AWARDS SCHEME FOR EXEMPLARY IMPLEMENTATION OF e-GOVERNANCE INITIATIVES

NAME OF CATEGORY- INCREMENTAL INNOVATIONS IN EXISTING PROJECT

1. Year of National Award for e-Governance given to the Project - 2009

2. Coverage – Geographical and Demographic :-

(i) Comprehensiveness of reach of delivery centers,

The Government Hospitals and Primary Health Centers are spread across all 32 districts of State of Tamil Nadu.

(ii) Number of delivery centers

- 270 Government hospitals using the Hospital Management System (HMS)
- 270 Government Hospitals and 1889 Primary Health Centers using online Health reporting system through Management Information System (MIS)
- Over 550 Medical and Paramedical colleges affiliated to TN Dr MGR Medical University using the College Management System (CMS)

(iii) Geographical

(a)National level – Number of State covered | 1

(b) State/UT level- Number of District covered | 32

(c) District level- Number of Blocks covered | 385

Please give specific details:-

Management Information System has been implemented in 270 Secondary care hospitals, 1889 Primary health centers and 20 Government Medical College Hospitals and allied institutions. This application is developed to capture the daily, weekly & monthly reports from the institution level. The data as report is instantly available at the

Institution, District and State Headquarters level.

(iv)Demographic spread (percentage of population covered)

The system is in use in all Government hospitals and Primary Health centers providing free healthcare services to all citizens in the State catering to the population of 7.2 crores.

3. Situation Before the Initiative (Bottlenecks, Challenges, constraints etc with specific details as to what triggered the Organization to conceptualize this project):

- Monthly reports sent as hard copy a challenge for data comparison and analysis
- No real time data available to monitor the performance of the hospitals
- Difficulty in Drug/ Equipment inventory maintenance and track of warranty /AMC
- Evidence based program management was a challenge
- Retrieval of old manual paper records was cumbersome and time consuming
- Maintenance of outpatient records was cumbersome.

4. Scope of Services Covered(Number, extent and list of services made ICT enabled – extent to which a service is e-enabled may be one of the four criteria's (a) Service is requested through electronic means including mobile devices – Front-end is electronic, (b) Workflow/approval process is electronic, (c) Database is electronic/digitized, (d) Service delivery is electronic

Prior to the implementation of HMIS, in Government hospitals, patient records were entered manually and maintenance/retrieval of manual records were time consuming and inaccurate. Monthly reports were sent

as hard copy and this remained as a challenge for data compiling and analysis, also no real time data for monitoring the hospitals were available, drugs and equipment inventory were not accurate and there were chances of data duplication .

- HMIS eases this process and gives the Tamil Nadu Health Care system a significant leverage in efficient management across the entire state.
- The HMIS application is envisaged as a single State Health IT system. A totally centralized web based system on fully open source technologies was decided upon to optimize investments and more importantly, overcome the maintenance issues and skills availability at district/hospital level.

It has two components namely:-

HMS (Hospital Management System) and MIS (Management Information System)

The various modules /screens in HMS module are as follows:-

- Registration- Outpatient/Inpatient/Casualty
- Clinical module for OP record/ IP record/ Nurses notes, Operation notes/ discharge summary/ ANC record
- Reporting of the lab test results online
- Online indents and issues (for drugs)
- Online ward transfer/ linen/diet/ BMWM

- Online day end/ periodic report generation
- Final disease diagnosis is mapped to ICD-10

The various screens in the MIS module are as follows:-

- Clinical module (as above-Auto populate)
- Ancillary-reporting forms-Blood Bank ,stores, diet etc
- National Program – Blindness control, Malaria , TB, Infections diseases, School Health
- Administrative Information- HR issues
- Security module handles all the access and privileges to be given to end users for each application and reporting.
- A University Automation system for Tamil Nadu Dr.MGR Medical University and College Management system has been devised for University & Govt. Medical College activities.
- Institutional Services monitoring report

5. Overview of the original project which has been horizontally transferred/ replicated

Health Management Information System (HMIS) is a judicious combination of Information Technology (IT) and Management Systems, to deliver improved evidence based health care to the public at large. Health Management Information System also provides information based support for the implementation of cutting-edge reforms by the Health administrators.

Apart from Primary Health Centers and Secondary Care Hospitals, this project is envisaged to include all the Tertiary Care Hospitals including the Medical Colleges. HMIS, as mentioned earlier is devised to capture real time on line data of patients availing Government Health facilities.

IT enablement of hospitals in the Tamil Nadu districts will create an accurate real time database which can be then be used as a basis of timely information for drawing up health-related policies and budgets by the State bureau of Health. This initiative strives to strengthen the patient and the hospital database such that it ably supports the strategic management of the health system of the state. The easy access to epidemiological data about each individual patient, enables proactive and efficient management of communicable and non-communicable diseases. This is very effective and result-oriented during the eventuality of an epidemic.

Early intervention and swift response by the health directorates, guided by accurate information would aid in handling emergencies and such other situations thus the Health department of Tamil Nadu is not only providing for quality health care but also ensuring infrastructure support to sustain this care through IT enablement of the hospitals.

Critical parameters captured and made available in real-time, across the health chain, distinctly aids quality and timely decision making by the health directorates. Implementation of health schemes has significant financial implications.

Thus the HMIS project is being implemented by the Health department of Tamil Nadu

1. To lay emphasis on providing an efficient health care system which is highly accessible, equitable and evidence based to the socio economically under privileged disadvantaged group and tribal population.
2. To deliver evidence based health care to the public by using a judicious combination of information technology and hospital management systems
3. To provide information based support for implementation of reforms by health administrators and policy makers.

Implementation of HMIS brought a massive impact on transmission of real time data from taluk, non-taluk and district hospitals. Data analysis and policy decision at headquarters has been simplified. End-users find the system very useful for establishing electronic medical records for the patients. Government orders were obtained to do away with the manual records and the end-users are informed to maintain online information for registers as specified in the G.O.s. Audit team from Directorates was given directions to audit records available on HMIS. Various stakeholders helpdesk act as interactive platform for service delivery. Gap analysis done periodically by the Project Director in the Weekly review meeting and short falls are taken care appropriately.

As computerization was introduced for the first time, the users had to be initially exposed to basic computer training and orientation. The e Governance agency of the State also provided the basic computer training. Training of end users is handled through

both classroom and hands on training sessions. All training sessions for the entire 270 hospitals the project fully completed. Refresher training also provided to target user groups to improve online usage. The HMIS application is envisaged as a single State Health IT system. A totally centralized web based system on fully open source technologies was decided upon to optimize investments and more importantly, overcome the maintenance and skills availability at district/hospital level. The existing state infrastructure of State Data Centre was utilized for stationing the servers and the State wide network (TNSWAN) serves as the primary connectivity line.

6. Innovations to the original project(Give details about the new processes / new activities, new steps , ICT interventions, functionalities introduced into the system, identification & removal of any bottlenecks / irrelevant steps, administrative process reforms, any use of new & emerging technology

- Online data entry by doctors, Pharmacists and Nurses extended to tertiary care institutions.
- The Electronic medical record has been further enhanced to facilitate Specialty wise data capture. Over 300 templates have been provided to cover over 43 Specialties with customizable forms for specialist doctors.
- Further, the use of online system has facilitated direct export of data from HMIS system to the NRHM portal.
- This facility has shown significant benefits to end users in removing duplication of data entry, savings of time and effort for data consolidation and reporting.
- End users are able to generate and compare their data and performance.
- Online system has been useful for comparative analysis of

performance of institutions on various identified parameters – the reviews by Joint Directors, Deputy Directors in Health Administration are now based on institution wise ranking and performance

- The online indents from Hospitals to the central procurement agency (TNMSC for drugs and surgical items) has delivered huge advantages in managing inventory at hospitals. With provision of access to online indents of hospitals, the Drug Warehouse are able to save paper as number of paper copies of the indents are no longer necessary and the time delay due to the process manually indenting .

7. Comparative with Original Project(Provide a comparative analysis about how is this project similar / different in services provided, design, functionality, technology, platform etc from the original project).

As maintaining of manual records for outpatients treated in Government hospitals was cumbersome in view of the huge turnouts of patients availing Govt. healthcare facilities, with the implementation of the Hospital Management System, there is currently a large data base available of doctor wise, disease wise, patient wise medical data for further analysis.

The online indents from Hospitals to the central procurement agency (TNMSC for drugs and surgical items) has further huge advantages in managing inventory at hospitals. With provision of access to online indents of hospitals, the Drug Warehouses are able to save paper as number of copies of indents are now no longer necessary

On technology front, there was a change in one layer of the server configuration from Solaris to Linux to facilitate a more efficient load balancer deployment (PG pool). As the number of users would

significantly increase from Phase 1 to Phase 3, this change was introduced to optimize the use of existing infrastructure and also handle the large additional load from Tertiary care sector envisage for extending the application system.

8. Strategy Adopted

(i) The details of base line study done,

- The availability of real time data for health administrators at various levels in the system has been highly beneficial. The system now provides data for analysis and currently the Department is setting up a State Health Data Research Center.
- As manual records were not maintained for outpatients treated in Government hospitals, with the implementation of the Hospital Management System, there is currently a large data base available of doctor wise, disease wise, patient wise medical data for further analysis.
- Lessons learnt from deployment during Phase 1 and Phase 2 of the project have immensely helped to ensure sufficient care taken in Phase 3 of project for infrastructure issues management.

(ii) Problems identified,

- Mindset and Involvement of the hospital staff
- Change Management and Total system transformation
- Lack of co ordination among various vendors (no single vendor for IT infra)
- No senior IT consultant to co ordinate all IT activities. Only Medical Officers handle the project activities
- Connectivity still continues to be a major challenge

- Manpower shortage at the hospital end (HR of Directorate)
- Lack of basic computer knowledge
- Mapping existing process and rationalization of input forms for standardization
- Safe custody of hardware and other IT infrastructure at hospitals
- Frequent break down calls and 24X7 helpdesk role in downtime reduction-difficulty in mobilizing rectification team.

(iii) Roll out/implementation model,

Management Information System has been implemented in 270 Secondary care hospitals, 1889 Primary health center and 20 Medical College Hospitals and its allied institutions. This application is developed to capture the daily, weekly & monthly reports from the institution level. The data as report is instantly available at the institution, District and State Headquarters.

Apart from the patient services, the drug inventory management is fully online, the indent and receipt of drugs from central procurement agency to Institution level receipt and distribution to end patients. The stores and pharmacy management at Institution level up to sub store level (Pharmacy, Wards, Stores of Medical and Surgical,etc) is also fully online.

(iv) Communication and dissemination strategy and approach used.):

- Development and implementation of hospital management system which is a centralized web based one on fully open standard technologies.
- Adequate training at the end user level to ensure their full participation and increase their comfort level
- The simplicity of the interface allows the end users to directly use the application without the help of data entry operators

- Strong ownership and support from top administrators by conducting regular reviews at various levels of health administrators provides continuous motivation
- Providing uninterrupted connectivity with a leased line of 2 mbps and a secondary line as fall back by automatic switch over in the event of primary line failure
- A centralized server set up hosted at the secure and fully equipped State Data Center at Perungudi, ELCOT. The Server Architecture has been designed in such a way to enable redundancy at every level, to ensure high availability and so that there is no server downtime
- Availability of District IT coordinators at each district has helped in quick resolution of issues related to hardware and software issues etc.
- Support provided by District Project Coordinators has ensured sustenance of the system in spite of many hardships

9. Technology Platform used-

(i) Description,

1. Centralized web based one on fully open source technologies
2. J2EE
3. Post gre SQL Database
4. Glassfish Application server
5. Solaris OS

(ii) Interoperability

Export of data to NRHM portal as per predefined formats.

(iii) Security concerns

- Since this the application is on an open source platform it functions on a secured database, the server architecture has been so constructed as to prevent intrusion. Encryption activities carried out for academic application transmitted through TNHSP servers from State Data Center ELCOT (ISO 9002 certified).
- HMIS applications are STQC certified as per Government of India norms.
- Network Array Storage available for data backup one at on site and one at off site. Tape backup as a routine done for database. Data recovery center planned outside SDC
- The applications also audited and certified as fully compliant with the Open Web Application Security Project (OWASP) requirements

(iv) Any issue with the technology used

No issues

(v) Service level Agreements(SLAs) (Give details about presence of SLA, whether documented, whether referred etc. #)

Service level agreement signed between central procurement agency (ELCOT) for TNHSP and other stakeholders. Project Director and other monitoring officers gauge the implementation process through this service level agreement. All SLAs are documented and reviewed periodically.

10. Adaptability and Scalability(Give details about Local language support, ability to leverage shared NeGP infrastructure, Standardization of technology used (hardware, software, application etc. #), envisage future enhancements/plans

This innovative project was initially started as pilot later up scaled to Phase-I, Phase-II and Phase-III covering 267 hospitals and 47 DME institutions and one Medical University. The scalability was

monitored by World Bank clearance were given for the encouraging results during the process of upscale. Reliability and availability has been the key area of focus while drawing up the blueprint of infrastructural support for HMIS. Dynamic changes in technology and rapid growth of user needs are some universal changes. To counter the changing software scenario, TNHSP wisely chose an Open Source software stack to eliminate vendor lock-in, to create efficiencies, improve service delivery and maintain scalability.

Ability to leverage shared NeGp infrastructure:

The HMIS project has fully leveraged the investments of State in infrastructure.

1. The centrally hosted application is deployed on Server environment co located in the Tamil Nadu State Data center.
2. The Tamil Nadu State Wide Area Network (TNSWAN) has been harnessed with last mile connectivity to Institutions for providing primary connectivity to all 272 hospitals across the State.
3. The Basic computer training to staff in health department (linux training) was extended by TNeGA.
4. ELCOT – the State IT agency is also being used for procurement of TNHSP's requirements of Hardware, LAN, UPS, Furniture, Connectivity for the HMIS project and ongoing support of infrastructure.

11. Adaptability Analysis

(i) Measures to ensure adaptability and scalability

- The applications are fully aligned to end user requirements. The template based approach for electronic medical records provides for

ease of use for doctors.

- The applications are also fully scalable and handling large scale increase in total user load. The number of transactions have increased significantly and expected to scale up to meet the additional load of Tertiary care institutions across the State with limited infrastructure augmentation (Servers)

(ii) Measures to ensure replicability

- The application has proven that it is usable across the health chain bringing in standardization in reporting and data management.
- The Management information system comprises all data required for reporting to NRHM, WHO related etc

(iii) Restrictions, if any, in replication and or scalability

No restrictions. Since dynamic changes in technology and rapid growth of user needs are some universal changes,to counter the changing software scenario, TNHSP wisely chose an Open Source software stack to eliminate vendor lock-in, to create efficiencies, improve service delivery and maintain scalability.

(iv) Risk Analysis

- To reduce the dependency and support issues of technology – due to changes in ownership of application server software, the project has envisaged migration to a more supported technology – as part of further scalability and thereby minimizing risk on support.
- The analysis and proof of concept have already been done and approved by the World Bank for this project technology migration of identified application components.

12. Efficiency Enhancement (Give specific details about the following #)

(i) Volume of transactions processed,

- Over 150000 patients cycled through system daily, data entry at 270 + institutions across the State using Hospital management system application. (Patients registration, online medical records, drugs prescription and lab orders online)
- Over 1889 Primary health centers and 272 hospitals reporting online in over 400 forms in the Management Information system – the unified reporting platform for all Health directorates in Tamil Nadu.

(ii) Coping with transaction volume growth

- Augmented Hardware infrastructure – procured and installing additional Servers for handling additional load of Tertiary Care Hospitals
- Performance tuning of applications and Server load balancers
- Migration/separation of applications to different application server software layer to reduce vendor dependency and bring in more number of OEMs.

(iii) Time taken to process transactions,

All frequently used screens are simple and user friendly – to complete transaction in optimal time (less than a minute)

(iv) Accuracy of output

Infrastructure and Applications now stabilized.

(v)Number of delays in service delivery

Connectivity and power are constraints – which are also being addressed with quick turnaround time to minimize any downtime at locations.

At Server end – all redundancies built in to ensure minimal downtime

13. Accessibility (Give details about how following has been enhanced: user accessibility, transparency in system, single-window resolution, ease of navigation; impact on service response time, number of visits required for accomplishing the task before and after automation, Communication e-mail, SMS, web based tracking, etc.#)

- The access to the applications is user role based and privileges assigned as per the designated roles and requirements defined by the respective directorates.
- The access to online indents now available with Central Procurement agency (TNMSC) for drug stock supply and replenishment to hospitals
- The Report Servers have also been configured so as to reduce impact on transaction and response time to end users at Hospitals.
- The MIS application uses SMS service. At present the system is having SMS alert to biomedical engineers and vendors regarding equipment breakdown. The SMS services is also being planned to reach the patients for follow up under the NCD program. In future SMS alerts to The Honorable Health minister, the Health Secretary, the Project Director, DPH, DMS, DME, Joint Directors and Deputy Directors regarding various health hazards are being planned.

14. User convenience (Give specific details about the followings #)

(i) Service delivery channels (Web, email, SMS etc.)

- The end users across various Institutions and offices were called upon for finalizing the software requirement specifications, so that the entire application was customized to suit the needs of each and every department. TNHSP judicially chose an Open Source software stack in order to prevent a vendor lock in state,

in case the project needs to be up scaled. Extremely simple, user friendly screens designed by application provider to ensure end user ease of use and optimized for performance.

- The applications are web based and fully accessible on Internet and Intranet.
- Email and SMS alerts are also configurable in the system as per requirements.

(ii) Completeness of information provided to the users,

Adequate training for the end users at the Institutional level, to ensure the full participation and to increase the comfort level of the end users. Basic computer training followed by HMS training and HMIS training is imparted to all users with the help of TCS, TNeGA.

- Users given hands on training and supported
- All users can generate reports as required for their roles
- Help documents available online
- Helpdesk support available

(iii) Accessibility (Time Window),

Centralized, web based System is available round the clock

(iv) Distance required to travel to Access Points

- The system is accessible to users having valid credentials to the application from respective locations within the hospital. The system is a centralized web based deployment for use within the Tamil Nadu Government Health Department.
- All users can access the system from their respective work

locations within the hospitals.

- Training was given at State head quarters and at District head quarters hospitals. Also training progress are conducted at individual hospitals for the doctors, pharmacists, Lab Technicians, Staff Nurses .IT coordinators posted in all 32 districts of Tamil Nadu train and support the users during their hospital visits

(v) Facility for online/offline download and online submission of forms,

- The system is fully online for data entry into application.
- There is a provision for back dated entry in the system in case of connectivity or other infrastructure related problems for a specified period only.
- Facility has been provided for Online data export of identified data automatically from HMIS to NRHM portal.

(vi) status tracking

- Online entry status for all reporting forms available and dashboard for tracking completed/incomplete status available
- This is being closely monitored by the State Level officers for ensuring full compliance to data entry.

15. Sustainability (Give details about sustainability w.r.t. technology (technology used, user privacy, security of information shared – Digital Encryption etc. #), Organization (hiring trained staff, training etc. #), financial (Scope for revenue generation etc. #)

IT challenges faced by all deployments is, trying to accommodate increasing demand for new IT capabilities and services. The scenario in this case includes maintaining a fine balance between growths, cost savings, handling day-to-day operations and providing improved and

extended services.

The mantra for success for this application includes :

1. *Enablement of real-time, online data capture and updation*
2. *High availability*
3. *Reliability*

After the project period the respective Directorate will maintain the HMIS implementation and will be promptly supported by the Department of IT, Government of Tamil Nadu. The budget (recurring expenditure) needed to run this project will be factored in during the annual budgeting of the Directorate. The Department of IT will maintain the hardware/software by means of Annual Technical Support every year.

16. Ease of transaction (Give details about method deployed to educate user on how to avail service, security of data shared by user(if applicable), completeness of information provided, Linkages for financial processes (if applicable), etc. #)

1. Basic computer Training
by TNeGA

2.Training on HMS Application- by T
CS

- End users given hands on training on the application and screens as per their respective roles.
- The user manuals and online help files available.
- Helpdesk support available for end users

3. Refresher training for MIS by ELCOT district trainers for al

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Adequate training for the end users at the Institutional level, to ensure their full participation and to increase the comfort level of the end users. Basic computer training followed by HMS training and HMIS training is imparted to all users with the help of TCS, TNeGA at State Head Quarters and at District Head Quarters. Also training program are conducted at individual hospitals for the Doctors, Pharmacists, Lab Technicians, Staff Nurses & Hospital Workers.

17. Appropriateness of context and degree of localization (Give details about degree of localization i.e. local language interface, database support etc. relevance of content, etc. #)

- The screens for data entry are fully aligned to the work carried out by users in day to day activities. The data labels are bilingual on frequently used screens.
- The entire drug database is common with the Central procurement agency with reuse of standard codes for drugs and equipment.

18. Cost effectiveness(Give details about impact on cost incurred w.r.t. overhead cost, direct and indirect cost, man days/man hour required to do a job etc.#)

Project Data: HMIS the flagship Tamil Nadu Health System Project was implemented in a phased manner. Started as Pilot (during the year 2008), followed by Phase –I (during the year 2009), Phase-II (during the year 2010) and finally Phase III levels (2011).

Sl .No	***Stage***	***Amount Spent through TNMSC and ELCOT***
1.	*Pilot*	*Rs.2,88,15,000/ and Rs.18,33,250/-*
2.	*Phase I*	*Rs.5,01,84,000/-*

3.	*Phase II*	*Rs. 87,85,28,697/-*
4.	*Phase III*	*Rs.23,05,05,792/-*

19. Number of users and services(Give details about frequency of services used in last 01 year, number of visitors, number of unique visitors, number of users etc. #)

OP Registration :	21437003
Clinical Registration :	11665490
Lab Registration :	4773398
Pharmacy Registration :	9681207

20. Benefits Accrued / Impact assessment(Give a comparative Analysis of pre- & Post- implementation in terms of (a) Service Access points, (b) service charges paid by user, (c) travel cost, (d) indirect cost incurred by user, (e) comprehensiveness of service/information provided, (f) distance required to travel, (g) mode of service delivery, (h) citizen charter (time to deliver the service), (i) Green e-Governance (power & paper consumption, disposal of e-Waste etc.), (j) revenue collection, (k) Capacity Building (No. Of persons trained) etc.)

Benefits to patients

- Unique Patient Identification Number (PIN) issued to the Patient on first time registration
- Patient can visit any Government hospital under DMS within Tamil Nadu
- Online health record available for easy retrieval by doctors during subsequent visits of the patients
- Time saved, direct access to doctor is possible for follow up visits as re-registration not required
- Patient issued with printouts of doctor's prescription, Lab results and discharge summary.

Advantage for doctors

- Saves a lot of time-need not write prescription, write on each drug token, write the lab investigations separately and also note down the OP number/diagnosis on the register
- Drugs/lab investigations can be grouped into packages and more often a package may be prescribed.
- The doctor is able to view the previous clinical history of the patient including last treatment given and the lab results and prescribe accordingly
- Specialty OP- Doctors with a single click repeat the previous prescription.
- In special cases the doctor can follow the Standard treatment guidelines

Advantages for staff nurses

- Savings in time and effort as there is no need to maintain several registers and data entry duplication (eg name, age, and other details of patients in each register)
- Drug/ Diet/ linen indenting can be done from respective wards
- Online maintenance of the drug inventory and stock position available online
- In Patients' lab investigations results can be viewed online
- Discharge summary can be given to the patient in the form of a printout.
- Handing over and taking over of charges, patients census- made accountable and transparent
- Ward transfer in/out managed effectively
- Blood bank staff nurse can effectively monitor and manage the blood bag availability/expiry dates on a real time basis.

Advantage for pharmacists

- Transparency and accountability in managing drugs, equipment stocks.
- Online stock position and indent to main stores available
- The pharmacist can monitor the expiry dates and the batch number of each drug.
- Saving in time and effort for consolidation and day end and month end reporting – no need to count the tokens consolidate them and update the stock position.
- The Warranty/AMC of equipments can be easily tracked.
- Curtailing of drug issue to patients who visit frequently.

Major benefits accrued

a. No data entry support provided – end users directly using system so no additional overheads for use of system
b. No printing of several registers – savings in cost for paper reports
c. The training on HMIS applications have been extended to over 10000 users (doctors, nurses, Pharmacists, lab technicians, etc) in Health department for HMS and over 5500 users for MIS for online reporting across PHCs, Government Hospitals, Corporation and Municipalities.

d. 21. Result Achieved/ Value Delivered to the beneficiary of the project- (share the results, matrices, key learning's, feedback and stakeholders statements that show a positive difference is being made etc):

(i) To organization

- Real time data available – Census data institution wise available for quick reviews

- NCD program able to monitor daily status of screening and trend in cases across districts
- Gap analysis based on reports and rationalization of manpower and other resources – evidence based decisions
- Pharmacists and Stores In Charge able to save time in consolidation of reports and inventory. Able to extract/retrieve details quickly for any queries on stock position
- Online indents to Central procurement agency (TNMSC)

(ii) To citizen

- Patients benefitted with reduced waiting time in queue after first time registration – can meet the doctor directly for subsequent visits to hospital
- Patients happy that doctor is able to see their earlier visit records and enquire on progress and status

(iii) Other stakeholders

- TNMSC – able to get online indents from Hospitals and prepare issues in time
- NHRM – getting institution wise data directly

22. Extent to which the Objective of the Project is fulfilled-(benefit to the target audience i.e.G2G, G2C, G2B, G2E or any other, size and category of population/stakeholder benefited etc):

G2C – direct impact on healthcare delivery to patients

23.Comparative Analysis of earlier Vs new system with respect to the BPR, Change Management, Outcome/benefit, Change in legal system, rules and regulations

- Issuance of Government Orders – to remove manual records and shift to Online system
- No paper prescriptions to patients – online entry by doctors and printout to patients of prescription and lab tests
- Institutional Performance monitoring reports for all three directorates being done online
- Online entry of screening details of all patients under the Non Communicable Disease program – in the NCD module from Primary and Secondary Hospitals across the State
- No manual reports being sent – all reports consolidated for NRHM reporting with online data only.

24. Other distinctive features/ accomplishments of the project:

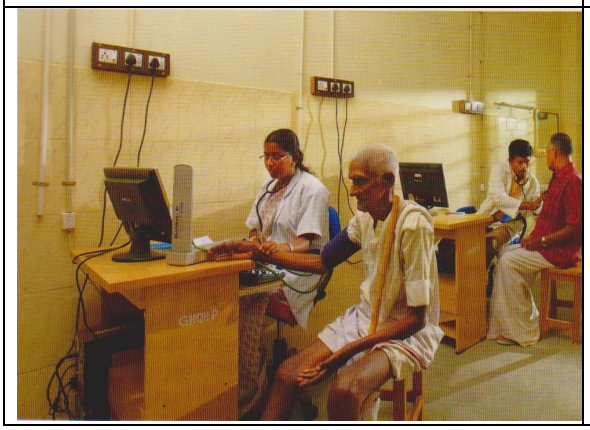
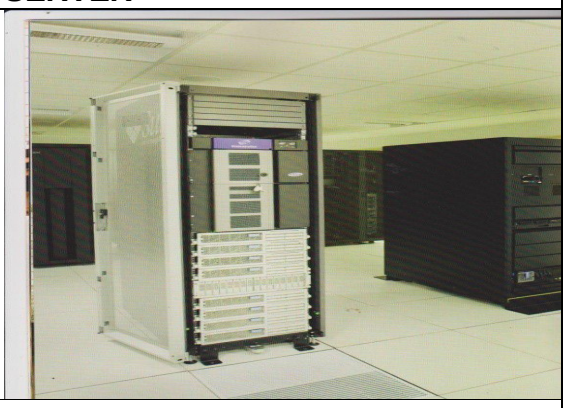
1. No data entry support – all end users including doctors enter details of their activities online directly

2. Scale up to Tertiary Care sector

3. Inclusion of screening and follow up under the NCD Program .

PHOTO GALLERY

TRAINING IN ELCOT TRAINING CENTRE	END USER TRAINING IN ELCOT
	
OP REGISTRATION	**LABORATORY**
	

CLINICAL OP - DOCTORS	**PHARMACY**
	
ANTE-NATAL CLINIC	**SERVER**
	
THE PROJECT DIRECTOR INSPECTING PHASE III IMPLEMENTATION IN GOVT. ROYAPETTAH HOSPITAL	**OP CASE RECORD PRINTOUT IN GOVT. ROYAPETTAH HOSPITAL**