Section VI

e-Governance Success Stories

G2G & G2B Initiatives

CHAPTER 33

*Census of India 2011**

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I) Overview

Census 2011 marks a milestone in the history of Census taking in the country. It has come at a time when India is perhaps at an inflexion point in history, when it sheds the legacy of the past and emerges among the comity of Nations as a strong, self reliant and modern Nation. The basic benchmark statistics on the state of human resources, demography, culture and economic structure at this crucial juncture of the country's history would be vital to guide and shape the future course of the Nation. Indian Census 2011 is the largest peacetime mobilisation of people in the world where the country's 2.7 million trained enumerators conducted the census for 1.21 billion people in the most economical way and helped in generating the socio-demographic profile of the country.

With a rich history of 130 years behind us, our organization has been the only source for giving the country's benchmarking statistical data for the use of the policy planners and continues to do so in its journey.

Quite evidently there is no parallel in the country to conduct this world's largest peacetime mobilization exercise and logistical handling of gigantic proportions to impact each and every citizen in the country of 1.21 billion people and collect, compile, tabulate and disseminate socio-demographic data in real time. The task is clearly mesmerizing when the linguistic, regional, rural-urban, literate-illiterate, gender-wise variations are truly and faithfully captured by

* *Winner of CSI-Nihilent e-Governance Awards for the year 2010-11.*

training an army of over 2.7 million enumerators drawn from the teachers throughout the country. The rich legacy of the organization engaged in this activity since 1872 is in itself the right pointer to the solid foundation of this organization and thus the claim made by the organization in handling the technology of national importance is rightful and fully deserving.

Indian Census is the single largest source of a variety of statistical information on different characteristics of the people of India. It is the most credible source of information on Demography, Economic Activity, Literacy and Education, Housing & Household Amenities, Urbanisation, Fertility and Mortality, Scheduled Castes and Scheduled Tribes, Language, Religion, Migration, Disability and many other socio-cultural and demographic data.

With a history of more than 130 years, this reliable, time tested exercise has been bringing out a veritable wealth of statistics every 10 years, beginning from 1872 when the first census was conducted in India non-synchronously in different parts.

The recently concluded Census 2011 is the 15th National Census of the Country in the unbroken series since 1872 and the seventh after Independence. It is remarkable that the great historical tradition of conducting a Census has been maintained in spite of several adversities like wars, epidemics, natural calamities, political unrest tec. Very few countries in the world can boast of such a glorious tradition! The rich diversity of the people of India is truly brought out by the decennial census which has become one of the tools to understand and study India.

In a country like India, with multiethnic, multilingual, multicultural and multilevel society, the Census is much more than a mere head count of the population. It gives a snapshot of not only the demographic but also the economic, social and cultural profile of the country at a particular point of time. More often than not, it is the only available source of primary data at the level of the village and town (ward). It provides valuable information for planning and formulation of policies by the Government and is also used widely by National and International agencies, scholars, business persons, industrialists, and many more.

In addition, the Census provides a basic frame for conduct of other surveys in the country. Any informed decision making that is based on empirical data is dependent on the Census. Democratic processes like the delimitation of electoral constituencies and affirmative action like reservation are also based on the basic data sets of the Census.

1. Methodology

The Census of India is conducted once in a decade, following an extended de facto canvasser method. Under this approach, data is collected on every individual by visiting the household and canvassing a single questionnaire over a period of three weeks. The count is then updated to the reference date and time by conducting a Revision Round. In the Revision Round, any changes in the entries that arise on account of births, deaths and migration between the time of the enumerators visit and the reference date/time is noted down and the record updated.

In Censuses until 1931, a synchronous de facto method was adopted wherein the Census was conducted throughout the country on a single night. This method, besides being costly, required the deployment of an extremely large force of Census takers. This method was given up in the 1941 Census and the present method adopted.

Census 2011 has been conducted in two phases. In the first phase, known as Houselisting and Housing Census each building, house and other structures were systematically listed and numbered and those used for residential and partly residential purpose were identified. Besides, useful information on the amenities available to the households as well as the assets owned was collected. This exercise held between April to September, 2010 in different States/Union territories was used to draw up a frame for the second phase of Census 2011, known as Population Enumeration held in February 2011.

The work of Population Enumeration commenced on 9th February, 2011 and completed on 28th February, 2011. During this period about 2.7 million Enumerators visited each and every household for collecting information on every person living in these households. On the night of 28th February, 2011 the Houseless population was enumerated. Thereafter, in order to update the

population with reference to the census moment, i.e., 00:00 hours of 1st March, 2011, the Enumerators undertook a Revision Round from 1st to 5th March, 2011, by revisiting the households and updating information on births and deaths occurring in the households.

2. Planning for Census 2011

Freezing of Administrative Boundaries

The first step towards Census taking relates to preparation of a complete and unduplicated list of all geographical entities in the country, which includes States, Districts, Tehsils/Taluks/ Community Development (CD) Blocks and Villages/Towns at a particular point of time. For Census 2011 all administrative units in the States/ UTs across the country were sought to be frozen as on 31st December 2009.

The finalisation of the Rural Urban frame, by listing out Statutory and Census Towns and categorising them as 'Urban area' and the Villages as 'Rural area' was completed as part of Pre Census activities. The demarcation of Out Growths of Towns and Urban Agglomerations was also taken up as a part of this exercise.

3. Cartography

The availability of accurate maps as per the latest administrative boundaries is a prerequisite for Census. The Cartographic Division of the Census Organization, entrusted with this work, has evolved over the years and is now the largest producer of thematic maps in the country. It has come a long way from the traditional manual cartographic methods used until 1981 and now utilizes the latest GIS software to produce digital Maps. The organization now has the largest repository of digital files of villages and towns. The latest addition in Census 2011 is the preparation of satellite imagery based digital maps at the street and building level in 33 Capital Cities of the country. These digital maps were used effectively to carve out the Enumeration Blocks in both phases of the Census.

4. Consultation with Stakeholders

As part of the Census preparations, the First Data Users' Conference was held in April 2008. In this conference, consultations were held with all stakeholders comprising representatives of various Ministries of Government of India and the

State Governments, National and International Organisations, Population Research Centres, Statistical Institutions, Universities, eminent demographers and social scientists. Based on the deliberations of the Conference and other correspondences received a draft Questionnaire was developed.

5. Finalization of Questions

The draft Schedules were pretested in the field in all the States and Union Territories from 28th June to 17th August 2009. The results and the experiences of the pretest exercise were discussed in a Conference of the Directors of Census Operations and a draft Questionnaires were finalized. These Schedules were then presented to and approved by the Technical Advisory Committee constituted for the purpose. These final Schedules on Houselisting and Housing Census and Population Enumeration were then put up for the consideration of the Government of India. On receipt of the assent the Questions to be asked in the two phases of operation were duly published in the Gazette of India.

6. Printing

A feature that makes the Indian Census particularly complex is that the Schedules are canvassed in 16 languages and the Instruction Manuals are developed in 18 languages for use by the Census Enumerators/Supervisors and other functionaries in the country.

The requirement is also mind boggling – 54 lakh (or 5.4 million) Instruction Manuals and 34 crore (or 340 million) Census Schedules. To add to the complexity, the Schedules had to be printed on special grade paper, the specifications for which were evolved in India for the first time in consultation with experts in scanning technology and paper technologists. The services of the National Institute of Design, Ahmadabad were utilized to upgrade the quality and aesthetics in the designing of the Schedules. The result is that the Indian Census Schedule is comparable with the best in class internationally.

Unique features that make it stand out are Bar Codes in each Schedule, Unique Form Numbers, Pre Printing of certain Location Particulars, Uniform quality of printing and colour dropout facility. This required printing in high end Presses having facility of digital printing and very high production capacity. That the

entire quantity of material has been printed within the stringent timelines and with strict adherence to quality is a feat in itself. Approximately 12,000 Metric Tons of paper of various grades has been procured for this purpose.

7. Logistics

The task of making available all the materials required for conducting the Census – Enumerators Kits, Instruction Manuals and other training material, Census Schedules in the right quantity and in the right language to the Charge Officers (approximately 17,000 in number) as can well be imagined is a logistical nightmare. Adding to the complexity is the fact that each Charge may use material in several languages. The Census Commission availed the services of India Posts for transporting the material from the printing presses to the Charge Offices (i.e., Tehsil headquarters and Municipal authorities). For supervising and monitoring an elaborate web based management system was developed by them. Though there were operational problems, the precision with which the entire logistics operation was accomplished within a very short period of time, is remarkable.

8. Training

The need for comprehensive training of all functionaries, especially the Enumerators and Supervisors can hardly be underscored. A three tier cascade of training was devised for this purpose. At the top of the pyramid were a group of National Trainers, 90 in number. This group was rigorously trained for 5 days at a residential training camp. They then trained 725 Master Trainer Facilitators (MTFs) at the State level. The MTFs in turn trained 54,000 Master Trainers (MTs) at the District level. The MTs ultimately trained the 27 lakh (or 2.7 million) Enumerators and Supervisors at the field level.

A new feature in Census 2011 has been the utilization of Non-Governmental Agencies in the massive training effort. In order to supplement the manpower for training by the Directorates of Census Operations of the States/UTs, trained manpower from the NGOs was also utilized. In addition, volunteers from NGOs working in the field of disability and gender were associated with Census 2011 for sensitizing the trainers at National, State and District level.

9. Publicity

All modes of Publicity Mass media, Public Relations, Outreach activities and Digital media have been used to spread awareness and enlist the cooperation of all stakeholders. A scientific media plan was designed by a professional agency that also created the media content in both the phases of the Census. While the general theme was that of including everybody without omission, special emphasis was laid on the issue related to such vulnerable groups as women, elderly, disabled persons, infants and the homeless. Endorsements by different celebrities were also broadcast. Census messages on these issues were broadcast over All India Radio, Radio FM, Private Radio FM, Door Darshan and Private TV Channels. To reach different crosssections of the society, particularly the younger sections, advertisements using such digital media as popular websites were used.

10. Houselisting and Housing Census

The Census Operations in India are carried out in two phases the Houselisting and Housing Census followed by the Population Enumeration. The objective of the Houselisting and Housing Census is to systematically list out and number all the buildings, houses and other structures in an Enumeration Block, identify houses which are residential or partly residential and collect information on households throughout the country for preparation of a sound frame for conduct of the population enumeration.

The Houselisting and Housing Census was conducted in different States and Union Territories during April September, 2010. In addition to collecting data on characteristics of the house, information on availability of certain amenities and assets to the households were also collected in this first phase.

The Houselisting and Housing Census collected information on the housing and availability of amenities and assets to households. The items of information collected were same as in 2001 Census except that a few questions were modified to elicit more accurate information. These include modifications in collecting information on: Source of drinking water, Type of latrine, Availability of computer/ laptop and mobile phone to households.

11. Population Enumeration

The Population Enumeration or the second phase of Census 2011 was held from 9th to 28th February 2011 throughout the country as stated above. In the snow bound areas this exercise was held 11th to 30th September 2010 with reference date as on 1st October 2010.

There were a few modifications and addition in the Household Schedule canvassed for collecting information on each individual residing in the country in comparison to Census 2001. These included:

- Preprinting of Location particulars up to District level
- Printing of Bar Codes/Form Number
- Colour dropout in the Schedules to facilitate scanning
- Linking of Houselisting data with Population Enumeration data
- Tracking system in case of more than one form is used
- Collection of information on the Institutional Households
- Recording other Gender than male or female
- Date of birth
- Separate Codes for 'Divorced' and 'Separated' under Current marital status
- More descriptive Codes to capture information on Disability
- Separate codes for persons who have never attended any educational institution and persons who have attended earlier under Status of current attendance in educational institution. An additional code for recording persons attending special institution for the disabled has also been added.

Categorisation of Marginal Worker into two categories – those who worked for 3 months or more but less than 6 months and those who worked for less than 3 months including a category of 'Others' under noneconomic activities to account for commercial sex workers and persons involved in illegal activities. A new code for 'rentier' has also been introduced.

II) Result Indicators

1. Key Performance

a. Service Delivered (G2C,G2B,G2G,G2E) with benefits

1. Geographical Spread of activity: States and Districts covered

In the Census of India 2011 operations, the team of all the DCOs, PCOs, Charge Officers and 2.7 million Enumerators & Supervisors had mapped the entire country in the 35 States & UTs consisting of 640 Districts which were subdivided in 5,961 Sub-Districts consisting of 8,001 Towns and 640,852 Villages.

Approximately, in all 240 Million Households in the country were covered twice in the course of the two phases of the Census Operations in the country.

2. Approximate Number of people impacted

Thus, each and every person in the country was impacted. In all, approximately 1.21 billion people living in 240 million households were covered in Census of India 2011 operation. In fact, all the persons residing in normal households, institutional households and even shelterless and homeless people were also covered. The team of 2.7 million functionaries effectively covered the last man standing across the length and breadth of the country.

3. Declaration of Provisional Population Results – Census 2011

After the completion of the Population Enumeration phase of Census 2011, the Provisional Population of the country and for each State was declared by the Census Commissioner, India within a month on 31st March 2011, a feat not known to have any parallel in the world. The Provisional Population Totals are arrived at by compiling the summary report (known as Enumerator's Abstract) from every Enumerator.

The salient points of the Census 2011 Provisional Results are as follows:

The country's population stood at slightly over 1.21 billion as on 1st March 2011.

1. The population of India increased by 181 million since the last Census in 2001, recording a growth of 17.6% compared to 21.5% during 1991-2001.
2. This slowing down of growth in population is seen in most of the States including the large ones, like Uttar Pradesh (from 25.85% in 1991-2001 to 20.09% in 2001-11), Maharashtra (from 22.73% to 15.99%), Bihar 28.62% to 25.07%), Madhya Pradesh.
3. The overall Sex Ratio of population, an index to measure the sex composition of the population and expressed in terms of number of females per 1000 thousand males, showed an increase from 933 in 2001 to 940 in 2011 in the country.
4. However a matter of overwhelming concern is the decline in Child Sex Ratio (0 to 6 years) from 927 in 2001 to 914 in 2011, a drop of 13 points, lowest since Independence in the country.
5. The overall Literacy Rate (of population above 6 years of age) reached 74% from 64.8% in 2001 Census in the country.
6. It was most satisfying to find that the number of female literates (aged above 6 years) in the country have grown by about 49.1% in the last decade. The Female Literacy Rate has recorded an appreciable increase from 53.6% to 65.4% in 2011.

III) Enabler Indicators

The scale of operations of the Census of India 2011 was truly gigantic. To cover each and every 240 million households in the country with its intrinsic cultural, linguistic diversity and to capture correctly and comprehensively the responses to the questionnaire through an army of duly trained 2.7 million enumerators and supervisors within a short span of three weeks could not have been accomplished but through a well thought out strategy as has been the tradition in the organization.

Succinctly put, the success depended on the way the questionnaire was drafted to keep put any biases, discriminatory predilections of the canvasser or the canvassed. It also dwelled primarily on how the training was envisaged and delivered

throughout the country in a cascaded manner flowing from the national level to the state and through it to the district, sub-district and tehsil level. The training material and their content along with defined pedagogy determined that the 2.7 million enumerators culled out from the primary level schools in the country were well equipped to undertake the operations. The idea was to impart a distinct identity of the enumerators so that they could easily establish a rapport with the general public whenever they visited their homes.

The organizational setup consisting of the administrative machinery of the State, Districts and the Charge Officers were also equipped with due executive authority and were properly trained to oversee the largest peacetime deployment in the contemporary times. The difficulty of the task was enhanced due to the issues of naxalism/militancy in certain States which had to be tackled for the successful conduct of the operations.

Moreover, the leveraging of the Department of Posts to deliver the 340 million schedules to all the 17000 charges in the country along with the training materials and stationery meant for the enumerators and supervisors and also to return the filled in schedules from the enumerators and delivering to the Data Capture Centres of the Directorates of Census ensured that the logistical nightmare was effectively and efficiently dealt with.

The deployment of advanced ICR technology for scanning and digitizing the information scattered in 340 million schedules was also duly strategized and the provisional demographic details of the country were put before the people of India in a record time of 30 days.

1. Complete and Unduplicated Coverage of the entire population of India.

- In any Census, the most important aspect is the complete coverage of the geographic area of the country without any omission or duplication. This requires the updating of jurisdictional boundaries at all levels. In order to conduct the Census 2011, the changes in administrative boundaries of 35 States/Union Territories, 640 districts, 5,924 sub-districts, 7,935 Towns and 6,40,867 Villages were meticulously collected along with official notifications and maps. There was an increase of 47 Districts, 461 Sub

Districts, 2774 Towns and 2279 Villages in Census 2011 as compared to Census 2001. Each of these changes was digitised using the latest GIS software. The Census of India is the only Organisation in the country with the digitised cartographic data base of the entire country with the latest administrative boundaries.

- In addition, digital maps of 33 capital cities of the country based on satellite imagery were prepared. These maps show detailed layout of buildings, houses, other structures, road network and important landmarks. These structures have been systematically numbered by visiting each one of them. Some basic details like type of construction of the house, number of floors, usage (residential/non-residential) and the approximate number of people living in these houses were also collected. Enumeration Blocks were then carved out scientifically. This facilitated equitable balancing of work load and complete coverage.
- In rural areas, a printout of every village boundary map was given to each Supervisor in the country. This ensured that no area was left out or duplicated.
- A geographical Directory was also prepared giving a unique identification Code to each and every administrative unit in the country. This is the only such Geographical Directory in the country. The Department of Information Technology is in the process of declaring this Directory and the methodology for its updation as the National Standard for the country.

2. Quality of content.

- Designing of the Census Schedules: Two types of Questionnaire, known in Census as Schedules, are canvassed for the two phases of Census. In Census 2011, the work of designing the Schedules was entrusted to the National Institute of Design, Ahmadabad who came up with brilliant designs, which were easy to use, aesthetically developed, easy to scan and comparable to the best in the world. The Schedules had several unique features like Bar Code, Unique Form Number, drop-out color from a standard palette, edge cutting for proper alignment, pre printing of certain location particulars and many more. All these helped in collecting quality information and

better inventory management, a nightmare in the past. These features have greatly enhanced the processing of data.

- Training: One of the most critical elements in Census is the training of the field Enumerators who collect information. Unless the 2.7 million functionaries are clear about the concepts and methodology, the quality of data collected will suffer. In Census 2011, a three-tier training hierarchy was put in place with National Trainers (90 in number) at the country level, Master Trainers Facilitators (725) at the State level and Master Trainers (54,000) at the District level. It was the responsibility of the Master Trainers to train 2.7 million Enumerators/Supervisors at the grass root level, a ratio of just 50 Enumerators per Master Trainer.
- In 2011 Census, after detailed evaluation and consultation with experts in the field, the Manual was substantially improved by incorporating suitable illustrations and examples. In addition Training Guides for use by the trainers at each stage of training was prepared. For the first time detailed agenda showing minute to minute programme was prepared for the three or five day training as the case may be. The Guide not only focused on elaborating concepts and methodology in Census but also covered such aspects as communication, rapport building etc. One important addition to the basket of training aids was the introduction of eLearning modules on important census concepts. In this eLearning module animation characters representing Enumerators and Respondent(s) were shown actually delivering the dialogues and asking questions, as should ideally be done in the field. These visual and animation examples became an instant hit with the Trainees. In places where there was no electricity, trainees were asked to enact the role plays as in the eLearning Modules by enacting the scenes as per scripts included in the Training Guide. All these innovative measures helped in imparting quality and uniform training to the four levels of trainee from the National Trainers to the Enumerators.
- Publicity Campaign in Census 2011: For any large scale operations like Census Operations to succeed, undertaking adequate publicity campaign is an important element. Adequate sensitization of the people is a pre-requisite as Census aims to collect personal information on each individual

residing in the country at the time of Census. It is also important to focus on proper enumeration of such critical aspects as gender and disability in the population. Due to various socio-cultural reasons, it has been found that in many parts of the country, the respondents do not share information on these sensitive subjects. Consequently the information collected on these groups suffer from inaccuracies. The aim of the publicity campaign was not only to request the people to extend cooperation when the Enumerator visits them but also to make them aware about the critical issues.

- In absence of adequate in-house expertise, the work of devising the entire campaign was assigned to reputed advertising agencies in the country with support from the UN Agencies. Backed by a team of Resource Persons from the Census Office, they developed media plan and all the creatives to reach both rural and urban segments of the population in different age groups using different regional languages. Elaborate campaign was planned and executed by using mass media, public outreach and digital media to achieve the objectives. The basic modules in Hindi were translated in 12 languages for use in different parts of the country. The media plan was prepared using the latest reports available on reach of media in different parts of the country using different modes on a scientific basis. The total expenditure on publicity was about Rs 60 crores in the two phases.
- The Census Office used the media plan recommended by the Advertising Agencies and placed orders with DAVP (for print and electronic media), All India Radio and Door Darshan for execution with slight amendments as suggested by the latter wherever necessary.
- Census in School programme: To sensitize the school students about the ensuing Census 2011 an innovative programme was introduced throughout the country, where specially prepared and attractively designed School Kits were sent to about 60 to 80 schools in each of the 593 districts in the country. Each School Kit contained a letter from the Census Commissioner, India to the Principals of these schools requesting them to sensitize the students about the ensuing Census 2011 and also about the importance and the utility of Census. Special attention was paid to the students of Class VI, VII and VIII, for whom special lessons were sent on different

subjects. The Census Commissioner, India also requested the Principals to designate one week in January 2011 as Census Week to develop awareness about Census 2011. To generate curiosity among the students of these three classes a pack of cards with Census Quiz and their answers were also sent with the request to hold the Quiz in the Census Week. The programme generated huge interest among school students and achieved the objective of sensitizing them so that when the Census Enumerators visited their house they were welcome.

- Gender Sensitization: Even though gender had been a prominent cross-cutting priority in 2001 Census, data related to female count, marital status, female headed households, female disability and female work-participation has continued to suffer from under count or under reporting. The 2001 census enumerated several villages/districts that had reported very few women, very low female literacy and no female worker. To ensure collection of accurate information an attempt to integrate gender issues into various stages of the census taking has been undertaken and briefly described in this note. Firstly, gender critical districts were identified on the basis of three criteria emerging from the 2001 Census. These were: overall sex ratio, female literacy and female work participation. The advantages of using these three indicators are that they reflect the status of the women and additionally enable analysis at the lowest disaggregated level, i.e. village level. Thus, districts with low sex ratio (less than 900); low female literacy (less than 30%) or low female work participation rate (less than 20%) were identified on the basis of 2001 Census. In this way 262 Critical Districts was identified for focused attention and training. Special steps were taken to appoint additional Master Trainer Facilitators to sensitize the Enumerator on gender issues and train them in collecting authentic information on this vulnerable section of the population. Special Data Sheets and Posters were prepared and displayed at each training class to sensitize the Enumerators on the poor status of women with reference to these three critical indicators. Extra effort was also made during the publicity campaign to sensitize the people to provide correct information about women and the girl child at the time of enumeration.

- Using Social Networking websites: With the overwhelming popularity of the social networking sites among the youth today, for the first time, in Census 2011, a conscious effort was made to reach them directly. Census 2011 Group was created on Facebook and Twitter in the first week of February 2011 and regular posts were made initially informing the visitors about different facets of Census in general and Census 2011 in particular inviting their support in spreading the message on Census. Within a short time a large number of persons, mostly from the younger sections of the population, became members and actively posted views on the wall. The experience was quite satisfactory as most of the posts complimented the efforts while a few pointing about not being covered in Census 2011. Immediate action was taken to redress their grievances. The site was also used for disseminating information on Census 2011 extensively. At present there are more than 19,000 members on this Group. Similarly on Twitter as well the members welcomed the Census in the new initiative. It may not be out of place to mention that the Census Commissioner, India was awarded Exceptional Achievement in Gov 2.0 for its innovative use of social media in the country's biggest governance exercise by Gov2.in Award – 2011.

3. Time bound completion of field operations and timely release of data.

- Using State of the Art data recognition technology in data capture and data processing: The Census Office has always been in the forefront in the adoption of latest data processing technology in the processing of census data. At 2001 Census, for the first time a major technology change in the vital activity of data extraction recorded on the Census Schedule and creating associated computer data files was introduced, so as to fully computerize the subsequent data processing activities in generating output tables for use. India was the only large country in the world to have used this technology in 2001 Census. Up to the 1991 Census, more than 150 Regional Tabulation Offices throughout the country for compiling village/ ward-in-town level information to generate Primary Census Abstracts. Subsequent data entry was undertaken in 1991 Census manually.
- In the new technology used, the Census Schedules were scanned using

high speed duplex scanners and information read using ICR technology. When the Census Office adopted this technology in India, it was considered a risk by many as the technology had been used only by a few small countries and not tested for a large country. This innovation by the Indian Census not only saved time and money but allowed accurate capture of data as well. Another major benefit in adopting this technology was that it allowed the Census to tabulate the entire data on a 100% basis than on a sample basis as was the case till 1991 Census.

- Adoption of ICR technology for data capture in Indian Census is a major decision as it involved capturing information from Census Schedules in 16 languages. The Census Office developed its own checks and balances to ensure that the data capture is error free. For this purpose, the Census Schedules were freshly designed, appropriate drop-out colours were used in printing the Schedules, Bar Codes and pre-printing of location codes were introduced for better inventory management, high speed scanners were used to scan the 340 million Schedules and ICR software used to capture the numeric data accurately. Subsequently Computer Aided Coding (CAC) was used to primarily capture the alpha data or data in textual form from the Schedules.
- Using the ICR technology not only saved time for data capture and data tabulation thus ultimately making it available to the users early but also was very cost effective saving public money.
- Despatch and delivery of Census material: In Census 2011, approximately 340 million Census Schedules, 6 million Instruction Manuals, and other printed materials in 18 languages were used. The despatch and delivery of these Census materials weighing about 2000 metric tons, printed in the right language(s) from about twenty printing presses located in different parts of the country and delivering them to about 17,000 locations in each tehsil in the country was a logistic nightmare. After the operations, the filled-in Schedules were to be collected and delivered to the 17 Data Scanning Centres and the 33 Census Offices. This job of collection, delivery and return collection was given to Indian Posts who used their Logistic Post Service to deliver the material in each tehsil in the country, safely and securely and in

time. A database of the requirement of census material by language(s) was prepared by the Census Office in advance, which also had information on various other key details, like location of the press, language in which printed, place of delivery, etc. Pre-printing of location codes on the schedules also complicated matters. The material in the right languages, in the right quantity were packed in specially designed boxes supplied by Department of Posts and were delivered to the right location in time. They also introduced a web based management system to book and later track the movements of the material and also sent daily MIS on it. With their expert services the India Posts were able to complete the work in a time satisfactorily.

- Public Grievances and Monitoring: A Call Centre was set up to receive complaints from the public on various issues relating to Population Enumeration. Located in Pune, the facility was extended in 14 languages throughout the country. The complaints on non-coverage and other issues were quickly resolved with support from the local Census Offices. The Call Centers facility was also used to monitor the progress of enumeration work by directly contacting the Supervisions. At the conclusion of the Population Enumeration exercise, they have been assigned the job of Post Enumeration Survey (PES) in four metro cities.
- Outsourcing of non-critical activities: Undertaking the Census Operation requires planning and execution of a wide array of activities, some demanding serious application of mind and some other simply involving logistics and infrastructure. The scale of operations in all cases, however, was gigantic, due to the geographic spread and absence of adequate infrastructure in the country. It was decided in the planning stage itself to outsource non-critical activities in Census 2011 to allow Census Officials to focus more on Census related activities than managing logistics.

4. **Optimising Costs.**

- The most important way of optimizing cost in Census 2011 was the adoption of data scanning and data capturing technology. Prior to 2001 Census, temporary field offices were set up for about 2 years in almost all tehsils in the country to undertake initial tabulation of the data collected by the Enumerators. This involved huge expenditure towards hiring of

about 300 to 500 persons per location, incurring all the establishment costs while setting up of the office. In Census 2001 and Census 2011, adoption of ICR technology enabled scrapping of the requirement of setting up of temporary field offices in more than 5,000 locations in the country.

- Another area of optimization of costs was in availing the services of NGOs in training made available by the UN Agencies.
- Availing the services of reputed Advertizing Agencies in creating publicity materials and preparing media plan for use in House-listing and Housing Census as well as in Population Enumeration phases helped in getting high quality input without incurring any expenditure.

IV) Value Indicators

1. eParticipation

In the Census of India 2011 operations, the team of all the DCOs, PCOs, Charge Officers and 2.7 million Enumerators & Supervisors had mapped the entire country in the 35 States & UTs consisting of 640 Districts which were subdivided in 5,961 Sub-Districts consisting of 8,001 Towns and 640,852 Villages.

Approximately, in all 240 Million Households in the country were covered twice in the course of the two phases of the Census Operations in the country. Thus, each and every person in the country was impacted. In all, approximately 1.21 billion people living in 240 million households were covered in Census of India 2011 operation. In fact, all the persons residing in normal households, institutional households and even shelterless and homeless people were also covered. The team of 2.7 million functionaries effectively covered the last man standing across the length and breadth of the country.

The challenge was the vastness & diversity of the country where mapping of each and every inch of its territory, each and every individual and household was to be completed in a span of just three weeks. There were snow-bound areas where accessibility remains a critical issue, hence the Population Enumeration in such areas were done in the month of September, 2010 instead of February, 2011 elsewhere in the country.

The linguistic diversity of the country also posed a challenge in the framing up of the Census Questionnaire as it had to be in the local language itself. Great care and caution was maintained so that the questionnaire was linguistically correct. In all, 340 million questionnaires were printed in 16 languages.

The issue of Naxalites in States of Chattisgarh, Orissa, West Bengal and difficult areas of North-Eastern States and militancy infested J&K were also important issues handled by the local Directorates of Census Operations and their foot soldiers - Enumerators and Supervisors.

Besides, the other very relevant but complex issue was that of the logistics involved in the entire process. The first challenge was the design of the questionnaire. The questionnaire used in Census 2011 was specially designed with unique features, like special quality paper, bar coding, unique form numbering, special drop-out colours and pre-printing of certain data fields. These 340 million Census Schedules were printed in 16 languages at the high-end-processes with state-of-the-art equipment to carry out digital variable printing with consistent quality. Other materials like the Instruction Manuals (5.4 million) etc. were printed in government and private presses.

2. eWaste

Adoption of Green Technology: Registrar General & Census Commissioner, India supervised and monitored the progress of the Census Operations through video conferences with all the 640 District Collectors every week. The video conferencing technology saved huge amount of money which otherwise would have been necessary if the supervision team practically travelled to all the places or issued instructions through letters or correspondences.

Availing Call Centre facility to address public grievances during census helped in spreading green technology.

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CHAPTER 34

*e-Panjeeyan**

Shri Deepak Goswami and Shri Devajit Bhattacharyya

I) Overview

e-Panjeeyan is designed and developed by NIC Assam State Center and is based on JEE and MySQL with an object oriented approach as per the rules of Registration Act. It is designed with function specific modules, managing the processes as per the role assigned to the user of the system. The main functionalities facilitated by the system are:

1. Automates and manages the complete workflow of sub-registrar office, which include capturing of fees and stump duty details, parties, witnesses etc. details. Scanning and storage of registered document, capturing and storage of photos, finger prints of parties involved in the process of registration and assessment of stamp duty, registration fees based on the market value of the property and various MIS reports.
2. Interoperability with land record system, e-stamping for verification of ownership and exchange of data with land record system and verification of e-stamp and locking of the e-stamp respectively.
3. Facilities export transaction data from sub-registrar to central server for storage.
4. Additionally, it provides facility to register marriage as per the Indian Marriage Act.

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* *Winner of CSI-Nihilent e-Governance Awards for the year 2010-11.*

The software covers the entire cycle of a deed registration right from deed presentation to issue of the deed. It has been implemented in thirteen sub-registrar offices out of total 77; the rest will be covered by December 2011. After the implementation of e-Panjeeyan, it has become possible to deliver the original documents of registration on the same day, which used to take several years in the pre-computerization days. This is one of the most visible benefits to citizens that accrued from computerization. This has also increased the number of registered deeds in a day and has increased the government revenue. Also, the instant assessment of stamp duty and registration fee as provided in the e-Panjeeyan software, has reduced the involvement of middlemen in the registration process.

The Revenue and Disaster Management Department (R&DM), Government of Assam has initiated the state-wide roll-out of computerization of Registration, which is implemented under the Asian Development Bank funded Assam Governance & Public Resource Management Project (AGPRMP). In Assam there are 77 Sub-Registrar Offices (SRO) out of which 4 SROs were covered under the Pilot Project sponsored by the Department of Information Technology, Government of India's 'Horizontal Transfer of Successful e-Governance Programme' scheme. After successful implementation of pilot project, it has been replicated in another 9 SROs. The remaining 64 SROs will be computerized under the current scheme of state-wide roll-out.

The software solution (e-Panjeeyan) for the computerization of registration project has been provided by National Informatics Center (NIC), Assam State Center; this software is based on JEE and MySQL developed with an object oriented approach. The software is designed as per the rules of Registration Act and built with the objective of providing operational and decision-making support to all activities of SRO. The application software provides solutions for the Pre-Registration, Registration and Post-Registration activities of SRO. It also supports web services for interoperability with land record system, e-stamping and exporting data to central server for data storage.

The primary objectives of e-Panjeeyan are as follows:

1. Computerized system to provide services to the citizen.

2. Visible enhancement of citizen services through reduction in service delivery time.
3. Enhance transparency and accountability in the system.
4. Increased efficiency of operations.
5. To integrate with the land record system, e-stamping, and central server for data storage.

Benefits accrued from the system to its stakeholders are as follows:

To the Citizen:

1. Transparency in the registration process by automatic stamp duty and registration fees calculation on the basis of the type of document and assessed market value for property.
2. One-stop services related to registration and obtaining the original registered document on the same day.
3. Simplified the registration procedures for obtaining certified copies of documents, non encumbrance certificate, and marriage certificate. mis reports for monitoring, enhanced speed, reliability and consistency of the system.
4. Online query on registered documents and its retrieval.
5. Digitization of photographs and finger prints to ensure genuine witnesses, executants and claimants.

To the Department:

1. Ease of administration.
2. Reduced manual work.
3. Reduced process delays.
4. Easier tracking of all the registered documents.
5. Online verification of land records database and e-stamping.
6. Automatic generation of all meaningful MIS reports.
7. Modernization of SROs.
8. Increased government revenue.

Some salient features of e-Panjeeyan are :

1. Assessment of fees and stamp duty based on the document-type.
2. Auto-generation of serial number of the document presented.
3. Generation of enquiry slip.
4. Scanning of documents and biometric inputs (i.e. digital photo and finger impression of the first party, second part, witnesses, etc.) after the endorsement is completed.
5. At the end of the day, generation of accounting figures viz, the total receipt of fees, its article-wise break-up, stamp duty and additional stamp duty.
6. Searching and printing of a document based on certain criteria.
7. Registration of marriage as per the Indian Marriage Act.
8. Generation of MIS reports.

II) Result Indicators

1. Key Performance

a. Service Delivered (G2C,G2B,G2G,G2E) with benefits

Benefits Delivered:

The core (G2C, G2B, G2G and G2E) services offered by the system are as follows:

1. Government to Citizen (G2C):

- Assessment of Stamp Duty and Registration Fee based on Document type and Market Value.
- Registration of all type of documents.
- Issue of non-encumbrance certificate
- Issue of certified copies of documents
- Issue of system generated form for mutation (Form No.10)
- Issue of Marriage Certificate under Indian Marriage Act.

2. Government to Business (G2B) :

The system is integrated with e-stamping system for verifying and locking of the certificate issued by Stock Holding Corporation of India Limited (SHCIL) by the Sub-Registrar after registering the document.

3. Government to Government (G2G):

The services offered by the system for the government are as follows:

- Various reports for the sub-registrar.
- Integration with the land record system for verifying the ownership details of land and exchange of registration data with land record system for mutation.
- Integration with central server for posting of transactional data from SRO location to central server for storage and generation of various MIS reports as per the requirement of IGR.
- User role to the Circle Officer for online verification of the registered deed.

b. Services Enhanced/Introduced Plan vs Status

Following are the services/functionalities enhanced during the year:

1. Biometrics authentication-based endorsement of the deed/document by the Registering Officer.
2. Integration with

- E-stamping system for verifying and locking of the certificate issued by SCHIL by the Sub-Registrar after registering the document.
- Land record system for verifying the ownership details of land and exchange of registration data with land record system for mutation.
- Central server for posting of transactional data from SRO location to Central Server for storage and generation of various MIS reports as per the requirement of IGR.

3. User role to the Circle Officer for verifying the registered deed.
4. Issue of

- System generated form for mutation (Form No. 10)
- Hindu Marriage Certificate under the Indian Marriage Act.

5. Storage of reference document related to deed/document.

c. Implementation Coverage

Started as a Pilot Project in Sonitpur district covering 4 (four) SROs , and replicated

in another 7 districts (covering 9 SROs). The remaining 64 SROs will be computerized under the current scheme of state-wide roll-out sponsored by the Asian Development Bank funded Assam Governance and Public Resource Management Project (AGPRMP) by the end of December 2011.

2. Efficiency Improvement Initiatives

a. Time and Cost Efficiency

1. Substantially reduced the time to

- Issue of original document after registration from a few years to a few hours.
- Issue of certified copy of the document and non-encumbrance certificates from days to a few minutes.
- Instant assessment of stamp duty and registration fees based on document type and market value.
- Manual copying of the document for preservation is replaced by scanning of the document which significantly reduces the time required for copying the document.

2. Cost savings for delivering the above set of services.

- e-Panjeeyan helped Sub-registrar Offices to handle larger number of document registrations for the citizens and provide services without appointing additional staff.
- e-Panjeeyan is developed in Open source J2EE platform using Glassfish application server with MySQL as RDBMS which helped to save a large amount in comparison with the proprietary software.

b. Innovative Ideas Implemented

1. Fast and efficient scanning of registered document for storing and retrieval which replaced the previous tedious process of manual copying of the entire deed.
2. Integrated Java applet in web - based application, e-Panjeeyan, for utilizing resources, viz., scanner, web camera and finger print devices installed at the client system.
3. Use of biometrics for

- Endorsement of the deed/document by the Registering Officer.
- Capturing images and finger prints of parties, witnesses and identifiers involved in the registration process.
- Supports web services for interoperability with

4. Land record system for verifying ownership details and posting registration related data to land record system for mutation.
5. e-Stamping issued by SHCIL for verifying the certificate and locking the certificate.
6. Central server for posting transactional data from SRO to the central server for storage.
7. System is developed in J2EE technology with MySQL as RDMS to maintain portability to any platform with minimum effort.

c. Integration with Other Systems

1. e-Panjeeyan supports web services for interoperability with

- Land record system for verifying ownership details and posting registration related data to land record system for mutation.
- e-Stamping issued by SHCIL for verifying the certificate and locking the certificate.

III) Enabler Indicators

1. Processes

a. Major non-ICT front end process changes

1. Previous versions of e-Panjeeyan were Windows client-sever application which has been replaced by web based user interface with multi-browser support and it reduces client side application configuration.
2. Uses of Java applet for scanning and bio-metrics devices installed at client system.
3. Flexible reporting in different printable formats like PDF and Excel using Jasper Report.
4. Biometrics - based authentication for endorsement of the deed/document by the Registering Office.
5. User interface for interoperability with e-Stamping and land record system.
6. User Interface for posting transaction data to central server.

b. Major non-ICT back end process changes

1. Database changed from Proprietary (i.e., MS SQL Server 2005) to open-source (MySQL).
2. Scanned documents, captured photos and finger prints are now stored as binary data in the MySQL database Server instead of storing in file server.
3. Maintains un-posted transactional data to be sent to central server for storage.
4. Configurable role - based access control, password management and session management.
5. The previous process of manual copying of deeds has been replaced by scanning resulting in a big saving of time.

2. People and Resources

a. Project Management and Monitoring

Revenue and Disaster Management Department, Government of Assam, has constituted a Project Steering Committee at the top level which is responsible for decision on key approval points and progress reviews at all project milestones.

b. Training -Plan and Status

The training of sub registrar and office staff has been implemented and planed as follows:

S. No.	Training Details and Location	Concerned Officials	No. of Days
1.	Training of Sub-Registrars, IGR Officials, Department Officials at Assam Survey & Settlement Training Center.	Sub-Registrars, IGR Officials, Revenue & DM Department Officials.	5 days
2.	Training of Sub-Registrar Staff at District HQs.	Sr. Sub-Registrars/Sub-Registrars and Sub-Registrar Office Staff (Clerks, Extra Writers, etc.).	4 days
3.	Hands on Training at SR Offices	Sub-Registrars and Sub-Registrar Office Staff (Clerks, Extra Writers etc.).	3 days

As on date (mid-August 2011), the following training programs have been completed:

1. Training of Sub-Registrars, IGR Officials, Department officials.

2. Training of Master Trainers.
3. Training of Sub-Registrar Staff at District HQs completed for twelve districts.

c. Change Management strategy

Training on basic ICT skills and application software is used as an effective tool of the Change Management Plan for skill building and creating an interest around the project and also for providing confidence to the employees about the change process and its benefits which ensures least resistance from employees with regard to changes in the processes and systems.

Feedback analysis and corrective action are used to follow-up with the employees to understand how the changes are working. The feedback gathered helps in developing corrective actions and post-implementation change management activities.

d. Leadership Support and Visibility

The department is headed by Shri. V K Peparsonia, IAS, Principal Secretary to the Government of Assam, Revenue and Disaster Management Department. The leadership, valuable advice and suggestions given by the Principal Secretary for the utilization of the advanced technology of the ICT are incredible. He is always keen to fulfill the vision and goals of the ICT initiatives of the department.

e. Financial Model

1. Funding pattern:

This is a Government-owned project implemented by Revenue and Disaster Management Department and the technical support is provided by NIC Assam State Center. The project will be rolled out under the scheme of state-wide rollout of computerization of Sub-Registrar Office sponsored by the Asian Development Bank funded Assam Governance and Public Resource Management Project (AGPRMP).

2. Business model:

The service delivery, i.e., delivery of Original Deed is on charge basis so as to make the system self-sustaining. The payment of service charges is made by the citizen. The revenue generated from service charges will be managed by a district level IT society.

3. Technology

a. Strategy for Disaster Recovery and Continuity

The application software provides data protection via replication of data from local database to centralized network-based storage at state level. The solution is policy-based replication of business-critical data from the local site to the disaster recovery site over Assam State Wide Area Network (ASWAN). The central data center maintains consistent, accurate records of database to ensure immediate, smooth recovery from site failures and achieve continuous business operations in case of disaster. The server at central data center will be connected with Storage Area Network (SAN) located at NIC Guwahati which supports data replication to remote DR site located at NIC Hyderabad.

b. Solution Adopted and NeGP compliance

1. Technology used

- Presentation: JSF and Applet.
- Model: Java POJO classes
- Web Service: Java API for XML Web Services (JAX-WS)
- Application Server: GlassFish
- Database: MySQL Community version

2. The four layers used in the system are

- The client layer has web browser through which users can interact with the system.
- The presentation layer contains the tag libraries, Applets and JSP.
- The business layer contains business components, workflow components, validation and security components and the web service interface component.
- The data access layer contains the data access components.

c. Security and Compliance Standards

1. All users have been assigned user id and password (encrypted) with appropriate role to access the system to ensure reliability and confidentiality at the implementation level.

- Configurable account locking feature on multiple failed login attempts.
- Configurable session management with time out.
- Password policy implemented as follows:

2. Minimum 8 characters with 2 upper case, 2 lower case, 2 numeric and 2 special characters.

- Configurable password expiry.

3. Biometrics authentication based endorsement of the deed/document by the Registering Officer.

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CHAPTER 35

Integrated Online Junction on Net for Decentralised District Planning (iOjN 4 Planning)

Shri V N Maira and Dr. Hiten Parekh

I) Overview

State is keen to enhance quality of service rendered to community. To enhance the quality level, State Government is trying to bring transparency as much as possible for Developmental Projects undertaken by Decentralized District Planning programme so that various schemes get implemented timely and successfully. To meet this objective of government, iOjN 4 Planning (Integrated Online Junction on Net for Decentralised District Planning), a web enabled application operating on intranet as well as on internet is developed and implemented successfully.

System designing is done with the help of Problem Analysis Technique and Stakeholder Analysis Technique having module concept. Elimination of multiple times data entry, curtail the cross checking process resulting into increasing in reliability values.

Important feature of the system is it captures data in local language. Unicode font is used for such bilingual support. The other important feature of this system is to disseminate all sort of information pertaining to Developmental Project. Uploading of photograph at three stages, viz pre execution of Developmental Project, during execution of Developmental Project and after completion of execution of Developmental Project are also incorporated.

Thus this application facilitates citizen for scrutiny & monitoring of Developmental Projects, as data retrieval of all the important parameters of Developmental Projects are available online in local language within their vicinity for the purpose of social audit. This enhanced quality of Developmental Projects.

Application of iOjN 4 Planning software helps in Decision Support System at District and State level.

Decentralized District Planning Programme is introduced for bridging gap in infrastructure and human development sectors like health, education, roads, community development, minor irrigation electrification, water supply etc.

Administrative Unit: District Planning Office is Administrative Unit at district level for Decentralized District Planning Programme funded by State Government and Member of Parliament Local Area Development Programme, Govt. of India.

The scheme running under Decentralized District Planning Programme are 15 % Vivekadhin Yojana., 5 % Incentive Yojana, Special backward areas, Developing Taluka, Celebration of Rastriya – Purve, Member of Legislative Assembly Local Area Development Scheme.

State Government has recently introduced the Taluka Centric Approach. Under this approach, in 15 % Vivekadhin Yojana, every taluka get finance according to the category of taluka based upon number of villages included in respective taluka.

Developing Taluka: State government has identified 30 Taluka as developing taluka with respect to topography of the taluka and low values of their Infrastructural Development Indices and 11 taluka with respect to low values of their Human Development Indices.

Table 1

Schemes	**Geographical Coverage**	**Financial Lay out/ Annum (in Rs)**
15% Vive kadhin		
1. Taluka Level	Taluka	1.0 to 1.5 crore
2. District Level	District	1.5 crore
3. Administrative Authority level	District	1.0 crore

5% Protsahak	Taluka	10 to 20 Lakh
Developing Taluka	Taluka	2.0 crore
Rashtriay parve Celebration		
1. State Level	- District	1.0 crore
- Rural Area	- District	1.0 crore
- Urban Area	- Corporation	1.0 crore
- Corporation Area	Taluka	
2. District Level		25 Lakh
Khas Pachat	Identified Area	40 to 70 Lakh
MLALADS	Legislative Constituency	50 Lakh
MPLADS	Parliamentary Constituency	5.0 crore

Every year more than 20,000 Developmental Project under Decentralized District Planning Programme are implemented successfully.

Before making system functional, in depth discussion on issues and benefits was carried out in couple of meetings. MLAs, MPs, President of District Panchayata, President of Taluka Panchayata TDOs, COs, head of departments as well as public representatives were consulted for preparing system design and flow.

Starting from the proposal, system takes care up to completion of work. Submission of Proposal, Acceptance of Proposal, Details of Plan Estimate, Administrative Sanction, Allocation of Grants, Expenditure incurred and Details of UTC are the main component of the system. Unnecessary transition delay in grant or acceptance process is almost negligible.

Following features make this initiative different from similar type of projects carried out before:

1. The status of the Developmental Project of interest is available through the System software from the near by place accessing through SWAN/ internet connectivity. For this reason the collection of the required information from various offices is not required now a days. This has reduced the time & cost involved for the same.
2. As the application maintain the related parameters of Developmental Projects in the electronic storage system, quick retrieval process helps in

the timely analysis of data and need base report generation. Accordingly action will be taken. This reduces the administration cost as well as expenditure information of Developmental Project.

3. As iOjN 4 Planning software generates Monthly Progress Report & other required information electronically, redistribution of information flow has been generated automatically.

And finally

1. Web based application accessible on internet with Gujarati Language Support.
2. Centralised Database. Ensures more security.
3. Uploading of photographs of work at 3 different levels of progress.

II) Result Indicators

1. Key Performance

a. Service Delivered (G2C,G2B,G2G,G2E) with benefits

Benefits Delivered:

1. All concerned government offices & elected representatives and citizens have the access of the important parameters of Developmental Projects sanctioned under Decentralised District Planning Schemes & MPLAD Programme.
2. Customized report generation has been done to suffice the administrative requirement, political requirement, report writing requirement as well as citizen requirement.
3. Bulletin Board : To broadcast instructions and important messages.
4. Online help, Online User Manual have been synchronized in system software.
5. Meeting Agenda as well as Meeting Proceeding for District Planning Board, a high power committee for Decentralised District Planning have been included in system software.

6. On line review process: All sort of review process is being done online.
7. Dynamic Query Module: Every stakeholder has access of Dynamic Query Module. By applying selection criteria, iOjN 4 Planning software gives information pertaining to parametric values of Developmental Projects of interest in main screen.
8. Flexibility to update master viz to add the village name, implementing officer is given to District Authority while, MP MLA name master is updated by State Authority.
9. All schemes under Decentralised District Planning are covered.
10. Customized report generation has been done to suffice the administrative requirement, political requirement, report writing requirement as well as citizen requirement.

Main screen of system comprise of two portion: One is different Module and other one is summary of Developmental Project having selection criteria.

Various parameters of Developmental Projects included in summary are:

1. Proposal of Developmental Projects
2. Acceptance of Developmental Projects
3. Rejection of Developmental Projects
4. Pending proposals
5. Technical sanction accorded for Developmental Projects

Activity Monitoring Mechanism & Financial Monitoring Mechanism:

MIS is generated in such a way that it is also utilized as activity monitoring purpose such as

1. Online pendency stage wise at all stakeholder level.
2. Online pendency run over stipulated time limit at all stakeholder level.

MIS is generated in such a way that it is also utilized as financial monitoring

purpose such as

1. Grant allocation
2. Report of the leftout grant allocation
3. Booking of expenditure with uploading of phase wise photographs
4. Issuance of grant utilization certificate.
5. % of physical achievement
6. % of financial achievement
7. Generation of MPLAD cheque book
8. Generation of MPLAD cash book
9. Report of the leftout issuing of cheque

Information access to citizen :

Open access is given to the citizen. To access specific information pertaining to Developmental Project, citizen has to give only identification number of Developmental Project. After submitting identification number, all kinds of key parametric values are of Developmental Project displayed. If citizens want to get information in different manner, for example what are Developmental Projects sanctioned during specified financial year, by utilising selection criteria he/she can get the summary of these Developmental Projects at district level, taluka level and village level, thereafter all related parametric values of Developmental Project.

Under Decentralized District Planning Scheme, the online information about the following can be obtained by citizens and stakeholders:

Table 2

Government to Citizen (G2C)	1. All functionalities are now online 2. The system has been universally accepted by district-taluka level officials and sub-taluka level functionaries including PRIs 3. Projects are being sanctioned for villages which were not adequately covered 4. There is shift in emphasis and focus towards work as per needs and ground level realities

	5. Reduction in RTI applications 6. Greater accuracy in generation of reports 7. Reduction in number of LAQs, Shift in type of questions (micro to macro) and time taken to reply 8. Facilitates social audit which leads to transparency & qualitative improvement
Government to Government (G2G)	1. Projects are being sanctioned for villages which were not adequately covered 2. Administrative order wise summary reports 3. Reduction in time taken for sanction of proposal 4. Assembly Constituency wise number of works and amount for administrative sanction given 5. Greater accuracy in generation of reports 6. Report showing constituency or taluka wise grant allocation 7. Error free submission of files for grant allocation 8. Query based Module for effective monitoring 9. Reduction in administration expenditure towards manpower, printing, photocopying, etc. 10. Timely completion of works as well as utilization of budget allocation 11. Preparation of Asset Register at village level 12. Convergence in both state level and national level programs 13. Reduction in RTI applications 14. Reduction in number of LAQs, Shift in type of questions (micro to macro) and time taken to reply

b. Services Enhanced/Introduced Plan vs Status

Geographical Spread in the State achieved:

On Pilot basis	Entire Junagadh District
Implementation Date	April-2007
Roll Out Date	August-2009

Table 3

GAD (Planning) and CMO at State Level	Monitoring of Developmental Projects. Formulation of policy. Fund allocation etc.
DPO at District Level	For monitoring of Developmental Projects. To give principle approval, administration approval, financial approval

Taluka Planning Committee at Taluka level	To raise proposal under various scheme
Implementing Officer level	Details pertaining to plan estimate, technical sanction and update status of Developmental Projects
MP/MLA level	To propose the Developmental Project To know update status of Developmental Project

Summary of the Developmental Projects for Junagadh District (Rs. in Lakh)

Table 4

No.	Name of Scheme	2007-08 Financial Layout	No. of Develop-mental projects	2008-09 Financial Layout	No. of Develop-mental projects	2009-10 Financial Layout	No. of Develop-mental projects
1	2	3	4	5	6	7	8
1	MPLAD (Loksabha)	200.00	151	200.00	122	100.00	3
2	MPLAD Rajyasabha (Kesubhai Patel)	200.00	69	0.00	0	0.00	0
3	MPLAD (Rajyasabha Suryakantbhai Acharya)	200.00	85	200.00	58	0.00	19
4	15 % Discretionary	597.94	396	447.70	422	481.81	417
5	5 % Incentive	45.59	44	45.59	28	45.59	28
6	Special Backward Ghed Area	6.09	9	6.09	9	10.44	13
7	MLALAD	500.00	637	500.00	604	500.00	435
	TOTAL	1749.62	1391	1399.38	1243	1137.84	915

c. Implementation Coverage

Road Ahead:

1. To make full fledged implementation across the state by March-2012.
2. Mobile Computing:

- To provide status of project automatically to MPs, MLAs through SMS whenever stage of proposal/work is changed.
- On demand, On providing Work ID, status information of project to be provided to citizens through SMS.

3. Customization of this application for other departments Viz. District Panchayat, GMFB, DRDA, Road & Building Dept. etc.
4. Uploading of Plan Estimate of Developmental Project.
5. To make system full proof with biometric authenticity.
6. Feedback Mechanism:
    - To provide interface to public for receiving feedback
    - Where villagers can also suggest any work which is in interest of community or society.

Recently State Government introduced Apano Taluka Vibrant Taluka (ATVT). In this perception, Block (Taluka) is divided in more than one cluster of 5-6 villages based upon geographical condition, gap in development and similar kind of issues faced. Thus this may help in making cluster level planning. e-Gram / CSCs at village level would be utilized for this purpose.

2. Efficiency Improvement Initiatives

a. Time and Cost Efficiency

Tracking of project activities are required to smoothen the execution of field activities of Developmental Project such as approval of project proposal, preparation of plan estimate, technical sanction etc.

Any delay in process of execution of Developmental Project can be trace out by this software application. This results into rectifications process required if any is taken care for specific Developmental Project.

Online submission of proposal for Developmental Project, online sanction of Principle Approval, Administrative Approval, Financial Approval, online booking of expenditure occurred has reduced the time involvement for the same in comparison with the existing system. Diversion of surplus time can be utilised to enhance quality of Developmental Project.

Important features are:

1. Generation of Need base Analysis Report.
2. Generation of Pendency Report: Activities run over stipulated time span.
3. Dynamic Query Module for effective monitoring.
4. Preparation of accounting reports for smoothening Treasury function.

Through Dynamic Query Module, one can get updated status of Development Project proposed during specified time span.

Cost savings for delivering above set of services.

The status of the Developmental Project of interest is available through the software from the near by place accessing through SWAN/internet connectivity, so that the collection of the required information from various offices is not required now a days. This has reduced the time & cost involved for the same. This facilitates social audit leads to transparency & qualitative improvement of Developmental Project.

Elimination of submission process of MPR to District Authority by implementing officer has curtailed Typing & Xeroxing of MPR.

Typing and Xeroxing for the purpose of submitting MPR is almost stopped due to online review process. This reduces the recurring expense say approximately Rs. 1 lakh per annum / middle size district.

b. Innovative Ideas Implemented

Celebration of Rastriya Purve: Gujarat state started the Celebration of **Independence Day**, **Republic Day & 1st May Day** (**Gujarat Sthapana Divas**) from State Capital to District Place and District Place to Taluka Place. In the eve

of Celebration, series of Programmes are being organised at the place where the State level Programme is celebrated. Lokarpan & Inauguration of project of CIVIC amenities which are going to be taken place on these days are also included in the system for effective monitoring and timely completion of the projects.

c. Integration with Other Systems

It is integrated with the Village Asset Register which includes various development work being carried out across the various departments. Works under district planning schemes form major part of village level works and it is directly integrated to village asset register application by uploading required information from iOjN database to Village Asset Register database.

III) Enabler Indicators

1. Processes

a. Major non-ICT front end process changes

Process reengineering has been done. Systematic work flow designed for proposal, Principle Approval, Technical Approval, Administrative Approval Grant Allocation, and Expenditure occurred, Completion of work would **eliminate** unnecessary delay in implementation.

Updating indicators of Developmental Project are only done by the **responsible** stakeholder and other stakeholders have only access to see information, system does not **permit** any kind of **alteration** by the unknown user as well as stakeholder who does not have rights for the same.

b. Major non-ICT back end process changes

Depends on geographical situation & other developmental parametersly , every middle size district has approximately 70 to 100 users in all stakeholders and approximately 1500 to 1800 developmental projects in their hands in each financial year. Time span of grant utilization is at least 2 years. Due to these phenomena, compilation process becomes **tedious** and **time consuming.** For this reason, each district needs one dedicated manpower to prepare meeting agenda & proceedings of Implementing Officer Meeting, Executive Planning Committee Meeting and District Planning Board Meeting as per the requirement of district administration.

As ***iOjN* 4 Planning** software **generates** MPR & other required information electronically, the requirement of **dedicated manpower** as well as **dependency** on him/her is not a question now a days.

On line review process: As all sort of review process is being done online, pre schedule time slot is not required.

2. People and Resources

a. Project Management and Monitoring

The software development is done in house with help of NIC. To help in operationalisation of software application, training for all concerned users has been imparted through interactive workshop.

Table 5

Man Power Saving

	Before	**Envisaged**	**Approx. man days Saved**
State level	One dedicated typist/ Operator for planning work	No dedicated typist required	30 Days / month
District level	1) One person for report collection & compilation	1) Reduction in work load	1) 10 Days / month 30 Days / month
	2) One person for typing report/orders etc.	2) No separate person required	2) 8 Days / month
	3) Allocation for the grant	3) Reduction in work load	3) 15 Days / meeting 2 to 3 meetings/annum
	4) Preparation of Agenda for	4) Reduction in work load	4) 15 Days / meeting
	5) **DPB** Preparation of Agenda for **EPC**	5) Reduction in work load	5) 8 to 10 meetings/annum

b. Training -Plan and Status

To roll out ***iOjN* 4 Planning,** various actions have been taken

1. Development of User Manual
2. Conduct training workshop

3. Trouble Shooting Process

User Manual covers the objective of system, importance of bulletin board, stakeholder and their responsibilities, data entry module, dynamic query module, administration module as well as common access to the citizen to obtain speedy and accurate information pertaining to Developmental Projects.

For the purpose of capacity building, Talim programme has been arranged at 3 stages

1. At state level
2. Regional level
3. District level

In the interactive Talim workshop, emphasis is given to interest of stakeholder. It covers the objective of system, data entry & system effectiveness.

Trouble shooting Process : Interactive help menu has been synchronised to resolve any kind of query arised by stakeholder. The help menu is reviewed periodically by the planning office to ensure it is updated according to last changes made in the system. Trouble shooting is also done remotely through Net Meeting technology.

Before rollout the application in entire state, **interactive workshop is** conducted at state level, regional level and at district level. Some of the **important suggestions** which are incorporated after this workshop are as under:

1. MIS development at GAD (Planning) and CMO level
2. Synchronisation of Meeting Agenda & Proceeding
3. Physical Inspection report of Developmental Project by authority

c. Change Management strategy

All responsible stakeholders are instructed to use the software application and give their feed back on **result and utility**. This approach with continuous follow-up and **imparting** training has helped for the acceptance of the system.

Responsibility has been assigned to **update** status of only related parameters by **responsible stakeholder** only & rest of the things taken care by system itself.

On line review process: All sort of review process is being done online. All activities are required certain minimum time span for their completion. To expedite field level activities of Developmental Projects it is more important to pin point activities of Developmental projects which are **run over** stipulated time span. Keeping this in mind **Pendency Report** is incorporated in system software.

MLA, MP and other people representatives are interested to know update status of Developmental Projects Proposed during specified time interval. It is difficult to give proper response to such kind of questions, as existing system does not support query with multiple conditions. Therefore dynamic query module is developed to fulfill such kind of requirements.

d. Leadership Support and Visibility

Holder group to **utilise** the software & update relevant parameters of the Developmental Project has helped both, administration and stakeholder, as utility of the software has **reduced** their **time involved** for monitoring & reviewing the Developmental Projects allocated to them.

e. Financial Model

As project is operationalised in house, no **additional finance** is required so far, but utilization of the software application has **reduced** the **recurring expenses** required for the same

f. Project Sustainability

Project is operationalised through SWAN as well as internet. The storage of Database kept with State Data Center. All important offices at district level as well as taluka level are connected through SWAN. Villages are also connected through SWAN. For this reason the accessibility of any kind of information regarding parameters of Developmental Projects is made available at 24 x 7 hours a week.

User friendly approach in the development of Software Application and **imparting training** to all stakeholders has increased the **acceptance** of the changing environment.

3. Technology

a. Strategy for Disaster Recovery and Continuity

As the database is stored at Gujarat State Data Center, it provides central repository and secure data storage. It also provides disaster recovery and better operation and management control and minimize overall cost of data management

b. Solution Adopted and NeGP compliance

1. User friendly approach
2. Easy to retrieve information
3. Reduction in recurring expense
4. Reduction in time involved for data management at all stakeholder level
5. Easy accessibility of required parameters of Developmental Project.

c. Solution Adopted and NeGP compliance

All stakeholders have been assigned to user id & password with appropriate rights. As soon as proposal is made, unique identification number is generated. Only responsible stakeholder can update the information pertaining to parametric values of developmental projects. This ensures reliability and confidentiality at implementing level.

IV) Value Indicators

1. Digital Inclusion

Steps taken to address this factor:

Important feature of the system is it **captures** data in **local language**. Unicode font is used for such bilingual support.

2. eParticipation

Steps taken to address this factor:

Organize interactive workshop for all stakeholders

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CHAPTER 36

*e-Governance of Mineral Administration**

Shri Vinay Vyasa and Shri Jagdeep S Kochar

I) Overview

(n)Code Solutions, a division of GNFC is the Total Solution Provider for Commissionarate of Geology & Mining (CGM), Government of Gujarat. (n)Code has offered integrated software development and portal application modules such as e-payment, e-Royalty pass, e-return, Demand Register and other related modules covering in one single portal for stakeholders of Geology & Mining in Gujarat State. The primary aim is to replace the traditional manual processes by a web-based application which is faster and more efficient. Certain business processes have been reengineered to be suited in a virtual atmosphere where they are quicker and more transparent. The project has played a crucial role in reduction of malpractices such as royalty, theft and illegal mining.

The former process of issuing royalty pass to leaseholders was manual. The leaseholders had to get physical challans, get them signed from district geologist office, stand in queue to deposit in an authorized bank and wait for the day of week decided by district office for allotment of royalty pass booklet and get each triplicate passes stamped. To overcome a big challenge in mineral administration, CGM has concentrated on e-Solution and decided to provide the genuine e-Services to leaseholders and other stakeholders of Geology & Mining.

(n)Code has developed a system through which a leaseholder can generate the royalty pass online once the payment is reflected in his virtual account. The system has created the centralized database containing the information

* *Winner of CSI-Nihilent e-Governance Awards for the year 2010-11.*

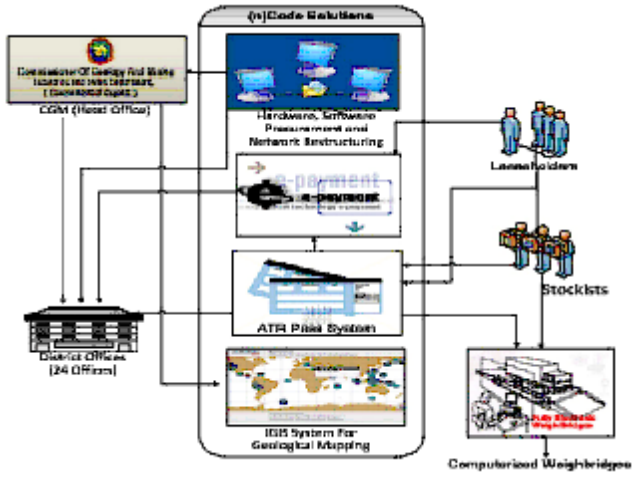
related to leaseholders, payment transactions, updated mineral rate, royalty pass issuance, demand register information and weighbridges, mineral stockist for better automation. The system has reduced the scope of illegal issuance of Royalty Passes and has also made monitoring and tracking royalty a convenient and accountable system.

The challenge was to cover the approximate 7000 leaseholders in entire state. (n)Code, in conjunction with CGM drew a systematic plan for adequacy of system. To educate the leaseholders about the benefits of e-System, various training sessions were organized at micro level, operational manuals were designed, and demo cases were prepared and presented to stakeholders.

Goals:

1. Effective and Hassle free mineral administration
2. Facilitation of e-Services to all stakeholders belonging to Geology & Mining Dept.
3. Real time accounting of mineral transportation
4. Reduction in illegal mining through automated system
5. Increase in State Mineral Revenue
6. Transparency and accountability in mineral administration

Figure 1



Benefits:

Table 1	
To Government	**To Leaseholders**
1. Information on demand	1. Automation of manual processes through electronic services
2. Automation of many processes to reduce dependency on manpower	2. Anytime, anywhere issuance of royalty pass
3. Data consolidation	3. Decrease in cost of capital as there is no need to pay royalty in advance at the beginning of every month
4. Increased revenue to state	4. Easy access to services
5. Integrity & accuracy of data	5. E-Payment
6. Increased speed	6. E-Royalty pass system
7. Improved Service Delivery and easy access for stakeholders	7. E-Return
8. Real-time accounting of minerals excavated and royalty collected	8. Monthly record verification / automatic reconciliation for submission of returns

II) Result Indicators

1. Key Performance

a. Service Delivered (G2C,G2B,G2G,G2E) with benefits

Benefits Delivered:

G2C

1. **Information dissemination**: To provide for information dissemination associated with various minerals, mines, leases, operations, policies and guidelines as well as other related details required to be made publically available or available to a selected set of stakeholders based on access rights.
2. **Any-Time Royalty Pass System:** A web-based interface for leaseholders to issue royalty passes having a unique barcode/QR code based id and having certain mineral transport parameters such as mineral weight, duration of journey, destination details etc to enable effective monitoring of the process of royalty pass issuance with respect to the lease and the leaseholder information.

3. **E-Return:** All leaseholders have to fill up the applicable Mineral Return Form configured by system on monthly basis in the prescribed format by GMMCR / MCDR act describing the production, dispatch, labour and employment details, royalty paid, mineral consumption, sale in domestic/ export market etc with specific reason within the prescribed time limit decided by online system.

4. **Online Application for New Mineral Lease/Permit:** To provide leaseholder with a facility to file an application for mining lease, quarry lease, quarry permit and work permit through an online software module as well as facilities to renew, transfer and surrender a lease.

5. **GIS based Mineral Atlas:** To provide a GIS-enabled solution to the users to view and search information based on pre-defined parameters along with layered GIS maps.

G2B

1. E-Payment System: Interface the existing funds management system to act in an integrated manner with other modules of the web portal. Facility to transfer 9 types of payments through RTGS/NEFT from leaseholder's bank account into CGM's Virtual Account.

G2G

1. Demand register: Provision of online/offline information transaction recording framework to maintain leaseholder's account details of production, dispatch and payments etc as per rules of GMMCR 2010.

2. Mobile / System based Royalty pass tracking: Provide facility to authorized users to review and track an online royalty pass using mobile devices

Benefits

Table 2

To Leaseholders	To Weighbridege Operators	To Government
1. Savings in cost and time taken	1. Retrieval of unloaded weight of a registered vehicle from the central database	1. More Transparent process

2. 24*7*365 facility of royalty pass issuance	2. Automation of weight collection process for mining vehicles	2. Elimination of redundant processes
3. Significant reduction in the time taken to fetch necessary details about various minerals due to availability of a central database	3. Real time registration of weight for each vehicle passing through the respective weighbridges.	3. Reduction in incidents of illegal mining privy 4. Increase in mineral revenue 5. Reduction in the effort and time spent to fetch necessary information 6. Better administration

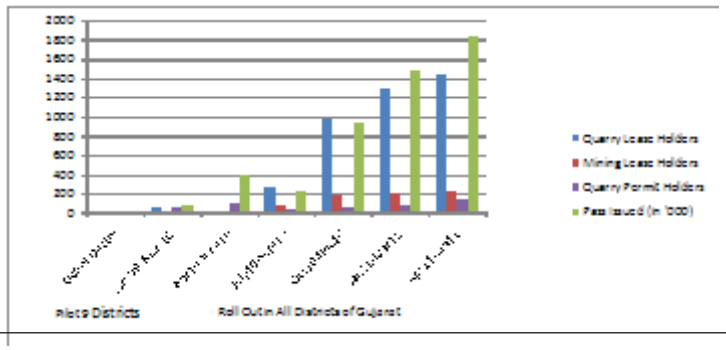
b. Services Enhanced/Introduced Plan vs Status

Following manual and traditional Govt. services are converted into electronic mode to provide ease of use to CGM's stakeholders:

1. Royalty & Other mineral concession collection
2. Issuance of TPS (Triplicate Pass System)
3. Return on mineral
4. Semi Auto frame work for Demand Register transactions recording system
5. Online new lease application for QL/ML/QP/PL/RP
6. Monthly Progress Report
7. Mineral Atlas information dissemination
8. Registration of Mineral stockist / Weighbridges
9. Delivery Challan establishment

c. Implementation Coverage

Figure 2



Future plans: CGM plans to implement "M-Pass" system, where unique Royalty Pass number shall be sent to mobile of the vehicle driver through SMS. This "M-Pass" shall be used in lieu of paper based royalty pass. CGM also plans to have a command and control center for monitoring mining activities for Gujarat State.

2. Efficiency Improvement Initiatives

a. Time and Cost Efficiency

1. A leaseholder doesn't need to visit the district office regularly to get the challan signed to apply for Royalty Pass booklet and enquire about its status.
2. A leaseholder can now get the royalty pass issued from the ATR web-portal by depositing money in his bank which will be transferred to CGM's account on request
3. Online Royalty Pass issuance system has resulted in considerable reduction in effort; cost and time spent by stakeholders to get a Royalty Pass issued
4. Now a pass can be issued any time and print out can be taken in the mine itself

b. Innovative Ideas Implemented

1. Hand Held Terminal (HHT) Devices and Integrated Software

- To facilitate Leaseholder to avail Royalty pass for:
  - Remote areas
  - Low Connectivity
  - Irregular Power supply
- The software application for HHTs to communicate with the existing Web Portal

2. Barcode Based Royalty Pass Validation Application

- To validate the authenticity of the royalty pass in field
- Integration of mobile devices with the server to enable the Flying Squad to verify authenticity of the Royalty Pass

3. Integration of weighbridges

- To allow the user to gather required data from the ILMS on entering the Royalty Pass Code
- To capture weighing scale data directly through serial port
- To read weighing scale data for automatic calculation of weight
- To generate weighing receipt and send real time data to central server

c. Integration with Other Systems

1. **Weighbridge Integration:** The system is able to capture the gross weight of vehicle from weighbridge, generate weighing receipt and send real time mineral weight data to central server.

2. **Integration with Legacy System in Leases:** The special web service / DLL component is also developed to integrate with legacy system working in mineral industries.

III) Enabler Indicators

1. Processes

a. Major non-ICT front end process changes

Table 3

Front End Processes	IT Enabled Process	Status (Implemented)
E-Payment	• Money Transfer through RTGS / NEFT / Internet Banking Procedure through one's own bank • Confirmation through Internet • Accurate MIS is generated for all Transactions	Implemented
E-Royalty Pass	• Real Time issuance of Royalty Pass through computerized web based system or HHT device • Optimize cost and time saving • Effective report mechanism for royalty pass issued • Barcode based validation application • Integration with Weighbridge/Stockist	Implemented

E-Return	• Timely Submission of online e-Return by leaseholder as per MCDR (Mineral Conservation & Development Rules) • Integration with Demand Register • Statistical Report Generation	Implemented
Online Lease Application	• Online Submission of New Application • Availability of Online Status of New Quarry/Mining Lease Application	Implemented
Portal Development	• Information Dissemination • GIS based Mineral Atlas • Monthly Progress Report	Implemented

b. Major non-ICT back end process changes

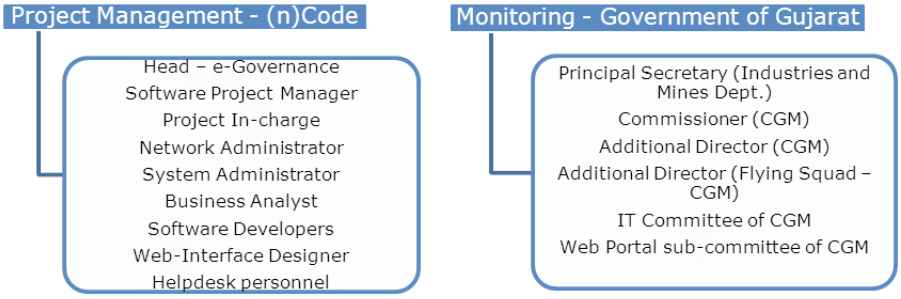
Table 4

Back End Processes	Manual Process	Status
Removal of Challan Sign Process	• Lessee had to get Challan from District Office • Get Signature and Stamp on the Challan • Pay the Royalty/Other amount to designated bank	Successfully Replaced by e-payment
Royalty pass stamping/validation	• Present the Paid Challan/Note down the Challan details in manual register • Issue the Royalty pass - serial number wise • Stamping on each page of Royalty Pass Book by CGM officials • Manual checking of parameters of royalty Pass by CGM officials	Partially Replaced by e-royalty pass
Monthly return	• Monthly Return forms (J,F9,F3,F8) submitted on simple paper (typed or handwritten)	Successfully Replaced by e- return
New lease application	• Physical Submission of New Quarry/Mining Lease Application • Manual Tracking of Status of Application	Successfully Replaced by online form submission
Demand register transaction recording system	• Manual entry of various information • Difficult to calculate the interest / royalty difference, adjustment of various dues etc. into manual demand register • Tough task to carry forward all entries / calculations month-wise	Partially Replaced by online semi auto generated demand register

2. People and Resources

a. Project Management and Monitoring

Figure 3



b. Training -Plan and Status

Table 5

Training On	Internal	External	Participants	Imparted By	Status
General IT Awareness and Refresher training on use of the system	District Staff		300	Outsourced	Planned
Royalty Pass System	District Staff	Leaseholders	1000	(n)Code	Implemented
E-Payment System	District Staff	Leaseholders	1000	Bank Officials and (n)Code	Implemented
E-Return System	District Staff	Leaseholders	750	(n)Code	Implemented
Weigh Bridge System		Weighbridge Owners	250	(n)Code	Implemented
Stockist Management	District Staff		100	(n)Code	Implemented
Demand Register	District Staff		250	(n)Code	Implemented

c. Change Management strategy

1. All changes are requested through a predefined format
2. Log sheet of the same is maintained as per predefined format
3. The feasibility of each change is identified
4. The prior approval is sought to bring in change
5. Any change made is communicated to CGM through official email/hardcopy and the acknowledgement is obtained

d. Leadership Support and Visibility

CGM is a State Government organization. This IT initiative was encouraged by the Hon'able Chief Minister and subsequent Ministry, Secretariat and Commissionarate officials for the benefit of Geology & Mining stakeholders. Various Industries and Mineral Association have proactively participated for this e-Governance initiative. Moreover, the Central Ministry of Mines has directed other State Governments to adopt the same solution implemented in Gujarat. The Govt. of Karnataka has already taken initiative in adopting the solution such as "ePermit" system for transportation of "Iron Ore" minerals.

e. Financial Model

State Government has made IT budget provision for project implementation on turnkey basis for conceptualization of e-services, software development, Hardware provision, Network infrastructure management, Post implementation support etc. to successfully implement the project. For weighbridge integration, (n)Code shall adopt PPP model, in which it shall deploy the software at weighbridges at its cost and charge lorry or leaseholders on per weighment basis.

3. Technology

a. Strategy for Disaster Recovery and Continuity

1. Application and Database servers hosted in clustered and load-balancing environment, to provide for fail-over and performance
2. Transactional Replication of Database to enable service continuity in case of database server crash
3. Redundant internet bandwidth to ensure disaster recovery in case of bandwidth failure
4. Link load balancing to ensure business continuity in case of bandwidth failure
5. Periodic backups of database, application files and configurations

b. Solution Adopted and NeGP compliance

Cost of Ownership: Approx. INR 3 Crores (Capital Cost: IT Hardware Procurement, Development of Integrated Webportal) (Operating Cost: Application Hosting, Management and IT Services)

Technological Solution Adopted: The project has been built on 3-tier architecture. There is a presentation tier, which provides the front end for the site. There's a business logic tier, which handles several tasks including authentication, authorization and workflow management. Lastly, there is a database tier, which is used to read and write the data from its database. The business logic has been kept separate from the presentation logic by design. This makes the system more scalable allowing new departments to be incorporated into the system. All workflow and navigation code have been abstracted from the user interface for achieving this.

Maintenance Model: A proactive approach is taken at various stages of application lifecycle. Four approaches are used to ensure an efficient and all-encompassing maintenance model:

1. **Preventive** approach is taken in restructuring, revitalizing, and rewriting code for better maintainability, to avoid future problems based upon past incidents, for anticipation, feedback and continuous improvement,
2. **Perfective** approach is taken to add functionality (new modules, new reports) and to improve performance,
3. **Adaptive** approach is taken for modification to keep application usable in a changed or changing business or technical environments, and
4. **Corrective** approach is taken for reactive modification to correct discovered problems, bug fixing.

Compliance to NeGP Standards

1. **Open Standards**: The application adopts XML based message exchange through SOAP Web Services. The web services can be used for data exchange and process automations through other application, based on access privileges and business rules. This ensures that the data is not contained in a silo.
2. **Localization Standards**: The application inherently supports UNICODE format for fonts and designed keeping multi-language support and localization in mind.

3. **Digital Signatures and Interoperability**: The application inherently supports x.509 Digital Signature Certificates. Use of standards web service allows future integration with SSDG (State Service Delivery gateway) and NSDG (National Service Delivery Gateway).

c. Security and Compliance Standards

1. Authentication And Authorization
   - Strong and configurable password policies
   - Secure password recovery mechanism
   - Role based access privileges
2. Encryption
   - Strong encryption for sensitive data including configurations
3. IT Act 2000 And X.509 Digital Signature Certificates
   - Infrastructure is housed in an IT Act 2000 Compliant Tier IV datacenter.
   - The infrastructure is by design equipped for physical as well as logical security, redundancy, and disaster recovery and business continuity.
   - Wherever required, X.509 Digital Signature Certificates are incorporated to ensure privacy, authenticity, integrity and Non-Repudiation of content.
4. OWASP
   - The Open Web Application Security Project (OWASP) is a 501c3 not-for-profit worldwide charitable organization focused on improving the security of application software. OWASP releases common security threats to software applications. Enough security measures are in place to protect against these threats. These measures are tested against at regular intervals to ensure they are still effective.

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CHAPTER 37

*Maharashtra Plan Schemes Information Management System – MPSIMS**

Shri S J Kunte and Smt S M Aparajit

I) Overview

The Planning Department, Govt. of Maharashtra (GoM) is responsible for formulation of Five Year Plan (FYP) and Annual Plan (AP) of the State as per the guidelines of the Planning Commission, Govt. of India. The FYP and AP's are required to be prepared so as to address developmental issues of the State as a whole. The plan size is around Rs. Forty thousand crore. There are approximately 1,100 state level schemes and 800 district level schemes through which developmental issues are addressed by the State. The plan process is complex in nature as the demands for the funds are very high on one side and on other side the resources are limited. The draft plan prepared by the state is required to be submitted to the Planning Commission for approval. After approval the plan is implemented by the line departments of the state and districts. The implementation of the plan is also required to be monitored by the Planning Dept.

To address the complexities of the plan process and achieve transparency, the Planning Dept., GoM, took an initiative to develop and implement Maharashtra Plan Schemes Information Management System (MPSIMS) using the IT infrastructure of Directorate of Economics and Statistics.

The computerization of the plan process is a pioneering effort in India. The project is G2G, G2C covering all the districts. The mandatory reports as prescribed by the Planning Commission (Vol. III & IV) were generated through MPSIMS in

* *Winner of CSI-Nihilent e-Governance Awards for the year 2010-11.*

English and local language Marathi without manual interventions. We feel that the efforts of the Planning Dept. in conceiving and successful implementation of MPSIMS, certainly deserve award in the Project Category. The details of the project are submitted herewith.

After independence, the Government of India has adopted a policy of framing Five Year Plan to address the developmental issues. The Planning Department, Government of Maharashtra is responsible for formulation of Five Year Plan and Annual Plan for the State and monitoring thereof. Strategically, the Government of India has identified 13 sectors of development viz. Agriculture & Allied Activities, Rural Development, Special Area Development, Irrigation & Flood Control, Energy, Industry & Minerals, Transport, Communication, Science, Technology & Environment, General Economic Services, Social & Community Services, General Services and Other Programmes. Each sector has sub-sectors and under each sub-sector various schemes are conceived, formulated and implemented by the State Government. The Annual Plan for the year 2009-10 and 2010-11 was Rs.38,153 crore and Rs. 37,916 crore respectively, while for 2011-12 it is of Rs. 41,500 crore. Looking at the administrative convenience in the State, there are 43 departments which are responsible for implementation of the plan through planned schemes. The State Plan is classified as a General Plan, Tribal Sub Plan and Special Component Sub Plan. Further, State Plan is also classified as State Plan and District Plan. Approximately, the District Plan is 10 to 15 per cent of the total State Plan.

Every year, considering the resource estimates for the next financial year, the draft plan is prepared by the Planning Department and the same is submitted to the Planning Commission for approval. The whole process of departmentwise, schemewise, sectorwise planning is complex in nature. A care is also required to be taken to address the developmental issues over the geography of the State. The whole process was manually done by the Planning Department involving lot of manpower & time. The manual system had inherent lacuna of integration with computerised Budget Distribution System developed by Finance Department. This often resulted in mismatch of the outlays provided by the Planning Department and the amount budgeted by the line departments. In addition to this, financial monitoring could not be done using the Budget Distribution System (BDS) expenditure data.

In view of the above, the Planning Department decided to use IT infrastructure available with its subordinate office i.e. Directorate of Economics & Statistics to develop sophisticated system for plan formulation and monitoring. A project Maharashtra Plan Schemes Information Management System (MPSIMS) (http://mahades.maharashtra.gov.in/MPSIMS) was conceived. At the fag end of 2008-09 it was decided to computerize the plan process in a modular manner on rapid prototype model. Initially, it was decided to computerize some part of the plan formulation process for the year 2009-10. Accordingly limited modules for capturing demands of various departments / districts and plan allocation module were developed so that whole plan documents as per prescribed formats of Planning Commission can be generated in English and local language Marathi. This module was successfully implemented in 2009-10 and the draft plan was submitted to the State Assembly and the Planning Commission for approval. Subsequently, the process was revisited to have robust database, better user interface and to have various other modules. The details of the same are given in subsequent paragraphs.

Features of MPSIMS

MP-SIMS software is a web enabled centralized planning tool to strengthen planning process being pursued by various state level departments and District Planning Committees (DPC) leading to consolidation of state plan through interactive workflow. MPSIMS enables Planning Department to capture demand of funds from various departments, allocation of funds to the departments as per availability of resources (funds). The funds (outlays) are given to the departments and are further distributed at scheme and work level. Plan funds so made available to the departments are broadly used for following purposes:

1. Creation of infrastructure like roads, dams, hospitals, schools, etc.
2. Providing benefits to various categories of citizens e.g. backward community, senior citizens, disabled, handicaps etc.
3. Providing services established for seamless execution of the schemes.

The MP - SIMS features are detailed below:

Functionality aspects of MPSIMS

1. Profile creation

MP-SIMS enables various departments to create scheme profile. The profile consists of

- Scheme information – Plan type, sector, subsector, Scheme description, nature of scheme, Implementing agency, Coverage area, GR details.

- Component of expenditure – CRC (Cross Reference Code), source of funding, object code (objects of expenditure).
- Expected physical output vis-à-vis financial inputs – Target and unit of measurement
- Impact of the scheme on – Education, Health, Income generation, women & child.
- Upload relevant Government Resolution

2. Outlay Demand, Assessment and Allocation

- MP - SIMS helps all the Departments to demand funds prioritizing the schemes that have been identified for the plan year under consideration. The demand of funds is required to be raised under different types of statements as follows
  - GN2 – Financial details of all the funds
  - GN3 – Physical targets
  - GN4 – Financial details of Centrally sponsored / Assisted schemes
  - GN5 - Financial details of Externally Aided projects
  - GN6 - Financial details of projects supported/Aided by Domestic Financial Institutes
  - Boardwise – statutory development board wise distribution of outlay
  - Naxal - outlay proposed for development of naxal affected area
  - PPP & PSU–Projects to be undertaken through public private partnership and by PSUs

3. District Plan

- MP - SIMS facilitates consolidation and integration of all plan schemes in the district including General Plan, Special Component Sub Plan, Tribal Sub Plan & Other Tribal Sub Plan schemes and generate a consolidated District Plan.

4. Other Important Modules

- Physical and financial performance
- Re-appropriation and re-allocation of outlay

- Module to monitor receipts of funds from sources other than state's own sources
- Supplementary demands.

5. Integration with Budget Distribution System (BDS)

- MPSIMS is integrated with BDS for generating various reports required for financial monitoring.

6. Report Generation

- MPSIMS enables to prepare categorywise reports by selecting sector, sub sector Scheme level, Department, Plan type, source of fund.
- The categories consist of reports like GN2, GN3, GN4, GN5, GN6, PPP, Boardwise, Naxal, Women & child, HDI etc.
- Report stimulating the planner to think in systematic planning process of the state rather than isolated department.
- Sector, Subsector wise summary reports.
- Set of Plan Document of the State as per directives of the Planning Commission.
- Dynamic home page for viewing & generating exceptional reports
- Ad-hoc reporting facility using SAS for prime users

II) Result Indicators

1. Key Performance

a. Service Delivered (G2C,G2B,G2G,G2E) with benefits

Benefits Delivered:

1. **G2G (Government to Government)** - MPSIMS is browser based software with work flow management. All the line departments and the districts are given specific login/password for entering in to the plan process, for viewing completed & incomplete tasks, generation of reports, exclusive reports etc.
2. **G2C (Government to Citizen)** – At every stage in the Planning process, the Plan is readily available to the general public through web link www.mahades.maharashtra.gov.in . This helps in transparent plan preparation.

3. MP - SIMS is an application that is developed to specifically meet the needs of the planning department of Maharashtra. It has simplified plan monitoring functioning of various administrative departments in Government of Maharashtra. The application also has to lend itself easily to additional goals of ensuring transparency in government operations, along with efficient record keeping.

These objectives are achieved through the collection and assimilation of all attributes of all schemes in one place. Additionally, through the use of different role-based login credentials, MP - SIMS allows different officials at the state and district levels to administer and monitor relevant schemes. The application follows a modular design with each module (and sub-module) aligned to a broad functionality in the planning process of the state.

2. Efficiency Improvement Initiatives

a. Time and Cost Efficiency

1. The plan document was generated through MPSIMS and printed volumes were submitted in the budgetary session of State Legislative Assembly within 48 hours.
2. Physical and financial monitoring of plan schemes is now possible through MPSIMS.
3. Assessment of cost efficiency over the manual system can not be compared as MPSIMS has addressed much wider issues than the manual system.

b. Innovative Ideas Implemented

1. MPSIMS is designed to enable state's existing planning processes in such way that it can be effectively used by any other state within the country.
2. Flexibility to add / remove functionalities and data based on the need of the governing officials and decision makers.
3. Linking of physical performance to object of expenditure.

c. Integration with Other Systems

1. The MPSIMS has been integrated for plan monitoring purpose with the BDS developed by Finance Dept. of GoM.

III) Enabler Indicators

1. Processes

a. Major non-ICT front end process changes

1. As stated above a limited module of demand assessment of outlays and allocation thereof was successfully implemented by eliminating manual process. The MPSIMS was revisited and various functionalities were incorporated without losing data. The list of various modules developed and implemented is already given under "Functionality aspects of MPSIMS".
2. The work-flow functionality of MPSIMS has streamlined manual process.

2. People and Resources

a. Project Management and Monitoring

1. MPSIMS has been implemented using the IT infrastructure available with the DES. The EDP cell of the DES has been entrusted with the project management and project monitoring.
2. The core team working on MPSIMS has imparted training to all the staff members of the EDP cell. Further all the stakeholders were imparted time to time training at Mantralaya. The district level officials were also trained at the respective Division level. The extensive training programme facilitated in successful implementation of MPSIMS in a short time.
3. The EDP cell took active role in the change management with the formal understanding.
4. The project is implemented under the guidance of Principal Secretary, Planning. The status of the development and implementation was continuously monitored by the Principal Secretary. Various reports generated through MPSIMS were submitted to the Planning Sub-Committee, headed by Hon'ble Chief Minister. The Chief Secretary also conducted series of meetings during 2010-11 for monitoring implementation of the state plan.

b. Training -Plan and Status

1. The IT infrastructure available with DES was used in development and

implementation of MPSIMS hence no cost was incurred in procurement of hardware or softwares. As a development model is collaborative system design and implementation issues were addressed by EDP staff of DES. The JAVA programmers were hired from M/s Blue Star Informatics Limited on man-month rate basis. The IPR of the system is with the Govt. of Maharshtra.

3. Technology

a. Strategy for Disaster Recovery and Continuity

It may be kindly noted that the DES has undertaken technology upgradation project in the year 2007-08 on the lines of e-Gov policy of Govt. of Maharashtra. As such it was envisaged that the servers procured for the DES project shall be hosted in the common server farm / data centre. The IT dept. of Govt. of Maharashtra has already taken IT security measures for access. The data centre of the state is expected to commence shortly and the servers used for MPSIMS and DES project will be relocated in this upcoming data centre which will have the disaster recovery site. In the mean-time complete back-up of servers is being taken on weekly basis using two sets of magnetic tapes. One set is kept at M/s BSIL developmental centre and one set is kept at EDP centre of DES. An incremental back-up is also taken everyday.

Complete mirroring of the system has been done at M/s BSIL office which is having technical expertise for recovery and it is a part of the contract with M/s BSIL.

b. Solution Adopted and NeGP compliance

The project is in confirmation with the guidelines issued by IT dept. of Govt. of Maharashtra. MPSIMS is an augmentation of DES computerization project for which M/s BSIL has been appointed as a Turn Key Solution Provider for a period of five years. This appointment is on TCO model.

c. Security and Compliance Standards

The servers are hosted behind the IT security arrangements made by the IT department of Govt. of Maharashtra. The MPSIMS is developed on three tier architecture. The stakeholders have been given specific login and passwords which are encrypted.

IV) Value Indicators

1. eParticipation

Steps taken to address this factor

The stakeholders of MPSIMS are mostly government departments and district level offices. Sufficient training has been imparted for the usage of MPSIMS. The home page of MPSIMS is dynamic and available to the public at large.

2. eWaste

As no hardware / software were separately procured for MPSIMS, therefore, the question of addressing e-waste issues under this project does not arise.

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CHAPTER 38

Government Receipt Accounting System (GRAS)

Shri Shreekant Deshpande and Shri Balakrishnan Nair

I) Overview

In recent years, governments across the world have been investing considerable resources in applying ICT tools to transform the way in which public services to citizens and enterprises are delivered. This wave has been popularly known as eGovernance.

There was a time when even availing simple services from the government was a task fraught with delays, long queues and inconvenience. Whether it was getting copies of Land Records, applying for a vehicle registration or driving license, getting Stamp papers or Court fee stamps, or applying for benefits under social services schemes such as pensions, it would usually take days or even months to get the paperwork and files moving and actually get the job done. Today, however, it has become a breeze to do many of these tasks, without the hassle of standing in serpentine queues, in uncomfortable conditions.

At the heart of India's national eGovernance strategy, in fact lies the NeGP, which has a vision of taking public services closer to the common man both in urban and rural India at affordable costs. NeGP is a multi-stakeholder program which primarily focuses on making critical public services and information available, empowering the citizen at the grass roots level and promoting rural entrepreneurship. It marks a paradigm shift from a government-centric and process-centric, to a citizen-centric approach. Clearly, eGovernance is gaining considerable

momentum in India, with several high impact projects being implemented in both Government-to-Citizen (G2C) and Government-to-Business (G2B) domains, across central ministries and state departments.

eGovernance is being increasingly viewed as an enabler and facilitator of 'good governance', where the scope of good governance includes attributes such as a service-centric approach, citizen-centricity, anytime, anywhere delivery of services, integrated delivery of services, focus on outcomes, accountability, promoting right to information, inclusion of disadvantaged communities and a focus on awareness and communications. To translate these values into operational terms, there is a need of a methodology to ensure that eGovernance systems adequately reflect user centric quality characteristics, which has necessitated this project.

Government Receipt Accounting System (GRAS) is a secure web application which provides a facility to the Citizens, Business Community to pay taxes / non tax receipts to the Government of Maharashtra electronically. Using Banks internet payment gateways citizens can pay their taxes / non tax receipts at any point of time and from any location.

The facility is available on a 24 / 7 basis. It is a G2C, G2B, G2G and G2E initiative of the Government of Maharashtra.

It is the first Virtual Treasury established in the country. The jurisdiction of the Virtual Treasury is across the state whereas in the case of the Physical Treasury it is restricted to a geographical location.

Effort has been made to convert the entire manual process of Government Payment right from the payer selecting and making his own data entry for preparing the receipt, making the payment, Fund Transfer, Accounting, Reconciliation, generating and submitting receipt reports electronically. It's a complete end to end solution!

Finance Department (FD), Government of Maharashtra, has decided to receive its tax and non-tax revenue receipts electronically. For this purpose the State Government has established a new treasury called '**Virtual Treasury**' which dedicatedly handles all the online transactions across state centrally. The transactions take place through a web-portal named as '**Government Receipt Accounting System (GRAS)' i.e. https://gras.mahakosh.gov.in**

ePayment is a mode of payment in addition to the conventional methods of payment offered by the Government of Maharashtra. GRAS has been integrated with the independent payment gateways of participating banks. This mode of payment is offered by the banks under specific security norms of Reserve Bank of India. It provides the convenience of making online payment of any of Maharashtra State Government Tax/Non Tax Payments through Bank's Internet banking service.

The existing procedures of the executive and accounting agencies of the Government Departments can easily continue with this system as an alternate channel of receiving government receipts

This scheme facilitates anytime, anywhere payment and an instant on-line payment receipt is generated once the transaction is complete. The department users can Deface the Receipt once the service is given. Electronic accounting, electronic reconciliation of Receipts are the major strengths of the System. One of the biggest strengths can also be noted as liquid fund availability to RBI/ government on T+1 basis which helps the government to predict the Cash Flows and adjust the liquidity or overdraft positioning of the State Government Funds.

No transaction cost or any other cost to be borne by the payer or the Government

Features:

1. To avail of this facility the taxpayer is required to have an Internet-banking enabled account with any of the banks listed by the government on this site.
    - This is a 24x7 facility and citizen can make the State Government Tax/Non Tax payments any time of the day.
    - On-Line Filling of single challan form facilitates minimum fields of the challan to be filled.
    - Instant online receipts for payment made and instant online banks transaction number becomes available.
    - One can pay personal taxes as well as on behalf of the firm, company and others.
    - Payment Timing: All payments effected up to 20.00PM will be accounted for the day itself and all payments effected after 20.00PM will be accounted as next working day's receipt.

2. Advantages:

- Ease of operation and convenience
- Facility is available on 24x7 basis
- One can pay on behalf of the firm, company and others
- On-line payment of taxes (No more queues and waiting)
- On-line filling of single challan form
- Minimum fields of the challan need to be filled. Most of the fields are populated automatically.
- Selection of appropriate tax-type from drop-down menu
- Instant online receipts for payment made
- Instant online receipt with banks transaction number becomes available
- The existing manual tax accounting system requires the taxpayer to file three copies of challan. But, E-Challan would require a single challan for payment of any state government tax. It would cover all the essential information required from the assessee in relation to his tax payments.
- Online reconciliation of receipts
- Real-time accurate receipt data availability on central portal

3. "Value proposition" for the project:

Goals/Objectives to remove the hurdles in the existing system of payments to the Government:

- **Physical visit to the Treasury, Treasury bank or respective Department mandatory:**

  Before the system was implemented the physical visit to the treasury or to the treasury bank or to the respective department was a necessity. In order to make payment to the government it is necessary, get the Challan verified by the govt official even for the regular periodic payments

- **Manual system of payments with loopholes and prone to mistakes, misappropriations and frauds:**

  The manual system of payments is subjective and prone to human mistakes and misappropriations and frauds

- **Too much of manpower deployment:**

  In the manual system of payments there was a huge need of manpower like cashiers and accounts clerks and related staff. In the new system this has been reduced.

- **Proof of Payment i.e. Receipts misplaced or worn out or damaged:**

  The payment receipts are prone to get damaged with the passage of time, getting misplaced or worn out due to mishandling, leading hurdles in establishing the proof of payment, claiming refunds etc.

- **Single Receipt format for the Entire State:**

  Before deployment there were around 100-150 different Challan formats used by the various government departments for accepting payments and it was very inconvenient for people to get access to the specific formats for paying the receipts

- **Single Electronic Receipt Scroll format for the State:**

  Since the process of computerisation started; the various departments of government started inventing their own systems to suit to their requirements; this made the interdepartmental data exchange nearly impossible due to the use of various technological platforms

- **Establishing the Points of Collection for the User Departments:**

  The governments receipt collection was distributed and there was no common platform to compare the receipts collected at one place and in one goes.

- **Immediate Credits to the Government Account:**

  One of the biggest strengths of the system is the liquid fund availability to RBI/government on T+1 basis, also the system helps the government to predict the Cash Flows and adjust the liquidity or overdraft positioning of the State Government Funds.

II) Result Indicators

1. Key Performance

a. Service Delivered (G2C,G2B,G2G,G2E) with benefits

1. **For Citizens: (Government To Citizens)**

- One Single Government Portal wherein the citizen can pay any type of Tax/Non Tax Payment to the Government of Maharashtra
- Ease of payment to the citizens, 24x7 ability to pay
- Saving in travel time, travel expenses
- No more queues to pay government payments
- Payment from home, Anytime, Anywhere!
- The Electronic proof of payment i.e. Government Receipt available online for minimum of 5 years
- Quicker Services from the government Departments
- Savings in Paper work
- Replacement of Court Fees stamps in High Court and District Courts with e-challan.

2. **For Business: (Government to Business)**

- One single portal where all types of taxes can be paid
- No need to carry huge currency avoiding risks in cash handling, thefts etc
- No need to visit government offices for routine payments
- Faster service delivery
- Hassle free permits and licences
- Savings on the paperwork

3. **For Government departments: (Government to Government)**

- One single portal wherein all the government Receipts can be accessed

- Instant Verification of receipts with the Banks
- Less people to handle cash transactions at the counters
- Less manual work for receipts, less no. of registers to maintain, less no. of counterfoils to maintain
- Less paper work
- Less manpower requirement; the manpower can be deployed in more productive works
- Real-time online accurate data of the receipts available to the government departments
- Effortless reconciliation of Receipts with Banks and Accountant General
- Immediate Credit of Funds facilitates liquidity
- Predictability of Funds Flow position or Overdraft positioning
- Defacement of Challan after service is provided
- Avoidance of inappropriate Re-use of Challan

b. Services Enhanced/Introduced Plan vs Status

The System has been implemented for the following Departments – RTO, Excise, and IGR, High Court, District Courts.

1. In the RTO department, New Registration Payments by the dealers is routed through the online mode
2. In Excise Department, the excise duty and other taxes can be paid online
3. In the IGR department, the stamp duty and registration fees can be paid online
4. In the High Court and the district courts e-Challan has been enacted as a replacement of stamp court fees.
5. In department of Co-operation, Marketing and Textiles, the repayment of loans can be made online

6. In Food and Drugs Administration department, the drugs licence or renewal fees can be paid online

7. In the DAT, the interest payments for delayed remittances to the Virtual Treasury can be paid online.

c. Implementation Coverage

Department Wise No. of Offices which receive Receipts through GRAS so far is as follows:

1. Virtual Treasury Office (For entire Maharashtra)
2. RTO – All RTO offices in the Maharashtra State Covered (45)
3. Excise – 45 Offices across the State
4. IGR – 56 Offices across the State
5. Courts – High Court all 3 benches (9 Courts)
6. District Court (9 Courts)
7. Department of Co-operation, Marketing and Textiles (For entire Maharashtra)
8. Food and Drugs Administration (9 Offices)
9. Directorate of Accounts and Treasuries (35 Offices)
10. Total Offices Covered at Present – 210
11. From 01/04/2010 to 20/08/2011
    - Total Revenue collected so far - 2100 crores
    - Challans Generated – 50000
    - No. of Users:
        - Virtual Treasury Officer 1
        - Admin Virtual Treasury Officer 1
        - Departmental Users 185
        - Registered Users 2736

- Guest Users 1
- Bank Users 5
- Treasury Officer 34
- Total 2961

12. Banks – All the Nationalised Banks to be integrated with GRAS
    - SBI and its subsidiary banks will be integrated in one months' time
    - Punjab National Bank will be integrated in one month's time
13. Payment Gateway – To Internet GRAS with Payment Gateways to accept payments using Debit Cards, Credit Cards

Stakeholders:

1. The Virtual Treasury, an independent treasury of the State of Maharashtra administers the overall functioning of the application-
    - Can view all the electronic receipts, verify payments, accepts the scroll data electronically, review the Defaced Challans after service is given to the tax payer/refund is processed, gets the bank reconciliation done electronically, gets RBI receipt reconciliation done electronically, gets the MIS reports, and gives reconciled downloadable data to the user departments
2. The User Departments- Departments of the State Government-(IGR, Excise, RTO, High Court, District Courts, FDA, DCM)
    - Can view their respective receipts, verify payments, Deface the Challan after service is given to the tax payer/refund is processed, gets the MIS reports, gets downloadable data, don't need to worry about the receipt reconciliations with banks and treasury
3. The RBI-
    - The apex bank for handling the entire receipts of the State has been reduced with the Transaction burden, for RBI its single transaction for one bank per day
4. The Participating banks-

- GRAS has been integrated with the following participating banks namely, Bank of Baroda (BOB), Bank of India (BOI), Industrial Development Bank of India (IDBI), Indian Overseas Bank (IOB) and Union Bank of India (UBI) who can now accept government revenue.

5. The Accountant General-

- The accountant General can now accept the receipt data electronically

2. Efficiency Improvement Initiatives

a. Time and Cost Efficiency

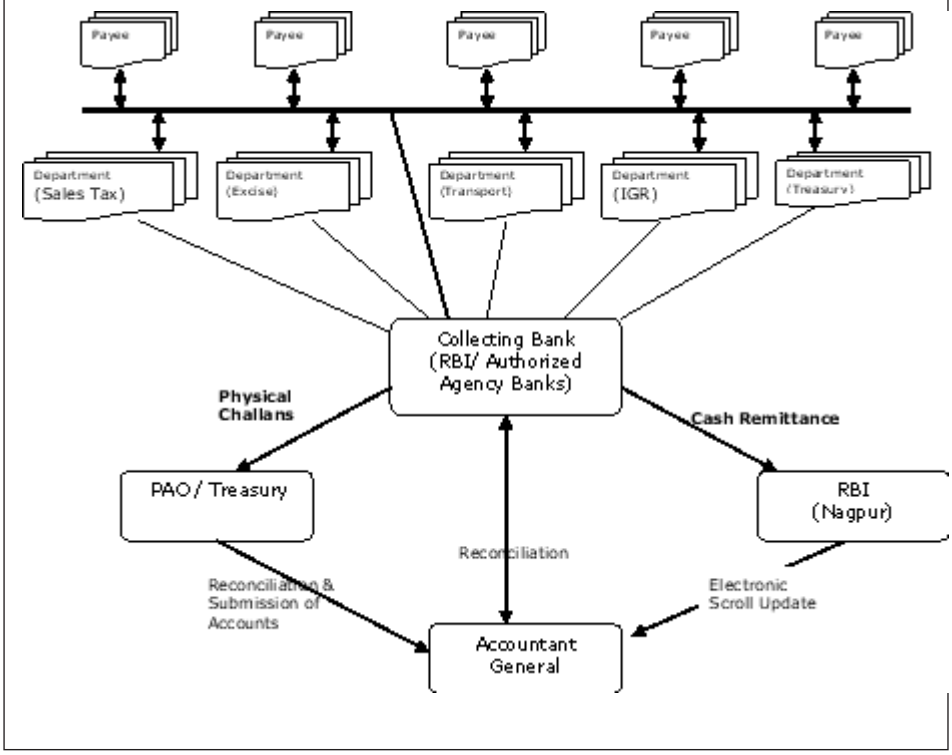
Table 1

Procedure	Actual Time Taken at Treasury	Actual Time Taken at GRAS Virtual Treasury
Payee gets Challan authorized by Department	1 Day	**Immediate**
Payee makes Payment Across the Bank Counter	1-2 days	**5 Minutes max**
Bank confirmation of Payment	Cash- Same Day Cheque/DD- 7-15 days	**Immediate, on the spot**
Agency Bank Remitting Funds to RBI	Standard decided T+3 for local & T+5 for outside (actual time taken varies)	**Standard decided T+1 (Including Put Through Date)**
Scroll Submission by banks to Treasury	Standard decided- Next working Day (Actual time taken +30 days in many cases)	**Standard decided- Next working Day electronically**
Trips to various offices (bank, Government office, treasury)	4	**2**
Loss of wages of user	2 days	**Nil**
Remittance Cost involved per transaction	Approximately Rs.300	**Nil**
Mistakes in transaction	1% approx.	**0%**
Requirement of payment of non-formal charges for speedy service	Yes	**No**

b. Integration with Other Systems

1. Integration with 'Bank of India' payment Gateway
2. Integration with 'Bank of Baroda' payment Gateway
3. Integration with 'Indian Overseas Bank' payment Gateway
4. Integration with 'Industrial Development Bank of India' payment Gateway
5. Integration with 'Union Bank of India' payment Gateway
6. Integration with the 'SARITA' software for the IGR department
7. Integration with the 'VAHAN' software for Transport/RTO department
8. Integration with the 'High Court' software
9. Integration with the 'District Courts' software

Figure 1: Workflow



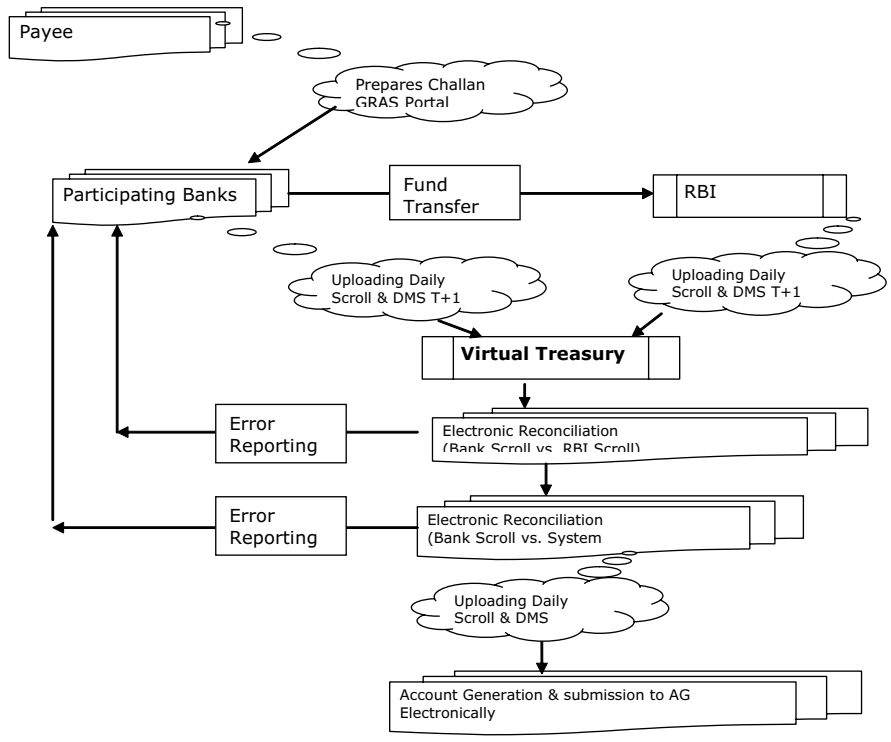
III) Enabler Indicators

1. Processes

a. Major non-ICT front end process changes

1. Single Challan format across the State, across the departments
2. Single e-scroll format i.e. reporting from the banks to the Government across the State
3. Electronic Scroll from the RBI
4. Process definition of ePayment or eChallan for the State
5. Process definition and electronic Data Transfer to the Accountant General

Figure 2: Post-Deployment Workflow



b. Major non-ICT back end process changes

1. In High Court and District Courts-
   - Processes have to change to accept e-challan as replacement of Court Fees stamps -Planned and Implemented
2. In Transport Department –
   - Process flow changes in RTO to accept e-Challans
   - Planned and Implemented
3. In IGR Department -
   - Processes have to change to accept e-challan as replacement for Registration fees
   - Process to accept eStamping receipts through eChallan
   - Planned and Implemented

2. People and Resources

a. Project Management and Monitoring

1. Fully Owned and Managed by the Virtual Treasury, DAT, Finance Department, Government of Maharashtra in Collaboration with
2. National Informatics Centre, Government of India Pune

b. Training -Plan and Status

1. Fully Managed by the Virtual Treasury, DAT, Finance Department, Government of Maharashtra in Collaboration with
2. National Informatics Centre, Government of India Pune

c. Change Management strategy

1. Fully Managed by the Virtual Treasury, DAT, Finance Department, Government of Maharashtra in Collaboration with
2. National Informatics Centre, Government of India Pune

d. Leadership Support and Visibility

Bureaucratic – Support from Finance Secretary, Secretary IT, Director-Directorate of Accounts and Treasuries and from Various Secretaries and Commissioners of Different Departments and National Informatics Centre

e. Financial Model

1. Entire Project is Funded by Government of Maharashtra
2. No Cost to Citizens / Business Community for the services on GRAS site.

3. Technology

a. Strategy for Disaster Recovery and Continuity

The system has been hosted on a professional Data Centre with Load Balancer and Multiple Web Servers and Database Servers with Proper Backup Mechanisms with proper DC and DR sites. Data Centre is in Mumbai and the Disaster Recovery Site is at Hyderabad.

b. Solution Adopted and NeGP compliance

1. Web Based Architecture
2. Operating System – RHL 5.5 (Red Hat Linux)
3. Web Server – Apache
4. Database – DB2 9.7
5. Source Code – PHP 5.3
6. Source Code Encryption - Zen guard – 5.5
7. Digital Signature
8. SSL Certificate – Extended SSL Certificate (Green Bar)

c. Security and Compliance Standards

1. Encryption of sensitive, Critical Data in Database
2. Encryption of Source Code
3. Periodical Functional Testing
4. Periodical Security Testing
5. Performance Testing
6. Periodical Penetration Testing
7. Periodical Vulnerability Testing- All carried out through certain empanelled agencies
8. Use of Digital Signatures for Uploads/Downloads

9. Use of Digital Signatures for critical functions like Refunds
10. Use of Digital Signature for document signing and reports
11. Hosting at the Professional data centre with proper agreements
12. Extensive use of SSL layer over the Network
13. Periodic Drills of DC to DR.

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CHAPTER 39

SEVAARTH (SEVA+ARTH) A Web based Integrated Package of Personnel Information and Pay Roll

Shri. Sunil Vyas

I) Overview

Sevaarth is a centralized web based, integrated system of Personnel Information & Payroll, developed by NIC, Pune for Govt. of Maharashtra. It is an important component of IFMS (Integrated Finance Management System) with data exchange with other modules of IFMS, namely TreasuryNET and BEAMS (Budget Expenditure & Monitoring System).

It is the first step in the direction of achieving paperless Electronic Payroll System i.e., paybill generation, electronic submission, electronic audit and electronic payment to the employees.

Maharashtra is a large state having 693 Controlling officers spread over 35 districts and 310 talukas and 12,506 Drawing and Disbursing Officers (DDOs), out of which 5,964 DDOs are at tehsil level. The Sevaarth system has been running smoothly for quite sometime now, which is indeed a creditable achievement considering the magnitude and complexity involved.

Now, a central database of employees and posts is available for ad hoc queries for decision making.

Similarly, a provision to incorporate UID number into the database which will enable the State Government to analyse and use the data recorded in UID, especially for making e payment to the employees directly into their accounts.

Considering the above factors and the future plans the State Government has in ensuring various MIS reports and paperless system, it is felt that this system is one of its kind and hence most eligible for the Award.

In the Government SEVAARTH plays an important part in maintaining personnel information and payment history. SEVAARTH, which consists of two components: 1) SEVA – meaning personal and service details of employees and 2) ARTH – meaning personal payments made to the employees, helps in keeping basic record of employees as well as in generating pay and other bills relating to personnel of various departments. With the increase in the number of employees over the years, the Government of Maharashtra was finding it difficult to have a centralized information base of all employees, as also to generate pay bills manually after incorporating all the changes and pay employees on time. Thus a need was felt to introduce computerization to achieve both the objectives. However, non availability of connectivity to all government offices, which are located in far flung areas of Maharashtra, posed a major problem. Therefore, a model was evolved wherein the original data was posted to a central server and an offline utility for pay bill generation was given to the user offices. It was envisaged that the updated information available offline would be transferred to the central server so that the data is updated. However, although many offices started using this version, it was experienced that updation to the central server was not being done regularly. This experience led the Government to look at alternatives and the one which is currently in place was devised with a central server model, wherein all the offices work online.

The Goals set out for Sevaarth were :

1. To have a centralized employee database which can be used to build e-Service Book and facilitate online generation of pay bills and other employee related bills.
2. To build a database of various offices, government quarters and DDOs.
3. To create an effective MIS for use of various departments of the government and the Accountant General.

SEVAARTH was designed with the following sub-objectives :

1. It should be possible to quickly & accurately gather personnel data for all the government offices in the State.
2. The prevalent system of incorporating changes manually and preparing different pay bills for different employees grouped under a scheme was to be eliminated and more effective controls were to be exercised over the expenditure.
3. The system was to enable each Drawing and Disbursing Officer (DDO) to prepare pay bills on time.
4. Simultaneously, the system was to ensure all allowances and all deductions were made correctly and accurately.
5. The system was also required to provide a statewide information system to monitor various aspects of the personnel system thereby ensuring financial discipline & correct decision-making.
6. The system was designed to avoid manual labour required for preparation of monthly and other pay bills, thereby reducing the time and energy.
7. Another objective was to build a credible system to capture the bank details of the offices as well as employees so that the system to transfer funds electronically could be put in place.
8. Finally, the system was to provide a transparent and open information system for the use of various offices, departments and other entities as well as the common citizens to know the information about various offices, etc.
9. Due to more accurate information being available, better decision-making and control was to become possible at the level of the Cabinet, Ministers and each and every tier of the government.
10. To provide a facility to individual employees to access the system to view their own data/profile.
11. To provide a transparent tool to common citizens to monitor how much money government is spending on pay and allowances from their tax money.

In order to be effective and to achieve the desired results, the system had to be implemented simultaneously in the whole state, and cover, to the extent possible, all the offices in the shortest possible time.

Sevaarth has already covered 11,525 (93%) of the DDOs with data of nearly 5.49 lakh employees out of a total of around 7.5 lakh employees. Online pay bill is regularly being generated for around 4.42 lakh employees.

Now, a central database of employees and posts is available for ad hoc queries for decision making. Stakeholders of the System are DDO, Treasuries Finance Department, Heads of all Departments, Accountant General, SRKA, Employees.

II) Result Indicators

1. Key Performance

a. Service Delivered (G2C,G2B,G2G,G2E) with benefits

The services delivered under Sevaarth use the ICT to bring benefits to various government offices. Hence the services rendered fall in the category G to G.

The Finance department, GoM is channelizing its efforts to integrate finance & accounting operations. 'SEVAARTH' is a part of forthcoming integrated financial management system (IFMS). It is recognized as the drawing & disbursing officers' module.

It is planned to replace the physical bill with the e-bill. This shall eliminate the need for all preprinted stationery and pave the way for paperless bills. The detailed bills will only be available in electronic form while the summary change statement can be printed and signed by the DDO before it is submitted by him to the PAO/Treasury. Of course, this module is not presently available. However, the Government is planning to move toward this direction.

SEVAARTH caters to the needs of all users as user friendly online up to date MIS is available. There are various readymade reports displayed on the click of a button. The effective MIS supports decision making process, tracking of expenditure, generation of pay bills, etc. However, it is planned to create various MIS reports for different authorities in the Government. This will be taken up in near future.

SEVAARTH has facilitated a momentous improvement in the personnel information system. The departments/offices are able to save huge amounts of

time that was spent earlier in generation of pay bills. With saving in time and consequently the manpower, they can now focus on developmental activities.

Maharashtra is a large State having 30 Administrative Departments, 693 Controlling officers spread over 35 districts and 310 talukas and 12,506 Drawing and Disbursing Officers (DDOs), out of which 5,964 DDOs are at tehsil level. Sevaarth has already covered 11,525 (93% of the DDOs) with data of nearly 5.49 lakh employees out of a total of around 7.5 lakh employees. Online pay bill is regularly being generated for around 4.42 lakh employees. The Sevaarth system has been running smoothly for more than a year. This is indeed a creditable achievement considering the magnitude and complexity involved.

2. Efficiency Improvement Initiatives

a. Time and Cost Efficiency

The process of data entry and generation of pay bill has to be done by the DDO and his assistant. Therefore, every DDO has to participate and do his part of the process as otherwise he can not use the system effectively. Therefore, participation by every DDO has been ensured for the system to be used universally. Gradual training and handholding of DDOs has brought results.

Sevaarth has re-engineered the whole process of monthly pay bill generation. It is a system which has simplified the complete cycle for making changes taking place during the month (e.g., transfer, promotion, demotion, increment, leave, absence, suspension etc.), updating information and generation of pay bills for establishments of various offices. It has put in place an effective management information system for the employee data, office details, bank details of office as well as employees and history of payments made to the employees. This system involves minimum of paperwork, yet is totally accurate & reliable.

b. Innovative Ideas Implemented

The convenience of users has been the prime focus while designing and implementing the system.

1. SEVAARTH has effectively made use of Internet, it is available 24x7 on Internet (web), as well as through intranet. Thus it can be accessed from anywhere in the world.

2. Although the system uses on-line mode, an off line utility has been given to those DDOs who have relatively large number of employees on their establishments, e.g., Police, Health, etc. The DDO can make off line data entry as per his convenience and then upload the data to the central server in one go.

3. It is recognized as the drawing & disbursing officers' module in an Integrated Financial Management System.

4. Separate facility for State level Administrator to create or update various Masters has been made available.

5. Maintenance module has been provided for all the users. This module gives the user utilities for maintaining the system such as password related activities, resetting password, changing password etc, creation of assistant users, undoing transactions, logs of various transactions and users' activities on the system.

6. Effective grievance reprisal mechanism has been established which includes:

7. Continuous monitoring of the system at apex level

8. State level help desk in DAT, Finance Department is available

9. Facility centers at treasuries & sub treasuries

c. Integration with Other Systems

SEVAARTH has helped in improving communication across departments and created scope for integrating systems across the department. It is a project launched not only for automation, computerization or making use of technology but the project also emphasizes that various stakeholders such as Accountant General, treasuries, Drawing & Disbursing Officers can interact with each other and can share a common database.

Centralised database at the State level, Integration of Payroll with PIS have been ensured through Sevaarth. Data entered in PIS (Transfers, Promotions, leaves etc. is automatically reflected in the Paybill generation. Service book gets automatically built up. The central database facilitates development of other related sub-systems around the main system (like Quarter Allotment system, Loan Bills,

LTC bills, Employee Corner etc). Sevaarth achieves rule based pay bill calculation, which makes it easily replicable for other States.

d. Integration with other External ICT Systems

Sevaarth has capacity to integrate with other systems of the Government used for different purposes. These systems are BEAMS (For Budget), TreasuryNET (Treasury Processes), DCPS (New Pension Scheme) etc.

III) Enabler Indicators

1. Processes

a. Major non-ICT front end process changes

Changes communicated through the coordinator from the Accounts & Treasuries Directorate to the NIC team leader. The team leader then gets the changes effected through contract programmers. Expertise of personnel (in technical matters) from NIC is often used for resolving technical issues.

A massive program for training all the users of the system was launched. The simultaneous training and handholding for over 12,000 odd users spread over 35 districts and 302 talukas was a gigantic task.

It was not enough just to arrange few classroom sessions & explain the whole system. The more important thing was giving hands on training in real environment. However it was a challenge considering the large number of users.

The training was organized as follows:

1. Apex level training sessions arranged at Mantralaya for Administrative departments periodically.
2. Separate follow-up training sessions and Hands on Training sessions at Mantralaya & regional training centers.
3. Regional level training at each region with continuous training every week on Friday at 6 regional places.
4. Periodical trainings at each district by State level trainers.
5. Special training arranged for DDOs and their assistants at Yashada, Pune. Special training sessions for High Court staff.

Apart from this online training manual & presentations are available on the Internet and updated regularly so that the users can refer to them as and when required. There is a separate link provided for presentations and manuals.

Simultaneously, it was decided to allow exemptions, concessions in certain cases initially wherever it was difficult to make system applicable due to either lack of certain features in the application software or due to technical/operational difficulties faced by the user.

1. Enrichment of system by adding new features based on feedback from users:

2. Additional Re-engineering:

   The next step was to add more and more features into the software. The implementation of the system coupled with continuous training sessions and effective feedback mechanism helped in adding various new features in the application.

3. Setting up of Facility centers:

   Despite the intensive training, the DDOs did face problem in using the system. Each office did not always have computers. There was a problem of power shortages due to which the computers did not work. Finally, connectivity provided by BSNL still leaves a lot to be desired. Also the constant up-gradation and new features that were added required a constant system to communicate new features to all concerned.

   Since all the DDOs have to come to the treasury to submit their bills and to pick up the cheques facility centers have been set up at each district treasury & sub treasury at taluka level. The facility centers provide infrastructure as well as handholding support to the users. Every facility center at district has been equipped with computers, printers, assured power supply and a broadband connection. Specially trained staff has been deployed at these facility centers.

   In addition qualified and trained personnel are deputed at each regional treasury by appointing staff on contract basis for handholding.

4. Sustainability of the initiative :

   The initiative has the backing of the High Power Committee of Maharashtra

Govt. and is sustainable in view of the following :

2. People and Resources

a. Project Management and Monitoring

1. The technical support for software maintenance is being given by NIC.
2. Trainer's training has been given by NIC. The officers of the Directorate of Accounts and Treasuries organize training programmes for DDOs regularly.
3. For the handholding and operational support to DDOs, staff has been hired on contract basis.
4. System is accessible on SWAN as well as Internet.
5. Broadband connectivity is available at most of the field offices.
6. Presently the coverage is more than 93% DDOs and proves the sustainability.

b. Training -Plan and Status

Initially the idea was floated by the then Secretary (Information Technology), Government of Maharashtra. However, since the persons working under the Directorate of Accounts & Treasuries were much more e-literate, having already implemented Finance applications like Treasury Net and the above referred off line model, the task of co-ordinating the development of software for this purpose was assigned to the Finance Department of the Government with National Informatics Centre, Pune as the actual software developer. The Directorate of Accounts & Treasuries worked as the facilitator and gave domain knowledge.

The Secretaries of the Finance Department working from time to time were instrumental in gearing up this activity by guiding, promoting and making available the required resources and infrastructure.

c. Change Management strategy

The System has been developed in house, by involving NIC, Pune. The NIC has been doing the work of development of various software since a long time and

without any charge. The only expenditure that had to be incurred is on technical infrastructure like severs, Hosting space, etc., and on the remuneration being paid to the programmers appointed on contract basis for development and handed over to the NIC. All the systems belonging to the Finance Department of the Government of Maharashtra (relating to the Directorate of Accounts & Treasuries) have been hosted in a managed environment of service provider.

3. Technology

a. Strategy for Disaster Recovery and Continuity

As far as development of software is concerned, the NIC has used open source technology. Linux, Apache, PHP have been used. At the backend DB2 is used considering the technological advantages this software has as compared to other technologies.

b. Solution Adopted and NeGP compliance

The Finance Department, Government of Maharashtra has entered into contract with M/s Tata Communications Ltd., Mumbai for three years for managed hosting. All applications have been hosted in Data Centres of M/s TCL located at Mumbai and Hyderabad. Three systems including Sevaarth are hosted from Hyderabad as primary site (with DR site at Mumbai), whereas other four applications are running from Mumbai (with DC site at Hyderabad). The services under Managed Hosting conform to the standard necessary specifications prevalent in the industry. The process of selection of service provider was done through open tender process. The total value of contract is Rs.9.5 Crore. Ofcourse the Finance Department has hosted all seven applications apart fromSevaarth.

It is ensured through the contract made in this behalf that all security measures are taken and all confidentiality standards maintained by M/s TCL. The compliance in this regard is scrutinized by qualified and trained personnel appointed by the Department of Information Technology. It has been agreed that M/s TCL will handover the whole set up to the Government of Maharashtra at the end of the contract period.

The highlights of the system solution are -

1. Data is not shared with other organisations.
2. Physical security of the server – Server installed in well guarded premises of TCL data centre.
3. Server behind TCL firewall.
4. Only authorised and authentic users can access the system. Login with user id and password
5. Role based access
6. Data locking mechanism provided. After locking, data is updated through change module which logs all changes.
7. Maker-Checker method used for approving changes.

IV) Value Indicators (Optional Section)

1. Digital Inclusion

2. eParticipation

Since this is a system under G to G category, the users are government personnel. Each DDO has been assigned a specific 10 digit DDO Code. Also since the system is web based, each DDO has to work online. The system also provides utility for feedback.

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CHAPTER 40

*Integrated Orissa Treasury Management System (iOTMS)**

Shri Patita Pawan Nath and Shri Siddhartha Das

I) Overview

Orissa Treasury Management System (iOTMS) which brought the process of Centralized Budget and Treasury Management System in Orissa has been revolutionary in the field of e-governance. iOTMS has incorporated several modules which have helped in smoothening the entire treasury functioning to a great extent. The main aim of e-governance, viz. transparency in the governing process, accuracy and accountability on the part of the officials, is ensured through iOTMS. Since the work flow in the treasury is entirely system-based, it has helped in ensuring accountability, responsibilities and transparency in the process through services like bill tracking facility, pending bill status, pension payment status, etc., These are monitored by the higher officials of the Directorate of Treasuries and Inspections since well as the Finance Department. The e-payment facility of iOTMS has greatly helped the taxpayers as well as the Government as it is hassle free. Besides this, the project also provides several crucial citizen-centric services like pension payment status, bill status, and challan query. iOTMS can be regarded as a bright instance of promoting e-governance in the state.

It has now been a challenge for every Government to ensure that e-governance is delivered to its citizens through the use of Information and Communication Technology (ICT). Various projects have been undertaken in various fields by

* *Winner of CSI-Nihilent e-Governance Awards for the year 2010-11.*

different governments in this regard. One such important endeavor undertaken by Government of Orissa is the computerization treasury process. The history of treasury computerization dates back to 2007 with the launching of "Orissa Treasury Management System (OTMS)" in the entire state in association with Department for International Development (DFID). However, some serious limitations were experienced in OTMS. They were:

1. The system was based on a distributed architecture due to which real time data was not available at the central location.
2. Access to OTMS was restricted to the intranet users only.

These limitations led to the development of Integrated Orissa Treasury Management System (iOTMS). Unlike the existing system, the present system is based on a completely centralized architecture which maintaining data of all the 39 District/Special treasuries at central location in Bhubaneswar. The present system provides a tool to the Finance Department for budget forecasting on the expenditure, payments, etc. at a single click of the mouse. iOTMS makes available real time data without any time lag which is highly crucial for the financial management of the state. iOTMS is a web - enabled service which allows the users to access it from anywhere across the globe. Some of the crucial services provided by iOTMS includes e-budget distribution, online payment of commercial taxes, citizen services like bill status, challan query, pension payment status, etc.

The users/stakeholders of the system as well as the objectives which iOTMS was expected to bring to them are described below in detail:

1. Officials of the Administrative Department (AD), the Controlling Officers (COs) and the Drawing and Disbursing Officers (DDOs) and Divisional Officers : iOTMS is aimed at simplifying the system of budget allotment and making it more efficient. Unlike the previous system where the allotment was distributed manually, iOTMS allows the ADs to allot funds online to the COs who in turn distribute them to the DDOs.
2. Officials of the Treasury : iOTMS was mainly developed to benefit the treasury officials. The aim was to reduce the frequency of delay of submission of accounts and to bring accuracy in account compilation.

3. Pensioners drawing their pension from the treasury : For the pensioners, it was expected that the project would help in providing various crucial services like pension payment status, pension slip generation, etc. It was also expected that since the entire process of treasury functioning would be simplified, the passing of pension bill and subsequent payment of pension would be less time consuming compared to the existing system.

4. Taxpayers (commercial taxes in particular) : iOTMS expected to help the taxpayer in paying the taxes without much hassles which would be in turn beneficial to the government as well. The e-payment facility of iOTMS, which has been implemented through Cyber Treasury, launched specifically to handle the online transaction with PSBs, has helped the taxpayer to pay taxes without his physical presence and without paying any transaction cost.

5. Officials of AG (O) : iOTMS is aimed at submitting e-accounts from all the treasuries to the office of AG (O). This helps in timely compilation of accounts.

6. Higher management from ADs and Finance Department for monitoring of expenditure and revenue : It was expected that the project would help in rendering the higher management from AD and Finance Department to monitor the expenditure and revenue. The Decision Support System (DSS) of the Treasury Portal provides the expenditure and receipt data on a year to year, month to month and quarter to quarter comparative basis in a graphical mode.

iOTMS is economical and also cost-sensitive in the sense that less number of servers are required to cater to the needs of the entire state. Further, the existing hardwares are utilized to its maximum extent in the new system. Any change in the software is deployed at only one location thereby eliminating any chance of mismatch. Another important benefit of the system is data integrity, i.e., no piece of data is repeated within the database.

II) Result Indicators

1. Key Performance

a. Service Delivered (G2C,G2B,G2G,G2E) with benefits

Benefits Delivered:

1. **G2C Services: The various G2C services delivered currently and the benefits obtained from these services by the stakeholders are:**

    - **Online bill status enquiry** service helps citizens and DDOs (Drawing and disbursing Officers) to know the status of bills along with the voucher details submitted to the treasury. This facility saves time and travelling cost of stakeholders.
    - **Challan query** service enables the stakeholders to know their challan status as well as the treasury challan number online through the web portal of DTI.
    - **Pension payment** status helps the pensioners to get crucial informations like the status of their pension bill, pension amount, pension calculation parameters and voucher number without physical presence in treasury.
    - **Public grievance** facility enables the citizens to lodge complaints online. An online grievance reference is provided for future reference/ status query. A dedicated team of officers of DTI looks into the grievances and tries to redress them at the earliest.
    - **Other services**: Available include download facility of important forms, important notices and circulars, feedback space, etc.

2. **G2B Services: The various G2B services delivered currently are:**

- Online payment facilitates deposit of government taxes, duties online through "VeriSign" secured and Appin audited web portal. Payments can be made by net banking facility anywhere without the physical presence of the depositor. The Cyber Treasury, created specifically to deal with online transactions, receives and accounts for the e-payments entirely through electronic mode reducing treasury workload.
- Bank interface link facilitates treasury-linked banks of Cyber Treasury to upload daily electronic credit scrolls (MIS for payment receipt) in portal for preparation of accounts simultaneously. The government prepares error-free account in time for revenue reflection of treasury. Manual entry of numerous challans and checking the same with the scroll is dispensed off thereby saving time and government manpower.

3. G2G/G2E services

- Monthly pension bill generation automated the process of pension disbursement. Centralized monthly pension bill is generated in bulk mode through the system, which is available to treasury for passing and approving the bill. This saves time and helps generating pension bill at the same time for all the treasuries in the state without any manual intervention. In addition to this, revised pension disbursement process has been piloted in 4 treasuries which would automatically credit the pension amount in the pensioner's bank account. The process would be operational throughout the state by 1st September, 2011.
- Centralized budget distribution system Through centralized budget distribution system : The Administrative Departments (ADs) can allot funds to their respective Controlling Officers (COs). The COs can further distribute the allotted funds to the Drawing and Disbursing Officers (DDOs). COs can surrender, redistribute and re-appropriate funds as per the requirements. COs and DDOs are intimated about their respective allotments through e-mail. Different types of reports relating to distribution and expenditure of the allotted funds are available to help the ADs and COs in taking informed decisions. For the DDOs, reports of DDO-wise allotment and expenditure against allotment are available.
- Online distribution of works expenditure: Through the Works Expenditure Module, the allocation by the Grant Controlling Officers and the Budget COs to the Divisions/Irrigation projects is made. The Divisions log into the Orissa Treasury Portal in the internet and enter their cheque details and the amount of expenditure to be incurred with the available allotment which gets deducted in the system. While honoring cheques issued by the Divisions, the bank uses the Bank Interface of the Treasury Portal to verify the appropriateness of the claim.
- Online bill submission (e-billing) is a web-enabled functionality of iOTMS through which DDOs can prepare different types of bills through online/ offline bill format (e-form). After submitting the bill at treasury end it passes through different levels; a SMS will be triggered to DDO at the submission of bills in treasury application online. Subsequently, treasury officer will process the electronically submitted bill (e-bill).

- Decision Support System (DSS) and Dashboard : The Decision Support System and the Dash Boards available in the Treasury Portal reveal the expenditure as well as receipt data major head-wise, scheme-wise, CO-wise and DDO-wise for various kinds of expenditure analysis. The Decision Support System of the Treasury Portal provides the expenditure and receipt data on a year-to-year, month to month-and quarter-to-quarter comparative basis in a graphical mode.

b. Services Enhanced/Introduced Plan vs Status

Services enhanced during the year are:

1. Exclusive portal for the Directorate of Treasuries & Inspection.
2. Online Budget Distribution and Expenditure Monitoring System.
3. Online Works Budget Distribution and Expenditure Monitoring System.
4. Online Payment of Commercial Taxes.
5. Centralized Treasury Management System.
6. Centralized Pension Processing System.
7. Online Bill Submission (e-Billing).
8. MIS, Dashboard and Decision Support System (DSS).
9. Citizen Services : Bill Query, Challan Query, Pension Query.

Services planned to be delivered in subsequent stages are:

1. Budget Planning and Preparation.
2. Implementation of e-billing system across all the DDOs.
3. Asset & Liability Management System.
4. Internal Audi and Inspection by DTI.
5. Centralized Pensioners' Database.
6. Pensioners' Portal.
7. SMS Service.
8. Integration with HRMIS (Human Resource Management Information System).
9. ECS (Electronic Clearing System) for payment of all types of bills passed through treasury.

10. e-Scroll (Cr/Dr) for online transfer of bank's scroll to treasuries.
11. Collaborate with Central Plan Scheme Monitoring System (CPSMS) in order to monitor expenditure relating to the flagship schemes of Government of India and Government of Orissa.
12. Integration with NSDL for implementation of New Pension Scheme in the state.
13. Facility for eTDS.
14. Integration with Mining and Excise departments for online payment of taxes.

c. Implementation Coverage

The entire implementation period of iOTMS can be divided into 2 phases.

Phase I : In this phase, the 'e-budget interface' module was piloted across all the 38 administrative departments and 170 COs in the state. In addition to this, Orissa Treasury Portal, e-Challan, e-Billing, Citizen Services: Online Status Enquiry (bills, pension, challan) System, Dashboard and MIS Reports for Departments and COs were executed.

Phase II – In this phase, the centralized treasury management system was first piloted in 2 treasuries (District Treasury Khurda and Special Treasury No.1). Subsequently, after successful piloting, the system was rolled out throughout the state across all the treasuries in the state over a period of 3 months in a phased manner. Further, other important modules like Online Distribution of Works Expenditure, Interface with AG, Banks, DSS for Finance Department was also completed in this phase.

2. Efficiency Improvement Initiatives

a. Time and Cost Efficiency

The treasury computerization in the State has enhanced the effectiveness and efficiency of the delivery system in many ways.

The allotment through the 'Budget Interface' module of iOTMS is electronic and immediate, for which the direct and indirect cost and the overhead cost has

reduced to a substantial extent. Similarly, the data regarding the drawal of expenditure at any particular corner of the state is available on real time basis for the Administrative Department as well as the CO to keep an eye over the expenditure. A fully enabled audit trail with archiving facility, makes it possible to store and monitor the history of data changes. In addition to this, the e-Payment facility through Cyber Treasury has been beneficial for both the taxpayer as well as the Government. From the point of view of the taxpayer, it is easy, convenient and also the payment is made without any transaction cost. In respect of revenue earning department, the tax comes to the State account in T+1 basis whereas in case of payments made through any demand draft or cheque, it takes longer time for credit of the tax into the Government account. Increasing revenue figure through online payment has been provided in the supporting document.

Other noticeable improvements are : significant progress in bill processing time, reduction in delay of submission of accounts, and increase in accuracy in terms of account compilation. The most vital improvement among all is the closure of the yearly account on 31st March instantly without having any pendency.

b. Innovative Ideas Implemented

The treasury computerization through iOTMS has facilitated several innovations in the field of treasury transactions, Government receipts and payment process. Some of the notable innovations are:

1. **Online payment through Treasury Portal:** The e-Payment facility of the Treasury Portal has started a new era in the receipt process. The electronic transactions are not merely convenient for the taxpayers but also help the treasury in preparing the accounts accurately and efficiently.
2. **Multiple Link Banks for Cyber Treasury:** For the purpose of Cyber Treasury which prepares the account for all e-receipts, the Government in Finance Department after due consultation with RBI and AG (A&E), Orissa has notified that it would be linked to multiple banks. This has facilitated the convenience for the taxpayer to make the payment from any of the bank account.
3. **Facility of payment gateway through the Central Bank of India** : At present, 7 banks are participating in the e-Payment system. To facilitate the taxpayers

who do not have account in designated 7 PSBs, the iOTMS has been integrated to the payment gateway facility offered by Central Bank of India wherein payments made through 48 nos. of both public and private sector banks are accepted. A taxpayer paying tax through the Treasury Portal has now got the choice of making payment through any of the list of 48 banks.

4. **Allotment processing for works expenditure:** Already mentioned under G2G services.

5. **E-budget distribution:** Already mentioned under G2G services.

6. **Revised pension disbursement procedure:** The pension bills will be generated from the central server before the end of the month and would be approved at the treasury level. The treasury would advice the bank to credit the pensioners' bank account through National Electronic Fund Transfer (NEFT) or Core Banking Solutions (CBS) as the case may be. This has already been implemented in 4 treasuries on a pilot basis and the rest will be covered within 1st September, 2011.

7. **Online bill submission through e-form:** Already mentioned under G2G/ G2E services.

c. Integration with Other Systems

iOTMS is integrated with different external ICT systems like AG (Accountant General), other government departments and public sector banks.

1. **AG, Orissa:** iOTMS makes it possible to submit the monthly treasury accounts electronically to AG, because of its centralized database. This minimizes the time of submitting monthly treasury accounts, and also helps AG to download the electronic form of data directly to their database. Integration with the Voucher Level Compliance (VLC) system of AG helps reducing human intervention of entering a huge volume of data, and prevents from human error at AG end.

2. **Public Sector Banks:** iOTMS application is integrated to different PSBs through its Cyber Treasury. This helps to import the electronic scrolls of different banks in iOTMS and generate the accounts. It saves the time and manpower for entering such number of scrolls into the system. It also provides a link to the banks to verify the cheque's authenticity issued for

works expenditure through iOTMS which eliminates the possibility of excess expenditure and also helps bank to minimize the effort of maintaining all the details to eradicate excess expenditure. iOTMS is integrated with payment gateways of a wide range of banks, which helps a depositor to deposit his/her government dues online.

3. **Other departments:** iOTMS is capable to produce different formats (XML, PDF) of MIS, related to department-specific revenue and expenditure data. This in turn helps the department to directly download the data into their database.

III) Enabler Indicators

1. Processes

a. Major non-ICT front end process changes

The project of iOTMS aimed at introducing various ICT processes that would help in serving the purpose of smoothening the treasury functioning in the state. Orissa Treasury Portal is the main front-end process which was planned and was subsequently implemented. The portal gives access to various modules of iOTMS as well as interfaces with external agencies. Since the portal is web-based, it can be accessed from anywhere across the globe. The modules available through the portal includes e-payment, online budget interface, works expenditure module, online challan status, etc. Similarly, the interface includes bank interface and AG interface.

b. Major non-ICT back end process changes

While planning the user interface onto an ePlatform, it was realized much earlier that it was important to have modules that seamlessly integrate the front-end and the back-end processes to be able to fully harvest the gains. The idea was to carry over the manual process onto an e-platform. This has led to significant amount of innovation, simplification and process reengineering. Today, the full cycle of operation starting from import of state budget in iOTMS, budget distribution to DDO level and allotment availability at treasury, process of approving bills against allotment, receipt of challan, e-Payment, etc. is conducted on an electronic platform, which has significantly added to efficiencies for the user and the government and is explained below.

iOTMS is a full-fledged information system software that enables the automation of various functions of the treasuries. It runs on an advanced infrastructure fully hosted within the central location located at DTI premises Bhubaneswar. It is developed based on the System Requirement Specifications and System Design Document. iOTMS has been developed using JAVA-J2EE, which is a platform independent language. It is based on 3-tier architecture, and is browser independent. The application is segregated into internet and intranet version. The intranet application is accessible only to the treasuries. The internet application is accessible to the citizens, more than one lakh pensioners, 38 Administrative Departments, 170 COs, 6,680 DDOs and 386 Divisional Officers.

Important software modules of iOTMS are e-Budget, Works Expenditure, Centralized Treasury Management System, Bills and Challans Query, Pension Payment Status Query, Interfaces With Various Agencies, e-Payment, e-Bill etc. iOTMS is a VeriSign secured site having 128-bit encryption. Network equipments like firewall and load balancer have been employed to maximize the security as well as availability. The entire arrangement of iOTMS focuses to deliver two things – firstly, the timely availability of data to enable the users to analyze the same and secondly, the ease it provides to the top management in seeing a comprehensive picture enabling them to take a timely and correct decision.

2. People and Resources

a. Project Management and Monitoring

iOTMS is an instance of the coordinated efforts of various agencies as well as efficient project management. The responsibility of developing and implementing the entire project lay in the hands of Directorate of Treasuries & Inspections (DTI). For this reason, a Project Management Unit (PMU) is in place in DTI where a dedicated team of competent officials headed by the Assistant Director look into the project management of iOTMS. An instance of efficient project management is that the software developer of OTMS (CMC Ltd.) was again given the task of developing the software in iOTMS. This arrangement led to the completion of the project in record time of less than a year, much before the target date of completion. This was possible due to two major reasons – firstly, a lot of time was saved since no tenders were invited and secondly, since CMC Ltd. was already well versed with the domain knowledge of treasury functioning, it

was comparatively easier to develop the new software. Also the constant support provided by the network support provider, BSNL, cannot be ignored.

Regular review meetings are held between CMC Ltd. and the Director of Treasuries and PMU of DTI. Regular monitoring is done by the PMU so that there is no technical problem as well as problem relating to its usage. In case any problem is faced by the user, it is tackled by the PMU on a priority basis. Users are given a facility of lodging their complaints relating to iOTMS through a call logging system named "Mantis". There is also a highly efficient Help Desk system with Toll Free call facility in DTI comprising of an Asst. Director, a System Analyst and two Asst. Software Engineers. To make the Help Desk system more effective, CMC Ltd. has positioned two personnels to manage the Help Desk. The Help Desk with the Toll Free call facility is available during working hours. During holidays or non-working days, the mail IDs and telephone numbers of the designated officials have been provided in the Portal for the users to contact in case of any difficulty.

An effective version management (managed through CollabNet Subversion) and deployment policy are in place as a part of effective project management.

b. Training -Plan and Status

"Train the trainer" was the training policy adopted for implementation of iOTMS. Resultantly, a resource team comprising of officials working in the treasury was set up. The resource team was involved in the project development stage and was associated in all matters relating to the preparation of System Requirement Study (SRS) on Treasury Application. After extensive training was imparted to the resource team in the DTI, CMC Ltd. also deployed an Engineer in each of the Dist. Treasury for one month hand holding support. The district Treasury Officers conducted training programs for the officials of the Sub-Treasuries with the help of the resource person of the DTI and the CMC Engineer. In this way, the staff of all the 166 treasuries (nearly 1700) were trained in the new system. In addition to this, separate training programs were conducted for users of different modules like e-budget distribution and works expenditure.

At the outset, the users were quite skeptical about the new centralized system and were reluctant to use it. To remove these doubts, a full-fledged change

management strategy was adopted. The resource team, which consisted of treasury officials who were trained by the DTI on the new system, went to different treasuries and clearly explained the benefits of iOTMS and also familiarized them with the same. For instance, they explained that since iOTMS is a java-based application system, tab key would be used instead of the enter key.

Users were convinced, by means of training sessions, of the usefulness and benefits of the project. Resultantly, users are now comfortably using the system. The PMU based in DTI regularly look to the needs of the users and address issues, if any, faced by them.

c. Change Management strategy

iOTMS owes its success to perpetual leadership shown at the highest level in the Government. At the policy level, a Committee comprising of the Principal Secretary to Government in Finance department, Secretary of IT Department, Director of Treasuries and Inspection, representative from AG (O) and representatives from other Departments decided the basic outline of the project. At the Directorate level, a group headed by the Director of Treasuries, Addl. Director, Deputy Director, Asst. Director (PMU), Asst. Director (T&B), Asst. Director (Computer), OSD-cum-Cyber Treasury Officer, and Treasury Officers from selected treasuries decided the implementation plan and the rollouts. The support which the project received from the political sphere cannot be ignored. Honorable Minister of Finance was actively involved in all important developments of the project. The web portal of DTI was launched by the honorable Chief Minister of Orissa.

d. Leadership Support and Visibility

Going by the Mission Mode Project standard under NeGP, the Government of India aims to fund all the e-governance promoting projects. However, till now central assistance has not been received and the design, development of the project of iOTMS is entirely funded by Government of Orissa. The Detailed Project Report is being prepared to be submitted to the Government of India on the basis of which funds are likely to come for the project in the future.

3. Technology

a. Strategy for Disaster Recovery and Continuity

The DTI is in the process of shifting the data center to State Data Center (SDC), Orissa and will use their disaster recovery site located outside Orissa. In the interim, DTI has made the necessary arrangements to build a near backup site at Special Treasury, Khurda. Data Guard is implemented to replicate the production data to physical standby database located near backup site. Daily RMAN level 1 cumulative incremental backup of data and a full backup once in a week are taken and shifted to a removable storage like LTO and kept the same outside of the premises on daily basis.

b. Solution Adopted and NeGP compliance

iOTMS has been implemented at central server in DTI office at Bhubaneswar. The end-user, irrespective of locations, work with the central server database through a web-based application. This web-based application is available on internet as well as intranet. The developed application is deployed on Weblogic Portal and Weblogic Application Server, Jasper Report Sever and database is Oracle 10g Enterprise Edition. The application is built upon Java/J2EE technology to provide high level of compatibility, portability as well as security. The centralized architecture of iOTMS houses a database server at central location to store all the finance and treasury data. This database server accesses data through the application server where web application resides. Web server provides service to the end user for working on the web applications. Users are connected to application server, through web server hosted on a separate machine with adequate security including firewall, SSL, certificate etc. The application server is also inside the secured De-Military Zone. Multiple application server and web server provides service in a parallel mode. Here load balancer shares the total load among the servers and gives high level of availability. All these servers are separated from the outside network or internet through a firewall to provide high level of security. iOTMS has used the existing hardware and therefore expenses are incurred only for the license of application software, upgradation of network connectivity and upgradation of existing hardware. The detailed list of costs incurred in the project is given in the supporting document (Page 17).

iOTMS has now entered into maintenance phase. To provide technical support to the application, the Government of Orissa through the DTI has signed an agreement with CMC Ltd. Presently, CMC has deployed eleven personnel for technical support (including two call management persons) for technical support. Further, Wipro is providing hardware and networking support and BSNL is providing maintenance of intranet and internet connectivity of the system. The DTI has a technical team comprising of one System Analyst and two Assistant Software Engineers.

iOTMS fully complies with NeGP standard, as it has implemented the modules like e-Budget, Accounts, Pension, Receipt, Virtual Treasury (Cyber Treasury) for on line payment, Bank Interface, AG Interface, E-Status Enquiry, etc. The details of the compliance of iOTMS with the NeGP standard is mentioned in the supporting document (Page 15).

c. Security and Compliance Standards

iOTMS operates through the Verisign (SSL-128 encryption) secured web portal. Site security has been audited by Appin, database and application servers are behind firewall, regular systems checks are done to test firewall strengths for identifying potential weak points. MD5 hashing algorithm is used to encrypt and send data while transferring over net to third party agencies like PSBs in case of online payment. Care is taken to see that no net banking user name, password or HPIN is collected and stored in the web portal; sufficient logs are maintained for all transactions to help establish a clear audit trail and assist in dispute resolution. User account is locked after five consecutive failed attempts.

IV) Value Indicators

1. Digital Inclusion

Steps taken to address this factor:

iOTMS application is operational for the last one and half year and most of the services have been enhanced or newly introduced. The project has a plan to implement bilingual (English and Oriya) support in near future. Due to this, the database has installed to support Unicode characters. Presently, iOTMS is providing e-mail facility for necessary events, through its own mail server. As a plan to integrate SMS service in near future, phone numbers of the concerned

beneficiaries like, DDO, CO, Pensioners, etc. are being collected. First level discussion with service providers like BSNL for sending bulk SMS from iOTMS application has already been completed.

2. eParticipation

Steps taken to address this factor:

iOTMS is a team work involving officials and stakeholders at all levels. The officials of the treasuries have been consulted in the process of software development and their views have been taken to make necessary modification in the treasury application for facilitating a user friendly system. The users were consulted during the process of development of different modules.

3. eWaste

Steps taken to address this factor

iOTMS is a recent development and till now has not come across any problem relating to eWaste management. However, to frame a planned document of managing eWaste, discussions are being held with Government bodies like the IT Department, OCAC and academic institutions like IIIT. A full-fledged plan would be materialized well before the project starts facing the situation of managing eWaste.

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