cards and allotment of different commodities for the selected month are available online for public view.
- **Lifting details are available online:** The quantity of commodities that reached FPS from Distribution Centers is known as lifting. Delays in lifting are one of the big challenges that the department faces. For day-to-day monitoring of lifting by different districts and distribution centers, lifting details are made available online.
- **Sales details of individual FPS:** FPS owners are supposed to submit an affidavit every month, with the details of the sales actually made against the allotment for that month. The sales quantities are used to calculate entitlement of quantities that actually be issued to the shop, keeping into account the previous month's balance quantities available in the shop.

- **Details of 'RICE FESTIVAL':** RICE FESTIVAL is an innovative step taken by the department to check diversion. It is nothing but distribution of PDS commodities to the beneficiaries in the presence of public and nominated government officials on a pre-specified day in a month. The details of the ration card holders benefited in the rice festival are available on web.

4. Geographical Spread of Project Implementation

The project is fully operational throughout the state. It covers the following offices: 120 warehouses of CGSCSC, 16 District Manager's Offices of CGSCSC, 16 Food Controller's Offices CGSCSC, Head Quarters Directorate of Food, Secretariat of Food. To cover all the 10400 FPSs using mobile-based application, is under consideration for future expansion. Cost Benefit analysis is under progress.

5. Project Timelines and Milestones

- Project started on 01.03.2007.
- System Design and Development for Ration Card Database Creation 01.03.2007 to 31.03.2007.
- Ration Card Database Creation 01.04.2007 to 30.06.2007.
- Public Distribution system study 01.07.2007 to 31.07.2007 & Design Development & Testing 31.07.2007 to 30.10.2007.
- Training 01.11.2007 to 31.11.2007.
- Test Run 01.12.2007 to 14.12.2007.
- Public Distribution System Operational 15.12.2007.

6. Direct Cost and Time Savings to Avail Services

All the services are free to the user in the manual system as well as present system. The quality of the service is improved due to computerization. Third party study is being planned.

- Allotment details dissemination to FPS and distribution centers used to take 7 days in manual system and it reaches now within an hour at the maximum.

- Availability of lifting information to the head quarters and the secretariat used to take 10 to 15 days in the manual system whereas, it is instantly available in the present system.
- Lodging a complaint in the manual system used to take 3 hours to 3 days whereas, it is now a phone call on a toll free number.
- Truck dispatch information to interested citizens is instant through SMS whereas, there is no way to find out the information in the manual system.

7. Direct Cost and Time Savings to Deliver Services

NIL. But there are indirect cost savings to deliver services due to reduced leakage and diversion.

- Allotment details dissemination to FPS and distribution centers used to take 7 days in manual system and it reaches now within an hour at the maximum.
- Availability of lifting information to head quarters and secretariat used to take 10 to 15 days in the manual system where as it is instantly available in the present system.
- Lodging a complaint in the manual system used to take 3 hours to 3 days where as it is now a phone call on a toll free number.
- Truck dispatch information to interested citizens is instant through SMS where as there is no way to find out the information in the manual system.

8. Replication

The project is implemented throughout Chhattisgarh state. Madhya Pradesh, Uttaranchal, Orissa states expressed their interest to replicate the system in those states.

9. Implementation Model

The project is Government funded. The expenditure for hardware and infrastructure was met within the budget of CGSCSC. Software has been designed and developed free of cost by National Informatics Center (NIC) with the help of hired staff on contract.

10. Technologies

The system is fully web-enabled with backend MS SQL server 2005 and Front-end ASP.NET. At all the 120 CGSCSC Warehouses, 16 District Food Controllers Office, 16 District Manager's Offices, CGSCSC headquarters and directorate of food, VSATs were installed for connectivity by taking on lease from BSNL. All the VSATs were put under MPLS, so that, access of web-application becomes accessing through intranet. MPLS increased speed of access considerably. Broadband or other connectivity also obtained at these places as a redundancy wherever available. 4 High-end Servers are maintained at NIC Chhattisgarh State Center –

- i. Application server
- ii. Database server for PDS
- iii. Database server for ration card database
- iv. Backup server with hourly backups from production servers.

SMS Toolkit in Java was used to develop application using GPRS Modem to give automated SMS at different events. GPS, GPRS enabled Mobiles loaded with an application in J2ME were given to warehouses to record truck receipt. The incharge is supposed to take a photograph of the truck and receiver, using the application loaded in the mobile. The application sends photographs along with the latitude and the longitude to server. The latitude and longitudes are compared with the latitude and the longitude of the warehouse to check whether the truck has been photographed within the premises of the warehouse or not and accordingly, alerts the persons concerned, through SMS. GPS based truck tracking is under pilot implementation. Every truck transporting PDS commodities is fitted with a GPS instrument. The GPS sends the longitude and the latitude of the truck position using GPRS SIM to the server every two minutes. The data is analysed to find the truck's position, speed etc. If the truck diverts from the route or stops for a longer time in the geo fenced area (like mill premises etc.), the system gives SMS alerts to the concerned.

11. Capacity Building

All the field level officers are involved in the system design and development from the very beginning, by way of conducting frequent workshops and meeting either in person or through VC. About 500 man days of training has been given in the operation of the system in addition to on-job-training given at work places.

12. Project Reforms

- Government Order was issued to cancel all manually created ration cards and to give legality only to the computer generated ration cards.
- FPSs were earlier in private hands which resulted in high diversion. FPSs were first de-privatized and given to Panchayats, Cooperative Societies, SHGs etc. Even this reform is not directly related to technology, it proved to be a very good step towards checking of diversion.
- Submission of a declaration with the sales details of the month has been made compulsory under EC Act. Based on the declaration, stocks available at FPS are calculated. The quantity of stocks available is subtracted from the allotment and balance is only allowed to be issued. This checks piling up of excess stocks at FPS.
- Allotments were previously given by the Food Controller under the supervision of the District Collector. By an officer's order, the granting of allotment has been automated. The system has been accepted with some initial resistance.
- Computer Generated Delivery Orders and Truck Challans are made legal. Special approval from the Managing Director is required to issue manual delivery orders or truck challans.

13. Project Financials/Sustainability

Capital cost 2 crore for ration card database and 1 crore for PDS. Recurring expenditure 40 lakhs per year.

14. Project Teams and Leadership

Principal Secretary (Food, Civil Supplies and Consumer Affairs), Government of Chhattisgarh, MD, MARKFED and CGSCSC, Commissioner (Food, Civil Supplies and Consumer Affairs, SIO, NIC, Chhattisgarh, *sio-cg@nic.in*, PSA, NIC, CGSC, *som@nic.in*, Deputy Director, Food, Civil Supplies and Consumer Affairs Development and other team members.

15. Key Project Outcomes

- The SMS alert system, citizen interface website is encouraging citizen participation in monitoring of PDS

- **Transparency:** We believe that transparency is the only solution to check corruption. Thus as a matter of policy, most of the reports generated through the system are made accessible to general public at *cg.nic.in/khadya*. Ration card holder details, FPS details, Allotment details, FPS Sales details, Lifting details, CMR and Levy receipt details are available on web for social audit. Truck Dispatch details are sent through SMS to all registered users whenever trucks are dispatched to increase citizen participation in checking diversion.
- Call center and citizen interface website has empowered citizen to reach higher authorities with no effort.

16. Service Users' Feedback Mechanism

- Online website FOOD FORUM is used as a medium for giving feedback and getting technical solutions. *cg.nic.in/food* status
- Call center is used to lodge complaint on VSATs and other H/W related problems.

17. Implementation Challenges

- **Lack of connectivity at warehouses:** VSATs are taken on lease from BSNL. Whenever SWAN is operational we will discontinue VSAT lease and use SWAN for connectivity.
- **Massive data entry of beneficiary details in Ration card database:** About 36 lakh ration card holders' details are entered in the database for creating computerized ration cards. Since the data was enormous the only option was a decentralized data entry. A windows based form was developed for data entry. In the field, Microsoft Access was used for data entry and transporting data to the State Headquarters for convenience. The windows data entry software had elaborate validation checks to minimize mistakes in data entry. In addition to that, checking software was developed to check the data for mistakes when it was received at the State Headquarters. Once checked the data was imported into Microsoft SQL Server 2005 which was used to generate and print ration cards.
- **Font compatibility for Hindi data:** The common problem in storing Hindi data is its compatibility as different people tend to store the data in different fonts which are mutually incompatible. From the very

beginning, it was decided to use Unicode only for storing data in all modules. Thus compatibility is achieved.

- **Lack of trained manpower:** More than 500 man days of training and workshops were conducted to meet the challenge
- Coordination between different departments' six different organizations is using different modules of the system and they are inter-dependent. Coordination between these organizations is a major challenge. Secretary, Department of food took personal interest and coordinated with almost daily meetings and monitoring.

18. Key Lessons Learnt

Experience shows that process computerization is more sustainable than an MIS, where data is entered after process is over through manual methods. Connectivity should be addressed first. Rice receipt module was a form based module in the early days where, data was sent through automatic 'ftp'. During the time there were numerous problems. When VSATs were installed and it is converted to web module, problems have automatically reduced to negligible number. Training and capacity building is the key for successful implementation of the system. To make a project successful, top level management should accept system generated reports only. Manual reporting should not be accepted.

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Content Management Framework (CMF)

Kala K

1. Goals and Objectives

Government websites provide the richest and the most accessible form of information dissemination for common public. However, the value of the information on the websites often depends on the currency of the information. The existing paradigm does not support active content management on websites. The aim of this project is to increase the value of information on Government websites by migrating these websites to a Content Management Framework (CMF) which would support the evolutionary digital life cycle of information. This includes creation, updation, and publishing, translating, archiving and retiring. The CMF allows the authors (in this case the Government Departments and Organizations) to manage the content on a real-time basis as the information is generated or as the content evolves. It also ensures systematic archiving of earlier content which can be used for future references.

The Kerala State IT Mission (KSITM) has taken up the task of enabling each Government Department to update the data on their websites, by facilitating the migration of their websites to a Content Management Framework (CMF). Since Free and Open Source (FOSS) offers several powerful CMF applications, for example, Joomla, the project also aims to increasing the use of FOSS in the Government and reducing the dependency on proprietary solutions. About 50 websites have been migrated to CMF since the beginning of the project in November 2007. This includes 19 ministers' websites too. The IT Mission also intends to transfer the websites of all the Departments, which amount to about 90, to the new framework, which will soon be completed. It also intends to include all official websites of municipalities, gram panchayats, welfare boards, schools and the like in the

framework, which amount to more than 2,500. As part of the project, the Kerala State IT Mission has trained total service providers who in turn gave training to the nodal officers of Government Departments and enabled them to upload the content themselves on the website. The project could fulfill another objective—standardizing the templates of all Government websites—within this short span of time. The project also aims at combining all the Government websites to provide a single window for all Government services.

2. Spread of Project Service Users

The service users are Departments of the Government and Government Organizations who have existing websites or are intending to create their own websites. According to an estimate, there are currently about 2500 websites being maintained by Government Departments and Government Organizations.

The main beneficiaries of this project are none other than the public who will be able to get updated information on Government services without delay through the websites. The direct target group, the Government Departments, too will be benefited as they need not depend on the service providers to change the content. They themselves can update the content and the layout. It steers clear of the delay in updating content, once their website is migrated to the new framework. The Government itself is one of the beneficiaries as the feedback mechanism in this new framework enables the Government to improve their services.

3. Services Provided

Content Management Framework aims at enabling every Government Department to manage and update their own websites. It helps to provide the public accurate and reliable information. Open source applications like Joomla software are used, which allow the user to change the content and design of the website himself/herself through a username and password. This system also includes features such as page caching to improve performance, RSS feeds, printable version of pages, news flashes, polls, web-searching etc. It treats graphics and content separately, so the user can easily change the content without changing the graphics or by changing the graphics. Content Management Framework tries to combine all Government websites and provides a single window—Kerala web portal—for all Government services. It aims at standardising the templates of all Government services and provides

facility for the use of local language. Once the websites have migrated to CMF, all the relevant data on Government services including circulars to the public, submission of application forms, grievance redressal, e-procurement, Government orders, examination results etc., can be made available by the employees of the Department themselves with basic word-processing skills. Since the websites can be frequently updated, it will pave way for an e-Governance which is more people-friendly. All suggestions, complaints and opinions about this website could be sent using the facility provided in the link “Feedback”.

The project provides for hosting of all Government websites at the State Data Center free of cost and for Government Organizations at a nominal cost. This saves the Departments and Organizations the costs which were being incurred by them in hosting the websites on commercially hired servers. It provides trained solution providers to the Departments and Organizations which would help them to migrate their existing websites to CMF. Further, a Nodal Officer is identified in each Department or Organization, as the case may be, with the responsibility of maintaining the migrated CMF website. The Nodal Officers are provided training in use of CMF framework and the Department is provided hand-holding for one year for updating their websites. During the hand-holding period, it is ensured that the websites are updated at least on a weekly basis. The project assumes that after a year-long hand-holding exercise, the Departments would be sufficiently trained and equipped to manage their websites themselves.

4. Geographical Spread of Project Implementation

The websites of 50 Departments and Organizations have already migrated to the Content Management Framework. This includes 19 websites of Ministers in the Government. The project intends to transfer the websites of all the 90 Departments of the Government to the new framework as also those belonging to the local self Government bodies and other Government Organizations.

5. Project Timelines and Milestones

The project to migrate all Government websites to content management framework began in November 2007. It was decided that FOSS applications like Joomla will be used for this purpose and the technology support providers were identified as National Informatics Center (NIC), Center for Development of Imaging Technology (C-DIT) and Kerala State Electronic Development

Corporation (KELTRON). The rate of migration was also fixed. Training to officials from user Department was given and first batch of websites were migrated to CMF in December 2007.

A policy decision has been taken asking all Departments and Organizations to migrate their websites to CMF. Another policy decision taken is that all the Government websites shall be hosted from the State Data Center. Both these decisions have expedited the process of migration.

The migration of websites from existing web-applications to CMF is proposed to be continued for the year 2008-09 and 2009-2010. An Impact assessment study will be carried out after 2008-09.

6. Direct Cost and Time Savings to Avail Services

The public gets updated information without delay, compared to the earlier system. They need not go to the respective offices in order to get details and thus can save the money for travelling. Since the websites are updated more frequently, literally on a real-time basis, a petitioner can know the decision on his file much faster.

7. Direct Time Savings to Deliver Services

The user Departments can save considerable amount of money if they migrate their websites to the content management framework. They can update the content or layout themselves instead of depending on the web service provider, thus saving the cost for his services to the Department.

In the non-CMF system, to update the website, the information has to be documented, got approved through the approval process and sent to the service provider who manages the website. So, there happened to be a delay in rendering information to the public. But in the new system, the officials concerned in the Department can change the content and layout of the website by themselves and thus can save time considerably.

Additional saving is also generated as Departments and Government Organizations do not have to hire commercial server space for hosting their websites. They can host the websites in the State Data Center.

8. Replication

This is a state-wide project in Kerala. It can be replicated by other state governments and the Central Government. This is especially relevant for Departments and Government Organizations dealing with subjects for which public has to contact them very often.

9. Implementation Model

The three main sub-systems involved in the implementation of the project are the KSITM, the TSPS and the Departments/Organizations targeted for migration to CMF.

Kerala State IT Mission (KSITM) which is responsible for developing the policy guidelines relating to the project, providing financial support for training the solution providers and subsequently training the Nodal officers of the Government Departments and Organizations. KSITM also owns the core IT infrastructure like the State Data Center and Kerala State Wide Area Network (KSWAN) which is used by Departments for hosting their websites and updating content thereon.

Solution providers who are responsible for promoting the migration of websites to CMF. There are three Total Solution Providers (TSPs) which have been identified for this purpose. These are National Informatics Center (NIC), Center for Development of Imaging Technology (C-DIT) and Kerala State Electronic Development Corporation (KELTRON). These TSPs were trained by KSITM regarding the aims and objectives of the programme and in turn undertake the development work relating to migration of Departmental websites and the training of Nodal Officers. They also provide hand-holding to the Nodal Officer for one year to enable the Department to regularly update their websites themselves.

The Departments and Government Organizations represent the third sub-system of this Implementation Model. The websites of the Departments and Organizations which are migrated to CMF are also part of the sub-system. The Nodal Officers and other associate officers who get trained to manage and update the CMF website are also an integral part of the sub-system.

The key steps in the implementation include:

- Adoption of policy decision to migrate to CMF

- Identification of solution providers and assigning them roles and responsibilities, finalizing terms and conditions for their engagement
- Training the trainers (Solution providers)
- Identifying the target Departments/Organizations and identification of Nodal Officers within the identified Departments/Organizations
- Assigning roles and responsibilities within the user Departments/Organizations towards different types of content categories
- Training of Nodal Officers and related officers of identified Departments/Organizations
- The hand-holding of Department/Organization for content updating
- Monitoring content updation by Department/Organization concerned.

10. Technologies

While no specific technology has been mandated, the TSPs have been encouraged to use FOSS applications. Several FOSS applications on content management are freely available. The experience so far has shown a distinct preference for Joomla. Joomla is tried and tested world over. United Nations site United Nations Regional Information Center for Western Europe (<http://www.unric.org/>) is based on Joomla. Other important sites which are based on Joomla include the website for the Graduate School of Arts and Science, Harvard University (<http://gsas.harvard.edu/>) and Citibank Intranet.

Joomla is easy to install even for someone who is not an advanced user. It is easy to use and it is easy to empower the users to manage their sites themselves. Joomla also offers several extensions and features which may be provided for more advanced requirements. Joomla has been in existence since 2000 and is being supported by a strong collaborative effort by the open source community, thereby ensuring continuous updation and improvements.

11. Capacity Building

(Governance structure, project teams, training, change management, policies, standards)

The Kerala State IT Mission has spearheaded the programme. KSITM also acts at the State eMission Team (SeMT) for Kerala. Each Project leader

in KSITM is assigned the role of coordinating with one or more Departments with their e-governance activities. These Project leaders, therefore have a fairly good understanding of the e-governance activities in their respective Departments. In addition, a Project Coordinator was identified within KSITM to coordinate the overall programme.

The second important component of the governance structure were the Total Solution Providers, namely the National Informatics Center (NIC), Center for Development of Imaging Technology (C-DIT) and Kerala State Electronic Development Corporation (KELTRON). They acted as master trainers for the project. They were also entrusted the role of assisting the Departments in developing content management sites using FOSS applications in the first instance. The training to the officials of the Departments concerned was provided by C-DIT.

12. Process Reforms

Re-engineering of procedures are essential for the successful implementation of any e- Governance initiative. Active steps are being taken in this regard and some have met their goals. Content management framework paved way for process reforms in the website management methodology. Empowerment of user Departments to manage their own site was the main step in this regard. Standardization of rates for migrating websites was also a main reform. A Government order was issued instructing the user Departments to maintain a minimum content to be uploaded on the website. Another order was issued directing the user Departments to constitute a team within each Department in order to carry out the updations on the website.

13. Project Financials/Sustainability

No additional capital was required to set up the State Data Center as we had already one and the common infrastructure could be used for this project. But, each Department had to spend a maximum of about Rs.50,000 towards the setting up of website and service charges for hosting the website and training the officials.

14. Project Teams and Leadership

CMF is a project of Kerala State IT Mission and the technology support providers were identified as National Informatics Center (NIC), Center for

Development of Imaging Technology (C-DIT) and Kerala State Electronic Development Corporation (KELTRON). Kerala State IT Mission has mandated a content management governance mechanism in each Department headed by State Information officer. The technology support team gives instructions and guidance to the officer concerned or the content management team of the various Departments.

15. Key Project Outcomes

The project is sustainable as it provides updated information on Government services. It is very user-friendly from the perspective of both the user Department and the public. The user who intends to change the site needs only normal word-processing skill to carry out his task; and people with basic computer knowledge can download the information posted on the website. This empowers the user Department with the skill to maintain their own site and the common people with information regarding Government services.

16. Service Users' Feedback Mechanism

The content management framework promises high degree of interaction between the user and the technology solution providers. The user can access them for clearing any doubt in this regard. The websites hosted in this framework too offers high degree of interaction through the option 'feedback'. All suggestions, complaints and opinions about this website could be sent using the facility provided in the link "Feedback".

17. Implementation Challenges

One of the main challenges of the project is the monoculture of the software used. All the websites are created using the same kind of software and this leads to a security risk. If the weakness of one website is revealed, it will affect all the websites. There should be an alert facility to inform all the Departments in case the weakness of one website is identified.

Another problem related to the implementation is the huge amount to be spent by the Departments in this process of migration. So, many Departments are reluctant to accept this system. Though it seems to be a liability now, Content Management Framework will be advantageous for the Departments in the long-run.

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VATSoft – VAT Processing System

B A Harish Gowda and P V Bhat

1. Goals and Objectives

VATSoft has been started with the main objective to increase the tax collection and improve the tax administration at Commercial Tax Offices under the constraints of human resource. The second objective is to mitigate the hardship to the tax payers when they are dealing with the VAT Offices and thirdly to simplify the processes and build a transparent and accountable system. Finally it is also envisaged to assist the department officers in detecting the tax evasion made by the dealers using various modus-of-operandi.

2. Spread of Project Service Users

There are 3 categories of the beneficiaries of this system:

Tax payers: As the tax payer plays an important role in the VAT administration, it is necessary that his records/documents are maintained properly in the VAT offices.

Staff of the VAT office: As the staff of the department processes the request of the dealers, it should help them in easing the activities being carried out by them.

Management: As the Management is keen in improving the tax collection and monitoring of the tax administration, it is necessary that, new system should take care of these aspects.

3. Services Provided

National Informatics Center, Karnataka has designed and developed in-house VAT Processing System, known as “VATSoft”. VATSoft is a web-based application with 3-tier architecture. The VATSoft application has been released

in two versions to meet all the requirements of field VAT offices. It has the functionalities for Returns Processing, Registration Processing, Statutory Forms, Acknowledgement, Analysis and Comparative Reports, Defaulters' Notices, Additional Demand Monitoring, Audit Assignment Processing, Appeal Processing, Intelligence Assignment Processing, Penalty Processing, etc. This has been well-accepted and received by all the officials of the Department. It has also been enabled to carry out the backlog work. VATSoft is an online, user-friendly system. It has been built with workflow processes, wherein, the application/forms entered by the user will flow automatically to the next level as defined by the system. It has been incorporated with numerous business rules defined in the VAT Act and Rules so that, it will not allow the officers to deviate from the business rules. It has a public interface wherein the user can enter the applications/requests/forms received by the dealers into the system and generate acknowledgements to be given to the dealer across the counter. It carries out more than 50 checks and balances while processing the returns. It has brought transparency in the activities and maintenance of the records in the Department. It assists the officers to generate various kinds of notices based on various rules governing submission and non-submission of forms by the dealers. It assists the officers to generate a number of tax analysis reports based on various conditions. As a next step, the VATSoft application has been further enhanced to meet the requirements of various sections/wings of the Department, which cater to the needs of audit, appeal, intelligence and vigilance activities. It is a totally integrated system wherein, all the sections/wings of the department can exchange the data and information electronically. The new system has a process for automatic selection of cases for audit, based on various risk factors in relation to taxpayers. Assignment of audit cases to the officers of the Department is automated, based on various risk analysis factors so that, there is no element of subjectivity in allotting the case. The system is enabled to generate various analysis and comparative statements based on various parameters. E-filing system has also been built for updating various documents on the website by the dealers. The dealers are also enabled to view various documents submitted by them to CTD and the decision of the Department on the documents so submitted and thus it has brought in total transparency to the system.

4. Geographical Spread of Project Implementation

The roll out of this new VATSoft system was achieved in just two months, at all the 95 VAT front-offices in 5 phases and all the 30 divisional Offices in the 6th phase. The roll out has been started in June 2006. This system has been implemented successfully in all the VAT offices in the state and all the data related to the VAT system has been captured and made use of by the department effectively.

5. Direct Cost and Time Savings to Avail Services

The Department has spent around Rs.25-30 crores in installing the hardware and networking of this e-governance system. VATSoft system is one of the factors contributing to the increase in tax collection during the year of introduction of this system. The reduction in staff and offices for VAT purpose has also helped in reducing the expenditure. These two factors have proved that the expenditure involved in establishing the new system is very meagre, compared to the benefit accrued. Department has collected a revenue of Rs.16,163.48 crores and Rs.13,739.46 crores during the years 2007-08 and 2006-07 respectively compared to the Rs.11,511.38 crores, Rs.10,335.65 crores in 2005-06 and in 2004-05, which clearly shows the tax growth rate of 17.64% and 19.35% in the years 2007-08 and 2006-07 compared to the respective previous years. The Department is able to easily verify the Input Tax Credit claims made by the dealers, while processing of refund and assessment, by using this system. The number of non-filers has reduced drastically after the introduction of the VATSoft system. Cost and time required for analysing and identifying the cases for audit and intelligence activities have significantly decreased. The new VATSoft application software has reduced the requirement of 10 high-end servers with their system software, effectively saving more than Rs.100 lakhs to the Department. The Department is using these systems for other purposes like computerization of Check Posts, Minor Acts etc.

VATSoft system has improved the efficiency of the staff of CTD. Previously, a Case Worker used to take 30-45 minutes to scrutinize the returns submitted by the Dealer and he was supposed to do lot of calculations, checks and verification with earlier submitted forms. Using the VATSoft system, the time taken for scrutiny has reduced to 5-8 minutes. The calculations, checks and verifications are being done by the system once the return data is fed. Hence, the number of cases scrutinized and subsequent action taken by each case

worker has increased by 5 folds. In the new system, the number of front end offices has been reduced from around 376 to 95, to collect and process the returns and tax paid by the dealer. Each case worker is now handling 350-425 dealer files in the new system compared to around 60-80 dealer files handled in the earlier manual system. On an average, a case worker is processing around 800-1000 transactions per month. VATSoft system has reduced the routine clerical and mechanical works being done by the case worker, by preparing and generating various registers and notices and *ad hoc* queries at the click of a button. As data is exchanged between various wings through single central system, the time required for processing the request has been avoided and thus has enabled the Officers to effectively use this time for productive work. This also has enabled in avoiding the leakage of confidential activity being planned by the enforcement wing of the CTD.

6. Direct Time Savings to Deliver Services

VATSoft is designed and implemented keeping the Tax Payers in mind, who is one of the primary stakeholders of the System. This system has helped the CTD in proper maintenance of tax payers' records so that, unnecessary harassment to the Tax Payer of repeatedly asking them to submit the forms/returns is avoided. Counters have been established in VAT offices for the benefit and convenience of Tax Payers so as to submit their applications/forms/returns etc. The acknowledgement generated across the counter substantiates the submission of the document which is duly accounted for. The acknowledgment generated provides the proof of submission of the application and payments for any future reference. Based on this acknowledgement, the dealers can also verify the status of their requests being processed by the department. This brings in transparency of the VAT process carried out by the Department. VAT e-filing system has been established to enable the Tax Payers to submit their documents electronically and get web-acknowledgement from the system for the submissions made. This system also provides mechanism for the dealers to view their documents maintained by the Department.

7. Replication

The VATSoft architecture has been designed in such a way that the core of the system can be very easily customized and replicated in any State. In fact, more

than 80% of the modules of VATSoft can be used with minimum customization by any other State. The State of Puducherry and Goa have taken the VATSoft application to implement it in their States. National Informatics Center, State Unit of Puducherry and Goa are customizing and implementing in their respective State. The domain knowledge of the VAT system is also shared so that, the best practices followed in Karnataka are made available to Puducherry and Goa in detecting the tax evasion cases effectively.

8. Implementation Model

The Department has followed a well-planned strategy for implementation of VATSoft system with the assistance from NIC. The nodal officer of the rank of Joint Commissioner has been identified from day one for monitoring the implementation of VATSoft system. In the initial stage of implementation, a User Acceptance Committee was constituted to provide the inputs to the software developers and also to scrutinize the new requirements/inputs being received from various offices. The User Acceptance Committee ensures that the new versions are tested for user acceptance before releasing it for implementation. The roll out of this new VATSoft system was achieved in just two months, at 95 VAT offices in 5 phases. The implementation strategy is defined with roles and responsibilities for each of the stakeholders. Software provider conducted the training at the Department headquarters for field officers and resource officials of all the 95 VAT offices. Subsequently, District NIC officers conducted the training for the remaining officials at each VAT office. Interaction meetings were also arranged with all the VAT officers on a regular basis to update them with new developments in this e-governance project. Help desk has been established at the Department headquarters to monitor the implementation, attend the calls/problems of VATSoft system and for co-ordination with various agencies involved in this project for smooth implementation of the system. IT infrastructures are kept under Annual Maintenance (AMC) to ensure that they are always readily available for use by the officials. The hired technical manpower has been provided to all the VAT divisions to assist the field VAT offices in troubleshooting the hardware or software issues and train them as and when the new versions are released.

9. Technologies

VATSoft is a web-based Intranet System. It is built with three tiered architecture using ASP.NET technology with C# language for the front-end application and Oracle 8i/9i RDBMS as a backend. The application has adopted the Object-Oriented Methodology. The Commercial Taxes Department is having V-SAT based wide area network and has been implemented in a distributed architecture because of the limitations in the band width of V-SAT. Online database has been distributed in 50 locations in Karnataka and this data is getting replicated on a weekly basis to the Central Server located at the Head Office of the Department. Access to Central Server has been provided to all the officers for viewing the dealers' records. Disaster Recovery set-up has been created at one more location at Bangalore for data security.

10. Capacity Building

From day one of introduction of this VATSoft system, the data entry work has not been outsourced but has been and is being done in-house by the concerned staff of the Department. Required training has been imparted to all the staff of the Department in a phased manner and hence they are familiar with their roles and responsibilities. The Department has hired the Technical Assistants from external agency to assist them in training, implementing and handholding of this system throughout the State. These Technical Assistants are being used for the first 2-3 years for the roll out of the system. Meanwhile, the Department has identified internal resources to build expertise in carrying out the implementation of the system in the long-run. Nodal officer of the rank of Joint Commissioner has been identified to take care of the implementation of this system since the beginning. User Acceptance committee has been formed in the Department to provide the system requirements for software development and test the software before rolling it out through out the State. Help Desk has been established at the Head Quarters to assist and troubleshoot the problems of various offices of the Department. Regional level coordinators have been identified to monitor the implementation of this system. Regular reviews and skill-updating programs are being conducted for the field officers. These initiatives are helping in building their capacity for sustaining the e-governance in the long-run. The built-in workflow in VATSoft system has made the officers accountable for their roles and responsibilities. One can track down the number of requests of the dealers, pending to be processed by each officer/official at

the click of a button. Also, the system provides a mechanism for the frontend VAT officer to monitor the activities carried out by the respective staff. The system maintains the audit trail of the transactions carried out by the staff which helps in identifying the intentional wrong doings, if any of the staff. Users are authenticated, based on strong passwords so as to avoid misuse of the accounts. VATSoft system has roles and responsibilities defined for each group of the officers according to their designation. The role of the case worker has been limited for data entry and various reports generation. An Inspector has been assigned with the role of verifying the details entered by the case worker in addition to modification and generation of reports. The Assistant Commissioner or Commercial Tax Officer of any VAT office has been entrusted with the role of approval of critical activities carried out at their office. The Head of the Office has the privilege of administering the users of VATSoft System. Audit trails are maintained on the system. Activity done by each official can be easily accounted for.

11. Process Reforms

VATSoft has been introduced with unique concept called automated selection of cases for audit activity and automated assignment of these cases to the officers. Automatic selection is done on a scientific and innovative mechanism, using various risk factors based on tax evasion tactics adapted by the dealer. As it is system-generated, the cases are selected without any bias. On the same line, the assignments to the officers are impartially done on round-robin rule. This has helped in building a cordial relationship between officers and the management. The feature of Acknowledgement generation in VATSoft has brought in transparency and accountability in processing of VAT related activities. The Registration process has been designed in such a way that, one cannot have the registration number without the application being processed on the system. E-filing system has been introduced to collect the sale and purchase invoices from the dealers electronically. This is being used to verify electronically the input tax credit claims made by the dealers with the seller's invoice details which facilitates in identifying the bogus input tax credit claims made by the dealers.

12. Project Financials/Sustainability

Please refer to Part A-6: Direct cost savings to avail services and Part B-3: Capacity Building.

13. Project Teams and Leadership

The Project Team Members who were associated with VATSoft included The Commissioner of Commercial Taxes, SIO and Deputy Director General, Technical Director and Additional Commissioner.

14. Key Project Outcomes

Increase in growth rate of tax collection in the year of introduction of VATSoft itself shows that one of the main objectives of this e-governance is met. VATSoft system has helped in improving the tax administration and tax collection activities of the Department. Automation of the VAT related activities has reduced to a great extent the mechanical and clerical work for preparation of various reports and registers. This system is helping the VAT offices in monitoring the tax collection by various means like generation of reports and notices to defaulters, missing payments, short payments and comparative tax yield analysis etc. This e-governance system has brought transparency in the VAT administration. Local VAT Office monitors and processes the requests of the taxpayers on the system and senior officers also monitor different kinds of pendencies related to tax issues at the various offices. The introduction of acknowledgement generation system for the requests/submission of forms/returns by the taxpayer have brought in accountability in the system. The acknowledgements generated are printed across the counter and given to the taxpayer for his submission/requests etc. In turn, this acknowledgement is monitored and put up for further processing by the system as per the business process. 'VATSoft' has made the availability of all taxpayers' data to all the offices and wings of the Department for various activities like cross-verification, intelligence, audit, vigilance activities and generation of MIS reports. Utilizing these reports, the officers have started detecting the tax evasion and bogus input tax credit claims made by the taxpayers. This system is also providing numerous analysis and comparative reports based on various parameters. VATSoft e-governance system is both user friendly and is an online system. The users, namely officers and officials of the Commercial Tax Department, are able to use this system with minimum training. The VATSoft system has built-in workflow system, where the applications move from one officer/official to other officer/official based on their assigned roles. On touch of a button, the user can view the various kinds of requests/an application pending before them for processing which automatically brings accountability. This also helps the

officers at the next level to monitor the pendencies at various levels in the VAT Office. The department has various wings which interact with the dealers to carry out the intelligence/audit/vigilance activities assigned to them to detect tax evasion. To enable the activities in this process, these wings collect the data from the dealers. In the earlier manual system, an officer of a particular wing was finding it difficult to get the consolidated information about the dealer which was being collected by various wings. VATSoft has brought in one-stop shop concept wherein, an officer pertaining to any wing can access the consolidated information of the dealers in various formats at one place, without contacting or bothering other wings, thus avoiding unnecessary delay in collecting and using the information for intended purpose and it also reduces the processing cost. VATSoft system has been enabled to generate various kinds of analysis reports which have assisted the department in identifying tax evasion cases.

15. Service Users' Feedback Mechanism

The Staff of the department is happy with the new system as the number of clerical works has been reduced for them and it is helping them in day-to-day activities. The clerical works like verifications, checks, calculations, preparation of statements, registers and notices are done by the system. Hence, it has improved their efficiency. As the VATsoft system has been implemented with the acknowledgement processing, the tax payers are able to get the acknowledgement for their submission of the applications and documents. Subsequently, it is also helping the staff and tax payers to track the status of the application very easily.

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Integrated Prisons Management System

Sunil Kumar Barnwal

1. Goals and Objectives

The main purpose behind the implementation of the Prison Management System (PMS) was to enhance the administrative capabilities of the jails in terms of monitoring and security of the prison while improving the efficiency and productivity of the Prisons. The main goals of the project are enunciated below:

- To ensure proper monitoring of the prisons by the top officials
- To ensure that the discipline and decorum of the jails is maintained by both the employees and the prisoners
- To ensure compliance with the Jail Manual with respect to the visitors and their frequency
- To ensure that no impersonation of the prisoners happens by proper validation and authentication of the prisoner's identity
- To ensure that assistance could be provided to police stations in real time if the need arises
- To reduce the costs and the risks associated with the production of the prisoners in the court
- To improve the productivity and efficiency of the prisons so as to facilitate the usage of the available work force for sensitive work while leveraging technology to reduce the mundane workload of the employees
- To ensure the availability of data in digital form for preservation, analysis and reporting.

The nature of project is such that, outcome of project could be quantitatively measured only for few parameters such as:

- Automatic detection of duplication
- Automatic refusal to visitor meeting a prisoner at interval less than prescribed
- Immediate generation of report on categorization of prisoners on the basis of their cases, period of confinement etc.
- Automatic calculation of Remission to be granted to a convict prisoner for good behaviour, discipline etc.
- Reduction in the cost (Saving of resources) of physical production of prisoners in Courts.

2. Spread of Project Service Users

- The project serves the following stakeholders:
- Prisoners and their family members and visitors through facilitation of visits and meetings as per the regulations and laws
- Police by ensuring that the rules are followed while prisoners meet their relatives and to keep a track of the visitors and number of visits
- Judiciary by eliminating the need for the physical production of prisoners in the court; the prisoners may be produced electronically through video conferencing. This also saves time, money and time of police force.

3. Services Provided

The project is primarily delivering G2G services with mixture of G2C services. Some of the key services that are being facilitated are:

- Complete record of prisoner's individual and family details with health and educational background
- Complete record of activities performed by prisoner for the purpose of grant of remission by jail superintendent and Inspector-General as well as for inflicting punishment for breach of jail discipline.
- Updated record of Correctional program attended by prisoner

- Record of wages kept in the prisoner's account for work performed in prison
- Prisoner's case details, dates of production in different jails
- Biometric features of prisoners
- Prisoner's history ticket
- Complete record of visitors meeting prisoner
- Automatic refusal of visitor to meet a prisoner having visitor at frequency more than that provided in Jail Manual
- Web-based MIS in offline mode with data being pushed everyday using SWAN.

4. Geographical Spread of Project Implementation

The project is successfully implemented in all the 22 districts of Jharkhand.

5. Project Timelines and Milestones

This project has been initiated in January 2007 to automate the management of the Prisons in the state. Initially the project was launched in the Birsa Munda Central Jail, Hotwar, Ranchi on a pilot basis. The experience was also used to customize the software jails of Jharkhand. In March 2008, the software was implemented in all the Jails of the state. Next aim is to deploy the Jail software in the 3 tier architecture and have the centralized database for all the Jails of the state. Training was provided to all concerned, in a phasewise manner. This has helped us in implementing the software.

6. Direct Cost and Time Savings to Avail Services

This is a government centric project and no services to citizens at large are as such delivered through the project. However, the consistency of the visitor management system ensures that, the visitors are allowed to visit the prisoners as allowed by the prison rules.

This is a government centric project and no services to citizens at large are as such delivered through the project.

7. Direct Cost and Time Savings to Deliver Services

No third party agency study has been undertaken. However, the project has led to major cost and resource savings for the prisons. Previously, the prisoners

were taken physically to be produced in courts; this has now been eliminated due to the use of video conferencing for the purpose. This is safer also. These visits to the judiciary could be used by the criminals to escape.

No third party agency study has been undertaken. However, the project has lead time savings for the police officials who would previously accompany the prisoners when they had to be produced to the judiciary. This is now accomplished by video conferencing. This ensures that the staff does not need to be deployed for taking and then bringing back the criminals for producing them in courts.

8. Replication

This project has been replicated across all the prisons in the state of Jharkhand.

9. Implementation Model

The project has been conceptualized, implemented and funded by the state government. The software has been developed by the National Informatics Center, NIC.

10. Technologies

The software is running in two tier architecture under Client Server environment. a. SQL Server 2000 as data base, b. VB is used as front-end.

11. Capacity Building

The project has been a success due to the various capacity building efforts taken up by the project team. Workshops were organized to apprise the prison staff of the changes and the benefits that would accrue to them through the use of technology. Further, training on the new system was imparted to the concerned officials so that, they are comfortable using the system.

12. Process Reforms

- Capturing visitor's details at the entrance of the Jail
- Digital identification of the prisoners
- Capturing thumb impression of all the prisoners
- Capturing prisoner's details digitally

- The MIS website is used by the authorities to know the details of the prisoners for better decision-making. The site also helps the jail authorities to manage the jail in uniform manner
- Amendment of Cr. P.C. to allow the production of prisoner through video-linkage.

13. Project Financials/Sustainability

The project is fully funded by the Government of Jharkhand.

14. Project Teams and Leadership

Given the complexity and breadth of this project, interdepartmental teams composed of senior level officials had to devote time on the project. The organizations involved in bringing the project to fruition included DoIT, Law department, Home department, NIC, JAP-IT etc. Some of the key individuals who participated from these organizations were:

- Mr. R S Sharma, Principal Secretary, Information and Technology Department—he sanctioned Video Conferencing units between prison and court apart from the concept of RVJIS
- Mr. Sudhir Tripathy, Secretary, Home Department—he approved the project and the allotment of resources for the various modules of the project
- Mr. Prashant Kumar, Secretary, Law Department—he initiated the legal amendment of the Cr. P.C. i.e., process—re-engineering
- Mr. Sunil Barnwal, Inspector-General of Prisons and Addl. CEO, JAP-IT—I was closely involved in all aspects of project implementation right from project conceptualization
- Mr. Shahid Ahmad, SIO, NIC—he supported the project by using his team of software professionals to develop the web-enabled software for the project.

Further, as all the projects are prison-oriented, all the prison Superintendents, Jailors and Officers at the prison headquarters, particularly Mr. Deepak Kumar Vidyarthi, A.I.G. Prisons were keenly involved. Likewise, the video conferencing system at the Courtend for producing the prisoners from jail required the involvement of District and Sessions Judge and the concerned Chief Judicial Magistrate. The Acting Chief Justice of Jharkhand High Court, Mr. M Y Iqbal, took keen interest in the said project.

15. Key Project Outcomes

Some of the benefits that have accrued to various stakeholders due to this project are:

- Benefits to Prisons
 - Saving time and money on the movement of criminals for producing them in courts
 - Adherence to service levels in terms of number of visits to the jail by visitors to prisoners
 - Records of the criminals including their biometrics which ensures that the prisoners are not duplicated/someone else does not take place of a criminal in the jail while the criminal is allowed outside.
 - Information and MIS reports available to the top officials for planning and taking timely and informed decisions.
- Benefits to Prisoners and Visitors
 - Adherence to jail manual means that the visitors and prisoners rights are not violated
 - Capturing of the records of the criminals and also the progress in terms of correctional intervention ensures that there are better chances of the criminals being absorbed in the mainstream, once they are out of the jail.

16. Service Users' Feedback Mechanism

The Government intends to institute third party audits for the measurement of satisfaction levels of the users. Though no study has been done till now to determine the satisfaction levels of the users, the information on the ground suggests that prison staff is happy with the implementation of the system as it helps them in doing their job effectively. Further, the top officials are satisfied because, this system helps in providing them with better information and records are available instantly. Further, the resource crunch in the prisons has also been alleviated to a certain extent, as the prison staff that had to be deployed for producing prisoners in the courts can now be deployed for other tasks, as the prisoners are produced using video conferencing facilities, provided by the system.

17. Implementation Challenges

- Technical difficulties and interdepartmental coordination in such large scale networking and computerization.

Solution: A highly competent team of professionals was mobilized to ensure that the complex and challenging tasks of networking all the prisons is managed properly. Further, to ensure that there is coordination amongst the departments, an interdepartmental committee was formed with the secretaries of the concerned departments as its member. This ensured timely resolution of all issues amongst the stakeholders.

- Cultural change to ensure that the employees support the system.

Solution: Workshops were conducted along with a general awareness campaign about the project and the benefits that would accrue to the respective stakeholders. This ensured that the employees supported the system implementation and cooperated for the same.

- Lack of computer skills amongst employees.

Solution: Extensive training of the employees for using computers and the application developed for the project was undertaken to ensure that the system could be used effectively.

- Convincing the government regarding the project.

Solution: The project team did extensive investigations on the ills of the manual system and communicated the benefits of implementation of the project to all stakeholders. Along with the persistence of the project team and support of related stakeholders such as courts, police etc., support for the project was mobilized.

18. Key Lessons Learnt

- With proper change management, departmental employees are happy to cooperate in ensuring the success of the e-Governance initiatives
- Doing a pilot before rolling out the project extensively ensures that no major disruptions happen due to the introduction of a new and untested system
- e-Governance projects are not only helping in saving time and money but also help in better adherence to the rules which were easy to violate in the manual system.

Project Contact Details

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Integrated Workflow and Document Management – IWDMS

Neeta Shah and Raj Kumar

1. Goals and Objectives

Goal

To provide better service to citizens by improving the efficiency of Government employees, by automating and streamlining the Government processes. This goal is expected to be achieved by March 2009.

Objectives

- Ensure accountable, transparent and effective administration
- Use IT as an enabler for efficient workplace
- Create an automated Office Management System
- Move towards less paper office by automation of routine tasks
- Enable prioritization of work
- Enable policy based processing.

2. Spread of Project Service Users

- Government Employees (Secretariat & HoDs)
- Government Departments
- Council of Ministers
- Citizens
- Total Solution Provider. (Tata Consultancy Services Ltd.)

3. Services Provided

The services available through IWDMS can be divided into major components as follows:

- Core Applications
- Common Applications
- Departmental Applications (300+)
- Knowledge Management System
- File Management System
- Workflow & Organization Model
- Security & Access Controls
- Dashboard
- MIS

4. Geographical Spread of Project Implementation

At present this application is live at Gandhinagar Secretariat and is in the process of implementation at various HoDs (more than 50 HoDs are already living) in Gandhinagar and Ahmedabad. However, the ultimate goal is to rollout this application in the whole State of Gujarat by the end of 2009.

5. Project Timelines and Milestones

24/11/2004: Project Start Date (conceptualization of project)

15/02/2005: Formal start of IWDMS project

31/03/2007: Completion of design, development, testing and implementation of IWDMS.

6. Direct Cost and Time Savings to Avail Services

The only direct cost to avail the services is commuting cost to a specific department, which has already been reduced considerably as the information is accessible from any place where IWDMS is live. According to rough estimates it is reduced by 50%.

Reduction of Touch Points

A time-motion analysis was carried out for determining the time required in each event involved in processing a file. A comparative figure showing number of Touch Points in Manual system and IWDMS is as shown below:

Attribute	Manual System	IWDMS
Touch Points	46	12
Cycle time of one File (in minutes)	1412	285

IWDMS has ensured that the number of touch points is far lesser than the manual system. The cycle time for processing a file has also been reduced by 80 percent.

7. Direct Cost and Time Savings to Deliver Services

Cost Reduction

Reduction in purchase of paper and physical files for the government: IWDMS proposes a 'Less Paper Office' concept. All documents within a file are maintained electronically. The final approved draft in the form of letter, GO, GR, circular could be sent to the concerned users electronically. GOs and GRs repository could be maintained online. All these processes reduce consumption of papers at each level of submission. This cost reduction is due to less paper consumption. Also, physical paper files will not have to be purchased.

Reduction in cost of purchasing separate applications for each department and HoD: Various modules required for office procedures and administration matters are developed as part of IWDMS. This makes IWDMS cost-effective as there is no need for purchasing separate modules for automating these processes.

Elimination of cost of appointing Total Service Providers in each department: IWDMS is a single system scalable for all departments of Secretariat. This eliminates the need for appointing separate TSPs for each department. Thus it becomes cost-effective.

Reduction in space required for storage of physical files: IWDMS facilitates an in-built record maintenance system. Hence, cost-cutting is achieved for maintaining record room for physical files.

Reduction in Messenger and Mailing Cost: Due to availability of online files and tapals (correspondence), the cost in sending the same through

messenger will be eliminated. This manpower can be redeployed in other useful activities. Similarly there will be reduction in cost of sending mail through post office and courier services.

Reduction in cost of preparing copies of notices, government orders and Government Resolutions (GRs) and sending them: Notices, GOs and GRs can be prepared and circulated online. The cost and effort of printing and preparing copies of notices to all marked persons will also be eliminated. Thus, cost will be saved to a large extent.

Optimum Grant Utilization: An application such as Online Grant Assessment has reduced the time and human intervention required by calculating accurately the Grant to be given to secondary and higher secondary schools. The results are highly visible in the amount saved to be given in the form of grant. This saving is quite higher than the cost required in implementing the project.

IWDMS facilitates to eliminate several steps required right from inwardsing a physical tapal till creating a file from it. IWDMS provides a central numbering system for all correspondences and files. This process eliminates registering of tapal and files at each step for traceability and hence, reduces the number of steps. All registers required to be kept are automatically generated through the system. Electronic drafts which are attached to the files created in IWDMS could be edited at each level of submission. At the same time this enabled to keep track of all the changes done by users at various levels. Moreover the time required to transport the physical file by clerks and peons is reduced to merely a fraction of a second.

IWDMS has ensured that the number of touch points is far lesser than the manual system. The cycle time for processing a file has also been reduced by 80 percent.

- Budget proposal processing time reduced by 50 percent
- Revisions in Budget proposals have been reduced by 50 percent
- Real-time publication & online tracking of budget proposal.

8. Replication

IWDMS has been successfully replicated by the solution partner Tata Consultancy Services Ltd., in other state governments and central government organizations.

9. Implementation Model

Government owned.

10. Technologies

- J2EE Framework
- MVC2 Architecture
- JSPs for front end
- Servlet as controller
- EJBs as business objects and data access
- Centralized architecture
- RISC Technology with 64 bit Unix OS
- Oracle 10G RDBMS
- Unicode compliant system
- LDAP for Authentication and Organization hierarchy
- Digital certificate ready for high security.

11. Capacity Building

Project Team

- Project Implementation and Coordination Committee comprising members from Science and Technology Department, GoG and Gujarat Informatics Ltd.
- Project Review Committee comprising members from Science & Technology Department, General Administration Department, Finance Department & Legal Department.

Change Management—The biggest challenge in this project implementation was to overcome the resistance of end users who were initially unwilling to use IT for their daily work, which otherwise was done manually. Having foreseen

this in advance, many steps were undertaken by Gujarat Informatics Limited and implementation partner Tata Consultancy Services Ltd.

One such step was to conduct training on the usage of IWDMS for the Secretariat users and other employees. Handholding support has also been provided to them for over 18 months so that the users become comfortable in using the system.

A centralized helpdesk has also been set up to provide on-call assistance. In addition, support personnel are also available in the government departments during working hours. An online support tool has been provided in the system so that, the users can request for changes and get them resolved.

12. Process Reforms

1. **Query-less operations:** All the required information and enclosures are verified with Computer assistance at the time of acceptance of the application. Due to this, there are no queries and delays during backend processing.
2. **Delegation of authority to the Dy. Mamlatdar, Jan Seva Kendra.** The Dy. Mamlatdar at Jan Seva Kendra is authorized to handle affidavits and certification for tatkal disposal of cases. The officer is also entrusted the responsibility to resolve any technical queries related to applications. This saves a lot of time on all the ends and smoothenes the service delivery operations.
3. **Review Meetings:** Regular review meetings are the core part of the process. During the meeting, the tasks of:
 - (a) Simplification of processes,
 - (b) Reforms based on feedbacks from the applicants, service provider as well as officers and tracking of timely disposals is handled.
4. **Paperless operations:** No application forms are required now for affidavits as the applicant verbally conveys the data to the operator and the necessary stored information is fetched from the server.
5. **Citizen database:** While delivering the services, a massive database of citizens is being generated.

13. Project Financials/Sustainability

Financial Sustainability can be achieved in terms of saving. However, this project is not charging any transaction fee from the citizens who are availing services through IWDMS, thus there is no revenue generation.

The following resources are required for operation of IWDMS project:

- Funds for development/customization/deployment of Software Application
- IT Infrastructure consisting of the following:
 - Computers, Printers & Scanners (For endusers)
 - Database & Application Servers
 - LAN Connectivity within the Government office
 - LAN/WAN Connectivity between the Government offices
 - Data Center to host the Servers with redundant power supply (UPS)
- Training to Government Employees (Basic computer skills, Gujarati typing and IWDMS training)

14. Project Teams and Leadership

- Project Implementation and Coordination Committee comprising members from Science and Technology Department, GoG and Gujarat Informatics Ltd.
- Project Review Committee comprising members from Science & Technology Department, General Administration Department, Finance Department & Legal Department
- **IT Solution Provider:** Tata Consultancy Services Ltd.

15. Key Project Outcomes

- Sustainability: Capacity building – Ongoing training
- Vision to move towards Single File Management System across the state— Extension to HoDs
- Chief Secretary' direction to use IWDMS for creation of all new files w.e.f. 1 April, 2007

- Regular review and mandate to use IWDMS (e.g., Leave Application, Budget, Collector Diary, MoU Monitoring, etc.)
- Utilization of IWDMS for scheduling Secretaries Meetings.

Usage

Training has been conducted on the usage of IWDMS for the Secretariat users and other employees. Handholding support has also been provided to them for over 18 months so that, the users become fluent in using the system.

No. of Users	5000+
No. of Departments covered	25
No. of HoDs (Ahmedabad & Gandhinagar) covered	50+
Average No. of Transactions (Daily) 1000 (Correspondence creation) + 200 (File creation) + 200 (Communique) + 1200 (File/Correspondence/Communique Movement)	2600 Approx.
No. of Correspondences/letters received till date through IWDMS system	6,00,000+
No. of files created till date (using IWDMS System)	80,000+
No. of budget files for 2007-08	8,900+
Knowledge base—No. of GO, GR, Circular, Acts, etc.	9000+

Usefulness

1. Efficient monitoring and control
2. Building a knowledge base consisting of various Circulars, Acts, Precedents etc., thus enabling a robust decision support system
3. Helps decision-making through Checklists & Access to Precedent Cases, Acts, Rules, Statutes, etc.
4. Collaborative work environment
5. Paper Less office
6. Automates routine tasks—Work flow/Business rules/Processes
7. Maintenance of all registers
8. Automatic generation of file number and tracking
9. Work/Task prioritization
10. Standardization of common processes

11. Reduced cycle times and dependencies
12. 24 x 7 access
13. Pictorial dashboard—Provides a holistic status with drill down facilities
14. Traceability and accountability of actions—Audit trail
15. Reminder and notification to officers
16. Provides Interdepartmental interface.

Satisfaction

The Customer Satisfaction Index (CSI) survey for Government employees has been carried out every 6 months. The satisfaction level has been more than 90% in the CSIs undertaken during the last year. The citizens need speedy processing of their grievances and other applications which has become possible due to implementation of IWDMS. IWDMS has also helped in reducing the person dependency and has made it easier to track files and correspondences.

Empowerment

IWDMS project has empowered the target group consisting of citizens in general by increasing the transparency, accountability and efficiency in Government administration. Citizens have in particular directly benefited due to the following applications within IWDMS:

- **Grievance Redressal System:** Speedy Disposal of 3,877 (86.54%) out of the 4,480 grievances received.
- **Hon'able Chief Minister's Relief Fund System:** Single window system providing ease of submitting fund request and faster processing and approval of more than 2,400 cases.
- **Investment Monitoring System (IMS)-MoUs:** Facilitated speedy processing of various applications i.e., for land, water, power, etc., and online availability of status with regards to investments made through 364 MoUs worth Rs.4.6 Lac crores
- **Disaster Assessment Survey (DAS) – Surat Floods:** Facilitated speedy processing of more than 85,000 relief applications, which were processed within 20 days and facilitated immediate issue of certificates to the affected persons for obtaining loans.

16. Service Users' Feedback Mechanism

Regular survey and Online Feedback mechanism is in place to take service user's feedback. Also a dedicated team of Tata Consultancy Services Ltd., is providing handholding support.

17. Implementation Challenges

Challenges Met

- Training of users on Typing skills, basic computer literacy, IWDMS application
- Changes in business rules, manuals, Secretariat mandates, GO, GR, Circulars.

Challenges Ongoing

- Change of Mindset—relatively old workforce with high average age
- Integrating with Citizen delivery services
- Changing arms of Government i.e., single file management system from HoD to Secretariat
- Continuous process changes
- Increase utilization—from 25% to 50% usage in next 12 months.

Change Management—The biggest challenge in this project implementation was to overcome the resistance of end users who were initially unwilling to use IT for their daily work, which otherwise was done manually. Having foreseen this in advance, many steps were undertaken by Gujarat Informatics Limited and implementation partner Tata Consultancy Services Ltd.

One such step was to conduct training on the usage of IWDMS for the Secretariat users and other employees. Handholding support has also been provided to them for over 18 months so that, the users become comfortable in using the system.

A centralized helpdesk has also been set up to provide on-call assistance. In addition, support personnel are also available in the government departments during working hours. An online support tool has been provided in the system so that, the users can request for changes and get them resolved.

18. Key Lessons Learnt

IWDMS has facilitated providing a new approach to the existing problems of Government departments by eliminating several steps required right from inwarding a physical correspondence till creating a file from it. IWDMS provides a central numbering system for all correspondences and files. This process eliminates registering of correspondences and files at each step for traceability and hence, reduces the number of steps. All registers required to be kept are automatically generated through the system. Electronic drafts which are attached to files created in IWDMS could be edited at each level of submission and at the same time, enables to keep track of all the changes done by users at various levels. Moreover the time required to transport the physical file by clerks and peons is reduced to merely a fraction of a second. The innovative approach through IWDMS has helped reduce the touch points and cycle time for processing of files significantly.

There are several innovative aspects in the project. These include:

1. Unique File Number for better tracking and tracing.
2. **E-mail and SMS Alerts:** The employees can receive alerts on received documents in their inbox.
3. **Digital signature:** This is being incorporated for authenticating documents and also for security of financial transactions.
4. **Dashboard for tracking:** The dashboard provides the view of pending files with an officer and his downline, along with drill down facility.
5. Automatic Consolidation of Budget at each level.
6. Budget book printing through the system.
7. Automated generation of service book.
8. **24 x 7 access:** The user can access documents and files round the clock through GSWAN connection.

Project Contact Details

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e-Enabled Employee

V G Bhooma

1. Goals and Objectives

Goal

To create a transparent administrative process in the integral Coach Factory through information dissemination, process simplification and automation and bringing in new activities into e-processing.

Objectives

- To update and upload maximum data into public domain
- To computerize most processes and make them available through electronic media
- To increase accountability and decrease grievances.

2. Spread of Project Service Users

In the first level around 13000 ICF employees, 9000 pensioners and other service users can be escalated to the entire Indian Railways and other Central Government offices after customization.

3. Services Provided

Information Services: Employee personal Data, Seniority lists in service, Waiting lists for services like housing, loans and advances, career progression details, pay and deduction details etc.

- Information about ICF and the facilities offered to its employees
- Employees' own bio-data

- Seniority
- Eligibility for pre-requisites like Loans advances, Quarters, medical, pass facilities etc.
- Settlement benefits
- Details of their position in facilities like Quarters allotment, Community hall, loans, etc.
- Salary and income tax benefits and calculation
- Outstanding loan repayments.

Utility Services – Pass & Privilege Ticket Order Issue: Employees of Railways are issued with a Privilege Pass & Privilege Ticket Order to travel over entire Indian Railways. This was originally computerized at the offices. Later this was extended to the entire workforce spread over Shell and Furnishing Factory premises at 11 locations. What took 3 days to issue a Pass is done in minutes these days now, something unheard of in the history of Indian Railways.

Income Tax Return Submission: The Income Tax returns for the financial year 2008-09 was fully computerized and this saved a lot of man hours for both the administration and the workforce as every column of the Saral Form was computerized and filled automatically by the program meticulously and flawlessly.

Online Applications: Another milestone in history of e-governance in ICF is the online application for recruitment of candidates on Cultural Quota. The employee has to key in data in the dynamic pages at the ICF website. The data is stored in a database and used effectively for processing ESR or Electronic Service Register. The Electronic Service Register is a revolution in the history of Indian Railways. All details from the date of appointment to the date on which the service of the employee ceases to exist, is electronically fed in the Computer. In a nutshell we can have a glance an employee's history, record of awards and citations, punishments, other events etc.

Loans and Advances: Commencing from the registration to the preparation of office memorandum for the distribution of advances the whole system is computerized.

Reservation Rosters: In accordance with the constitutional provisions, all the incumbents to a particular post are recorded chronologically in diary called the

Post Based Roster. This is maintained in a database and data is fetched according to the requirements for a particular post or a particular cadre.

Provident Fund Processing: The employee's application for withdrawal or deposit into provident fund is managed online giving speedier, accurate and more transparent processing. This has paved way for ECS clearance of PF also.

Other Initiatives – e-Elections: The staff Council of Elections where around twelve thousand employees vote through secret ballot to elect their representatives is held triennially. The counting of votes and subsequently the voting on a trial measure is done electronically.

Work Process Documentation and Reference: This has provided an exhaustive documentation of the work procedures and the rules and provisions required to perform the work in an interlinked electronic form and made this available to the users from the department and the customers, i.e., the employees and suppliers etc. This has been a single significant basis for accountability and transparency. These are just a sample of the several applications which form part of e Enabled Employee project.

4. Geographical Spread of Project Implementation

The project is extended to the two workshop divisions of Integral Coach Factory which are located at a distance of one and half Kilometres and covers a geographic area of around 150 acres. The Income Tax Calculation has a national impact on the Indian Railway map. The issue of Computerized Pass and PTO is to be implemented in all divisions and Zones of all Indian Railways. But the project has a capability being utilized in all central government offices.

5. Project Timelines and Milestones

ICF had developed a good HR database and administration package and was using it for processing basic HR data requirement. In 2006, it was decided to convert this into customer focused HR application systems which is directly available for the information and use of the customers i.e., the employees themselves. To this end, the project was divided into three phases:

1. **Foundation Phase (2006-2007):** This was the first year when the data base was updated. The IT team was additionally trained in the newer versions of forms and reports; and the other HR department staff were

fully trained in using the system. Some initial applications were rolled out to increase the comfort level of the customers too.

2. **Application Phase (2007-2008):** This proved to be the watershed phase of the project when several applications were rolled out in customer friendly form and to be used directly by the customer and the department. From this phase, the project has got extended to all the other departments of ICF.
3. **Development Phase (2008 onwards):** In this phase, the focus shifts to introducing new applications and moving towards paperless office. The projected targets were completed within the targeted period.

6. Direct Cost and Time Savings to Avail Services

Before discussing the cost involved, the concept behind the project is elucidated here. The project aims at providing all the HR services for the government employees faster, more accurately and, more importantly, in a fair and transparent manner. The cost to benefit ratio of this project cannot be measured merely in terms of Rupees incurred, spent, saved or earned but in terms of improved efficiency leading to improved performance of the customer and lowered cost of delivery of services for the government. An example of the 'before-after' work process analysis will give us a clear picture of the project's cost benefit analysis. If an employee needs to apply for a privilege pass, in the 'before' scenario. The process was: he/she has to fill up an application form, to be personally delivered to the supervisor who verifies it and sends it to the pass clerk, who checks the number of passes so far availed, the family composition, the admissibility of the route requested, issues the pass and enters it in a manual register. Apart from this, the manual register has to be updated every year as per the correct data. The pass clerk has to send a consolidated statement every year. The manual records have to be physically preserved for three years. Further, the pass can be obtained only during the working hours from the employee's workplace only. There is a lot of scope for issuing the pass to ineligible members by mistake, if the data is not updated. In case a pass had to be cancelled, a particular register has to be located and cancelled. If the pass data is required for settlement or any other purpose, the searching of the information itself will be tedious. In the 'after' scenario, the process is, the employee punches request through the computer nearest to the workplace. The pass availability, route admissibility, family details are automatically verified by the system. The pass is issued and the data gets updated automatically.

This is done practically online and waits only for the supervisor's signature that too after the pass is printed. All the pass data has been connected to a central server so that, the data gets updated. So the employee can avail the pass in any of the pass issuing centers in the entire premises. The scope of error is almost nil since the data gets updated. Overaged or other ineligible dependants are automatically screened by the system at the time of accepting application itself. Thus, leakage of revenue is practically nil. Similar applications have been developed for several services as discussed above. Considering examples as given above, the direct expenditure made by the customer to avail the above services cannot be quantified. The employees' time of absence from work and the incentive that could be earned in that time would be the direct cost. Working on an average of one hour per service and one service per week, and taking the average earnings of the employee, the cost availed per month per employee works out to Rs.750. This does not include the delay and dissatisfaction caused due to the delay and the remainder and follow up needed. In a factory of 13000 employees and going by the average service requirement, this cost per month would work out to around 190000. This cost has been reduced to just ten minute per service from one hour that the manual system required. So the cost has come down to 15% of the earlier cost i.e., Rs.285000 not to mention the increase in satisfaction and increased awareness.

A substantial savings has been achieved in terms of the time spent by the users for availing the selected services in the existing system. The time saved in the selected service is detailed below: 1. For Issuing of Pass/PTO. A minimum of three working days was the time taken for issuing of Pass/PTO in manual system while, this has been reduced to 30 minutes for getting the Pass/PTO. 2. Access to information pertaining to seniority, registration of advances would take at least a week's time in the earlier manual system while, the same information is accessible through the Touch Screen Information Kiosks within minutes. This stands in tune with the famous quotation of Dr. Benjamin Franklin "TIME IS MONEY". This has been discussed above under the cost savings head. The time savings in various applications in implementing the project ranges from 80% to 30%.

7. Direct Cost and Time Savings to Deliver Services

The cost of delivery of services in the earlier system includes the manpower cost involved in repetitive non value added services. In the current system, it was deliberately planned to keep technology simple and use the internal resources

and manpower to the maximum possible extent so that, acceptance is high and risk due to change is minimal.

This has been the biggest area of success in this project. The processing time has come down by around 50 to 60% consistently and is constantly improving. For example, the processing time for issue of Pass has come down from six hours to fifteen minutes. In case of PF withdrawal application processing, the time taken has come down from two days at HR department to a maximum of twenty four hours. In another example, any specific query is registered at the shop floor in a grievance register maintained by a Welfare Inspector nominated for certain shops. The inspector shall collect them and post it to the respective dealing official who shall take substantial time to address the query. Now the grievance is logged online and the dealing official verifies the query and gives first hand information on the subject and a detailed reply shall be submitted after the case is finalized, if it calls for further investigation. There has been a reduction of 8 working days from the Government side to address and redress a grievance. The official to handle other jobs effectively and completely shall utilize this time.

8. Replication

The project is so simple and flexible that, it can be replicated not only in all the workshops of Indian railways but with very minimal customization throughout the Indian Railways. In other words, from serving 13 thousand employees, the project can be replicated to serve around 13 million employees with a minimum of customization and no development cost. In fact, the office of the Regional Provident Fund Commissioner has sought our assistance in utilizing our programmes for their HR administration. In fact, the pass module of our project is already running in some of the offices of South Central, East Coast, Southern, Eastern Railways. Similarly, we have rendered assistance to South Central and Southern Railways in installing their Touch Screen Monitor system for HR functions. In fact, the key strength of our project is that, it is adaptable to all official environments. The hardware and infrastructure requirement is so minimal that, it can be easily scaled up or down to suit the different work environments. Besides, the technology used is so simple and user friendly that even laid users can operate the system easily and benefit from it.

9. Implementation Model

The e-Enabled Employee project is based on in-house development model. The plan has been to Update database—Develop utilities—place them in the system—train users—develop applications—implement in phases. The project is a cluster of part applications each piloted by a competent programmer using the basic database. Care has been taken to ensure that all the part applications integrate into the master programme and are i) consistent with the ongoing initiatives ii) Cover all aspects of the chosen activities and make full use of the potential of software technology and provide a platform for iii) Completed on time and based on the required specifications. The project is developed wholly in-house and perfected and tested by a different person and placed on parallel application and totally implemented.

10. Technologies

The project is run on Oracle-8i platform in the back-end and with Forms & Reports in the front-end for user-friendly graphical interface for the end users. The touch-screen information system was programmed in visual basic as front-end with oracle as back-end. The online registration of applications by candidates against recruitment against cultural, scouts & guides and sports quotas for the organization was programmed in Active Server Pages (ASP).

11. Capacity Building

The entire project team is governed by the head of the department for Human Resources i.e., Chief Personnel Officer and assisted by the Dy. Chief Personnel Officer. The system implementation is run by a core team of five dedicated programmers.

Training: The project envisages two fold training:

- First, honing the team's skills of programming combined with their knowledge of the departmental rules and procedures.
- Second, educating the users, namely the employees about the knowledge of establishment rules and how to use the system to get more and better output, of the customers, namely, the employees and in the other applications, the vendors etc.

Policies: Develop software prototypes that will lead to preserve and provide access to electronic records over the long-term.

Standards: Improve the internal efficiency of the department and deliver services online.

12. Process Reforms

The project has ensured:

- Proper documentation of the procedures followed in processing requests, representations claims etc.
- Simplified the processes to suit the e-processing
- Provided all the relevant reference materials online
- Given standardized formats for most analyses and reports
- Interconnected interlinked process so that, there is single data captured at the source for various processes. For example, if a promotion is granted, the related activities of pay fixation, posting in the roster etc., are activated
- All the activities are posted on the website and touch screen kiosks simultaneously.

13. Project Financials/Sustainability

Capital: A dedicated sun-Solaris server 5.8 version and nearly 75 desktop computers, combined with its accessories like printers, network LAN extenders, and 24 ports switches etc.

Annual recurring expenditures & business model: The entire set-up is under the AMC and the recurring expenditure will be nearly 3 lacs.

Revenue generation: As the project is aimed at service enhancement, revenue generation is not focused upon. Except for this capital cost and the annual maintenance charges, the project has been revenue neutral and rather cost-saving due to saving of man hours.

14. Project Teams and Leadership

Full time project team: 5 system programmers.

Part time project team: 2 trainees under training in Oracle-based programming techniques.

Leadership support: Under the active guidance of Senior Personnel Officer, Dy.Chief Personnel Officer and the Chief Personnel Officer.

15. Service Users' Feedback Mechanism

The service users are railway men of our organization internally, all Indian railway personnel under the railnet and in some of the projects, external agencies like the vendors and other users.

- Our pilot project of computerization of issue of Passes/Privilege Ticket Orders has been replicated in many major railway zones of Southern Railway, South Central Railway etc., and production units like Rail Wheel Factory, Yelahanka/Bangalore and Rail Coach Factory, Kapurthala
- Our touch screen kiosks see a hit of around 150 per day
- Responses to our e-notifications are on the increase
- There is constant demand for increasing the services in our website and touch screen.

16. Implementation Challenges

- The main challenge has been to communicate to the users. Our model to tackle this has been phased implementation of project application and showing minor successes before launching the next phase.
- Scope changes—One of the rules of project management is that change is inevitable. What does not have to be inevitable is uncontrolled change. We have been expanding the scope constantly after analysing each request and then communicating the impact of each change and the alternatives, if any exist.
- Failure to manage risk—Many project plans have a list of risks, but no further analysis or planning happens unless triggered by an adverse event during project execution. Non reliability of alternate solution due to resource constraints has been a major source of concern.
- Customers and end users are not engaged during the project—Initially, our Project teams become so focused on internal deliverables, deadlines, and processes that external stakeholders were not involved during critical phases. This has led to wrong priorities and sometimes, change in

applications. We later corrected this and involved the users in the initial phase itself.

- A minor but critical issue has been the quality of hardware maintenance. Often the valuable applications get derailed because of poor hardware maintenance. There is a constant effort to improve the AMC supplier's services.

Project Contact Details

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e-Procurement

Aman Kumar Singh

1. Goals and Objectives

The Goal of e-Procurement Project is to enhance the efficiency and transparency in public procurement through the implementation of a comprehensive, end-to-end e-Procurement solution and to route the entire public procurement activity being undertaken by the Government through such system in a phased manner. Efficiency in handling public procurement by the Government is enhanced through automation and process re-engineering wherein, the e-Procurement system shall enable the Government maintain a clear/unambiguous picture of its procurement activities on a real-time basis. Through e-Procurement in public procurement, our prime objective is to introduce transparency, cost savings and reduced inventory cost. e-Procurement ensures that the Government and the supplier community shall have an equal, fair and unbiased access to opportunities advertised online.

2. Spread of Project Service Users

Government of Chhattisgarh (GoC): By expected saving of about 10-15% in procurement, Government curtails a little burden on itself. Presently, the 5 pilot departments namely Public Works Department (PWD), Water Resources Department (WRD), Public Health Engineering Department (PHED), Health Department (HD) and Chhattisgarh State Industrial Development Corporation (CSIDC) have been selected for the project. In the roll-out phase, all Government Departments, Boards, Corporations, Agencies, etc., engaged in public procurement activities, shall be benefited. All Suppliers/Contractors doing business with Government across the State are getting benefited.

3. Services Provided

Services being offered using e-Procurement system to Bidders

- Online Centralized Supplier Registration on the e-Procurement website and subsequent empanelment by the respective departments, as applicable.
- Free tender document download from the e-Procurement website. Only those bidders bidding for the respective tender are required to pay the tender document fees.
- Online bid preparation, using templates, and bid submission.
- Transparent bidding process since the bidder can submit his bid from anywhere in the world.
- Total online payments will also be offered very shortly.

Services being offered using e-Procurement system to Departments

- Centralized view of all suppliers registered/blacklisted for all classes.
- Online sealing of virtual tender box
- Online bid opening, evaluation & short listing, comments, corrections and approvals.
- Issuance of Purchase/ Work orders online.

4. Geographical Spread of Project Implementation

The implementation of e-Procurement is phased geography-wise, function-wise, value-wise and time-wise. The term “function” denotes the e-Procurement components implemented and the term “geography” denotes the departments and locations at which the solution is being implemented. “Value” denotes the worthiness of transactions routed through the e-Procurement system. The implementation of e-Procurement in Chhattisgarh is being done in two phases: pilot and roll-out. In the pilot phase the ASP has been asked to implement all the required modules on a test basis in the pilot departments identified by the Government for the e-Procurement project. Public Works Department (PWD), Water Resources Department (WRD), Public Health Engineering Department (PHED), Health Department (HD) and Chhattisgarh State Industrial Development Corporation (CSIDC) have been identified as pilot departments by the Government. Following the common practice of high value tenders first,

GoC has mandated PWD, WRD, PHED and Health Department to adopt e-Procurement system for all their tenders worth Rs.20 lakhs and above and CSIDC to conclude all their Rate Contract tenders through the e-Procurement system. Subsequent to their successful adoption, the e-Procurement system shall be rolled out across the State to all Government departments, organizations, agencies, boards, etc., and if needed, also the tender slab of Rs.20 lakhs and above, shall be lowered even further. For example, PHED is already floating e-tenders for procurements less than 20 lakhs.

5. Project Timelines and Milestones

Project Timelines

- e-Procurement RFP published from 21st February, 2006 to 06th March, 2006
- Pre-Bid meeting held on 16th March, 2006
- Bid submissions on 29th May, 2006
- Pre-Qualification Bids opened on 14th July, 2006
- Technical Bids opened on 11th August, 2006
- Commercial Bids opened on 25th August, 2006
- Private Partner selected on 30th August, 2006
- Letter of Intent issued on 4th September, 2006
- Master Service Agreement (MSA) signed on 19th December, 2006
- AS-IS study and TO-BE report submitted and approved
- Project e-Procurement officially launched on August 14th, 2007 in Pilot departments.

Milestones

- Constitution of a State level Empowered Committee, Chaired by Chief Secretary, for making policy and strategic decisions on e-Procurement from time to time.
- Constitution of Task Force Committee for supervising the operational aspect of the project.

- All tenders above Rs.20 lakhs in the pilot departments are being done by the e-Procurement system vide Government order No. 246/CS/2007 dated 5th December, 2007 issued by the Chief Secretary.
- Successful adoption of e-Procurement system by the pilot departments.
- 1374 Tenders worth Rs.2228 crores have been processed till 15th October, 2008 using e-Procurement system.

6. Direct Cost and Time Savings to Avail Services

Cost savings to the bidders: In the conventional mode of procurement, the bidders had to purchase the bid document. After the adoption of e-Procurement system, the tender document cost is waived off and is available for free download with the bidder's login. The tender document cost is to be paid by those bidders who are interested in bidding and paid at the time of bid submission.

- No time restrictions like non-business hours for getting information on tenders floated as everything is available on the e-Procurement website 24 x 7 x 365
- No physical presence required in terms of collecting relevant document or queries, every detail is available online.

7. Direct Cost and Time Savings to Deliver Services

- The biggest direct cost savings done by the Government to deliver the e-Procurement service is the stationary cost since the tender documents and other bid submission templates are available on the website from the bidder's login itself.
- Administrative and operational cost savings by streamlining the activities with vendors/suppliers.
- Faster decision-making/less of file movement.
- Time saved for any document submissions.
- Better utilization of man hours since the manual labour involved in the conventional procurement model is greatly reduced.
- About 3/4th cost of advertisement is saved directly as less area is required.

8. Replication

Prior to Chhattisgarh, only one State, Andhra Pradesh, was practicing this solution. In Chhattisgarh, prior to the adoption of e-Procurement, a couple of departments were using e-Tendering system wherein except for the bidding part, every part was done manually. e-Procurement is a comprehensive solution where, the e-Tendering is just one out of 9 modules which includes the pre-tendering and post-tendering activities.

9. Implementation Model

The Government of Chhattisgarh after procuring the solution has implemented the e-Procurement project using the Public-Private-Partnership (PPP) model and the solution is being deployed on a Build-Own-Operate (BOO) basis for a period of 5 years. The ownership of solution software used in e-Procurement model rests with GoC. If any software is developed during implementation, IPR will be with GoC. On successful completion of the term, the Government shall decide an out-right purchase of the e-Procurement system. The Chhattisgarh infotech & biotech Promotion Society (CHiPS) has been designated as State Nodal Agency for successful implementation of e-Procurement in the State of Chhattisgarh.

10. Technologies

The e-Procurement solution implemented in Chhattisgarh is based on an n-tiered architecture with Web, Application and Database server farms owned by ASP. Each tier shall be scaled independently, both vertically and horizontally, to address the performance and scalability requirements as and when needed.

11. Capacity Building

Owing to new way of working for department users and supplier community, which the e-Procurement system brings and the huge user base to be trained, the strategy adopted for provision of the training is multifaceted. As the first step towards capacity building activity, various one day awareness programmes were conducted for both Government officials and supplier community separately at various districts of the State by CHiPS with the help of the District Administration. In the final step, to accustom the e-Procurement users, a comprehensive training calendar was developed. Training is conducted in Raipur in the initial phase and shall subsequently be conducted across the State in various districts. The training

shall be provided in classroom context wherein, the user community shall obtain hands-on experience in using the e-Procurement system. About 25-30 users were trained in a batch for better effectiveness of the training. Simultaneously, in addition to training users in a class-room environment, other ways are being adopted such as a training facility at the ASP's office premises accessible to Government users and supplier community on a reservation basis, e-Learning method wherein, a screenshot wise, e-Procurement training manual have been uploaded on the website for ready reference and "Train-the-Trainer" method. Besides these, support team from CHiPS is a phone call away for any help.

12. Process Reforms

- **Digital signatures:** The usage of PKI enabled DSC along with the normal user-ID and passwords at critical stages were introduced for utmost Confidentiality & Security of bidding process.
- **Tender document fees:** The tender document fees at the time of online tender viewing for bidders has been waived off.
- **Centralized the supplier registration:** Suppliers, in order to participate in the tendering process on e-Procurement system, are required to register themselves at a central location instead of individual departmental registrations. Subsequently, the suppliers are required to get themselves empanelled with the respective department as per the department's terms and conditions.
- **Government Mandate:** The state government has mandated all pilot departments to use e-Procurement system for all their tenders worth Rs.20 lakhs and above.

13. Project Financials/Sustainability

Business & Revenue model: The project is being done on a PPP model, wherein, there is no upfront financial burden on the state government. The Application Service Provider (ASP) will be remunerated for the services rendered on a "transaction fee" model for 5 years. The transaction fees paid to the ASP is calculated at the module level. Some of the nine modules have been clubbed together and termed as a unit for the purpose of transaction fee calculation. The basis for calculation of transaction fees are "Percentage of Estimated Contract Value (ECV) of a tender", "Percentage of order value" and "fixed fee per bid received".

Recurring expenditure:

- IT infrastructure up gradation
- User trainings.

14. Project Teams and Leadership

- **Empowered Committee:** Headed by Chief Secretary, Government of Chhattisgarh is constituted for strategic decision-making and provide overall guidance for the project.
- **Task Force Committee:** Headed by the Principal Secretary, Government of Chhattisgarh, Public Works Department is constituted for overseeing and the operational aspects of the project. The committee is also responsible for providing recommendations to the Empowered Committee on operational aspects of the project for necessary approvals.
- **Project Review Committee:** Headed by the CEO, CHiPS reviews the overall operations and deals with the problems.
- **Project Director:** Chief Executive Officer, CHiPS is the Project Director for overseeing the day-to-day operations of the project and providing necessary approvals for smooth functioning of the project.
- **Project Implementation Team:** The team is headed by the Additional Chief Executive Officer (ACEO) for overseeing and necessary guidance on the daily activities of the project and to coordinate with various departments for e-Procurement.

15. Key Project Outcomes

- **Sustainability:** Considering the benefits of using the e-Procurement and other complimenting ICT tools, this new form of public procurement shall sustain for the years to come. Also, the state government is making all efforts to ensure the sustainability and viability of the project.
- **Usage:** Reduction in tender cycle/malpractices & corruption/vendor cartelization, cost savings are some of the evident benefits of the implementation of e-Procurement.
- **Usefulness:** Efficiency, Effectiveness and transparency in public procurement activities.

Recurring cost savings

- **Empowerment:** The project has empowered the Government in underpinning effective interventions in the area of transparent Government procurement activities through which increased transactional efficiency has been achieved.

16. Service Users' Feedback Mechanism

- As and whenever official/casual meeting of officers is arranged, oral feedbacks are collected.
- A quarterly e-Procurement feedback form is sent to all the users (Department and Suppliers/contractors, etc.,) for their inputs on the functionality and operational aspects of the e-Procurement system
- A monthly feedback form focusing on number and value of tenders mainly is also sent to the departments.

17. Implementation Challenges

- **Business Model:** One of the major tasks for the implementation of the project was to select the business model for e-Procurement project. After a series of meetings and discussions, it was decided to adopt the Public-Private-Partnership (PPP) model wherein, the technology, finance and risk involved shall be taken care of by the Private partner.
- **Confidentiality & Security:** For success of the project, it was necessary that all stakeholders were taken into confidence w.r.t. the transactions being handled by the e-Procurement system. The usage of PKI enabled DSC along with the normal user-ID and password at critical stages was hence introduced for utmost Confidentiality & Security of bidding process along with other security parameters like Audit trails, data encryption, disaster recovery, etc.
- **Departmental Coordination:** Owing to the wide spread reach of the project it was necessary to have coordination within and outside the departments. In order to achieve the same, Nodal officers were appointed who shall coordinate and expedite the e-Procurement activities within and outside the departments.

- **Adoption & Change of Mindset:** One of the most important challenges faced was the adoption of e-Procurement system by the departments and changing the mindset & attitude from the existing manual working system to electronic working system
- **Availability of IT infrastructure:** For smooth functioning of the e-Procurement project, the Application Service Provider (ASP) of e-Procurement system is to provide 200 desktops which shall be deployed at locations, as specified by the department and approved by the Project Director, for smooth functioning for the project
- To make aware the very large heterogeneous mass of bidders was also a big challenge. Awareness campaign was launched to cope up with it
- Resistance to change by the contractors and Government Officials alike.

18. Key Lessons Learnt

- **PPP Model:** A project to run on the PPP business model which has helped in scaling the various stages of project operations
- **Change Agents:** The constitution of Task Force Committee with the Secretary—PWD as the Chairman and Head of pilot Departments (HoD) as its member has acted as change agents in implementation of the project
- **Knowledge Sharing:** The awareness and training sessions conducted had helped in understanding the user and the suppliers of service requirements better in order to incorporate the necessary changes in the system
- **Political Ownership:** Direct support of Political Executives is very critical for success of the project.

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Digital Workflow using MESSAGE in Government of Kerala

Kala K

1. Goals and Objectives

The objective of this project is to use digital workflow as the norm of operation within Government and thereby, realizing the benefits of efficiency, productivity, speedier transactions and service delivery at lower costs. The project also demonstrates that the paperless operations can be effectively used in the public sector to reduce paper use and provide better services to its clients and citizens. A digital document management system allows the citizens to know the status of their files through web and mobile interface. The integrated digital file flow management system makes the governance transparent, faster and more efficient.

The biggest beneficiaries of the project are implementing organizations themselves as the implementation has led to higher efficiency and increased productivity. The employees benefit as the drudgery of maintaining paper files and their movement is reduced, retrieving of files and information becomes easier and anywhere anytime access is enabled. The employees also benefit as paperless office leads to better working ambience. The public all over Kerala are the beneficiaries of the project as the new system paves way for faster and efficient file movement and speedy redressal of grievances. Besides, they can access details of their petitions through Internet improving service delivery.

The application being used for digital workflow in the Government of Kerala is MESSAGE. Developed in an open-source by the National Informatics Center (NIC), the MESSAGE system provides an efficient monitoring and control of files and effective internal and external information exchange. It helps in the development of an effective knowledge base, content and document management

system which in turn will provide a quick access to information. It also enables use of local language—Malayalam—in the workflow. With the advent of the system, the records are maintained in a better way as electronic files and it helps to create a less paper office with a better and neat working ambience.

At present the system is operational at Kerala State IT Mission, Akshaya Directorate and all district offices of Akshaya, Kerala State Urban Development Programme and Kerala State IT Infrastructure Ltd. Recently, the Government has introduced the system in six Departments of the Secretariat, namely: Higher Education, Public Works, Finance, Food & Civil Supplies, Information Technology and the Department of non-Resident Keralites Affairs. All petitions received from MLAs, MPs, common people will be handled on through the digital workflow system in the Secretariat. The project envisages drawing all secretariat departments to this integrated file flow system.

2. Spread of Project Service Users

The biggest beneficiaries of the project are implementing organizations themselves as the implementation has led to higher efficiency and increased productivity. The employees benefit as the drudgery of maintaining paper files and their movement is reduced, retrieving of files and information becomes easier and anywhere anytime access is enabled. The employees also benefit as paperless office leads to better working ambience. The public all over Kerala are the beneficiaries of the project as the new system paves way for faster and efficient file movement and speedy redressal of grievances. Besides, they can access details of their petitions through Internet improving service delivery.

3. Services Provided

The digital file flow through MESSAGE automatically establishes a network-based system to monitor the flow of electronic files. The files/tapals are captured at source and the movements are tracked across the office. Thus, the use of MESSAGE provides for an efficient and transparent administration, efficient monitoring and control, effective internal and external information exchange, building knowledge bases, content and document management systems and robust decisions support systems; it also paves way for a structured workflow environment and helps in an effective policy-making and improves service delivery systems.

The paperless working through digital workflow is primarily a G2E project with spillover benefits to citizens.

- G2E benefits in terms of ease of working, better ambience, anytime, anywhere access of files, easy search and retrieval are some of the direct benefits which accrue to employees.
- From the organization perspective, improved productivity and efficiency, reduced costs are direct benefits. The ability to handle growth in activities is a consequence of the increased productivity of employees. Being paperless, saves the respective organization lakhs of rupees per annum in terms of paper costs, printing costs, filing costs and postage. Moreover, there is saving in terms of maintenance costs, reduction in space requirement for safe-keeping of paper records and files, which is in addition to the direct savings. Since employees use electronic files, the digital file flow has reduced the time taken in file movement. File tracking, retrieval and access have become far easier, enabling each officer to handle larger number of files.
- The system also provides significant G2C services. In the manual system, to know the status of a file or a complaint, the citizen was forced to contact multiple sections/seats. After the introduction of the digital workflow the citizens need not approach multiple points. The feature available in digital workflow helps the citizen know the file status through Internet from anywhere at anytime. This ensures transparency in administration.
- The implementation of the system has resulted in more space all around. The working ambience of employees has improved, as heaps of papers and piles of file folders have gone and the desk primarily consists of a computer and a scanner. No new filing cabinets/almirahs had to be procured.
- Another important service provided by the system is document security. There is no threat to lose important documents due to theft, fire or other disasters as such. The server for the system was hosted in a State Data Center which is a tier III facility and provides very high standard of security and availability. The users were required to follow standard security practices at the client side.
- **Ability to handle growth of e-governance activities in the state:** There is explosion of e-governance activities in the State. Being the nodal Department for all e-governance activities of all Government Departments

and organizations, KSITM needed to grow very fast. Digital workflow has enabled employees to work more efficiently. Their productivity has increased manifold. For example, before the introduction of the system, KSITM with the same staff strength was handling about 15 projects. Presently, it is handling over 30 projects. The details of these projects are available at www.keralaitmission.org. While it may be inaccurate to attribute this change solely to the implementation of digital workflow and paperless operations, nevertheless, we feel that the increased efficiency has been largely due to the new system.

- Access from anywhere anytime enables employees to attend to files from home or when on travel. This further reduces time delays.
- The implementation of the system is slowly resulting in accepting less paper from external agencies. In KSITM, it is common to ask the sender to send soft copy of reports and store them electronically. This has spillover effect beyond the organizational boundaries as well. Similarly, the use of system is also resulting in less paper out. There is increased dependence of sending communication electronically wherever the recipient organization is accepting such communications. Notice for holding meetings, agenda notes for meetings, drafts for comments etc., are some of the documents which form a huge proportion of paper communication in the past. These are increasingly becoming electronic.
- In the long-run, paperless working is also environment-friendly. Increasing migration to paperless working also has positive impact on the prevention of deforestation and the reduction of carbon emissions as there is no need to use energy for paper production.
- There are intangible benefits like improvement of self-esteem and pride among employees of working in a paperless office and serving as a role model for others.
- The implementation had spillover effect to implementation of other productivity tools in the organization. The SPARK was introduced for personnel management and the accounts were also increasingly computerized.

4. Geographical Spread of Project Implementation

The digital workflow has already been adopted in the following organizations:

Kerala State IT Mission (KSITM) in its headquarters in Thiruvananthapuram and its office in Kochi, Akshaya Directorate and all district offices of Akshaya, Kerala State Urban Development Programme and Kerala State IT Infrastructure Ltd. Recently, Government has introduced the system in six Departments of the Secretariat, namely: Higher Education, PWD, Finance, Food & Civil Supplies, Information Technology and NORKA.

In addition, several other Government Departments/organizations are in various stages of studying the feasibility of converting their operations into paperless operations.

5. Project Timelines and Milestones

In the conceptual phase, when the Government decided to go for a more efficient, integrated file flow system, it approached NIC for developing a software. After developing the software, the project was first implemented in Kerala State IT Mission with effect from January 1, 2008. After trial run, it was formally inaugurated by Shri V. S. Achuthanandan, Hon'ble Chief Minister of Kerala on February 15, 2008. The top leadership in KSITM drove its implementation. Necessary back-up policy was put in place so that, records created were available for future reference. All paper-files were closed on their extant positions, and continued as electronic files.

The Hon'ble Chief Minister himself took the initiative to get the implementation of the system in the Secretariat. Later in March, KSUDP also decided to implement the system in their department. At present, the system is operational at KSITM, Akshaya Directorate and all district offices of Akshaya, Kerala State Urban Development Programme and Kerala State IT Infrastructure Ltd. The project envisages drawing all Secretariat departments to this integrated file flow system within one year. Recently, the Government has introduced the system in six Departments of the Secretariat, namely: Higher Education, PWD, Finance, Food & Civil Supplies, Information Technology and NORKA. Apart from these, all petitions received from MLAs/MPs/common people will be handled on MESSAGE.

6. Direct Cost and Time Savings to Avail Services

Message and the concept of integrated file flow provided the facility for easy administration and speedy redressal of grievances. With the upgradation of the software, the public will be provided with various service access points—SMS (mobile telephone), touch screen kiosks, Internet, Akshaya etc. So, they need not go personally to the departments concerned to know the details on file status. Thus, they can save the cost and time, which will be otherwise spent on travelling. This easy access makes the governance more transparent and efficient.

7. Direct Time Savings to Deliver Services

- In the manual system, it was taking lot of time to move the files to the next section and for higher officials' approval. For want of a peon's service, a file may be waiting for hours/days together in a particular table without moving to the next table. It took at least one day for an employee to act on a file. But with the introduction of the integrated digital file flow management system, the time taken to act upon a file has got drastically reduced to minutes.
- In the new system, the employees will be saved from the duty of filing/binding/putting paper clips/putting paper flags etc. They need not go for repeat typing for draft and fair copies. There is no need to make multiple copies of meeting notices/circulars and to maintain a personal register. All the files can be sent to the record room with just one click. Searching back-files is made easy by the 'Search' facility of this system. The facilities provided by MESSAGE thus save money, time and human resource of the departments. The new system also enables the officials to work from anywhere at anytime, thus making the maximum utilization of available human resources. As the departments are using the already available network infrastructure and computer, there is no extra cost except for the scanners.
- The benefits in terms of time and cost can be best manifested with the example of KSITM. KSITM is a twenty-five employee's organization. Being paperless saves it about Rs.2.5 lakhs per annum in paper costs, printing costs, filing costs, postage. This is considerable considering that the total establishment charges for KSITM are about Rs.1 crore per annum. Moreover, there is saving in terms of maintenance costs, reduction in

space requirement for safe-keeping of paper records and files, which is in addition to direct savings. Other organizations which have switched over to digital workflow will have similar figures to report in future. Since employees use electronic files, the digital file flow has reduced the time taken in file movement. File tracking, retrieval and access have become far easier, enabling each officer to handle larger number of files. Before the introduction of the system, KSITM with the same staff strength was handling about 15 projects. Presently, it is handling over 30 projects. The details of these projects are available at www.keralaitmission.org.

8. Replication

The model, first implemented in KSITM was later replicated in many organizations as stated earlier. The MESSAGE can be replicated in all offices to make the file flow faster and smoother. This Government initiative may become a model for the other states to follow.

9. Implementation Model

This is a Government-owned project implemented by Kerala State IT Mission. The technical support is provided by NIC.

10. Technologies

The application used for the digital workflow system called MESSAGE, is open source based. It has been developed and supported by NIC. Being an open source it provides opportunities for continuous upgrades for the system without additional proprietary costs and issues of intellectual property. It therefore, provides clear opportunities for scalability. It has been developed on a three tier architecture.

- E-Services layer is the front-end layer of MESSAGE which interacts with citizens and offer services to the citizens.
- Middle layer is the Intranet Services layer, which offers lot of collaboration services and tools. E-Mail, Messaging, bulletin boards are few worth mentioning.
- Backend layer is the key functional area comprising all functional modules along with the database.

- The software is developed using Web and Portals technologies along with a proven RDBMS. Open software technology is utilized wherever appropriate. The applications, which are of public interest, will be given access through INTERNET and Touch Screens based kiosks using standard software and web interfaces. MESSAGE is developed in Linux-Apache-MySQL-PHP (LAMP). Details are given below:
 - Operating Server—RHEL 4.0
 - Web Server—Apache 2.0.52
 - RDBMS—MySQL 5.0.41 Standard
 - Application Server—PHP 5.1.1

11. Capacity Building

- The technical support and training to the master trainers were provided by NIC, who had developed the system. The master trainers were primarily in-house technical officers. After that, these master trainers trained and supported the employees within the KSITM. No external support was hired for the purpose in KSITM. KSITM also provided training and handholding support for replicating the system in other organizations. The local availability of the NIC team to support the application helps make it sustainable. The NIC team is available for customization, handholding, trouble-shooting, and making such other Department specific/organization specific needs.

12. Process Reforms

- With the advent of the new file flow management system, all files have been digitalized and all the works were computerized. The implementation of the system is slowly resulting in using less paper by the employees as well as accepting less paper from external agencies. In KSITM, it is common to ask the sender to send soft copy of reports and store them electronically. This has spillover effect beyond the organizational boundaries as well. Similarly, the use of the system is also resulting in less paper out. There is increased dependence of sending communication electronically wherever the recipient organization is accepting such communications. Notice for holding meetings, agenda notes for meetings, drafts for comments etc., are some of the documents which form a huge

proportion of paper communication in the past. These are increasingly becoming electronic.

13. Project Financials/Sustainability

As the departments are using the already available network infrastructure and computer, this does not incur any extra cost on the department except for the scanners. Maintenance charges too are minimal. An initial capital of Rs. 30 lakh was spent to buy servers and other equipment.

14. Project Teams and Leadership

Kerala State IT Mission is the implementing agency, which promotes the digital workflow system using MESSAGE and it gives training to the officials of the departments concerned. NIC had developed the software for the project. There are two types of users in the computerized system: System Administrator and normal users. System Administrator will be responsible for the day-to-day administrative functions of the computerized system like creation of seats, employees, setting passwords etc. Authorized employees/officers working in the various sections covered in the network based centralized system will be the primary endusers. In addition, other department staff and public also can be linked to this system with proper authentication for transactions and information.

15. Key Project Outcomes

Outcomes need to be listed in terms of (a) Sustainability (b) Usage (c) Usefulness (d) Satisfaction (e) Empowerment

The project is sustainable as it is faster and more efficient than the earlier system. The user can confidently abandon the earlier system to accept the new one, which ensures better monitoring and control by higher officials and reduced workload for the employees. The paperless office improves efficiency by developing a scientific digital document management system which makes it easier to obtain, access, share and store files in a networked infrastructure. This leads to employee as well as customer satisfaction. This is a very user-friendly system which demands only normal word processing skills from the user.

Since the application is in open source form, there are provisions for continuous upgrades for the system without additional proprietary costs and issues of intellectual property. It therefore, provides clear opportunities for scalability.

The MESSAGE application is also adopted by Government as the standard for digital work flow system across Government Departments. Since consultation with the IT Department is mandatory for implementing any major e-governance initiative, it will be possible to roll-out its implementation across Departments. This would allow the system to be inter-operable between Departments and organizations, thereby bringing uniformity and standardization. The uniform usage of MESSAGE across different Government departments and organizations will further add to the sustainability of the application.

The third component of sustainability derives from the improved citizen services which the system is capable of delivering. As larger number of citizens gets informed about the status of their petitions/files through the electronic system, the drive to continue and roll out the system would increase even further.

Seeing the success of the project in KSITM, many departments have come forward seeking its implementation here. This demand from other organizations is itself a proof of its sustainability. The resources required for implementing the digital workflow is simple and easy. Continuous monitoring and evaluation can be done using this system which again a proof of success and sustainability.

16. Service Users' Feedback Mechanism

The users are provided with mailing facility to make the project more interactive.

17. Implementation Challenges

Migrating to paperless office from the usual paper-oriented system which has been in existence for over hundred years, is possibly the most difficult task in the Government, as it hits the basic edifice of Government functioning. In the Government, where there is a huge reliance on paper documentation, authentication is done by signature by each person. To transform from the said system to a paperless system is a matter of intense trauma and shock. In addition, there are issues of training on the use of application, learning new processes and unlearning the old ones.

18. Key Lessons Learnt

1. Commitment from the part of employees is necessary for the successful implementation of the system. Commit to going to a paperless office, and convince staff to go along with it by explaining the advantages for each of them individually, and as a group, and involving them in the process.

2. Proper training should be provided to the employees to make them confident in using the system. The main hindrance faced during the implementation was the resistance from the employees to change into a new system. To bring about the change, there is a need for commitment from the leadership at the top.
3. It is necessary to develop a transition plan and a timetable.
4. Start small with just a single department or area of our business so you can address any problem before broadening your scope.
5. Provide a team for hand-holding support for initial period.
6. Develop a plan for ongoing organization-wide use. Include a document storage plan for employees with specific guidelines.
7. Gradually take your paperless transition through the company.
8. Commitment and acceptability from the part of the end users has to be ensured.

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Municipal Corporation of Delhi, Property Tax Self-Assessment Online

Dr A K Ambasht

1. Goals and Objectives

- To simplify tax-return procedure: Citizens should fill up only the bare minimum facts about the property, its location and its usage. Calculation would be the responsibility of the website.
- To remove corruption and middlemen
- To reduce the complexity of manual Self-Assessment Form by creating online system
- To increase number of points where payments could be made
- To increase the variety of modes in which the payments could be made
- To bring transparency in the whole process
- To make paperless form to enable efficient tax administration
- To gravitate towards zero-interface with the public.

With these objectives the Project was conceived in January 2007, with a very stiff deadline of inaugurating on 1st April, 2007. It was inaugurated by the Chief Minister of Delhi on 9th April, 2008. It was one of the fastest implementation achievements.

- Online property tax system has immensely simplified the experience of self-assessment and payment of property tax for about 1 million taxpayers in Delhi
- It has completely eliminated complexities of the manual self-assessment system

- It has eliminated the need for middlemen and tax consultants
- The system has recorded a tax collection of about 200 crores in 1 year and 3 months of its operation
- About 5.5 lac taxpayers have used the system in just over a year for assessment
- Taxpayers in 97 countries could pay their property tax in Delhi using the online system
- Taxpayers in about 80 cities in India could pay their property tax in Delhi using the system.

The system has created a zero-interface (physically) between the citizens and department officials.

2. Spread of Project Service Users

- About 10 lacs property owners of Delhi within the jurisdiction of Municipal Corporation of Delhi (MCD) are the beneficiaries of the project
- The property owners, however, file their tax from abroad and other cities of India also.

3. Services Provided

The site is available at <http://www.mcdpropertytax.in>. The following features are provided on the site:

- Web-based Assessment Form with validation and interactive screen
- Database of property and taxes
- Facility to assess your property online
- Facility to submit and save your return
- Facility to pay online through credit card
- Facility to generate payment voucher or challan and pay by cheque or cash and approach nearest designated Axis bank for payment (All Axis bank and branches and few HDFC banks accept tax challans)
- Integration with bank for payment status
- Generating return status

- Protecting data from unauthorized access
- Providing collection figures from zone to ward and colony level
- Providing collection figures for different kind of properties
- Overall, a paperless transaction system.

4. Geographical Spread of Project Implementation

- The project has been implemented in MCD, Delhi. MCD covers about 1450 sq kms in Delhi. There are about 10 lac registered tax payers. There are 12 zones headed by Joint Assessors and Collectors responsible for assessment and collection of tax in MCD
- Since the project is for enabling the tax payment on the internet, the property owners in Delhi, across India and outside India are able to access and pay through online property tax assessment and payment portal.

5. Project Timelines and Milestones

January 12th, 2007	The project was conceived. It was decided to launch the project on 1st April, 2007.
April 1st, 2007	The project was launched successfully
April 9th, 2007	The project was inaugurated by Ms Sheila Dikshit, Hon'ble CM of Delhi
June, 2007	The project handled its peak load of about 1.4 lac taxpayers successfully
March 31st, 2008	Peak load at the end of the financial year was successfully met. Over 2.10 lacs taxpayers paid Rs.97 crore online in the year
April 1st, 2008	The system was stopped for a week to enable transition to next financial year or in other words its 2nd year of operation
April 10th, 2008	The system was restarted successfully
June 30th, 2008	Peak load was met, Rs.86 Crore was collected by 2.5 lac taxpayers in just 3 months. The number surpassed the total number of taxpayers in the last financial year
July, 2008	The system was rewritten on an entirely different platform, as the earlier system was not scaling to the needs of the department. All of it was done without any significant downtime. The shift was from java, oracle-based system to PHP and MYSQL-based open source system

6. Direct Cost and Time Savings to Avail Services

- **Travel cost:** Citizens can file their return from home/office/cyber café etc. It saves travel costs. It is estimated that, for single filing of tax one needs to make several trips to one of the zonal offices.
- **Consultation cost:** The self-assessment tax has been simplified. It asks just for the bare facts like address, property details like area, age, occupancy, structure etc. The calculations can be quite complex like rebate calculation, vacant land tax calculation etc. The calculations are handled by the assessment system which is available on the web. This obviates the need to consult property tax experts and middlemen.
- **Corruption costs:** Since the taxpayer does not need to come to the office, it translates into zero interfaces between office and the citizen and reduces corruption.
- However, one needs to incur cost of internet access which is about 8 minutes required in making self assessment and paying online and cost of printing the challan and receipt on paper and also transaction charge of 1.72% of total tax, if payment is made through credit card. However, if the challan is taken to any of the designated banks and payment is made through cheque, there is no additional cost associated.
- It takes hours to correctly fill a manual self-assessment form. The form is available at <http://220.156.188.84/ptaxapplication.php?id=1> and can be seen. An inexperienced citizen can easily waste hours and days for filing the return and eventually goes to MCD for consultation or to middlemen or tax consultants for the purpose.
- Therefore, for the citizen, number of trips to MCD is eliminated as compared to manual form.
- The citizen also saves time which is spent in standing in queues which can be up to few hours during peak period of tax filing that is June of every year.
- Time is also saved by the fact that, online assessment is always correct if no facts are hidden and therefore, the department does not send notices for wrong filing of tax subsequently.

7. Direct Cost and Time Savings to Deliver Services

- About 30 lacs manual forms are printed to take care of about 10 lac self-assessments. (Manual form can be seen at <http://220.156.188.84/ptaxapplication.php?id=1>). There is direct cost savings in all the cases where filing is done online
- The administrative cost of collection of tax is estimated to be at about Rs.100 per form.
- Man-hour savings on tax collection
- Man-hour savings spent on providing consultation to taxpayers
- Man-hour savings on retrieval of manual tax forms which are about 10 lacs per year. In times to come all the tax forms will be retrievable through computer whereas in manual form it takes long times and often are not retrievable at all.

8. Replication

No replication has been done as it was not required

9. Implementation Model

Project was initially owned by Assessment & Collection department of MCD. Now it is running on PPP basis where the partner is ECIL—SARK consortium. The cost per self-assessment transaction is Rs 10.

10. Technologies

PHP and Mysql i.e., open source architecture

11. Capacity Building

It is mainly a citizen centric project. Therefore, interface was kept simple, user friendly and logical. Officials of MCD were trained to answer the queries. Officials have been trained to make use of internal processes etc.

12. Process Reforms

No reform was needed. The whole project revolved around simplifying the self-assessment of property tax for citizens and there were hardly any procedural hurdles. Terms and conditions were drafted with legal consultation which the citizen has to agree before filing tax returns.

13. Project Financials/Sustainability

Transaction fee of Rs.10 is paid to the implementing firm on a PPP basis. The cost goes into improvement and upgradation of the system therefore, making it sustainable.

14. Project Teams and Leadership

- Shri KS Mehra, IAS, Commissioner provided full top level support to the project. He is an able leader and firm believer in transparency, efficient services to the citizen.
- Shri PK Tomar, IRS, Additional Commissioner, provided much needed guidance and support to the project.
- Dr. AK Ambasht (IFS), Assessor & Collector, heads the Property Tax department and formed various input points essential for the development of the Online system. He took very crucial decisions like making the system compulsory. He is responsible for collection of property tax and thus the biggest stake holder in the success of the project.
- Mr Amit Prasad (IDAS), Jt Assessor & Collector, was closely liaising with the software vendor and work at ground level and technical level on a daily basis. Being very thorough in Information Technology he guided the Software Company to give proper framework to the website, besides other intricacies.

15. Key Project Outcomes

Summary

- Online property tax system has immensely, simplified the experience of self-assessment and payment of property tax for about 1 million taxpayers in Delhi
- It has completely eliminated complexities of the manual self-assessment system
- It has eliminated the need for middlemen and tax consultants
- The system has recorded a tax collection of about 200 crores in 1 year and 3 months of its operation
- About 5.5 lac taxpayers have used the system in just over a year for assessment

- The taxpayers in 97 countries could pay their property tax in Delhi using the online system.
- The taxpayers in about 80 cities in India could pay their property tax in Delhi using the system.

Description

Municipal Corporation of Delhi (MCD) is the 2nd largest Municipality in the world. Its area is about 1450 sq kms. It has an estimated 20-25 lacs properties in its ambit out of which, about 9 lacs properties are on record regular tax payers. MCD adopted the Unit Area Method of assessment of annual property tax. It also adopted a method of Self-Assessment of the property tax.

In the system prior to the UAM, bills were sent to the citizen who had to pay these bills like telephone and electricity. The system of billing is simple and such systems can easily be made online. UAM system on the contrary required the citizens from all backgrounds of society, to calculate his or her own tax on a paper form called Self-Assessment Form and file their return and be fully responsible for all times to come for his declarations and calculations. Such a system was difficult to translate into an online mechanism etc.

Self-Assessment of Property Tax was complicated as can be seen in the form attached herewith and also available at <http://220.156.188.84/ptax/application.php?id=1>. MCD has about 9 lacs tax payers who come from varied backgrounds and find it difficult to do the self-assessment on manual form. The complexity arises due to the following factors:

- Over 20 types of properties
- Over 12 types of property ownership
- Over 2300 different colonies with their own ward, zone mapping and different category and Unit Area Value which decide the rate of tax per square meter
- Technical calculation involved in calculation of land tax
- Over 80 types of use factors of the properties. For example, commercial has use factor of 4, residential has use factor of 1 etc.
- Over 20 different types of rebate and different permutations of calculations

- Technical calculation involved in calculation of annual value and tax of each floor based on Age Factor, Use Factor, Unit Area Value, Occupancy Factor and Structure Factor.
- Very complicated procedure involved in calculation of rebates. Many taxpayers calculate this wrongly and claim even when not applicable. For example, rebate is not applicable when property is on rent or under commercial use.
- Often the calculations are found to be faulty even when all factors have been taken correctly.

Obviously these problems are bound to arise when all the responsibility of self-assessment has been given to the citizen who comes from varied backgrounds and literacy levels. Needless to say that, it became imperative for the taxpayers to consult middlemen and tax-consultants. It is also pertinent to note that, wrong payment of tax is not because of wrong submission of facts but also, because of faulty calculation of tax used to occur very frequently.

On the side of Assessment and Collection department, the following problems were seen:

1. The Property Tax Return forms (PTR) which were filed manually in 12 zones of the department are huge in number i.e., in lacs. It is impossible to manage them effectively for obvious reasons.
2. The scrutiny of forms has fallen into arrears for the same reason.
3. The cost of printing of forms and their management is proving to be very high.
4. There is an urgent need to improve transparency which is only possible by increasingly putting information on an online system both for the citizens and for the department administration.
5. The Department decided to move towards paperless administration.

With these concerns the said project was conceived in January 2007 and launched in an extraordinarily stiff target date of 1st April, 2007. In the very first year, the amount of tax collected online was 96 crores and the number of taxpayers who came online was about 2.10 lacs. The average time taken for completing the assessment and payment procedure was about 13 minutes. However, in the second

year of its operation i.e., 2008, the amount collected online in 3 months itself i.e., April-June has been Rs.86 crore and the number of taxpayers has reached 2.5 lacs. The average time taken this year has been about 8 minutes. This is a drastic improvement of over 100% over last year in just 3 months. It testifies the benefits of ICT and the benefits it has given to the taxpayers. It has translated into preferred mode of interaction with the citizens. The manual form filling itself was quite cumbersome and full of pitfalls for the taxpayer for the following reasons:

Problems of manual filing of taxes have been tackled on the online system of property tax. The returns of manual taxes are not available when required whereas, in the online system all the returns can be fetched from a web-based system, using various parameters of owner, colony, address, registration number etc. There is no need to check calculations as they are responsible for the system. Dues status, ownership etc., can be found out instantly.

One of the best achievements is that there were 2.5 lacs taxpayers less in the municipal offices in the month of June, which reduced the pressures on administering the manual tax collection. The queues were more manageable and the expenses on collection were reduced. These queues are bound to decrease even further. The citizens also appreciated the change. The online tax payment system was a god-send for most of the taxpayers as suddenly, the complexity of the manual tax filing had completely vanished. More than 1 lac tax payers used their credit card to file tax sitting at their home or office or neighbourhood. Others who chose to pay by cheque had to approach their nearest designated bank and deposit their cheque along with printed challan.

Citizens from 97 countries have used the online system for filing tax returns and making payments for their properties in Delhi. Citizens from about 84 cities in India could do the same online. The average time taken for filing returns reduced from 13 minutes last year to 8 minutes in the current year.

16. Service Users' Feedback Mechanism

E-mail, Phone and letters were used as feedback mechanism. Online facilities were provided at RWA (Resident Welfare Association) offices. Feedback was taken from departmental officers and staff, who used to interact with citizens during tax filing process.

17. Implementation Challenges

Challenges faced during the implementation were many-faced. Implementing project of such dimensions is an uphill and never ending task. The project has to be constantly monitored for improvement.

- Number of taxpayers was huge. More servers and bandwidth were added to take increased loads in the peak periods
- The system was slow and inefficient in the beginning, which was improved with studying the response time of each module and making changes/optimization in the program
- Taxpayers differed with calculations of the computerized system, as they were used to calculating wrongly. Some taxpayers would claim wrong rebates which were disallowed by the online system.
- There were printing mistakes and inappropriate help on the system which needed correction
- Printouts were not coming accurately. Changes in the program were made
- People were using different browsers and the system worked only on internet explorer. Changes were made to accommodate Firefox(Still in progress)
- Some people had already paid in advance in previous years and so wanted to file the return but not make payment. This was not catered for in the system. An extra input was put to allow taxpayers to enter amount of their choice
- The department staff was ignorant about the online and computerized system and kept themselves aloof from it for a long time. Slowly they were sensitized to some extents
- There were numerous calls from taxpayers which in absence of trained staff were difficult to handle. Blogs were created to handle it. An email was created to get their grievances. More work is being done to correct the situation
- Credit card transactions were failing in large number of cases initially and a system had to be evolved for the same. Program changes were also made
- Number of grievance mails was piling up but due to shortage of trained and interested staff it was getting delayed. A call center is being set up

- The Implementing Company was very slow in making changes and were not able to keep pace with requirement. They also wanted to make more money out of the project once they felt their monopolistic grip over the system. Department created another system to break their monopoly and to keep the system going.
- Banks were making typographical errors resulting in wrong financial status. Banks were asked to make special data entry software with validations.
- Due to slow pace of changes and bugs in the system, the uploading of receipts got delayed creating dissatisfaction in the people at large.
- Historical record could not be put online. It was decided to carry on into future from scratch and let the data get built up. Steps have been taken phase-wise as per previous year's data.

The challenges still continue to be there. But, a project of this magnitude is being constantly monitored and improved.

18. Key Lessons Learnt

- ICT can drastically reduce the administrative expenses which are the need of the hour and can help reduce manpower, and unnecessary expenses thereby, effecting substantial savings to the Governments. And especially Municipal Governments who have very limited resources of revenue and ever increasing demand for better civic services.
- Implementation is the toughest part. It is necessary that the implementation team be cohesive and very dedicated.
- Implementation should be done in the shortest time possible as with time various factors of resistance grow in size and magnitude.
- Enough thought should be put into designing the user interface which should be as simple as it can get.
- One does not need to spend a lot of money to create big results. The project cost was about Rs.10 lacs and the project has already serviced about 5.5 lacs taxpayers and collected about 200 crores.
- When servicing a large number of citizens, the leanings have to be very rapidly incorporated into the system to improve it.

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