STATE HEALTH SOCIETY BIHAR

TENDER DOCUMENT

For

Establishment, Deployment, Operation and Maintenance of

Hospital Management System in IGIMS, 6 Medical College & Hospitals and 6 District Hospitals

19th May 2014

State Health Society, Bihar
Pariwar Kalyan BhawanBihar
Sheikhpura, Patna-800014

This Request for Proposals (RFP) has been addressed to the following shortlisted Bidders only:

i. BODHTREE CONSULTING LIMITED, HYDERABAD
ii. NSDL e GOVERNANCE INFRASTRUCTURE LTD, ERNST & YOUNG, SYMPHONY HEALTH CARE TECHNOLOGIES PVT.LTD.
iii. SIFY TECHNOLOGIES & HEALTHFORE TECHNOLOGIES LTD
iv. SRIT
v. TATA CONSULTING SERVICES

Important Dates and Information

Date Of Commencement Of Bid	19/05/2014
Sending of Pre-Bid Queries	23/05/2014 by 15:00 Hrs
Pre-Bid Meeting	26/05/2014 at 15:00 Hrs
Last Date And Time For Receipt Of Bids	09/06/2014 by 15:00 Hrs
Date & Time Of Opening Of Part-I ,Part-II, Part-III of the Bids	09/06/2014 at 16:00 Hrs onwards
Date & Time Technical Demo & Presentation	11/06/2014 at 11:00 Hrs (separate slots will be communicated to the eligible bidders)
Date & Time Of Opening Of Financial Bids and Declaration of results	16/06/2014 at 11:00 Hrs
Address For Communication / Submission/ Pre-Bid Meeting /Opening of Technical & Financial Bid	State Health Society, Bihar Dept. of Health, Govt. of Bihar Pariwar Kalyan Bhawan, Sheikhpura, Patna-14
Contact Person	Shri Arvind Kumar
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Contact Phone no	9470003015.

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1. Project Profile

1.1. Project Objective:

A next-generation MIS that is powerful, flexible & easy to use and has been designed & developed to deliver real conceivable benefits to hospitals.

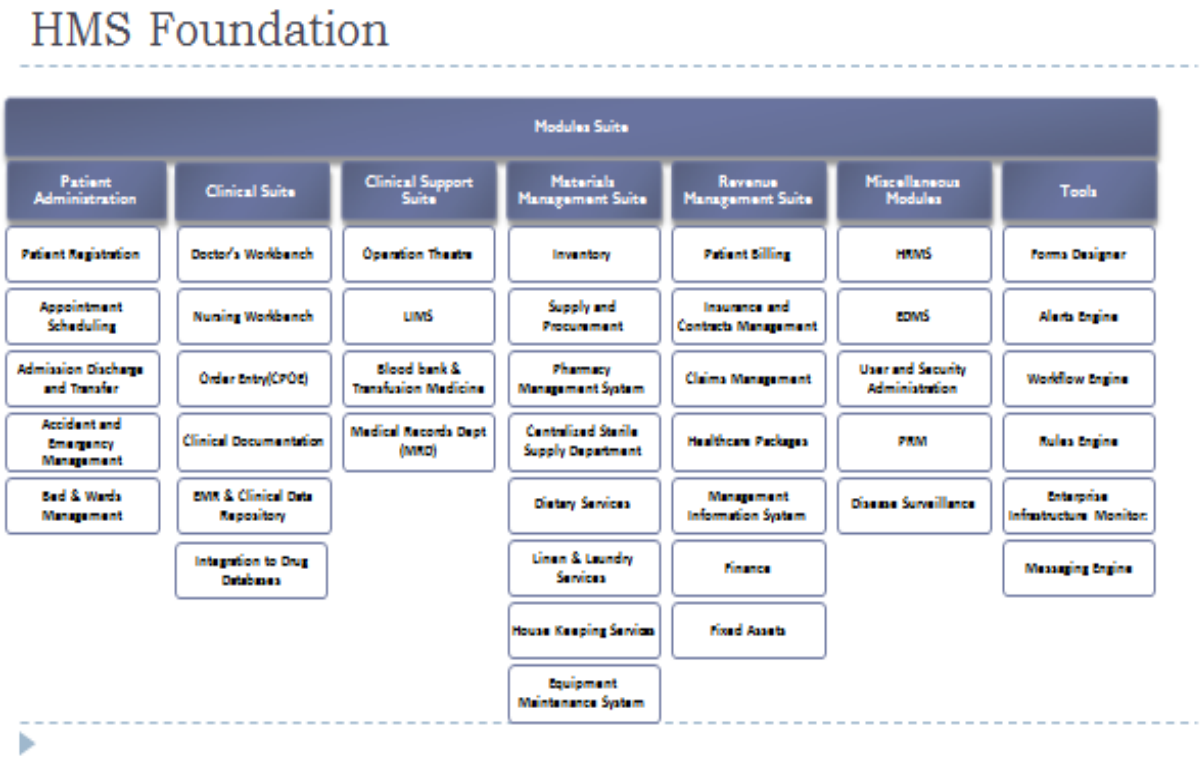
- Hospitals need to decide how services could be delivered more effectively to reduce costs, improve quality, and extend reach
- Rising hospital management costs, challenges in accessing services & timely availability of information are some of the facts of today's healthcare system
- New realities are placing pressures on the healthcare industry, and how patient care is delivered
- IT systems that facilitate decision making and provide 24x7 anytime, anywhere access to information are becoming a vital part of today's healthcare

SHSB is committed to preparing hospitals to meet current & future challenges through leveraging upon IT. Through a dedicated healthcare practice group State health department wants to establish/create a revolutionary IT system that facilitates hospitals for delivering effective, patient-centric services

- HMS should be a revolutionary solution with end-to-end features for simplifying hospital management – all at a cost which provides the fastest ROI
- Access to the right information and the automation of complex tasks & workflow is the key focus of the HMS, enabling freeing the staff to spend more time on caring for patients and extending the reach of services
- The HMS must be designed to cover a wide range of hospital administration and management processes
- State health department believes that every hospital is unique in terms of its requirements and priorities. Hence, flexibility must be built-in to the HMS to allow easy customization.
- The HMS features unparalleled flexibility & scalability, comprehensive report types, easy customization, intuitive visuals and interactive graphics that simplify complex data, dashboards supported quality initiatives and comprehensive drill-down capabilities
- The HMS must be conceived by a blend of seasoned professionals with rich and relevant experience in healthcare industry
- The system should incorporate the best healthcare practices and is designed to deliver key tangible benefits to clients across the globe
- The Solution be so designed that it is easily manageable and a Web Based solution accessible to the users from anywhere

1.2. Foundation of the HMS:

The HMS modules must been designed according to three categories – Core modules, Supporting modules and Enterprise-enabling modules. These modules can further be customized according to hospital needs.



1.3. Scope:

The Key Highlights of the HMS Modules required:

- Patient-centred approach
- User-friendly, easy-to-use & web-enabled applications
- Multi-level distributed hospital information system
- Security & privacy (authentication, authorization, privacy policy)
- Integration
    - Patient identification
    - Single log-in
    - Use of controlled vocabularies for coding
    - Data consistency
    - Transparency
- Single enterprise warehouse data store
- Robustness, reliability, performance
- HIPAA and HL7 compliance
- Scalability & portability (open modular architecture, declared interfaces, etc)

1.4 Brief Key Feature Description:

Patient Registration

The Patient Registration module captures all the demographic details of the patient and also allows the user to record the Social Security Number (SSN) of the patient. The SSN will be used by all the users to access his record in the future. The registration screen will capture all details of the patient like his personal information, contact details, details of the Next of Kin, and Biometric details. It will also capture all information with respect to his Insurance Policy like the Eligibility; Policy and Payment details.

Key Features

- New Born Registration
  Upon being notified of the birth from the Nursing Module the facility to register, a newborn baby is provided by taking pertinent information from the Mother's record.
- Patient Search
  This feature will provide a search screen wherein the user will be able to retrieve a particular patient's record by keying in the search/filter criteria. This will also facilitate the user to drill down on a particular record by putting in more search criteria.
- Patient Merge
  This feature will enable the user to merge two or more records if they are found to be duplicates. It will also give the user the option of selecting the particular record he/she wishes to retain and the others will be merged to this record
- Patient Unmerge
  This feature will enable the user to correct any incorrect merging. The user will have the facility of assigning the merged information from the date of merger back to the corresponding records by assigning them appropriately

Appointment Scheduling

The Appointment Scheduling and Management Module is an application, that can be used effectively to optimize the scheduling of patient appointments, staff, and other resources throughout the healthcare enterprise. The Module facilitates viewing of time slots for doctors and nurses for appointment allocation. It enables the employee at the scheduling desk to answer all appointment related queries posed by the patient. The patient's appointment with the doctor can be scheduled, rescheduled or cancelled directly or through telephone. This module can be easily interfaced with the HRMS module. The module handles various scheduling like OP scheduling, Multi-Consultant Bookings, etc. It has also inbuilt algorithms like best fit, rand fit, etc.

Key Features

- Reminders (including emails/SMS to patients) with log
- Cancellations with reasons
- Repeat appointments
- No show capture
- User defined slot definition (new / follow-up), follow up after 30 days
- Allows for appointments with non-physician healthcare professionals
- Ability to schedule diagnostic procedures etc at time of making outpatient appointment
- Allows physicians to invoke clinical orders and view previous records during consultation
- Allows scheduling of surgical procedures from the clinic
- Allows standard order sets associated with clinics.
- Links with EMR to allow Doctor to record history, physical examination, investigations and other clinical details/observations & view them
- Allows linked appointments & consultations between departments e.g. Imaging and OPD, or between doctors with cross-viewing of records
- Allows specified resources to be associated with an appointment (personnel, equipment etc)
- Alert if there are conflicting appointments

ADT

The ADT module takes care of the Admission, Transfer and Discharge of the Patient. The module helps to track the progress of the patient in terms of movement, stay and care delivery. The module operates individually and tracks patient status through interaction with relevant modules like Bed Management and Wards Management.

Accident & Emergency

The Accident & Emergency module offers patient tracking and an intuitive presentation of patient diagnosis and clinical events for the emergency department. It provides basic emergency department functionality, including quick admits, triage, tracking and patient history as well as a graphical reference to patient location and order status. At the same time brought by details, Accident Details (Place, Nature), Informing the Police in the event of a Police case are some of the built-in features in the Accident & Emergency Module.

Key Features

- Triage and assignment of patient priority
- Patient locator in (A&E)
- Clinician (Doctor, nurse etc) work list with electronic medical record access.
- View previous records if any
- Administrative and Clinical reports tailored to the A&E requirements
- System is able to merge temporary registration to actual registration.
- System records the patient body review results like temperature, blood pressure, etc.
- System displays referred doctor comments for admission along with provisional diagnosis and problems at admission & discharge office and nursing stations.
- System records the patient chief complaint.

Bed Management

The Bed Management Module enables authorized Personnel to have a graphical view of each and every bed across wards in the hospital in order to gauge and confirm the precise status of all operations relating to bed management like Bed Enquiry, Bed Census and Bed Maintenance. The module also helps to classify beds in terms of ICU, PICU/SICU,

Isolation, Trolley and Bassinet. It will provide a well-defined methodology of bed reservation and bed allocation for multiple rate categories. The Bed Management module will also provide valuable management statistics on bed utilization, bed audit and bed revenue reports.

Key Features

- Provides accurate and timely information for bed management decision-making and present the information in a way that is comprehensible.
- Enables inclusion of expected discharge planning.
- Provides bed-waiting facility to track time from when a patient is to be transferred till when it actually takes place.
- Allows designation of male/female/children beds/ rooms/suites etc
- Allows flexible occupancy of rooms e.g. mother and baby, twins, siblings
- Allows creation / maintenance of Wards/Beds/Cots Master File
- On-line Bed Status / Census
- Automatic capture of 'midnight' Bed Status / Census report
- Auto change of bed status, post Admission, Discharge or Transfer
- Pre-Admit and Bed booking

Ward Management

The Ward Management Module will assist Nursing and Ward Personnel in managing all administrative activities and ward related operations. The module also keeps track of patient care rendered at special care units like ICU, Operation Theater etc. for specific In-Patient episodes. The salient features of the module would include selection of wards and patients, Issue / Return Consumables, Collection of Samples, Transfers, Pre-Operative Checklist for patients, Discharge Planning, Bed Swapping, Bed Transfer, Consultant Transfer and Notification to Service Department. Besides this, the ward management module is interfaced with the Order Communication and Pharmacy modules to place patient and non-patient related orders and issue/accept returns of drugs based on the order communication generated from wards. The module also enables ward stock access at any given point of time.

Key Features

- Ability to add / modify ward details in Master File
- Create / Modify Room and Bed details in a ward, including transfer to another bed/ unit
- User defined type of beds, including multiple occupancy – mother/baby beds
- Out of service beds
- Bed status management
- Housekeeping notification after discharge
- Housekeeping schedule reminders
- Daily census
- Admission / Discharge / Transfers notification to kitchen

Doctor's Workbench

The Doctor's Workbench module helps to track all the episodes of care for a patient and enable the updating of every such episode in the EMR. It also helps to arrange, assort and record all patient specific clinical information and facilitates the order placing for the patient, prescription of drugs etc. The General Medical Examination which is an integral part of the patient case sheet includes the Chief Complaint, History of Presenting Illness, Past Medical History, Drug History, Allergies, Family History, Social History, Review of Systems, General Physical Examination,

Vital sign and Diagnosis for the patient.

CPOE

The Computerized Physician Order Entry module will allow orders for patient services to be entered and electronically transmitted from the point where the order originates to the point of patient services thus minimizing delays/Medical Errors, eliminating lost paper, and making information accessible to other providers. Order entry includes Laboratory Orders, Radiology Orders and Pharmacy Orders, Blood Bank Orders and MRD Orders for both inpatients and outpatients. The modular functionalities will also enable the physician to classify orders into patient related (procedural and general orders etc.) and non-patient related which helps to maintain the flow of data across the system. The module will have various business rules to handle various interactions and management principles like investigations, lab investigations etc.

1. Drug – Drug Interactions
2. Drug – Food Interactions
3. Drug – Lab Interactions
4. Drug – Pediatric Interactions
5. Drug – Geriatric Interactions
6. Drug – Allergy Interactions
7. Drug – Lactation
8. Drug – Pregnancy Interactions
9. Drug – Diagnosis

Electronic Medical Records

The Electronic Medical Record is a report mostly containing clinical information and also administrative details of the patient. This report is highly secured and access to the information in the EMR depends upon the access rights given to the user. This report will be available online and user can browse back to any episode of care and get the clinical details as on that date. The data comes from following departments

Key Features

- Nursing Workbench
- Doctors Workbench
- Laboratory
- Radiology
- Blood Bank
- ADT
- Patient Registration
- Pharmacy
- OT
- Order communication

Nursing Management

The Nursing Workbench module caters to the requirements of nurses in the ward or clinic to attend to all aspects of patient care. It works in conjunction with the Doctor's workbench module and other departmental modules of HIS. The module forms the core of the clinical and administrative systems of the HIS. The module enables nurses to:

- Enter the patient's nursing care plan
- Enter vital signs
- Enter allergy details
- Enter fluid balance chart
- Update drug chart/drug infusion chart
- Update request for investigation
- View dietary instructions entered by the doctor
- View lab and radiology results online
- Access EMR to view patient details
- Update OR checklists
- View nursing protocols
- Update vaccination chart
- Update birth notification details
- To enter/update e-MAR (Medication Administration Record)
- To enter/update Observation and Assessment Sheets
- Track Referrals
- To order for nursing interventions, ancillary services, medications, physiotherapy, etc
- Calculate the Acuity levels and upon choose the right level the same will be displayed in the graphical Bed and Ward Management Screens
- Access Medical Reference Information like Policies and Procedures, Drug Monographs, Differential Diagnosis, Nursing Care Plans, etc
- To enter flow sheet information and generate Graphs for the same
- Reports including Variance reporting, etc
- Scheduling requests

- Enter Patient Discharge information
- To transfer patients, bed swapping, consumable issue, consumable return, drug issues and returns, etc

Apart from the above the system will also provide with the following functionalities:

- Statistical Reports
- MIS reports on usage, tracking, performance, etc
- ADHOC Reports
- Run time form designer for the nurses to create their own assessment/observation/progress-notes forms
- Chart lists and Roster Management
- Planning features

Laboratory

The Laboratory Information management systems module is a versatile and feature rich LIMS built on the latest technologies. It is a user-friendly system providing smooth running of various departments of the LAB performing specimen transfer, storage, request and processing events and documenting real-time history of specimen with built-in security features for easy access to the authorized users. The HIMS provides special features to enable the user to conveniently view, share, analyze and communicate information across the board between various care providers. It provides a vide variety of reports for healthcare professionals. It will also provide various MIS reports, surveillance reports etc to enhance the quality of care provided to the patient by the institution.

Key Features

- Lab Registration
- Test Scheduling
- Sample Collection
- Sample preparation
- Analyzing
- Work Sheets
- Quality Control and Quality Assurance
- Authorization

- Results,
- External Samples,
- Referred out Samples,
- Inventory Control,
- Instrument Maintenance,
- Specimen reception with time frames
- Accession number allocation
- Specimen tracking
- Re-ordering of corrupted specimens
- Re-test management, for QC or at ordering physician's request
- Manual Entry of text results
- Manual entry of numeric results
- Specification of normal ranges – linked to age and gender
- Results back to patient EMR
- Manual/scanned entry of outsourced specimens by scanner
- Printing of test results available
- Specification of normal ranges – linked to age and gender

Pharmacy

The Pharmacy module acts as a drug information system useful for dispensing and stock control functions of the pharmacy department. As a centralized drug information system, this module maintains complete drug formulary with information on the generic name, the trade name, standard dosages, contra-indications, interactions, physical and chemical characteristics, etc. It supports various drug classifications and indexes and interfaces with eBNF /Unit dose and other drug databases like Martindale, Drug DB. The dispensing system allows dispensing of drugs against the drug medication orders and prescriptions for patients given by the doctors/ nurses /pharmacist as applicable. The medications can be for one-time use or could be repetitive in nature over a period as specified by the doctor.

Key Features

- Provision for merging or modification of MRN numbers from episodes on the same patient.
- Automatic downloading of patient demographics from the MPI at each hospital site including date of admission and discharge.
- Automatic updating of user defined patient demographics from the PMI to Pharmacy System including MRN, patient billing category, and any health insurance details.
- The system will support Discharge Prescriptions for patients going home.
- The system will support barcoding for stock selection from the pharmacy.
- Support for limited Imprest Drug Cupboards in wards, departments, and the Urgent Care Clinic.
- Support for clinical ward pharmacy functions including individual patient supply via drug trolleys.
- Support for taking and entry of Patient Drug Histories (Pre-Admission or Admission Histories) by a clinical pharmacist.
- Integrates with General Ledger, Invoice Matching, Accounts Payable systems for transfer of pharmacy stock control information.
- Full support for Intravenous Admixtures
- Transfer items between stores, imprest and sub-stores.
- Supports Patient Drug Profiles (Patient Drug History)
- Manages all stages of bill from the creation of an invoice through to receipting i.e.

create invoice, debtor management, cashiering system, trial balance and audit reports.

- Billing module defines different billing categories within each practice eg. Private, Public

Inventory

The inventory module would include all the business processes of inventory management of a back-office organization. All required inventory control features such as batch & bin tracking, expired items tracking, re-order level, min & max quantities are present here. Planning features such as suggested order quantities, vendor to item cross-referencing are very well mapped here. Apart from the stock transaction documents such as stock request/indents, issues, transfers, returns, reservation, adjustments, stock taking there are a host of power packed features such as user configurable reports, user configurable document printing etc

- Item
- UOM
- Item tracking
- Item Pricing
- Stock Taking
- Destruction Certificate Document
- Stock Adjustments
- Stock Transfers

- Stock Request
- Stock Issues
- Stock Receipt
- Stock returns
- Stock Reservation
- Packing List
- Stock Ledger
- Stores Management
- Approval mechanism
- Consumption Entry
- Goods Receipt Note
- Reports
- Item History
- Item Ageing analysis
- Item History
- Item Ageing analysis
- Stratification analysis reports (ABC, XYZ, FSND)

The report groups Items based on the stratification code, viz A, B, C or X, Y, Z etc assigned to it by the system. The rules for the Stratification are user definable and the system re-classifies an Item, if necessary on a monthly basis.

- Stock ledger - By Date, By Item, By Store, By Batch, By department
- Consumption analysis
- Stock transfer report
- Inventory listing
- List of all items in physical inventory with stock status
- Pending Material requisitions
- Critical items report

- Ratio of First time Issues versus Requisitions made
- Report listing of stocks Received, Accepted & Rejected for a specific period.
- Report on stock lying in the Quality stores
- Report on stock lying in the Rejected stores
- Monthly consumption report by Item, by Store

Supply and Procurement Module

The Supply & the Procurement modules mainly deal with purchase documents or through an elaborate tendering cycle. The complete purchase cycle from the purchase requisition till receiving of goods are comprehensively covered here. Certain salient features such as sorting of vendors based on prices, configurable payment & delivery terms are also present. Sales & distribution activities, which are part of the supply module, are well defined in the module.

- Profiles
- Item
- Payment terms
- Supplier Profile
- Classification of Local Agent and linking foreign suppliers
- Supplier Contact
- Customer Profile
- Customer Contact
- Price Matrix for Customers
- Documents
- Request for Advertisement (Tender Cycle)
- Bid Data Sheet (Tender Cycle)
- Tender Invitation document (Tender Cycle)
- Bid Document (Tender Cycle)
- Unifying bid data (Tender Cycle)
- Purchase Requisition
- Purchase Order - Register
- Purchase Receipt
- Goods Receipt Note
- Sales Quotation
- Sales Order
- Sales Invoice
- Delivery Note
- Sales Return

Fixed Assets

Fixed assets management has become an important function in any organization. Purchase of fixed assets, sale of fixed assets, tracking of life of the assets, warranty, insurance have all become growing needs of fixed assets management. Fixed asset module is a comprehensive module covering all aspects of management, control & tracking of fixed assets. Automatic depreciation calculation and fixed asset register are also provided in this module.

Key Features

- Multiple stores/locations
- Transfer facility by date and or location, requests and approvals etc
- Physical verification check list and control
- Valuation
- Depreciation – auto and post at required internal to GL
- Allocate depreciation by cost centre
- Records to show warranty and guarantee periods
- Fixed assets movement schedules, reports
- Planned Preventive Maintenance – scheduling of maintenance and equipment details, history files, alerts
- Test procedures
- Details on calibration expiry
- Availability of substitutes and other details
- Lifecycle modeling

Patient Billing

The Patient Billing and Accounting module will provide a comprehensive integrated billing system. It maintains charges for the various services provided by the Hospital / Clinic for In-patients and Outpatients. It will provide different charges for various types of patients based on eligibility criteria (for example - Military, Civilian, Insurance patients) and can generate split bills, single and interim bills. Settlement of bills can be done in local and/or foreign currency, cash and credit mode. The inbuilt security system provides access to authorized administrators to operate the billing system, enter discounts, refunds and cancellations. This module will track balance amounts and generates various revenue statements that are integrated with the Patient ledger module. The module will interface with Order Communication, Pharmacy, Laboratory, Radiology, Insurance and contract Management. Integration with Finance modules (General Ledger, Accounts Receivable, Accounts Payable) gets the effect once the invoice/receipt is generated in the Patient Billing Module. Patient Accounting & Billing application accommodates multi-entity accounting with centralized and decentralized billing and assists with every aspect of a healthcare organization's billing and collections.

Financial Accounting and Budget

Keeping in mind the ever-growing demands & challenges faced by the finance department, the Financial Suite is a comprehensive & integrated module enabling the finance manager to efficiently manage finances of an organization.

This suite will have basic tools of accounting & modern analytical reports to give an edge to the finance department in effectively managing and controlling finances. From user-defined Chart of Accounts to configurable MIS reports, this finance module encompasses all the required features from BRS to budgeting, voucher approvals to multiple currencies.

General Ledger

Key Features

- Chart of Account segments
- Accounting periods closure – month and year end by sub ledger
- Consolidated financial statements (PL, BS & CF)
- Cost Centers (budgets and performance)
- Cost Centre allocations through various criteria (direct, percentage or variable)
- Cost analysis by various parameters

- Budgeting and forecasting for both revenue and expense and capital budgeting
- Multiple currency conversion
- Approval process on the system, enter, edit, review and approve through the system
- Journal produced for each transaction for approval purpose (no manual journal)
- Verify budget on line
- Approval limit preset
- Recurring Journals
- Bank reconciliation on screen
- Reconciliation of G/L with other sub-modules (exception reports)
- Allows back posting at higher of level of authority
- Allows export facility to excel or word document
- Journal numbering system – auto and must correct when back posting is done. Facility to have the numbering system by month.
- Password at entry, view, alter, approve levels
- Flexibility to change cost centres, groups, account name etc
- View accounts details by drag down to entry level
- Customized reports
- Costing system

Accounts Receivable

Key Features

- Customers records, contact information
- Credit note/ debit notes
- Reminders to customers for payment – alert, auto letters
- Credit limit verification
- Block account operation

- Apply part payments, on account payment, advance payments
- Discounts
- Accounts statement by due date and bill date – age analysis
- Cash management and reconciliation
- Refunds

Accounts Payable

Main features of this module would include:

Vendor Evaluation based on:-

- On time delivery
- Pricing
- Automated checks / Bank transfers (Check Digit inclusion)
- Alerts when item price is outside contract ranges
- Steps/authorisations/approvals
- FA auto update
- G/L Auto update
- Ageing Analysis
- Various outstanding balances (Checks, promissory notes, cash, etc)
- Allows part delivery of goods
- Allows part payment
- Records payable by item category (capital, medical, consumables)
- Credit/ Debit Note entries
- Recurring payments

- Payment options – cheques/direct transfer/cash only etc

2. Instruction to IA's

IA's are advised to study this RFP document carefully before participating. It shall be deemed that submission of bid by the IA has been done after their careful study and examination of the RFP with full understanding to its implications. Any lack of information shall not in any way relieve the IA of his responsibility to fulfill his obligations under the Bid.

2.1. Definitions

In this document, the following terms shall have following respective meanings:-

"Acceptance" means the Government's written certification that following installation, the system(s) (or specific part thereof) has been tested and verified as complete and/or fully operational, in accordance with the acceptance test defined in the Acceptance Test Documents.

"Acceptance Test Documents" means a mutually agreed document which defines procedures for testing the functioning of the Software solution, against requirements laid down in the agreement. It should define tests to be carried out, test equipment and expected test results.

"Agreement" means the Agreement to be signed by the Successful IA and SHSB/Govt. of Bihar

"Authorized Representative" shall mean any person/agency authorized by either of the parties.

"**Affiliate**" shall mean any holding company or subsidiary company as a party of the Agreement or any company, which is subsidiary of such a holding company. The expressions "holding company" and "subsidiary company" shall have the meaning specified in Section - 4 of the Companies Act 1956 (as amended from time to time).

"B-TAST" is Bihar Technical Assistance Support Team

"Contract" is used synonymously with agreement.

"**Corrupt Practice**" means the offering, giving, receiving or soliciting of anything of value or influence the action of a public official in the process of Contract execution

"Documentary evidence" means any matter expressed or described upon any substance by means of letters, figures or marks intended to be used for the recording of that matter and produced before a court.

"**Default Notice**" shall mean the written notice of Default of the Agreement issued by one Party to the other in terms hereof.

"**Final Acceptance Test (FAT)**" means the acceptance testing of HMS for data, voice, video covered under the scope of work and their services rectifying all the issues raised in partial acceptance testing.

"**Fraudulent Practice**" means a misrepresentation of facts in order to influence a procurement process or the execution of a Contract and includes collusive practice among IAs (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive SHSB,GOB and /or Department of Health & Family Welfare of the benefits of free and open competition.

"**Good Industry Practice**" shall mean the exercise of that degree of skill, diligence and prudence which would reasonably and ordinarily be expected from a reasonably skilled and experienced IA engaged in the same type of undertaking under the same or similar circumstances.

"Gov./GoB /Government/Govt. of Bihar" shall mean Government of Bihar.

"**Implementation Period**" shall mean the period from the date of signing of the Agreement and up to the issuance of Final Acceptance Certificate of HMS.

"IA" means the firm offering the solution(s), service(s) and/ or materials required in the RFP. The word IA, when used in the pre-award period shall be synonymous with IA, and when used after intimation of successful IA shall mean the successful IA, also called 'IA or Implementation Partner', with whom Govt. signs the Contract

"Law" shall mean any Act ,notification, bye law ,rules and regulations, directive, ordinance, order or instruction having the force of law enacted or issued by the Government of India or State Government of Bihar or regulatory authority or political sub-division of government agency.

"LOI" means issuing of Letter of Intent which shall constitute the intention of the Tenderer to place the purchase order with the successful IA.

"**Partial Acceptance Test (PAT)**" means the provisional acceptance testing of all equipment (hardware & software) and their services covered under the scope of work.

"Party" shall mean Govt. or IA individually and **"Parties"** shall mean Govt. and IA collectively.

"PBC" means Pre-Bid Conference

"Performance" means accomplishment of the project in terms of Standards, Quality, and SLA for implementation, maintenance and support.

"**Period of Agreement**" means Implementation period as defined 3 years (including warranty period) from the date of final acceptance of the HMS.

"Rates/Prices" means prices of supply of equipment and services quoted by the IA in the Commercial Bid submitted by him and/or mentioned in the Contract

"RFP" means the detailed notification seeking a set of solution(s), service(s), materials and/or any combination of them.

"Services" means the work to be performed by the IA pursuant to this Contract, as detailed in the Scope of Work

"Site" shall mean the location(s) for which the Contract has been issued and where the service shall be provided as per Agreement

"Solution Implementer" shall mean the selected IA.

"Tenderer" shall mean the authority issuing this Request for Proposal (RFP) and the authority under whom infrastructure is to be implemented, operated, managed etc. and this authority shall be the SHSB, Government of Bihar.

"Termination notice" means the written notice of termination of the Agreement issued by one party to the other in terms hereof.

"BSWAN" means Bihar State Wide Area Network

"**Uptime**" means the time period when specified services with specified technical and service standards as mentioned in Section 5 are available to users. The uptime will be calculated as

follows: Total time in a quarter (in minutes) less total Service Down time (in minutes) in the quarter.

"**%Uptime**" means ratio of 'up time' (in minutes) in a quarter to Total time in the quarter (in minutes) multiplied by 100.

"**Service Down Time**" (SDT) means the time period when specified services with specified technical and operational requirements as mentioned in Section 5 are not available to its users. The network shall be always operational. The network is considered as operational when all centres at all tiers/ levels are working, providing all/ specified services as mentioned in Section 5 in full capacity at all locations in the network. In case of failure of an aggregate port (i.e. port connecting a centre with other centre) of a centre, all services at all positions of the lower level centre between the two centres shall be considered as Down/ non-operational.

If more than 50% of ports/ service positions (voice/ data/ video) are down/ non-operational in a centre, then the centre is considered as down/ non-operational.

SDT shall be calculated, including the Down time due to power failure (within UPS capacity), but excluding the Service Down time due to ISP failure ,Force Majeure, as follows: (all time shall be in minutes).

SDT = (Voice SDT + Data SDT + Video SDT) / 3 (From 08:00 Hours to 20:00 Hours on all days except Sundays & State Govt. Holidays).

Voice SDT = Sum of Down time of voice service from all voice service positions / Total number of voice service positions.

Data SDT = Sum of Down time of data service from all data service ports / Total number of data service ports.

Video SDT = Sum of Down time of video service from all video service positions / Total number of video service positions.

"All ports for Data and positions for Voice and Video or total number of ports for Data and positions for Voice and Video" means number of ports for Data and positions for Video and Voice as specified in Section below.

Internet/ other network service will be considered as data service for downtime calculation. In case of internet or helpdesk being non-operational/ down, all the data ports in the network shall be considered non-operational/ down.

2.2. Eligible IA's

The following are the conditions, which are to be necessarily fulfilled, to be eligible for technical evaluation of the proposed solution.

Sl. No.	Criteria	**Documents/Information to be provided in the submitted proposal**

1.	Should have submitted a EMD of **Rs.25,00,000/- (Rupees Twenty five Lakhs only)**	Original DD of Rs 25,00,000 from a Nationalized / Scheduled Commercial Bank having at least one branch at Patna
2.	The responding firm shall not be under a declaration of ineligibility for corrupt or fraudulent practices and should not be blacklisted by any State Govt./Central Govt/PSU/World Bank / DFID/ADB/any other organization for any reason during last 3 years ending on March'2014	A self-certified letter by the designated official of the responding firm about the non-blacklisting of the firm by the mentioned agencies for any reason during last 3 years ending on March'2014 ; Declaration that the bidder is not blacklisted as the format provided in the Annexure in an affidavit by notary public regarding the same should be submitted in stamp paper of relevant value. Both of the documents are reqd.
3.	Bidders reqd. to submit MAF(Manufacturer Authorization Form) from OEM's(Original Equipment Manufacturer) for Servers, Storage, Desktop PCs, Laptops, SAN Switch, Firewalls, Data Leakage Prevention,L3 Switches, Edge Switches UPS, Link Load Balancer	MAFs for all the items mentioned should be submitted as per the format given in the Annexure.
4.	Bidders should either have local presence in Patna, Bihar or agree to setup local office within one month of award of contract	A self-certified letter by the designated official of the responding firm to open up a local office at Patna within one month of award of contract; If the Bidders are already having a local office at Patna relevant address proof (Electricity Bill, BSNL phone Bill, Rent Agreement) for the same to be provided.
5.	Bidder will have the responsibility of all kind of maintenance and support of equipment, software etc specified in this project for a period of three years.	A self-certified letter by the designated official of the responding firm for taking the responsibility of all kind of maintenance and support of equipment, software etc specified in this project for a period of three years.
6.	Power of Attorney for signing the bid, letters etc on behalf of the firm	Power of Attorney to be provided as per the format given in the Annexure
7.	RFP document stamped and Signed in page printed back to back to be submitted	

NOTE: Please submit all the documentary evidence in support of the above conditions as the eligibility criteria without any of the above mentioned documents in the format as described if not submitted the bids will be summarily rejected.

2.3. Tender Fees

There are no Tender fees for this Bid.

2.4. Proposal Preparation Cost

The Bidder is responsible for all costs incurred in connection with participation in this process, including, but not limited to, costs incurred in conduct of informative and other diligence activities, participation in meetings/discussions/presentations, preparation of proposal, in providing any additional information required by SHS, Bihar to facilitate the evaluation process, and in negotiating a definitive Service Agreement or all such activities related to the bid process. This RFP does not commit SHS, Bihar to award a contract. Further, no reimbursable cost may be incurred in anticipation of award.

2.5. RFP Document

Bidder is expected to examine all instructions, forms, terms, specifications, and other information in the RFP document. Failure to furnish all information required by the RFP document or to submit a Bid not substantially responsive to the RFP document in every respect will be at Bidder's risk and may result in the rejection of its Bid. The Bid documents may be downloaded from website (http://www.statehealthsocietybihar.org/).

Tempering with any format given may be liable for rejection / disqualification of the bids

2.6. Clarification on RFP Document and Pre Bid Conference & Amendment to RFP Document

The Bidder or its official representatives (only one member) is invited to attend a pre-bid meeting to be held on the date mentioned in the important dates section at the Office of State Health Society, Pariwar Kalyan Bhawan, Sheikhpura, PatnaBihar-800014, Bihar,. The purpose of the meeting will be to clarify issues and to address clarifications sought by the Bidder's in this

context. The Bidder is requested to submit their Request for Clarifications through email only to reach the Executive Director, State Health Society, Bihar, by the date mentioned in important dates table before the pre bid meeting. The responses for the clarifications sought by the Bidder's will be distributed to all the Bidder's. No queries will be entertained after the due date to send queries.

However, it is not binding on SHS, Bihar to hold a pre-bid meeting or restrict itself to holding only one such meeting. If it feels, that the clarifications sought by the Bidder's do not warrant a pre-bid meeting, it can cancel the meeting and send the replies to the Bidder's by email.

Any modifications in the bidding documents, which may become necessary, shall be made by SHS, Bihar exclusively through the issue of a corrigendum. The decision of SHS on the need for any modification shall be final and binding on all.

The amendment(s) will be published on the website of SHSB http://www.statehealthsocietybihar.org/. Bidders are requested to visit the site frequently to check whether there is any related Corrigendum or not.

In order to afford prospective bidders reasonable time to take the Corrigendum into account in preparing their bids, SHS, Bihar may, at its discretion, extend the deadline for submission of bids.

Such Corrigendum, Clarifications etc. shall be binding on the Bidders and shall be given due consideration by them while they submit their bids.

2.7. Language of BID

The bid prepared by the Bidder, as well as all correspondence and documents relating to the Bid exchanged between the Bidder and the SHS, Bihar shall be in English. Supporting documents and printed literature furnished by the Bidder may be in another language provided they are accompanied by an accurate translation by approved translator of the relevant pages in English. For the purposes of interpretation of the bid, the translation shall govern. Information supplied in another language without proper translation shall be rejected.

2.8. Period of Validity of Bids

The bid shall remain valid for 180 days from the date of Technical Bid Opening being specified. Bidder should ensure that in all circumstances, its Bid fulfills the validity condition. Any bid valid for a shorter period shall be rejected as non- responsive.

In exceptional circumstances, SHS, Bihar may solicit Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing or by Fax. Bid Security shall also be suitably extended. Bidder granting the request is neither required nor permitted to modify the bid.

2.9. Format and Signing of Bids

The bidder shall prepare required number of copies (original plus one copy) of the bid and shall clearly mark each "Original Bid" or "Copy of Bid" as appropriate. In the event of any discrepancy between them, the original shall govern.

The original and the copy of the bid shall be typed or written in indelible ink and shall be signed and sealed by the bidder or a person duly authorized to bind the bidder to the bid. The person(s) signing the bid shall initial all pages of the bid with company seal, except for un- amended printed literature.
The Bids without the seal and signatures in all pages of all documents are to be disqualified.

The complete bid shall be without alteration or erasures, except those accorded with instructions issued by GoB or as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the bid

2.10. Sealing, Marking and Submission of the BID

Bidder shall submit their bids in Four PARTS, each in a separate sealed envelope super-scribed with the RFP document number, due date, time, Project name and nature of bid (bid security, Organizational capability, Technical bid or Financial Bid)

PART-I: EMD. Envelope needs to be super scribed as EMD.

PART-II: Pre-Qualification Documents and duly signed and stamped RFP with all corrigendum's (if any) Envelope needs to be super scribed as Pre-Qualification Document.

PART-III: Original plus 1 copy and one soft copy in a Pen Drive of TECHNICAL BID complete with all technical details. Envelope needs to be super scribed as "Technical Bid"- Do not open before 15:00 hours on the date given in Important date section.
Note: Filling up prices in Part III will render the bidder disqualified.

PART-IV: Original and 1 copy of FINANCIAL BID with full price details. Envelope needs to be super scribed as "Financial Bid" Do not open before 11:00 hours on the date given in Important date section.

The envelopes containing Part-I, Part-II, Part-III and Part-IV of offer shall be enclosed in a larger envelope duly sealed and marked as Response to Request for Proposal (RFP) with title and reference number, and a statement "To be opened by addressee only" and the name and address of the Bidder.

All the 4 envelopes shall be put in an OUTER COVER sealed and addressed to the Executive Director, State Health Society, Govt. of Bihar at the following address:

Executive Director,
State Health Society
Pariwar Kalyan Bhawan, Sheikhpura
Patna-800014

The OUTER COVER should be sealed and should contain the following documents:

a. This Tender Document duly signed on all pages as acceptance of terms and conditions by the bidder.
b. PART-I: EMD
c. PART-II: Pre-Qualification Documents
d. PART-III: Original and 1 copy of TECHNICAL BID along with one soft copy of the same in a Pen Drive
e. PART-IV: Original and 1 copy of FINANCIAL BID
f. Proposal covering letter which must be signed with the Bidder's name and by a representative of the Bidder who is authorized to commit the bidder to contractual obligations. All obligations committed by such signatories must be fulfilled.
g. Any other information that is required to be submitted in the proposal process

Please note that SHSB will not be responsible for in case there is a discrepancy between the hard copy and the soft version of the bid submitted by the bidders.

The outer and inner envelopes shall indicate the name and address of the bidder to enable the bid to be returned unopened in the case it is declared "late" pursuant, and for similar purposes.

If the outer envelope is not sealed and marked as above, SHSB will bear no responsibility for the misplacement or premature opening of the Bid.

Only detailed complete bids in the form indicated above received prior to the closing time and date of the bids shall be taken as valid.

Bids sent through Telex/Telegrams/Fax/e-mail will not be acceptable.

Bids should reach SHS Bihar on or before the last date mentioned in the important dates section by registered post or speed post only. Bidders submitting any bids in person or by courier will not be accepted.

Bids are liable for rejection if they don't comply to the above norms regarding sealing, signing proper packing & submission.

2.11. Opening of Bids at SHSB

SHSB will open bids at time mentioned at important Information sheet. BIDDER's representative (only one) with proper authorization must attend the opening at SHSB Technical Bid will be considered for those BIDDERs whose bids shall meet all the eligibility criteria mentioned in the Pre-qualification documents.

2.12. Evaluation Criteria

Part 1 (Bid Security)

BIDDER's who have submitted the valid EMD shall be considered for further evaluation.

Part 2 (Pre-Qualification criteria)

The Evaluation Committee would evaluate the Pre-qualification. Bidders should be ready to give any clarification asked by the evaluation committee. **One Representative with proper Authorization from the bidding firm must be present during the opening of the Pre-Qualification Documents. If there no representative of the bidding firm during the opening of Pre-Qualification Documents bids will be considered non-responsive and will be rejected.** The BIDDER's fulfilling all the conditions mentioned in the pre-qualification will be considered for Technical Bid opening. Authorized representatives should also carry rubber stamp with them.

Opening and Evaluation of Technical Bids

The Evaluation Committee would evaluate the technical bids. BIDDER's should be ready to give the presentation on their proposed solution and the queries raised by the evaluation committee in front of the Evaluation Committee at a date, time and location determined by SHS, Bihar. They are expected to reply to all the queries from the Evaluation Committee during the presentation. The presentation would be part of technical evaluation process.

SHS, Bihar may also undertake oral clarifications with the Bidder's. The primary function of clarifications in the evaluation process is to clarify ambiguities and uncertainties arising out of the evaluation of the bid documents.

One Representative with proper Authorization from the bidding firm must be present during the opening of the Technical Proposal. If there no representative of the bidding firm during the opening of Pre-Qualification Documents bids will be considered non-responsive and will be rejected.

In order to facilitate the Technical Bid evaluation, the technical criteria laid down along with the assigned weights have been presented in (Annexure). The marking scheme presented is an indication of the relative importance of the evaluation criteria.

Bidder's securing a minimum of 75% marks in the technical evaluation will only be considered for further financial bid evaluation. Bids which don't secure the minimum specified technical score will be considered technically non-responsive and hence debarred from being considered for Financial evaluation. Scores of technically qualified Bidder's shall be weighed prorate on a scale of 70 and shall be carried forward for evaluation together with the scores of Financial evaluation.

Opening and Evaluation of Financial Bids

After evaluating the Technical Bids, SHS, Bihar shall notify the BIDDERs who's Technical Bids were considered acceptable to SHS, Bihar, indicating the date, time and place for opening of the Financial Bids. BIDDER's representative (one only) may attend the financial bid opening at SHS, Bihar at Patna.

Scores of the Financial evaluation would be weighed prorate on a scale of 100 with the BIDDER with the **lowest financial quote** getting 100. These Financial scores would then be added up with the score of the technical evaluation and the Bidder getting the **maximum total score out of 100** would be considered as the successful BIDDER and called for negotiations, if required.

Formula for Final Bid Evaluation is

Bm= .7 (TM) + .3 (Fn)
Fn= (Fmin/ Fb)*100

Where

Bm is total marks of the BIDDER in consideration
TM is Technical Marks of the BIDDER in consideration
Fn is Normalized financial score of the BIDDER in consideration
Fb is Evaluated Cost of BIDDER under consideration
Fmin is Minimum evaluated cost of any BIDDER

SHS, Bihar reserves the right to negotiate with the BIDDER whose proposal has been ranked first on the basis of best value.

2.13. Bid Currency

Prices for services offered shall be quoted in Indian National Rupees only.

2.14. Bid Security

1. All BIDDER's shall furnish, as part of its Bid, an Earnest Money amounting to Rs.25,00,000 (Rs. Twenty Five Lakhs Only). Bids without this bid security will be rejected.
2. The Bid Security shall be in Indian Rupees and shall be in the form of Demand Draft, issued by any Nationalized bank/Scheduled Commercial bank in India having branch at Patna,

drawn in favour of "State Health Society, Bihar" payable at Patna. Such negotiable instrument should be valid for at least sixty (60) days.

3. Unsuccessful BIDDER's Bid security will be discharged or returned within sixty (60) days after the expiration of the period of Bid validity prescribed.

4. The successful Bidder's Bid security will be discharged upon the BIDDER signing the Contract Agreement, and furnishing the Performance Security.

2.15. Forfeiture of BID Security

The Bid security may be forfeited either in full or in part, at the discretion of SHS, Bihar on account of one or more of the following reasons:

1. The BIDDER fails to co-operate in the Bid evaluation process
2. If the bid or its submission is not in conformity with the instruction mentioned herein
3. If the BIDDER violates any of the provisions of the terms and conditions of the tender
4. In the case of a successful BIDDER fails to (a) accept award of work, (b) sign the Contract Agreement with SHS, Bihar after acceptance of communication on placement of award, (c) furnish performance security, (d) fails to sign the Contract Agreement in time, (e) or the BIDDER violates any of such important conditions of this tender document or indulges in any such activities as would jeopardize the interest of SHS, Bihar in timely finalization of this tender. The decision of SHS, Bihar regarding forfeiture of bid security shall be final and shall not be called upon question under any circumstances. A default in such a case may involve black-listing of the BIDDER by SHS, Bihar.

2.16. Award of Contract

SHS, Bihar will award the contract to successful BIDDER whose bid has been determined to be responsive and has been determined to be most competitive

2.17. Performance Security

Within 15 (Fifteen) days of Notification of "Award of the Work" the company shall furnish Performance Security to State Health Society, Bihar @ 10% of the total value of quoted bid by way of irrevocable and unconditional Bank Guarantee in favor of State Health Society, Bihar, payable at Patna for a period to be specified in the award of work. This Bank Guarantee should be of duration of 12 months renewable every year for 3 years. Depending on the project going live the Bank guarantee may have to be extended from the date of "Go live". The proceeds of the Performance Security shall be payable to State Health Society, Bihar as compensation for any loss resulting from the Company's failure to fulfill its obligations under the terms and conditions of the Work Order.

The Performance Security regarding commencement of job / task will be discharged by State Health Society Bihar and returned to the company not later than 30 (Thirty) days following the date of completion of the company's performance, related obligations under the terms & conditions of the Work Order.

Failure of the successful IA to comply with the requirements specified in this Section shall constitute sufficient ground for the annulment of the notification and forfeiture of the bid security in which event, the State Health society may award the contract in accordance with its prescribed rules

2.18. Contacting SHSB

1. BIDDER shall not approach SHS, Bihar officers beyond office hour and/ or outside SHS, Bihar office premises, from the time of the Bid opening to the time of finalization of successful BIDDER.
2. Any effort by a BIDDER to influence SHS officers in the decisions on Bid evaluation, Bid comparison or finalization may result in rejection of the BIDDER's offer. If the BIDDER wishes to bring additional information to the notice of the SHS, Bihar it should do so in writing.

2.19. Lack of Information to BIDDER

The BIDDER shall be deemed to have carefully examined RFP document to his entire satisfaction. Any lack of information shall not in any way relieve the BIDDER of his responsibility to fulfill his obligation under the bid.

2.20. Fraudulent & Corrupt Practice

"Fraudulent Practice" means a misrepresentation of facts in order to influence a procurement process or the execution of the project and includes collusive practice among BIDDERs (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive the SHSB of the benefits of free and open competition.

"Corrupt Practice" means the offering, giving, receiving or soliciting of anything of value, pressurizing to influence the action of a public official in the process of project execution. SHSB will reject a proposal for award if it determines that the BIDDER recommended for award has engaged in corrupt or fraudulent practices in competing for, or in executing, the project.

3. General Conditions

3.1. Conditions Precedent

3.1.1. Commencement of the Agreement

The successful BIDDER shall obtain the required clearances within 20 days of issuance of LoI. Agreement shall be signed only after the clearances are obtained:

The successful BIDDER shall have received all clearances, approvals and permits including any environmental approvals if required. The clearances, approvals and permits are specified in the RFP, SHS, Bihar and /or GOB will provide all necessary support to the successful BIDDER to obtain clearances, approvals and permits including environmental approvals. All the timelines will be counted from the date of signing the Agreement. Hence signing of Agreement cannot be altered / deferred. SHS, Bihar will help in receiving different clearances but obtaining clearances is the responsibility of the BIDDER.

3.1.2. Obligations to satisfy the Conditions Precedent

The successful BIDDER and SHS, Bihar shall use all reasonable endeavors to satisfy the Conditions Precedent that falls within the scope of its respective responsibility.

3.1.3. Notice of fulfillment of the Conditions Precedent

Upon the date on which the successful BIDDER becomes aware that any of the Conditions Precedent has been satisfied in full, it shall promptly give notice thereof to SHS, Bihar together with full details of the circumstances constituting such satisfaction and documentary evidence thereof.

3.1.4. Non-fulfillment of Conditions Precedent

If the Conditions Precedent set out hereinabove are not satisfied in full within 20 days of issuance of LoI, SHS, Bihar shall have the right to terminate/ cancel the LoI without any liability on SHS, Bihar and /or GOB. However, the Implementation Guarantee provided by the successful BIDDER will be encashed by SHS, Bihar/GoB if the delay is ascribed to the successful BIDDER.

3.2. Contract Obligations

Once a contract is confirmed and signed, the terms and conditions contained therein shall take precedence over the BIDDER's bid and all previous correspondence.

3.3. Implementation/ Performance Guarantee

The BIDDER shall furnish an irrevocable and unconditional Implementation Guarantee, as provided in the RFP to SHS, Bihar for an amount equal to 10 % of the total project cost for implementation of the project, as payable in terms of the Agreement.

The Implementation Guarantee shall be discharged by SHS, Bihar and returned to the BIDDER within 30 days from the date of End of Project.

3.4. Application

These general conditions shall apply to the extent that they are not superseded by provisions of other parts of the bid document.

3.5. Governing Language
The Contract shall be written in English language. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in the same language.

3.6. Applicable Law
The Contract shall be interpreted in accordance with the laws of the Union of India and State of Bihar.

3.7. Assigning of Sub-Contracts
The BIDDER can't assign anyone in whole or in parts, its obligations to perform under the Contract, without SHS, Bihar's formal consent.

3.8. Change orders
1. SHS, GoB may at any time, give written order to the IA to make changes for additional functionalities specifically required, but not falling within the general scope of the current RFP/Contract. If any such change causes an increase in the cost of, or the time required for, the IA's performance of any provisions under the Contract, the IA should notify Department of Health & Family Welfare, GoB in terms of the cost and person month efforts required for executing the change requests, SHSB will examine the efforts estimate & agreed efforts will be compensated in terms of person month charges.
2. Any claims by the IA for adjustment under this clause must be asserted within 6 working days from the date of the IA's receipt of the SHSB change order.

3.9. Notices
1. Any notice given by one party to the other pursuant to this contract shall be sent to the other party in writing or by telex, email, or facsimile to the other party's address, and confirmed in writing by the other party.
2. A notice shall be effective when delivered or tendered to other party whichever is earlier.

3.10. Patent Rights
The BIDDER shall indemnify the Tenderer against all third party claims of infringement of patent, trademark or industrial design and intellectual property rights arising from the use of equipment and services or any part thereof.

3.11. Taxes and Duties
Sales Tax/ Service Tax/VAT/Work Contracts Tax/ Octroi and other statutory levies shall be paid by BIDDER as applicable. The decision of SHS, Bihar in this regard will be final and binding and no disputes in this regard will be entertained.

3.12. Operation and Maintenance
The IA will post at-least five person at each Medical Colleges & Hospitals for three years to look after the maintenance of the Infrastructure after formal go-live. The IA will respond to any issue raised by the user within 6 working hours of being notified by the authorized person.

3.13. Force Majeur
1. For the purpose of this Article, Force "Majeure" means any cause, which is beyond the control of the IA or GoB as the case may be, which such party could not foresee or with a reasonable amount of diligence could not have foreseen, and which substantially affect the performance of the Contract, such as:-
   - War / hostilities
   - Riot or civil commotion

- Earth Quake, Flood, Fire, Tempest, Epidemics, Lightning or other natural physical Disaster, Quarantine restricts and Freight embargoes
- Restrictions imposed by the Government or other statutory bodies, which is beyond the control of the IA, which prevent or delay the execution of the order by the IA.

2. If a Force Majeure situation arises, the IA is required to promptly notify SHSB in writing of such condition and the cause thereof within a period of three (3) days from the date of happening of such an event requiring invocation of this force majeure article. Unless otherwise directed by SHS, GoB in writing, the IA will continue to perform its obligations under this supply order as far as is reasonably practical and shall seek all reasonable alternative means for performances of this order.

3.13.1. Force Majeure Exclusions

Force Majeure shall not include the following event(s) and/or circumstances, except to the extent that they are consequences of an event of Force Majeure :

(a) Unavailability, late delivery, or changes in cost of the HMS application, machinery, equipment, materials, spare parts.

(b) delay in the performance of any contractor, sub-contractors or their agents.

(c) non-performance resulting from normal wear and tear of the materials and equipment; and

(d) non-performance caused by, or connected with, the Affected Party's:

(i) negligent or intentional acts, errors or omissions; and/or
(ii) failure to comply with an Indian law or Indian Directive; and/or
(iii) breach of, or default under the Agreement.

3.13.2. Procedure for Calling Force Majeure

The Affected Party shall notify to the other Party in writing of the occurrence of the Force Majeure as soon as reasonably practicable, and in any event within 5 (five) days after the Affected Party came to know or ought reasonably to have known, of its occurrence and that the Force Majeure would be likely to have a material impact on the performance of its obligations under the Agreement.

Any notice pursuant this clause shall include full particulars of:

(i) the nature of each Force Majeure Event which is the subject of any claim for relief under the Agreement;

(ii) the effect which such Force Majeure Event is having or is likely to have on the Affected Party's performance of its obligations under the Agreement;

(iii) the measures which the Affected Party is taking, or proposes to take, to alleviate the impact of the Force Majeure Event and restore the performance of its obligations under the Agreement which are affected; and

(iv) any other information relevant to the Affected Party's claim.

3.13.3. Procedure for Claiming Relief

(i) Where an Affected Party claims relief on account of Force Majeure Event then, the rights and obligations of both Parties under the Agreement shall be suspended to the extent that they are affected by such Force Majeure Events.

(ii) In an Event of Force Majeure :

(a) the Affected Party shall use its best efforts to minimise the effects of Force Majeure and remedy any inability to perform due to Force Majeure;

(b) the Affected Party shall provide weekly written reports to the other Party regarding its progress in overcoming the adverse effects of the Force Majeure event;

(c) the Affected Party shall, as soon as reasonably practicable after claiming such relief, provide the other Party with written notice containing such information as may be reasonably required to justify the claim for relief due to Force Majeure;

(d) the Affected Party shall claim in respect of physical loss or damage resulting from the event constituting Force Majeure which are available from Insurances pursuant to any Insurance maintained by the Affected Party and ensure such claims are made as soon as is reasonably possible and that the proceeds of any such Insurance claims are applied to remedy the effects of the event constituting Force Majeure as soon as is reasonably possible; and

(e) the Affected Party shall, at its own cost, take all steps reasonably required to restore its ability to perform its obligations under the Agreement as soon as possible, including the re-commissioning of any affected part of the HMS.

(iii) When the Affected Party is able to resume performance of its obligations under the Agreement, it shall promptly give the other Party written notice to that effect. In no event shall the suspension of performance be of greater scope and of longer duration than is necessitated by Force Majeure.

3.13.4. Extensions due to Force Majeure

Neither Party shall be responsible or liable for, or deemed to be in breach of the Agreement because of any failure or delay in complying with its obligations under the Agreement, due solely to one or more events of Force Majeure, and the periods allowed for the performance by the Parties of such obligation(s) shall be extended on a day-for-day basis from the date of the event of Force Majeure provided that no relief shall be granted to the Affected Party to the extent that such failure or delay would have nevertheless been experienced by that Party had such Force Majeure event not occurred.

3.13.5. Termination as a result of Exceptional Event

Notwithstanding anything contained herein, in case the period of Force Majeure lasts for more than 3 (three) months from the occurrence of the event of force majeure, whether such force majeure event occurs before or after commissioning of the Project, either party shall have the right to terminate the Agreement by a written notice of 15 (fifteen) days to the other party.

The IA shall give notice to the SHSB of:

(i) the cessation of the event or circumstance of Force Majeure being claimed; and

(ii) the cessation of the effects of the event or circumstance of Force Majeure being claimed on the enjoyment by such Party of its rights or the performance of its obligations pursuant to the Agreement, as soon as possible after becoming aware thereof.

3.14. Handing Over

All moveable and immovable assets created in the project will be the property of State Health Society, Government of Bihar. Account of such assets shall be maintained properly. The assets will have to be handed over to the Government on completion/termination of the agreement in proper working condition.

3.15. Termination

The Government may, by a notice in writing suspend the agreement if the service provider fails to perform any of his obligations including carrying out the services, provided that such notice of suspension--

(i) Shall specify the nature of failure, and

(ii) Shall request remedy of such failure within a period not exceeding 15 days after the receipt of such notice.

(b) The Government after giving 30 days clear notice in writing expressing the intention of termination by stating the ground/grounds on the happening of any of the events (i) to (iv), may terminate the agreement after giving reasonable opportunity of being heard to the service provider.

(i) If the service provider do not remedy a failure in the performance of his obligations within 15 days of receipt of notice or within such further period as the Government have subsequently approve in writing.

(ii)If the service provider becomes insolvent or bankrupt.

(iii) If, as a result of other than force majeure conditions, service provider is unable to perform a material portion of the services for a period of not less than 60 days: or

(iv) If, in the judgment of the Government, the service provider is engaged in corrupt or fraudulent practices in competing for or in implementation of the project.

3.16. Resolution of Disputes and Arbitration

1. SHS, Bihar and the selected BIDDER shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

2. If, after thirty (30) days from the commencement of such informal negotiations, State and the selected BIDDER have been unable to amicably resolve dispute, either party may require that the dispute be referred for resolution to the formal mechanisms, which may include, but are not restricted to, conciliation mediated by a third party acceptable to both, or in accordance with the Arbitration and Conciliation Act, 1996.
3. All Arbitration proceedings shall be held at Patna, Bihar, and the language of the arbitration proceedings and that of all documents and communications between the parties shall be in English.

3.17. Acquaintance with local conditions

1. Each BIDDER is expected to fully get acquainted with the local conditions and factors, which would have any effect on the performance of the contract and /or the cost.
2. The BIDDER is expected to know all conditions and factors, which may have any effect on the execution of the contract after issue of Letter of Intent/Award as described in the bidding documents. The Tenderer shall not entertain any request for clarification from the BIDDER regarding such local conditions.
3. It is the BIDDER's responsibility that such factors have properly been investigated and considered while submitting the bid proposals and no claim whatsoever including those for financial adjustment to the contract awarded under the bidding documents will be entertained by the Tenderer. Neither any change in the time schedule of the contract nor any financial adjustments arising thereof shall be permitted by the Tenderer on account of failure of the BIDDER to know the local laws / conditions.

3.18. Statutory and Regular Approvals

The BIDDER shall be responsible for obtaining approvals for any statutory and regulatory requirements from any of the authorities. Further, the BIDDER shall be responsible to get required documentation completed for obtaining such approvals from time to time.

3.19. Confidentiality

Any information pertaining to GoB /SHS, Bihar or any other agency involved in the project, matters concerning GoB/SHS, Bihar that comes to the knowledge of the BIDDER in connection with this contract, will be deemed to be confidential and the BIDDER will be fully responsible, for the same being kept confidential and held in trust, as also for all consequences of its concerned personnel failing to observe the same. The BIDDER shall ensure due secrecy of information and data not intended for public distribution.

3.20. Limitation of Liability

The liability of the SHS, Bihar for its obligations under the Contract shall in no case exceed the total value of the Contract.

3.21. Failure to Agree with the Terms and Conditions of the RFP

Failure of the successful BIDDER to agree with the Terms and Conditions of the RFP shall constitute sufficient grounds for the annulment of the award, in which event SHS, Bihar may award the Contract to the next best value BIDDER or call for new Bids.

3.22. Indemnification

(1) The BIDDER shall indemnify SHS, Bihar and hold it harmless from all losses, claims, causes of action, damages, liabilities, fines, penalties and expenses of all kinds (including legal expenses, court fees and professional advisory service expenses) arising from or out of any adverse claims of any and all persons related to the execution of services as mentioned in the RFP.

3.23. Control and Possession

The BIDDER shall be deemed to be in control and possession of the equipment necessary for the proper and normal operation of the Project.

3.24. Replacement:

The BIDDER is required to replace, maintain & repair any equipment under this project getting damage or become non- functional.

3.25. Assignments & Sub-Contracts:

Assignment by BIDDER
The BIDDER can't assign, in whole or in part, its rights and obligations to perform under the Agreement to a third party, except with the prior written consent from SHS, Bihar.

Mergers and Acquisitions
No consent of SHS, Bihar shall be required, when an assignment by the BIDDER is the result of, and part of, a corporate acquisition, merger or combination with an affiliated entity or reorganization provided that such entity shall not be released of the obligations of the BIDDER under the Agreement.

3.26. Sub contracts

The BIDDER shall notify the SHS, Bihar in writing of all subcontracts awarded under the Agreement. Such notification shall not relieve the BIDDER from any liability or obligation under the Agreement. The BIDDER shall fully indemnify SHS, Bihar for any claims/ damages whatsoever arising out of the Sub contracts.

3.27. Amendment to the Agreement

Amendments to the Agreement may be made by mutual agreement by both the Parties. No variation in or modification in the terms of the Agreement shall be made except by written amendment signed by both the parties. All alterations and changes in the Agreement shall take into account prevailing rules, regulations and laws.

3.28. Use of Agreement Documents and Information

The BIDDER shall not without prior written consent from SHS, Bihar disclose the Agreement or any provision thereof or any specification, plans, , pattern, samples or information furnished by or on behalf of SHS, Bihar in connection therewith to any person other than the person employed by the BIDDER in the performance of the Agreement. Disclosure to any such employee shall be made in confidence and shall extend only so far as may be necessary for such performance.

The BIDDER shall not without prior written consent of SHS, Bihar make use of any document or information made available for the project except for purposes of performing the Agreement.

All project related documents issued by SHS, Bihar other than the Agreement itself shall remain the property of SHS, Bihar and Originals and all copies shall be returned to SHS, Bihar on completion of the BIDDER's performance under the Agreement, if so required by the SHS, Bihar

4. Special Conditions

The following clauses shall supplement the Instructions to IAs and General Conditions of Contract.

4.1. IA's Responsibility

The IA shall implement the project strictly as per the plan approved by SHSB. The implementation plan will take into consideration the following:

The IA shall provide details of equipment that will be incorporated in all hospitals mentioned in HMS project. The location for storing spare parts and quantity there on shall also be clearly indicated.

Implementation plan will be finalised during the period in which approvals & clearances will be taken.

The IA shall provide the necessary technical support, Standard Operating Procedure (SOP) and other information to SHSB and its user organizations in implementing HMS applications.

Electrical works wherever necessary shall be carried out by the IA at his own expense.

Earthing and Electrical points are to be provided by IA at each site.

The space cannot be used for any purpose other than for delivering the services as mentioned in RFP as contracted under the Agreement.

SHSB shall arrange for necessary clearances, which shall enable the IA to undertake any electrical works.

The entry and exit to the site and personnel of the IA shall be in accordance with Security Rules and Regulations that may apply to the Government Campus where the site is located.

4.2. Tests

The Tests concern all the equipment, systems and sub-systems supplied against this tender.

4.2.1. Field Acceptance Test

Once the system is installed and operating, it shall be tested by the successful IA and witnessed by SHSB and individual Hospitals. The Test shall be carried out as per the detailed test procedure supplied by IA and approved by the SHSB. Once the Tests successfully performed, the temporary acceptance of the system will be given. Only then the system will be ready for **"Test Run".**

4.2.2. Test Run

This Test aims at keeping the complete system in operation for a **period of 10 days continuously.** In case of failure, the Tests will be re-started till the system operates without failure for 10 days continuously. SHSB shall have the right to reject the complete system or part thereof in the event(s) of the acceptance Tests failing in two attempts. The "Test Run" shall be carried out after the commissioning of complete system.

Various observations and test results obtained during the various tests shall be documented and produced in the form of a report by the IA.

If malfunctions or failure of a unit or sub-system repeats, the Test shall be terminated and IA shall replace the necessary components and assemblies to correct the deficiencies. Thereafter, the Test shall commence all over again from the start as mentioned above. If after this one replacement, the unit or sub-system still fails to meet the specifications, the IA shall replace the complete unit or sub-system with the one that meets the requirements, and restart the Test all over again. All cost for repair/replacement of defective unit/ component/system/sub-system shall be to IA's account

4.2. Payment Terms

The payment for implementation of HMS will be as follows:

Sl. No.	Milestone	% of Payment to be released
1.	**Hardware Delivery at HQ**	80% of the Hardware cost quoted
2.	**Successful implementation and installation of Hardware as per BOM in all sites including SHSB and site preparation in all locations**	15% of the Hardware cost quoted
3.	**After 3rd year of implementation**	5% of the Hardware cost quoted
4.	**As-Is, GPR, To-Be Report**	5% of the Application cost Quoted
5.	**Finalized SRS submission**	10% of the Application cost Quoted
6.	**Design Document**	10% of the Application cost Quoted
7.	**Prototype Finalization**	25% of the Application cost Quoted
8.	**Partial Acceptance Testing**	10% of the Application cost Quoted
9.	**Successful UAT**	5% of the Application cost Quoted
10.	**Trial run in HQ for 10 days**	15% of the Application cost Quoted
11.	**Successful Rollout for all Locations**	10% of the Application cost Quoted
12.	**Go-Live**	10% of the Application cost Quoted
13.	**Successful Training of relevant Doctors & employees in IGIMS & 6 Medical Colleges & Hospitals**	44% of the Training Cost Quoted
14.	**Successful Training of relevant Doctors & employees in 6 District Hospitals**	44% of the Training Cost Quoted
15.	**Hands on Training for 13 locations**	3% of the Training Cost Quoted per quarter for 3 years
16.	**Post implementation support and maintenance for 3 years after Go-Live**	In 36 equal QGR (every month) for 3 years for the cost quoted under **Post implementation support and maintenance**

On receipt of such invoice after verification, SHSB shall release the amount to the IA.

The currency of payment shall be Indian Rupees.

If there is any deficiency in the performance of contractual obligations on the part of the IA, the IA shall be liable for imposition of appropriate penalties as specified in the RFP and SHSB shall be entitled to deduct such penalties at source while making payment to the IA for the services provided as mentioned & forfeit the guarantee submitted.

4.3 Number of Buildings/ Hospitals

For increase or decrease in the number of buildings/Hospitals, an addition/deletion of the amount towards the cost of the equipment will be paid /deducted from IA's original quoted price in the Financial Bid.
The IA shall be responsible for providing Software (System Software, Application Software, Device Drivers, etc) required, if any, to meet any requirements during the period of the Agreement without any additional cost to *SHSB*

Additional requirement means requirement of active or passive equipment if any should be taken care by the IA and billing will be charged subsequently after successful commissioning.

During the currency of the Agreement, for any additional requirement of equipment including interface equipment, the specifications shall be provided by the IA. *SHSB* ***shall verify suitability of the specifications submitted by IA for acceptance. The IA shall be obligated to undertake integration, operation and maintenance for all additional equipment also.***

4.4. Penalties

4.4.1. Penalties for delay in implementation

Failure to complete the Partial Acceptance Test at each & every centre.

If the IA fails to complete the Partial Acceptance Test at each & every centre within the time period (s) specified in the implementation plan, SHSB may, without prejudice to its other remedies under the Agreement, levy as penalties, for each week or part thereof of delay, until actual delivery of performance. The maximum penalty for delay shall not to exceed 15% of the total project cost. If the delay continues beyond 3 weeks, SHSB may terminate the Agreement.

Failure to complete the Final Acceptance Test at each & every centre

If the IA fails to complete the Final Acceptance Tests at each & every centre within the time period(s) specified in the implementation plan, SHSB may, without prejudice to its other remedies under the Agreement, levy as penalties, for each week or part thereof of delay, until actual delivery of performance. The maximum penalty for delay shall not exceed 15% of the total cost of project. If the delay continues beyond 6 weeks, Department of Health & Family Welfare, GoB may terminate the Agreement.

4.4.2. Operational Penalties

The following penalties for Operational Deficiencies in all the HMS shall apply (Building/Hospital wise):

For whole network downtime as defined in section 5.11 beyond the permissible period in a day/month/year a penalty at the rate of Rs. 2000/- per hour will be recovered for every additional hour of failure. However, if only a portion of the network or sub-network is down beyond the permissible limits, a penalty of Rs. 500/- per hour will be levied. The penalty time shall be arrived on the basis of 24 hours operation on each working day. Penalty for non-availability of the services of the network manager will be levied at twice the quoted rate per day derived from the quoted rate for providing the services of the network manager.

If 50% or more number of ports/ positions in any category as defined in the RFP is non-operational, the HMS for that Medical College / Hospital buildings shall be considered as non-operational

If the Uptime is less than 90% for consecutive 2 quarters SHSB shall have the right to terminate the Agreement. SHSB shall have the right to forfeit the Bank Guarantee and blacklist the IA for any further assignments in the state of Bihar and simultaneously inform Central and Other State Governments.

4.4.3. Misuse of Bandwidth

There shouldn't be any misuse of Bandwidth. It will be IA's responsibility to take care of the same.

4.4.4. Measurement of SLA

The Measurement of SLA shall be performed by a third party agency, independent of the HMS IA, to be identified by the SHSB. The IA shall establish an Enterprise/Network Management System for monitoring and measurement of the SLA parameters identified for the HMS. The NMS/EMS implemented for HMS shall conform to the open Network management standards such as Simple Network Management Protocol and Remote Monitoring (RMON) features. State reserves the right to periodically change the measurement points and methodologies it uses without notice to the IA

4.5 Approvals / Clearances

Necessary approvals/clearances (if reqd.) from DoT/TEC/TRAI/ Concerned authorities/ any other, for establishing the network and connecting different Network elements shall be obtained by the IA.

Necessary approvals/clearances from concerned authorities, as required, for fire protection, government duties/ taxes/ control, shall be obtained by the IA.

Necessary approvals/clearances, from concerned authorities (like Municipalities, Nagar Panchayats, Gram Panchayats, Public Works Department (PWD), Bihar State Electricity Corporation etc. for "Right of way"), as and if required, shall be obtained by the IA for laying their own cables(if required) to meet requirements .

For use of Radio/ Microwave/ Wireless links in Intracity / Intercity, an approval from Wireless Planning Commission (WPC) wing and Standing Advisory Committee for Frequency Allocation (SACFA), as required, shall be obtained by the IA for the range of frequencies that the

equipment is going to use. Technology & requirement is defined. If any clause is irrelevant for implementing the project, IA may simply ignore it.

Necessary approvals/ clearances from concerned authorities, as required, for providing Internet Service shall be obtained by the IA.

4.6. Implementation Schedule

Indicative Time Line	Deliverables
T1	Project Plan and Schedule- Immediately
T1+3 Weeks	As-Is, GPR, To-be Report
T1+5 Weeks	System Requirement Specification document
T1+7 Weeks	System Design Document
T1+10 Weeks	Prototype finalization
T1+12 Weeks	Testing Plan and Testing Strategy Report
T1+16 Weeks	Hosting of solution
T1+17 Weeks	Test Results
T1+20 Weeks	Complete Hardware and Network implementation
T1+19 Weeks	Bug Fixing
T1+22 Weeks	User Training & User Acceptance Testing
T1+23 Weeks	Implementation Report
T1+24 Weeks	Trial run
T1+25 Weeks	Go-Live of full-fledged solution
T1+28 Weeks	Complete Solution Documentation, source code and user Manuals,IPR
T1+ 32 Weeks	Support Phase

4.7. Saving Clauses

In the absence of any specific provision in the agreement on any issue the guidelines issued/to be issued by the Executive Director, SHS, Government of Bihar shall be applicable.

5. Scope of Work

5.1. Scope of Supply, Works & Services

(a) General

1. The minimum specified scope of work to be undertaken by the IA is to be performed as per the specifications and conditions mentioned in the different parts of this document.
2. The scope of work include design, development and implementation of Hospital management System and should provide turn-key solution for all the 13 sites and include any missing item(s) for the successful end to end implementation.
3. Supply, installation and commissioning of requisite hardware for HMS for Voice / Data (ERP/internet/intranet) / Video transmission.
4. This system shall allow for expansion through wireless / OFC media in subsequent phases during the tenure of 3 years in different district Hospitals.
5. Bids must be complete with all equipment and required accessories along with necessary power systems including Un-interrupted Power Supply for the entire equipment, mounting and fitting hardware, plugs, sockets and any hardware/software, etc. as required for complete installation of the System under this contract. The minimum suggestive technical specifications are mentioned in this Tender.

(b) Supply

1. The Successful IA to design, develop and implement the entire HMS.
2. The successful IA shall supply all hardware as per specifications mentioned in the tender.
3. Further, the successful IA must not bid/supply any equipment that is likely to be declared end of sale within three year from the date of supply. The successful IA shall submit an undertaking from OEM in this regard.
4. The successful IA shall be responsible for end-to-end implementation of the application, Hardware & connectivity of all the locations under this tender and shall quote and provide/ supply any item(s) of latest make and model not included in the bill of materials, but required for successful implementation and commissioning of the system as well as its management. For such item(s), which have not been quoted by the successful IA in the bid, but are required for successful completion of the project, the tenderer shall not pay for the same.
5. The successful IA shall supply all the installation material/accessories/ consumables necessary for the installation of the systems and sub-systems.
6. The successful IA shall provide patches and updates of Firmware free of cost during the warranty period.

(c) Installation, testing, commissioning & system integration

1. The scope of installation, commissioning & system integration shall mean to install, configure and integrate the following (but not limited to), adhering to essential security and safety measures.
2. Carry out installation of active components, passive components and accessories supplied as per standards for successful integration and implementation of the systems at all sites.
3. Configuring and fine-tuning of subsystems to achieve overall optimal network performance and highest security.
4. The components to be installed and configured shall include but not limited to:
   (i) Network units

(ii) Network Management System.
(iii) All patches and updates, version upgrades shall be provided by the successful IA during the currency of the contract.
(iv) Carrying out all general tests such as Power on test on delivery, pre-installation checks to ensure correct connections, completeness of system documentation etc.
(v) The successful IA shall not cause any damage to buildings/other premises/property, if any damage occurs, the successful IA will perform restoration. Trenches, path/road cutting, etc. will be back-filled and restored to the original condition immediately after laying of the conduit/cable/erection of mast etc. The successful IA if required shall also plug conduits and entrance holes with suitable sealing material, where the cable has been laid.
(vi) The system shall be subjected to inspection at various stages. The successful IA shall follow all Safety Regulations and practices.
(vii) IA shall spell out various tests that are being proposed to be carried out for demonstrating the functionality of the solution.
(viii) The Successful IA shall provide warranty for all the components including hardware, software, etc. as per Tender. Any delay for acceptance caused by the successful IA will result in automatic extension of the total warranty period by the same period.
(ix) The successful IA shall be responsible for the commissioning and maintenance of the entire system.

(d) Electrical works

1. Electrical cabling for the equipment and its accessories at each location shall be the responsibility of the successful IA.
2. Installation and configuration of the UPS and its accessories as per the standards shall be the responsibility of the successful IA.
3. The quantity of passive items if any shall be verified by the concerned official at each site.

(e) Chemical Earthing

1. The successful IA shall supply all materials required for Chemical Earthing at sites.
2. Installation & commissioning of Chemical Earthing as per Drawing and Specifications & Features mentioned in the Bid

(f) Project Management

1. The successful IA will undertake to completely manage and maintain the said equipment/infrastructure installed and commissioned at sites for a minimum period of three years after the clearance of Final Acceptance. During the said period of undertaking, the successful IA will be responsible for the smooth working of the total system installed at the locations under this project and to ensure minimum 99% uptime. This task of management of project will be termed as 'Project Management' in the rest of the document.
2. Successful IA shall depute engineer(s) and technician(s)/rigger(s) and Project manager to operate, configure, maintain and manage the said connectivity during the Project Management period round the clock. The successful IA shall provide a mobile phone at his cost to each of this staff so that the customer can reach them for fault rectification and other related services in case of emergency beyond office hours.

5.2 Application Software Requirement

The architecture proposed should be a SOA (Service Oriented Architecture) and the system should be designed in a modular manner to cater to the varying need of the various hospitals. The application should provide flexibility to the user to configure their scenarios with ease and the application should be easily customizable as per need. The application thus customized will be the property of the State and the IA will deposit the source code of the entire application and all customized components with the state authorities.

The scope of work for the IA with respect to the Application development includes Solution Design, Development, Testing, Implementation and Maintenance of the solution. The major works being:-

Design and Development

1. To prepare a System Requirement Specification (SRS) report – based on existing requirements of the Department.
2. To develop the web based solution based on the specifications finalized through the System Requirement Specifications (SRS) and solution design.
3. To prepare a System Design Document
4. Application should be designed in such a way that it can allow necessary interface for other existing/in future applications when ever required.
5. Application should be PKI enabled for provision of Digital Signature.
6. The selected vendor needs to get all the modules of the developed solution duly tested and accepted by STQC (Standardization, Testing and Quality Certification), Department of IT or STQC empanelled vendor.

Application Software Testing

1. To design Test Cases for the solution testing using the data.
2. To prepare the testing approach and plan
3. To perform the testing of the solution based on the approved test plan, document the results and fixing of the bugs found during testing
4. The selected vendor needs to get all the modules of the developed solution duly tested and accepted by STQC (Standardization, Testing and Quality Certification), Department of IT or STQC empanelled vendor.

Handholding

1. The bidder is required to depute adequate number of personnel at the user sites as application support engineers.

Technical Documentation

1. To provide full documentation of the SRS and design (including Entity Relationship (ER)diagrams, flow diagrams, UML diagrams etc.) installation and implementation of the software and user manuals both in hard copy and a soft copy on a Compact Disc (CD)

5.3. Training Requirements

1. The Implementation Vendor must impart training to the personnel identified by the Hospitals/SHSB, in the operation of the application /software, generation of MIS reports,

and maintenance of user Logins etc.

2. For all these training programmes, the vendor has to provide necessary course material, user manuals, system admin. Manuals etc. to the trainees. The different types of trainings to be provided to the identified staff under project are given below:

General Awareness Training

• The Syllabus for this training includes general topics on computer literacy.
• The training is to be provided to all the users identified for accessing computer.
• The duration of this training will range from 3-5 days depending on the progress shown by the trainees.
• Training material: A book on basic computing and Application user manual need to be rovided by the IA during the training.

Training on New Processes

• The topics to be covered under this have to be prepared and would cover mainly the post operationalization of the Software

• The training is to be provided to the selected employees of the Hospitals /SHSB.

• Training material: user manual

Software Training
Training on the Software

• The IA would prepare a comprehensive training course for the software package in use and maintenance of the software application

• During this training, the trainees could also be asked to carry out the routine functions using the software

• Training material : User Manual

5.4. Standards of Work:

The works shall be in accordance with the details in the BID document. To the extent that the standard of the works has not been specified in the BID document, the successful IA shall use good quality materials, techniques and standards and execute the works with care, skill and diligence required in accordance with industry best practice.

5.5. Spares:

The successful IA shall maintain spares or replacement parts for a period of **Three (03) years** from the completion certificate date. Such spares or replacement parts should be fully compatible with similar items supplied against this tender. The IA shall submit a certificate from OEM confirming spares and technical support for at least 3 years.

5.6. Software:

Unless otherwise stated in the bid document, the successful IA shall be responsible for providing all latest software and associated documentation necessary for the satisfactory operation of the equipment. The successful IA shall also provide free of cost any software upgrades and updates which the OEM shall make available during warranty period. Any software upgrades or updates in future shall not necessitate replacement of hardware supplied against this tender.

5.7. Network Requirements:

The network shall integrate multiple services - Voice, Data & Video and carry them on a single backbone. It shall be flexible enough to support different configurations needed. It shall be scalable and capable of using alternate communication channels. The IA shall understand all requirements mentioned in this document and meet the same.

5.8. Network Design:

1. The proposed new Connectivity shall be based on a technology, which provides for efficient delivery of multiple services such as Voice, Data and Video in an enterprise network.

2. The network shall route the data traffic as per the requirement from any location to any other location. The network shall allow Internet connectivity to all/ selective users / selective centres/ locations as per requirement using the same network infrastructure.

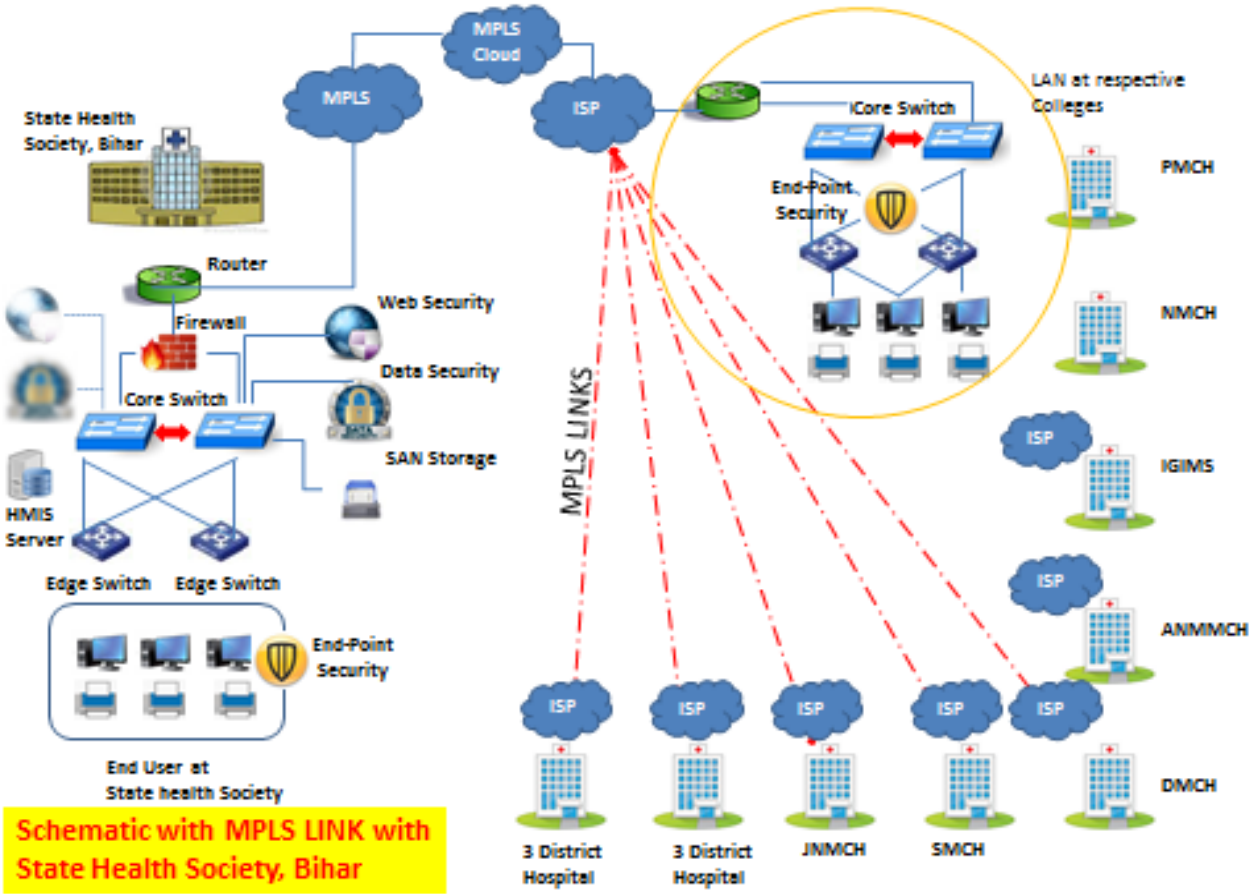
3. The network design shall support all relevant industry standard protocols. The Network shall have industry efficient compression engine to optimize bandwidth utilization.

4. The IA shall provide complete Network design, details of components used along with the make & model and ensure the complete compliance of requirements.

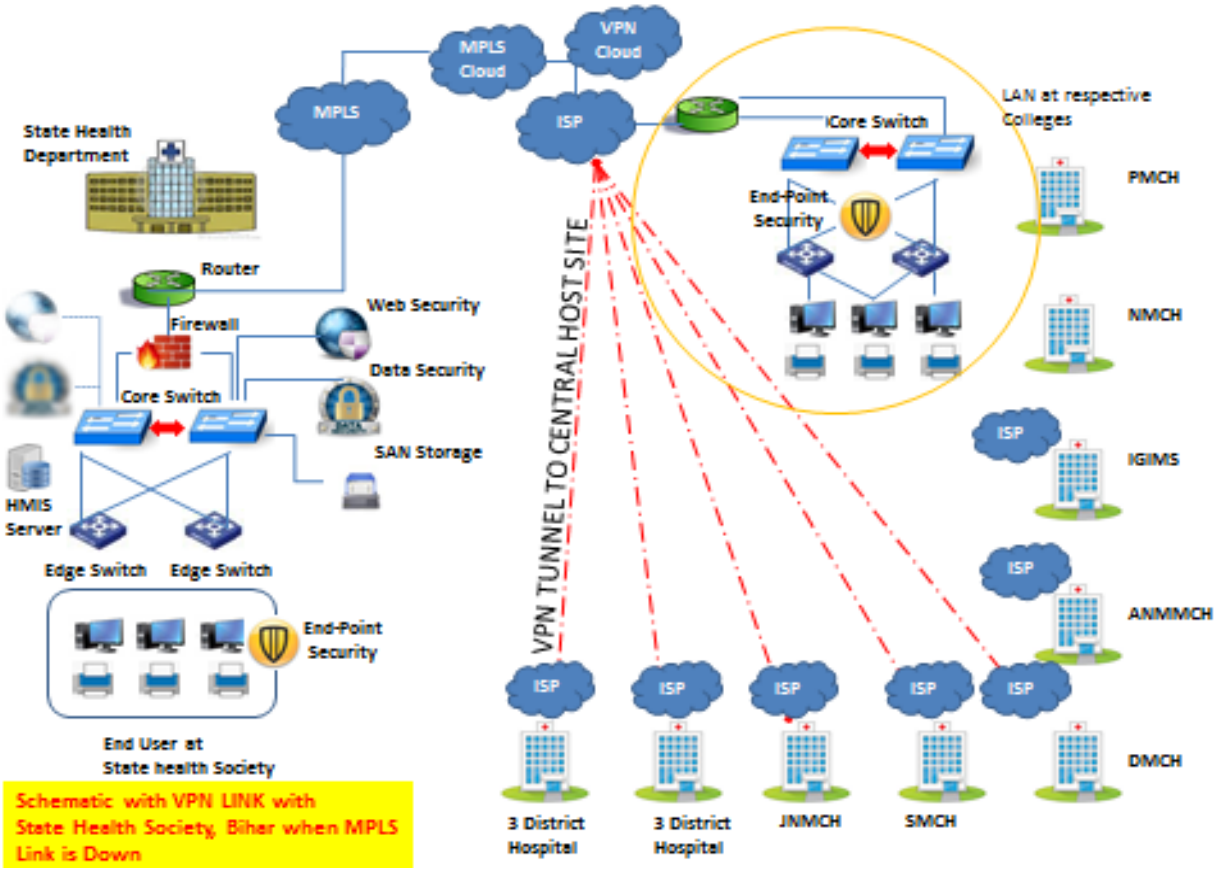
5. The design shall have sufficient diagnostic facilities to identify & locate the faults and easy rectification of faults. The IA shall specify the details & level of diagnostics provided.

6. The equipment/ interfaces shall comply with relevant ITU-T/ IEEE/ IETF/ EIA/ TIA/ ANSI/ NEBS/ TEC etc. standards as applicable.

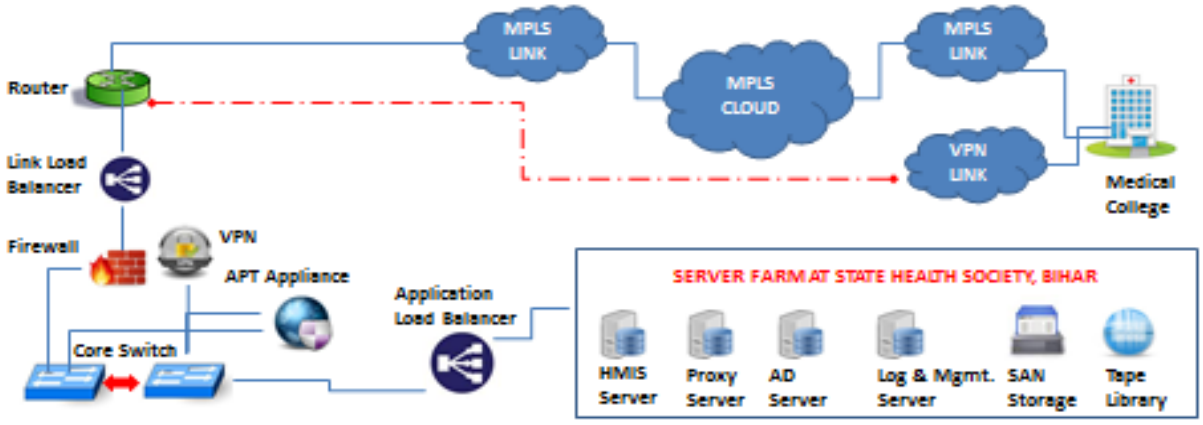
7. Systems should be IPv6 ready and should be configured by IA in Dual Stack so that both IPV4 and IPV6 can work simultaneously.



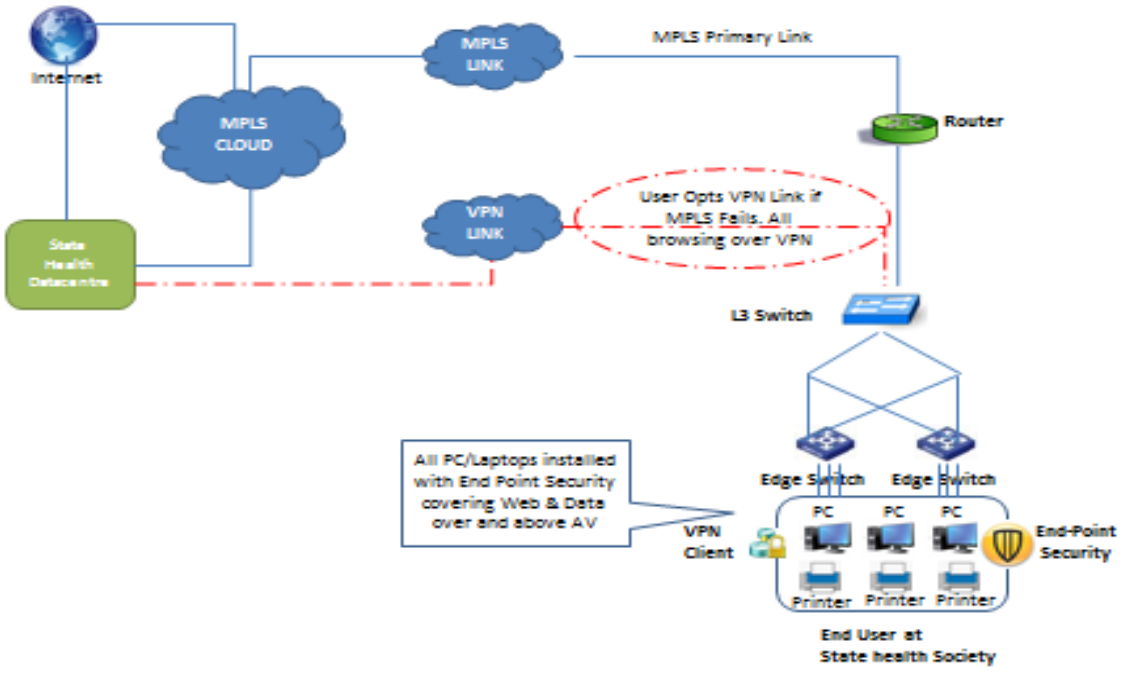
Schematic with MPLS LINK with State Health Society, Bihar



Schematic with VPN LINK with State Health Society, Bihar when MPLS Link is Down



Schematic Layout at the SHSB



Schematic Layout at the College End

1. The Key Consideration in the Central Site i.e SHSB is to ensure – Great Performance, Redundancy of the Network, Protection from Advance Persistent and Modern Threats, Web Security and Data Security at Gateway Level, Smooth accessibility of the HMS application.

2. The Primary Connectivity with the Datacenter and colleges would be MPLS Link and the secondary will be through SSL VPN Connectivity. All Colleges will be allowed to have a dedicated Internet link which may be used to establish VPN link incase MPLS Link is down. All users if required to browse Internet would be using the Central Site both at the time of using MPLS Connectivity or VPN. This is to avoid any vulnerability through the College network

3. All Desktop/Laptops will be installed with the End-point security to manage/maintain the Web security & Data Security policies.

4. The entire network will be DHCP based with all user policies created using the AD/LDAP Server. All Users will login into their respective College Domain and all policies get activated accordingly at the Firewall/Web Security/Data Security.

5. The VPN Box will also act as SSL Concentrator to ensure performance and min. latency. The Application Load balancer will be able to segregate the priorities and performance of the HMS application.

5.9. Facility management service

The IA, which will be finally awarded the project, shall be fully responsible for the entire HMS, integration, its implementation on the LAN and Networking and provide Facility Management Service [FMS] to maintain the same. The IA shall provide complete onsite warranty and Facility Management Services including upgrade & maintenance for a period of three years and this may be extendable. The IA shall permanently post its personnel for the period of contract in the campus, which shall be responsible for the overall operation of the system – Network, Hardware and the entire software. This would also include addressing and fixing any technical snags reported by the end user. The IA shall be ready to make further customization / any changes in the code as the need may arise from time to time during the above said period, without any extra financial cost. IA shall be responsible for complete maintenance support for all the items supplied, day-to-day operations & management of complete infrastructure including the desktop PCs.

5.10. Operational Requirements

1. The OEM's of all the offered products/items should be ISO certified.

2. The Equipment shall operate on commercial 230 VAC input power / 48 V DC in case of equipment deployed at the IA.

3. Earthing and electrical point(s) if required shall be provided by IA at each site.

4. The space cannot be used for any purpose other than for delivering the services as mentioned in Annexure as contracted under the Agreement.

5. The Equipment shall operate at places where the ambient temperature ranges from 0 to 65 degree C and 15 to 95% relative humidity.

6. All technical manuals (two sets) necessary for installation, operations & maintenance as applicable shall be provided by the IA.

7. "**Service Down Time**" (SDT) means the time period when specified services with specified technical and operational requirements as mentioned in Section 5 are not available to 13 locations & SHSB and its user organizations.. The IA shall provide sufficient manpower for operation & maintenance of the network.

   The network is considered as operational when all buildings are working, providing all/ specified services as mentioned in Section 5 in full capacity at all locations in the network.

   In case of failure of an aggregate port (i.e. port connecting a building with other building), all services at all positions of the lower level among the two building shall be considered as Down/ non-operational.

   Incase of non-availability of services from other agencies, the successful IA will have to arrange a documentary evidence of same (Down time) from a concerned competent authority.

   If more than 50% of ports/ service positions (voice/ data/ video) are down/ non-operational in a building, then the building is considered as down/ non-operational.

   Uptime shall be calculated as follows: (all time shall be in minutes)
   Total uptime in a quarter = Total time in a quarter – Service down Time in a quarter.

   Preventive Maintenance (PM) shall be done on quarterly basis for verifying the proper functioning of the Network/ Network elements and to detect the likelihood failure of components and the wear & tear of all moving components. The Preventive Maintenance (PM) schedule shall be finalized by the IA in consultation with SHSB & respective hospitals. The services shall not be affected during Preventive Maintenance (PM.).

   Guaranteed Up-time : FMS shall ensure a guaranteed uptime of not less than 98%, which shall be calculated as follows:

On all 24x7 hrs x 365 days a year, the network shall be up and running. It is assumed that the facilities will be working, 24 hrs round the clock for 365 days in a year and hence the total up time works out to 365 x 24= 8760 hour/annum. 2.0% downtime accordingly shall mean 175 hours in a year. However, the network shall be maintained in such a manner that on no occasion the network shall be down for more than 4 hours at a stretch and 20 hours in a calendar month. The same shall be construed as failure of FMS to rectify the system within the stipulated period and the penalty as indicated below shall be recovered, even though the total down time in the year up to that point of time/month/year may be less than the permissible downtime

5.11. Downtime Penalty:

For whole network downtime as defined above beyond the permissible period in a day/month/year a penalty at the rate of Rs. 2000/- per hour will be recovered for every

additional hour of failure. However, if only a portion of the network or sub-network is down beyond the permissible limits, a penalty of Rs. 500/- per hour will be levied. The penalty time shall be arrived on the basis of 24 hours operation on each working day. Penalty for non-availability of the services of the network manager will be levied at twice the quoted rate per day derived from the quoted rate for providing the services of the network manager

5.12. Services & Service Level Requirements

The total model expected by the SHSB includes service requirements related to the solution for hospital and medical college/ institute, within scope of this Bid. The services would include, but will not be limited to - hardware and software installation, maintenance, administration, network access, user support, training etc.

Definitions & Reference

i. The general working hours for the reference of the services are from 0800 Hrs. to 1800 Hrs. However, the service availability for certain critical functions is a must as and when requirement arises. Such critical functions are:
   a) OPD: 0800 Hrs to 1400 Hrs - 6 days a week
   b) Casualty / Emergency support services : 24 x 7 Hrs
   c) ICU/ CCU/ NICU/ NSICU : 24 X 7 Hrs
   d) IPD : 24 x 7 Hrs.
   e) All other support services of the Hospital : 24 x 7 Hrs
   f) Administrative services : 24 x 7 Hrs

ii. Services shall include standard maintenance services, complaint tracking and record keeping. These would apply for the IT related infrastructure of the Hospitals/ Medical Colleges but limited to, the applications, databases, servers etc.

iii. A request for hardware or software maintenance shall be recorded as service request, which include requests such as installation /re-installation, to change software applications. Turn around for such service request expected is within 1 day of logging of service request. Suitable alternative arrangements are provided in such situation.

iv. System Administration services shall include, for example, troubleshooting and user support, file / system / application management, data storage monitoring, and reporting, system error detection and correction, backup management, etc. Turn around time expected for all the scheduled services shall be defined at the time of finalization of SLA with the IA for non-scheduled services (within working hours) is 1 day and during non-working hours is before the end of next working day. If however complaint is lodged on the last day of the week it should be rectified before end of the day of the subsequent working day. The critical functions defined above cannot have any failure, and thus proper redundancies must be built in to the solution design.

v. Centralized Help Desk service for each location, covering complaint registration, resolution & tracking services shall be established by IA, to support service calls for hardware, application software as applicable. The help desk service shall also include the generation of trouble tickets and submitting unresolved problems to the appropriate internal service providers.

vi. Data Storage availability: The Department requires the on-line storage capacity to be monitored and upgrade suggested whenever storage exceeds 70% of disk capacity. It is also expected the solution to include provision for complete online storage with a view to ensure seamless & automatic retrieval of data from reasonable past periods.

The IA shall assemble and create regular reports on the performance of application functions, in order to assist in the effective management of the Service agreement, and enable continuous improvement of the in-scope services that the University receives.

Routine meetings and reporting processes must be defined to ensure a smooth interface and timely resolution of issues. The Department requires a single interface to coordinate the delivery of all services from the IA.

There must be routine and continuous interaction between the IA and the users at the different location.

5.13. Redundancy

The network shall have redundancy of relevant elements so that any one failure does not cause a total disruption of services. The network shall have capability for defining and enabling alternate routes to avoid disruption in service. IA shall provide the details of redundancy and the level of redundancy provided in the network.

5.14. Passive Components

All the passive components should be branded not local made.

5.15. OFC Laying

The offices which required to be connected by OFC will be overhead / underground connection from the adjacent Office or POP. Detailed Specification for laying, repair, Bills of materials is given at Annexure.

5.16. Installation and Commissioning

The whole project is required to be completed **on Turn- Key basis**. Accordingly, IA is understood to have assessed and quoted for all the items required for successful completion of the Project. It will be the responsibility of the IA to provide such items on free of cost basis which are not quoted in the bid but otherwise required at the time of installation for completion and successful commissioning of the project.

The successful IA shall ensure that installation of new system shall not affect the operation of the existing system already installed. In case interference of frequency is observed affecting the existing system, the IA has to provide additional equipment which will mitigate interference problem at his own cost.

Successful IA shall bring all installation aids and test equipment in order to carry out the job successfully. A list of the same is to be submitted to the SHSB for the review. Installation & Commissioning shall also be governed by relevant clauses as mentioned in the Bid Document.

Installation & Commissioning shall be treated as complete after installation of all the systems and sub-systems at all sites and successful completion of 'Test Run'.

6. Roles and Responsibility

A clear definition of the roles and responsibilities of all the partners involved brings transparency, accountability, manageability and efficiency in any project. The following are the roles and responsibilities of the Tenderer and selected IA.

Sl.No.	Activity	SHSB	IA	PMU
1.	Preparation of RFP for the Selection of IA	✓		✓
2.	Tender Process for the Selection of HMS IA	✓		✓
3.	Approval for Appointment of HMS IA	✓		
4.	Review and suggestion on the Network Architecture	✓		✓
5.	Site Identification	✓	✓	
6.	Site Handover	✓		
7.	Site Survey and Preparation		✓	
8.	Installation and commissioning of the HMS system		✓	
9.	Monitoring the Installation and Commissioning of the HMS system	✓	✓	✓
10.	Acceptance Tests (Partial & Final Acceptance)	✓		✓
11.	Onsite Inspection and Verification of Acceptance Tests		✓	✓
12.	Trial Run		✓	
13.	Witness of Trial Run	✓		✓
14.	Issue of Final Acceptance Test Certificate	✓		✓
15.	Operation, Management and Maintenance of the HMS		✓	
16.	Centralized Monitoring from NOC (24x7)		✓	
17.	Supervision of the Monitoring of the HMS			✓
18.	Periodical Generation of NMS report		✓	
19.	Verification of the NMS Report			✓
20.	Approval of NMS Report	✓		✓
21.	Periodical Auditing of the HMS			✓
22	Submission of the Audited		✓	

	Report of HMS as advised by PMU			

7. Exit Management:

1. Upon completion of the contract period or upon termination of the agreement for any reasons, the HMS IA shall comply with the following:

(a) notify to SHSB forthwith the particulars of all Project Assets;

(b) deliver forthwith actual or constructive possession of the HMS Project free and clear of all Encumbrances and execute such deeds, writings and documents as may be required by the State Govt. for fully and effectively divesting the HMS IA of all of the rights, title and interest of the HMS IA in the HMS Project and convey in the HMS Project;

(c) comply with the Divestment Requirements set out in the RFP except in case if Termination of this Agreement

(d) pay all transfer costs and stamp duty applicable on hand back of project assets except in case the Project is being transferred due to State Govt. of Default, Indirect Political Event, Political Event or expiry of Concession period, where State Govt. shall be responsible for transfer costs and stamp duty, if any.

2. Subject to clause 1 of exit management, upon completion of the contract period or upon termination of the agreement, the HMS IA shall comply and conform to the following Divestment Requirements in respect of the HMS Project:

(i) all Project Assets including the hardware, software, documentation and any other infrastructure shall have been renewed and cured of all defects and deficiencies as necessary so that the HMS Project is compliant with the Specifications and Standards set forth in the RFP, Agreement and any other amendments made during the contract period;

(ii) the HMS IA delivers relevant records and reports pertaining to the HMS Project and its design, engineering, operation, and maintenance including all operation and maintenance records and manuals pertaining thereto and complete as on the Divestment
Date;

(iii) the HMS IA executes such deeds of conveyance, documents and other writings as the State Govt. may reasonably require to convey, divest and assign all the rights, title and interest of the HMS IA in the HMS Project free from all Encumbrances absolutely and free of any charge or tax unto the State Govt. or its Nominee; and

iv) the HMS IA complies with all other requirements as may be prescribed under Applicable Laws to complete the divestment and assignment of all the rights, title and interest of the HMS IA in the HMS Project free from all Encumbrances absolutely and free of any charge or tax to State Govt. or its nominee.

1. Not earlier than 3 (three) months before the expiry of the contract Period but not later than 30 (thirty) days before such expiry, or in the event of earlier Termination of the contract, immediately upon but not later than 15 (fifteen) days from the date of issue of Termination Notice, the Independent Consultant as nominated by the SHSB shall verify, in the presence

of a representative of the HMS IA, compliance by the HMS IA with the Divestment Requirements set forth in the RFP in relation to the HMS Project and, if required, cause

appropriate tests to be carried out at the Divestment Requirements are found by either Party, it shall notify the other of the same and the HMS IA shall rectify the same at its cost.

2. Upon the HMS IA conforming to all Divestment Requirements and handing over actual or constructive possession of the Project to State Govt. or a person nominated by State Govt in this regard, State Govt. shall issue a certificate substantially in the form set forth in earlier Section,

which will have the effect of constituting evidence of divestment of all rights, title and lien in the HMS Project by the IA and their vesting in HMS Project pursuant hereto. Issue of such certificate shall not be unreasonably withheld by State Government. The divestment of all rights, title and lien in the HMS Project shall be deemed to be complete on the date when all the Divestment requirements have been fulfilled or the Certificate has been issued, whichever is earlier, it being expressly agreed that any defect or deficiency in any Divestment Requirement shall not in any manner be construed or interpreted as restricting the exercise of any rights by State Government or its nominee on or in respect of the HMS Project on the footing as if all Divestment Requirements have been complied with by the Concessionaire.

Annexure 1: Format for Performance Bank Guarantee

(To be stamped in accordance with Stamp Act)

Ref: Bank Guarantee No. Date:

To

The Executive Director
State Health Society Bihar
Pariwar Kalyan Bhawan
Sheikhpura, Patna
Bihar-800014

Dear Sir,

WHEREAS..... (Name of BIDDER) hereinafter called "the BIDDER" has undertaken, in pursuance of Contract dated ... 2014 (hereinafter referred to as "the Contract") to implement the [Name of the project: of for the SHS, Bihar

AND WHEREAS it has been stipulated in the said Contract that the BIDDER shall furnish a Bank Guarantee ("the Guarantee") from a Nationalized / Scheduled Commercial bank for the project/performance of the [Name of the Project] as per the agreement

WHEREAS we ("the Bank", which expression shall be deemed to include it successors and permitted assigns) have agreed to give the SHS, Bihar the Guarantee:

THEREFORE the Bank hereby agrees and affirms as follows:

1. The Bank hereby irrevocably and unconditionally guarantees the payment of Rs._____ (being 10% of the sum of order value) to SHS, Bihar under the terms of their Agreement dated on account of full or partial non-performance / non-implementation and/ or delayed and/ or defective performance / implementation. Provided, however, that the maximum liability of the Bank towards SHS, Bihar under this Guarantee shall not, under any circumstances, exceed in aggregate.
2. In pursuance of this Guarantee, the Bank shall, immediately upon the receipt of a written notice from SHS, Bihar stating full or partial non-implementation and/ or delayed and or defective implementation, which shall not be called in question, in that behalf and without delay/demur or set off, pay to SHS, Bihar any and all sums demanded by SHS, Bihar under the said demand notice, subject to the maximum limits specified in Clause 1 above. A notice from SHS, Bihar to the Bank shall be sent by Registered Post (Acknowledgement Due) at the following address: Attention Mr..... .
3. This Guarantee shall come into effect immediately upon execution and shall remain in force for a period of 12 months from the date of its execution. However, the Guarantee shall, not less than 30 days, prior to its expiry, be extended by the Bank for a further period of 12 months. The Bank shall extend the Guarantee annually in the manner herein before provided for a period of five years from the date of issue of this Guarantee.

4. The liability of the Bank under the terms of this Guarantee shall not, in any manner whatsoever, be modified, discharged, or otherwise affected by:
    a. any change or amendment to the terms and conditions of the Contract or the execution of any further Agreements.
    b. any breach or non-compliance by the BIDDER with any of the terms and conditions of any Agreements/credit arrangement, present or future, between BIDDER and the Bank.
5. The BANK also agrees that SHS, Bihar at its option shall be entitled to enforce this Guarantee against the Bank as a Principal Debtor, in the first instance without proceeding against BIDDER and not withstanding any security or other guarantee that SHS, Bihar may have in relation to the BIDDER's liabilities.
6. The BANK shall not be released of its obligations under these presents by reason of any act of omission or commission on the part of SHS, Bihar or any other indulgence shown by SHS, Bihar or by any other matter or thing whatsoever which under law would, but for this provision, have the effect of relieving the BANK.
7. This Guarantee shall be governed by the laws of India and only the courts of Patna, Bihar shall have exclusive jurisdiction in the adjudication of any dispute which may arise hereunder.

Dated this the ..... Day of 2014

Witness

(Signature) (Signature) (Name) (Name)
Bank Rubber Stamp

(Official Address) Designation with Bank

Annexure-2: Power of Attorney

Format for Power of Attorney for Signing of Application/Bid document

(On a Stamp Paper of relevant value)

Power of Attorney

Know all men by these presents, We M/s..... (name and address of the registered office) do hereby constitute, appoint and authorize Mr / Ms (name and residential address and PAN), duly approved by the Board of Directors in their meeting held on (Copy of board resolution enclosed), who is presently employed with us and holding the position of ..... as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our bid for "HMS" in Bihar including signing and submission of all documents and providing information / responses to the State Health society, GoB, representing us in all matters before State Health Society, GoB in all matters in connection with our bid for the said Project. We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us. Dated this the day of 20_

For_____

(Name, Designation and Address)

Accepted _____ (Signature)
(Name, Title and Address of the Attorney) Date :

Note:

i. The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executants (s) and when it is so required the same should be under common seal affixed in accordance with the required procedure.
ii. In case an authorized Director of the Applicant signs the Application, a certified copy of the appropriate resolution/ document conveying such authority may be enclosed in lieu of the Power of Attorney.
iii. In case the Application is executed outside India, the Applicant has to get necessary authorization from the Consulate of India. The Applicant shall be required to pay the necessary registration fees at the office of Inspector General of Stamps.

Annexure-3: Format for Affidavit

Format for Affidavit certifying that Entity/Promoter(s) / Director(s)/Members of Entity are not Blacklisted (On a Stamp Paper of Rs 500)

Affidavit

I, M/s..... (Sole Applicant / Lead Member / Member/Affiliate), (the names and addresses
of the registered office) hereby certify and confirm that we or any of our promoter(s) /director(s) are not barred by State Health Society Govt. of Bihar/ or any other entity of GoB or blacklisted by any state government or central government / department / organization in India/World bank /DFiD/ADB from participating in Project/s, either individually or as member of a Consortium as on the _____(Date of Signing of Application).

We further confirm that we are aware that, our Application for the captioned Project would be liable for rejection in case any material misrepresentation is made or discovered at any stage of the Bidding Process or thereafter during the agreement period and the amounts paid till date shall stand forfeited without further intimation.

Dated this..... Day of....., 20.

Name of the Applicant

.....

Signature of the Authorized Person

.....Name of the Authorized Person

Annexure-4: Format for MAF from OEM

Date:

To

The Executive Director
State Health Society Bihar
Pariwar Kalyan Bhawan
Sheikhpura, Patna
Bihar-800014

Subject: **OEM Authorization**

Dear Sir,

We M/s. _____ manufacturer of the
_____
_____

Hereby authorised M/s. _____ having it's registered

Office at
_____
_____

Is our Authorised partner and has been authorised to participate in the referred Tender. They can negotiate and will be responsible for all the Terms and conditions as per the Bid. We further confirm that all products quoted are warrantied for 3 years from the date of supply and will extend all sort of support for maintenance.

For any clarifications please feel free to contact undersign.

Thanking You
Sincerely Yours

Name of Signatory:
Date of Sign:

(Stamp & Seal)

(To be submitted in OEM letter head in original only)

Annexure 5: Technical Bid letter

To

The Executive Director
State Health Society Bihar
Pariwar Kalyan Bhawan
Sheikhpura, Patna
Bihar-800014

Dated.....

Sir,

We hereby declare

1. We are equipped with adequate manpower / machinery / technology for providing the Services as per the parameters laid down in the Tender Document and we are prepared for live/technical demonstration of our capability and preparedness before the representatives of SHS, Bihar and We/our principals are also equipped with adequate maintenance and service facilities within India for supporting the offered document.

2. We hereby offer to provide the Services at the prices and rates mentioned in the Financial Bid
3. We do hereby undertake, that, in the event of acceptance of our bid, the Services shall be provided as stipulated in the schedule to the Bid document and that we shall perform all the incidental services.
4. We enclose herewith the complete Technical Bid as required by you. This includes:
    a) This Bid Letter
    b) Details of the proposed solution, proposed Methodology & Timeline

We agree to abide by our offer for a period of 180 days from the date fixed for opening of the Technical Bids and that we shall remain bound by a communication of acceptance within that time.

We have carefully read and understood the terms and conditions of the tender and the conditions of the Contract applicable to the tender and we do hereby undertake to provide services as per these terms and conditions.
Bid Security (Earnest Money) for an amount equal to Rs.15, 00,000 (Rs. Fifteen Lakhs Only) is enclosed.

We do hereby undertake, that, until a formal contract is prepared and executed, this bid, together with your written acceptance thereof or placement of letter of intent awarding the contract, shall constitute a binding contract between us.

Dated this Day of 2014

(Signature) (In the capacity of)

Duly authorized to sign the Tender Response for and on behalf of: (Name and Address of Company)

Seal/Stamp of BIDDER

Witness Signature: Witness Name:

Witness Address:

Annexure 6: Format of Curriculum Vitae for Proposed Manpower

(Use the Format given below for each individual)

Sl.No.	Category	Details
1.	Proposed Position	
2.	Name	
3	Current Designation	
4	Educational Background/ Training/ Certifications	
5.	Tasks proposed to be assigned	
6.	Areas of Expertise	
7.	Summary of Professional/ Domain Experience	
8.	Period of Association with the organization	
9.	Number and Details of relevant project experience	
10.	Any other Information	

1 Project Director to look after the overall project.
1 Project Manager along with 1 Application/solution Architect, 1 Database Administrator, 1 Network Expert for all 13 locations to be provided.

Annexure 7: Financial Bid Letter:

To

The Executive Director
State Health Society Bihar
Pariwar Kalyan Bhawan
Sheikhpura, Patna
Bihar-800014

Dated.....

Sir,

We hereby declare

1. We are equipped with adequate manpower / machinery / technology for providing the Services as per the parameters laid down in the Tender Document and we are prepared for live/technical demonstration of our capability and preparedness before the representatives of SHS, Bihar and We/our principals are also equipped with adequate maintenance and service facilities within India for supporting the offered document .We hereby offer to provide the Services at the prices and rates mentioned in the Financial Bid.
2. We do hereby undertake, that, in the event of acceptance of our bid, the Services shall be provided as stipulated in the schedule to the Bid document and that we shall perform all the incidental services.

We agree to abide by our offer for a period of 180 days from the date fixed for opening of the Financial Bids and that we shall remain bound by a communication of acceptance within that time.

We have carefully read and understood the terms and conditions of the tender and the conditions of the Contract applicable to the tender and we do hereby undertake to provide services as per these terms and conditions.

We do hereby undertake, that, until a formal contract is prepared and executed, this bid, together with your written acceptance thereof or placement of letter of intent awarding the contract, shall constitute a binding contract between us.

Dated this Day of 2014 (Signature) (In the capacity of)

Duly authorized to sign the Tender Response for and on behalf of: (Name and Address of Company)

Seal/Stamp of BIDDER

Witness Signature: Witness Name:

Witness Address:

Annexure 8: Technical Evaluation Criteria

Sl. No.	Category	Max Marks	Sub-category	Marks
1.	Proposed technical solution	15	Methodology for the proposed services along with Design & operation Procedure	5
			Proposed work plan with detailed WBS	5
			Training methodology & details	5
2.	Technical Specification Hardware	20	Comparison between Technical Specification and offered Specification 2 marks to be reduced for each deviation but not limited to 10 marks only. If deviation in Technical specifications mentioned is more than 5 the bid can be summarily rejected	20
3.	Technical Specification Software	30	Comparison between Technical Specification and offered Specification Weightage will be calculated as: S: Standard W: Work around C: Customization T: Third Party N: Not Possible	30
4.	Demo of the Application	20	Demo of the application showing various features	20
5.	Quality certifications for the Prime Bidder / any member of the consortium	15	ISO 9001:2008	5
			Else	0
			ISO 27001	5
			Else	0
			CMMI Level 5	5
			CMMI Level 3	3
			Else	0

Annexure 9: Format for Queries

IA's requiring specific points of clarification may communicate with SHSB during the specific period using the following format.

RFP No.
Name of Project: HMS
Name of the IA-

Contact Address of the IA-

Sl No.	Section No.	Page No	Query

Signature:

Name of the Authorized signatory:

Company seal:

Note: All the queries should be sent in this format to: statehealth_society@yahoo.co.in. No other format is acceptable apart from this format.

Annexure 10: OFC Laying Specification

General

The work involves excavation of trench, backfilling including compacting, providing necessary protection works including laying of pipes as described in the Tender Document, and the pulling of Optical Fiber construction of Joint Enclosures, protection of civil works etc. The protective pipes are intended to provide mechanical protection to the delicate Optical Fiber Cable. These shall be suitably plugged to prevent obstruction the cable pulling at a later date.

- **Route Survey**

  The cable is be laid on the designated route as per approved survey document prepared by the IA based on survey carried out by the IA after award of contract, which has been dully approved.

  The IA should familiarize himself with site conditions before submitting the tender. Non-familiarity with site conditions will not be considered a reason for any form of delay or cost escalation what so ever.

- **Soil Survey**

  The IA is to make a soil survey document after award of contract, which has been dully approved.

  The IA should familiarize himself with site conditions before submitting the tender. Non-familiarity with site conditions will not be considered a reason for any form of delay or cost escalation what so ever.

Location and alignment of the Trench

The trench will normally follow the road except when cutting across the road or Rail Track with specific permissions from the authorities responsible for maintenance of this road/Rail Track.

The IA has to take Road Permission from pertinent Road authorities and paying necessary reinstatement charges for the same, SHSB will in no way be held commercially or otherwise liable for any costs incurred by IA due to delays on this account. The IA is advised in his own interest to review the quantum of labour and other resources deployed at site by him from time to time so that idle costs are minimized to a maximum extent. While marking the alignment only the centerline will be marked. The IA shall be solely responsible for the accuracy of such setting out.

The IA shall prepare and grade the right of way to facilitates the marking of the alignment of the undergrowth, stumps, rocks and other obstacles to ensured that minimum of bushes and shrubs shall be removed to clear the way and the IA shall give all consideration to the preservation of trees within the right of way. No additional charges will be paid for clearing the alignment.

Trenching Depth & Width

The laying and Construction Practice to be followed will be as per the latest and / or prevailing standard / norm of ITD at the time of work.

Regarding choice of depth, when 1.65 m is not achieved, appropriate SHSB authority will have to record reasons and approve the depth relaxation on the IA's Measurement Sheet. However in case of any delay and/or liability arising out of SHSB failure/delay to give timely decisions, IA will not claim any additional any other charges etc. from SHSB will not be liable for the same.

Gradient Permitted

The transition of OF Cable from one depth level to another should be gradual i.e. at a gradient not exceeding 15 degrees from horizontal.

Normally a trench of about 70 cm wide at the top and 40 cm wide at the bottom at a depth of 1.65 m may be appropriate. However, the width at surface should not be more than 70 cm. However, there will be no objection if the width of trench is adequate to ensure that the pipes are laid properly at the specified depth. The payment to the IA will not be related to volume of excavated earth but only related to length of trench in running meters.

It is likely that due to uneven ground conditions, if 1.65 meter is adopted as the uniform depth throughout, the bottom of trench will also follow the same unevenness as the surrounding terrain. This should not be the case, and the bottom of trench has to be uniformly level. If necessary, trench depth better than 165 cms will be made. No extra payment for higher depth of trenching can be claimed by IA.

All efforts are to be made, including chiseling and use of mechanical option (with prior written permission from competent authority), to achieve full depth of 1.65m in accordance with Standard norms.

The distance of cable from center of road shall be normally more than 10 feet. The cable will be normally laid on flat surface. The route of cable should adequately clear the edge of metalled road with due regard to other existing obstructions/structures along the road side.

Inspection of Trenching Work

On the completion of digging of trench (50 to 100 meter at one time) SHSB or its authorized representatives will inspect the trench. The inspection will be done before the pulling of cable.
Note: In case, where RCC/PCC pipes are used instead of DWC ducts, this should be duly noted in the Measurement Sheet.

Inspection of Protection Work

The protection provided will inspected by engineers to check and verify that protection has been provided as per standards. These certificates will be recorded in the Measurement Sheet. The inspection will be done before the trench is backfilled.

Important Note regarding Measurement of O.F. Cable Depth

Wherever it is said in this tender that O.F. Cable is to be laid at a particular depth' it means that top of HDPE pipe in which cable is said is at the 'particular depth' below the ground level. The measurement of O.F. Cable depth will also be done in same manner.

Finishing & Level of Trench & Compacting

The IA shall dig the trench to the depth specified. Trenching shall, as far as possible, be kept ahead of the laying of pipes. IA shall exercise due care that soil from trenching intended to be used for back-filling is not mixed with loose debris. The bottom of the trench should be as straight as possible, all curves and gradients if unavoidable rocks should be cut and blunted and trench should be cleared of all pieces of stones, rocks and leveled up properly. A layer of minimum 10 cm of soft soil/river sand should be laid on the trench bed.

Compacting

Compacting should be done at 1m (one meter) depth first after backfilling. Compacting should be done using proper implements and light pressure should be given so as to avoid any damage to the HDPE pipe/O.F. Cable. Light watering should be done so that the soil settles down properly. Upto 1 m level from bottom of trench only soft soil/sieved soil, free from stones/boulders etc. should be backfilled. Balance portions of trench should be filled with natural earth mixed with reasonable quantity of small stones, gravel, brick pieces etc. to obtain cohesiveness of the backfilled soil which will not get washed off with the monsoon, or running water on the road sides. The completely backfilled trench should be compacted by medium heavy implements until natural ground surfaces level in achieved.

Dewatering

The IA will be responsible for all necessary arrangement to remove or pump out water from the trench. The IA should survey the soil condition in the section for which he is tendering and make his own assessment about dewatering arrangements that may be necessary. No extra payment shall be admissible for this and the IA's rate should take care of this aspect.

The IA should provide sufficient width of the trench at all such places where it is likely to cave in due to soil conditions and for this no extra payment will be made.

A minimum free clearance of 15 cms should be maintained above or below any existing underground metallic / non-metallic lines or structure crossing the trenching. No extra payment will be made towards this.

Night Capping

At the end of each days work, the open ends of the pipe section shall be night capped with a securely closed cap to prevent the entry of dirt, water or any foreign matter into the pipe line until the work is resumed.

Regarding O F Cable pulling, it should be ensured that the cable is pulled during the day, and loose cable is not left out in open ground at the end of the day.

Method of Excavation

In city limits as well as in built up areas, the IA shall resort to use of manual labour only in order to ensure that damage is not caused to pipes and structures of various other utility services like Telephone, Power, Sewer or Water supply etc. Any mechanical excavation may damage such installations. In case such damage due to manual labour or otherwise by IA occurs, IA shall without demur pay the cost of reinstatement to the entire satisfaction of the Authority whose installation is damaged.

It is not compulsory that the trench is to have 70 cm width at the top and 40 cm at the bottom. So long as the IA can ensure proper laying and jointing of the pipes at the prescribed depth the IA will be free to dig Trenches of fewer dimensions. But, there shall be no compromise so far as the depth is concerned as well as specifications like uniform level, gradual gradient, bends etc.

There shall be no objection if at road crossing or rail crossings or at locations at small hillock etc., if mechanical boring device is used to bore a hole of required diameter and HDPE pipe is pushed through that hole, provided of course it is ensured that no other existing cable or any services or pipe is damaged. The same procedure can also be permitted in open area in the country side under the above conditions.

The IA shall ensure that trenching and cable laying should be continuous without leaving patches or portions in between. In a case intermediate patches are left, measurements will be taken of the completed portions only after such patches left over are also excavated according to specifications and pipes laid and jointed and trench backfilled and work in such patches in also completed in all respects.

The IA will make arrangement for underground horizontal boring if necessary for laying HDPE duct across roads or railway line . The horizontal boring will be done at the full depth of 1.65 m and DWC (Double Wall Corrugated) Duct protection will also be provided. No separate cost will be payable and it is assumed that cost involved is included by the IA in the Item Rates offered. Horizontal boring will be necessary on very busy roads where it may not be possible for any reason to cut the road due to traffic or any other considerations, or, while laying HDPE pipe under Railway line.

OFC Pulling

The Optical Fiber Cable is of 2 km nominal length in each reel. Only after full length of HDPE pipe to accommodate the full cable length has been properly buried with all due protection and the end midsection joint enclosures constructed, should the Optical Fiber Cable laying be done. Actually the cable is to be pulled through the HDPE pipe with the Nylon rope previously laid in it. The FO Cable end has a pulling eye to which the nylon rope is to be secured. The cable can withstand only limited pulling tension and therefore the cable should be pulled gently. Since the HDPE duct over 2000 meters is likely to have number of bends/ends of HDPE pipe / level variations, every 200 meters and also at important bends – handhole / manhole should be temporarily dug and the OF Cable pulling should be assisted manually. In no case the cable should be damaged during pulling since in

between fiber joints are not normally permitted. The digging and closing of manholes/handholes, mentioned above, are deemed to be included in IA's scope of work, and no extra charge will be claimed by IA.

- **Crossing of Rivers/Streams/Nullahs**

  Method of Crossing will depend on Bridge structure

  - Crossing of Permanent Bridges

    If permanent bridges like Steel Bridges are to be crossed, the river crossing of OF Cable will be carried out as per DIT standards by laying OF Cables through the side of the bridge where provision has been made essential services for the road authority with sufficient protection etc.

  - Crossing on temporary wooden bridges not allowed

    Wooden Bridges are not considered as permanent structure since the repairing works of such bridges are carried out frequently on regular basis by State P.W.D. etc. The frequent repairing of the wooden bridges may cause damages to the OFC Cable if laid by the side of the bridge.

    For this reason wooden bridges will not be used by IA as support structure for crossing the FO Cable.

  - River Crossing under riverbed

    In case when there is no permanent bridges as mentioned above or no bridge at all, the river crossing should be carried out for laying the OFC cable through the riverbed with sufficient depth (not less than 1.65 m depth) with proper protection .

- **Depth Wise Selection of Additional Protection Over HDPE Pipe**

  Guidelines for additional protection over HDPE pipe, to be provided at various depths of Cable laying when permitted by competent Authority, are given below for the IA's clarification. The use of additional protection is usually required when cable is laid at less than standard depth. The standard depth is achieved by laying the HDPE pipe in a trench dug to nominal 165 cms or better. Hence first of all IA must obtain competent authority approval from SHSB before laying cable at less than standard depth. Assuming that such permission has been obtained, the selection of additional protection to be provided will be as follows:-

  - Depth Range less than 165 cm better than 120 cm

    As per Standard norms, normally no additional protection is to be given on cross country routes. However, as per DIT norms there is a provision for providing additional mechanical protection even at 165 cm depth in built up areas. Normally therefore no additional mechanical protection will be provided to the HDPE pipe when cable is laid in

depth range 1.2 m to 1.65 m unless and until specifically instructed by SHSB. This is applicable both for cross country as well as built up area routes.

- Depth Range 90 cms to 120 cms

  As per DIT norms DWC duct, as suitable, arranged by the IA, as additional mechanical protection.

  For this purpose DWC duct of 89/75 mm diameter of appropriate specifications will be used.

- Depth Range 50 cm to 90 cm.

  As per DIT norms mechanical protection in the form of double walled corrugated duct protection around HDPE pipe is to be provided. IA will provide all necessary materials including reinforcement rods, concrete mixture (cement, sand, stone aggregate etc.) and install/lay this protection at site.

- **Use of Various Types of Pipes**

Various types of pipes and their applications in the protection of underground Optical Fiber Cable relating to the work of this contract and detailed specifications are given below:-

- HDPE Pipes

  High Density Polyethylene Pipes 40/33 mm diameter O.D. (6 Kgf/Sq. cm) of nominal length of 50 meters are to be jointed by 50/37 mm O.D. plain sleeve (25 cms length) couplers or rubber 'O' ring couplers.

  On most of the route this pipe will be laid at standard depth in ordinary soil as well as in Rocky Soil except in some special applications as described for other types of pipes.

- **DWC Ducts**

89/75 mm diameter DWC duct (as per DIT's requirements) are to be laid for crossing bridges/culverts. Following procedures are to be adopted:

Culverts/Bridges exceeding 6 meters in length and less than 30 meters

The OFC Cable should be protected and taken through 89/75 mm diameter DWC duct and the pipe should be laid within carriage width of the culvert near the parapet well. Exact method adopted, as per particular situation, should be as per approval obtained from concerned authorities. Various possible methods are as under:

(a) Culverts without earth cushion / less cushioning the wheel guard (kerb) may be broken and the pipe is fixed and wheel guard is rebuilt enclosing the 89/75 mm diameter DWC duct with concrete.

(b) If the wheel guard is of RCC and where breaking is not permitted 89/75 mm DWC duct shall be used to enclose OF Cable.

(c) When culverts with earth cushioning of 30 cms to 60 cms deep is available, the DWC duct can be buried in earth cushioning, and , Brick chamber 150 mm x 150 mm is constructed to enclose the pipe.

(d) If neither of the above methods is possible, a DWC duct 89/75 mm diameter should be clamped at minimum one meter interval to the outside of the parapet wall.

- **Jointing and Laying of HDPE Pipes**

Prior to aligning the pipes for jointing, the inside or each length of pipe and coupling should be thoroughly inspected and cleared to remove all dirt or anything that may be clogging the pipe, any obstruction that remains in the pipe line after its completion shall be removed at the expense of the IA.

Any water present in the trench at the time of laying and jointing the pipes should be pumped out by the IA at his own cost.

The pipes shall be joined for continuous stretch of about 200 meters and supplied nylon rope pulled through the pipes and kept tied at the end of the rope on end caps.

Both the ends of the pipeline section should then be securely sealed by suitable covers or plugs that should be arranged by the IA including fixing with adhesive tape.

The next pipeline shall be laid leaving a gap of 0.5 meters. These gaps will be suitable closed after OF Cable pulling is completed.

The gap of 0.5 meters may also be kept at every bend that the pipe may take as per the direction of the Engineer at site.

The pipes may be joined for as long a length as safe on ground and then lowered in the trench properly supported and further joined in trench if required.

Mandrel/Balloon testing of the pulling sections of laid HDPE duct will be done.

The IA shall exercise all care to ensure that the pipe is not subjected to any strain.

- **Backfilling and Dressing the Trench**

Provided that the pipe has been properly laid and joined in the trench at the specified depth and the nylon rope has been filled inside, the backfilling operation should follow closely. The backfilling operation shall be performed in such manner as to provide firm support under and above the pipe and to avoid bend or deformation of the pipe, when the pipe gets loaded if the backfilling is unevenly centered over the trench due to carelessness or any other cause. It shall be redressed at the IA's expense. No debris shall be allowed in backfill at any time.

At location where the backfill material contains hard clods, rock fragments and other hard materials which may cause injury to the pipe and where rock has been excavated from the trench in whole or part with such excavated rock or material. The trench should be initially filled, in order to prevent injury to the pipe from hard fragments, with not less than 10 cms

of sieved loose earth above the top of the pipe (to be screened through a suitable mesh if so required) and backfilling only thereafter be completed and finished with excavated materials.

The backfill shall be maintained by the IA against wash out settlement below original levels.

Where the trench has been dug through public and private streets, drive-ways and roads, the backfill shall be thoroughly tamped to prevent settling, Backfilling or Public, private roads and railway crossing shall be performed immediately after lowering of the pipes and jointing and the road or Rail line made safe to the traffic.

The finished backfill must be sufficiently level. After backfilling the original ground conditions should be restored.

Due to hilly terrain and the roads in hilly region in North East Road Authorities will normally not allow trenching work to proceed, if trenches are left open, thus causing the backfilled soil settling down after first rain and thus forming an unwanted drain weakening the road structure causing road user to face hazardous conditions. The IA will be responsible to take all precautions, to avoid such possibility.

- **Warning Grid Tape**

The laying IA shall supply warning Grid tape made of orange Colour PVC material, resistant to normal mechanical stress and chemical aggression from soil duly inscribed OFC at 1 meter interval both in Hindi and English alternatively, 100 mm wide and 1mm thick to be laid continuously in the excavated trench 600 mm belowground level. Neither the Colour of the tape nor the marking printed inscribed on it shall change or fade away throughout life time of the tape.

- **Fixing of Route Indicator/Joint indicator**

Route Indicators of approved SHSB design should be fixed at intervals of 200 meters to indicate position of cable/pipe. These should be liberally used where the route changes at curves, bends and crossing. The route indicators will be provided by the IA as per SHSB design. IA shall install the indicator. The route indicators are normally buried to a depth of 500 mm or more as per direction of Engineer in charge.

Joint Indicators are placed to indicate the location of midsection joints in Joint Enclosures.

- **Additional Requirements Regarding Laying Of Optical Fiber Cable**

The Optical Fiber Cable is light in weight. The approx. weight of the cable is 90 kg. per km. The length of cable is nominal 2 km and total drum & cable weight is around 330 kg. The cable is light

but delicate in nature and requires lot of precaution in handling the cable drum & drum and pulling the cable.

The steel axle rod (in Jack) will be used to mount the cable drum so that the drum (wooden reel) is freely rotated. The wooden rollers shall be used to prevent the damage to the insulation of the cable.

For pulling the cable, the tension shall be limited to 1600 N in all cases. The mechanized pulling with safety arrangements to prevent cable pulling once tension exceeds a preset limit can also be employed. In absence of mechanized pulling sufficient number of laborers shall be employed to pull the cable. It is estimated that at least four laborers shall be required at drum end and two laborers each shall be required at every interval of 200 m distance. The distance of 200 m is selected to avoid excess tension in cable at time of pulling. Adequate laborers will be required at bends, sharp curves etc. and will be provided by IA.

- **Work Measurement**

  The IA will record the measurement of work on the measurement sheet. This measurement Sheet will be signed by IA, Site Engineer/Authorized representative. Signatures of all authorized representatives are necessary before work measurement is considered authentic/payable.

- **OF Cable Entry into Building**

  The IA will take special care while entering the OF Cable into buildings. The cable is never to be bent sharply or twisted as it will definitely damage the delicate fibers. The Bending Radius should be more than 1 meter. The IA should survey the entry into building specifically and plan the same keeping in mind the location of Equipment, and Termination Join Box inside the room, make a sketch and get the approval of concerned SHSB officer for this. Any protection arrangements which can be constructed earlier to enable cable pulling into building should be done. Any cable pit/brick enclosure if required as per requirements similar to Joint Enclosure for keeping 10-20 m additional OF Cable, should be made by IA.

- **Schedule of Work**

  The item wise schedule of work is given in the following pages.

- **Road Warning Signs**

  Adequate number and proper type of Road Warning Signs will be kept installed at work site by IA to warn Road users of work going on along with Route. The IA will deploy adequate number of personnel who will stand along the road and warn various users of the road and/or assist the road traffic authorities. The Road Warning Signs will be arranged and installed as per guidelines, and, as per any stipulations that local civic authorities/statutory or Govt. agencies may put.

- **Arrangement For Disposal of Excess Earth Material From Work Site**

  The IA will arrange at his own cost the proper disposal of any excess earth material from the Work site, so that work site is fully cleared of any loose debris/earth materials, empty cable drums.

- **Pre-Survey and As Built documentation**

  The IA, after award of work, will conduct a Survey of OFC Route to determine the following minimum information in addition to any other information required for executing the work as per specification in a time-bound manner:-

  (1) Estimate of quantity of Protection materials e.g. DWC duct, Concreting etc.

  (2) Estimate of reinstatement quantities of road metalled surfaces, water drains, and any other such already built up works which have to be necessarily cut to lay the OFC cable and for Road Authorities, Municipal authorities etc. The IA will also prepare the Engineering statements, route drawings etc. which may be required to be forwarded to SHSB to enable SHSB to take up the case with concerned Authorities and pay necessary Reinstatement charges in advance.

  (3) The IA should submit the As Built Documentation to SHSB for Approval. This should show on a scaled drawing showing the crossings, the expected location of Optical Cable Joint Pits, highlighting of the metalled/already constructed brick work/concrete work/road metalled portion which will be cut while laying the cable as per site-related reasons and which the Road authorities will have to reinstate at cost to be borne by IA , the planned location of Route and Joint makers, also indication any important and key buildings, bridges, culverts, nullahs, river/stream beds whether having perennial water flow or dry for major part of the year, especially taking care to show the proposed method of laying the cable & HDPE pipe under nullah/river beds, under culverts.

  This As Built Documentation as prepared initially will form the engineering basis of work execution and it should be approved by SHSB so that work can proceed with full satisfaction and without any hitches.

  (4) The IA will submit the final As Built Documentation end-to-end i.e. from OF Termination Box at one end inside Building to the OF Termination Box at the other end in the Building.

- **Optical Fiber Cable Joint Chamber**

  These will be constructed as per specifications

  These will be constructed alongwith trenching and HDPE pipe laying work.

- **Mechanical Rock Cutting Option**

  Where small stretches of hard rock formation are found and it is considered preferable to cut these rocks to greater depth so that proper gradient and/or level of HDPE pipes achieved for technical reasons related to optional fiber cable laying, and it is further seen that chiseling or manual breaking of these rocks is liable to the up too much time thus affecting the overall rate of work in the particular stretch in which work is drilling machines or rock cutters in order to break the rock, on case by case basis, and with prior written permission from SHSB . No extra payment will be made for the same.

- **Test Pits/Drills Option**

During pre-survey activity or later also, if it is considered necessary to make test pits/test drills to determine the nature of soil / earth etc. the same will be done by IA.

- **Test and Measurement of OF Cables**

  The OF cable drum will be transported to site in sealed condition. Before laying, the wooden planks on the circular periphery will be carefully opened and the cable end will be made loose and only sufficient length unwound to enable measurement of fiber attenuation of each fiber on Optical Time Domain Reflectometer. In case a drum of OF Cable is judged to be beyond permissible limit, it will be kept aside and new drum should be arranged by the IA.

  After the accepted OF cable is unwound from the drum and laid in HDPE pipe, once again the measurements will be repeated to check and record that the cable specifications have not deteriorated in the process of laying. Any defect, if arising because of IA's fault will be the liability of the IA.

- **Explosives**.

  Explosives shall not be stored or used on the work or on the site by the IA without the permission of the Engineer-in-charge in writing and then only in the manner and to the extent to which such permission is given. When explosives are required for the wok they will be stored in special magazine to be provided at the cost of the IA in accordance with the Explosive Rules. The IA shall obtain the necessary license for the storage and the use of explosives and all operations in which or for which explosives are employed shall be at sole risk and responsibility of the IA and the IA shall indemnify the owner against any loss or damage resulting directly or indirectly there from.

- **Further guidelines for laying protection pipes on Bridges and Culverts**

  The work involves laying and concreting of DWC duct generally of not more than 4" diameter and/ or G.I. Troughs of size 4"X 4 " laid on brides/ Culverts.

  In Bridges/ Culverts, where there is no provision of ducts, the protection pipes must be laid through the ducts.

  Normally in the Bridges/ Culverts, where there are no ducts and where the cushion on top of the Arch is 0.5 meter or more thick the DWC duct (carrying HDPE pipe and cable) may be buried on top of the Arch adjoining the parapet wall, the digging close to the wheel guards.

  Where the thickness of the Arch is less than 0.5 meter, the pipe must be buried under the wheel guard masonry and the wheel guard rebuilt.

  If any of the above methods is not possible the DWC duct /G.I. troughs must be clamped outside the parapet wall with the clamps arranged by the IA. If necessary, the pipe may be taken through the parapet wall at the ends where the wall diverges away from the road.

  In case where the methods explained above are not possible, the DWC duct/ G.I. Troughs can be fixed on top of the road kerb close to the inside face of the parapet wall by means of clamps, supplied, using rawl plugs and wood screws or small diameter bolts, without damaging the concrete and limiting bolts, without damaging the concrete and limiting the

external diameter of the bolts to 7.5 mm. The permission for carrying out this work will be obtained from Road Authorities by IA.

Method sited above should be carried out under close supervision of road authorities and restoration of any damage to the structure in any of the methods adopted should be done by IA to the entire satisfaction of Road authorities.

When protection pipes are laid on bridges/culverts as per above except when pipes are clamped outside of the bridge cement concreting will be provided over the protection pipes/troughs.

SPECIFICATION FOR CONCRETING

The nominal dimension of concreting is 8"x8" cross section. However depending on the actual situation this cross section may vary to ensure uniformity with any existing structure/base on which the DWC duct/G.I. Troughs are placed as demanded by the road authorities. The work shall be carried out at the rates applicable for nominal cross-section.

The concreting surface should be thoroughly cleaned and leveled before concreting.

At both ends of the Bridges/Culverts where the DWC duct/troughs slope down and get buried the concreting should be carried out to ensure no portion of the DWC duct /trough is exposed and further down as required by the site-in charge to protect the pipe/trough from any possible damage externally caused.

Any damage caused to the existing structure such as footpath or base of the parapet or kerb wall on which DWC duct / troughs are placed should be repaired and original condition restored to the satisfaction of Road authorities.

Where white wash/colour wash exists on the Bridges/Culverts the same should also be carried out on the concreted portion to ensure uniformity.

Cement concrete mixture used should be 1:2:4 compositions i.e. 1 cement: 2 Coarse Sand: 4 Graded Coarse stone aggregate of 20mm nominal size.

Smooth finishing of exposed surface should be done with a mixture of 1:3 i.e 1 Cement: 3 Fine sand.

Portion where cement concreting have been done shall be cured with sufficient amount of water for reasonable time to harden the surface.

- Laying Of OFC Cable And /Or Protective HDPE Pipe In DIT's Pre Fabricated Ducts

IA will also lay the optical fiber cable in DIT's available ducts wherever so directed. Before laying the fiber optic cable and/or HDPE pipe IA will clean the sub ducts and mandrel/balloon tested. Thereafter the fiber optic cable etc should be laid. In the manholes on DIT's duct route IA will at his own cost arrange to open the covers deploy necessary labour for the work and close the covers as before. In case any special protection is required to be provided to OFC cable in manholes of DIT's duct IA will arrange to install it but the additional fixtures and fixing accessories if any will be arranged by the IA. As per directions imparted to IA, IA will lay either optical fiber cable alone or both the fiber optic cable and

HDPE pipe fiber cable alone or both the fiber optic cable and HDPE pipe (as is suitable for site conditioned). The payment for installing of fiber optic cable will be regulated as per the rate quoted (and accepted) in the schedule. The payment for laying of HDPE pipe will be regulated as per item rate quoted (and accepted) in schedule. The IA for laying the fiber optic cable and/or HDPE pipe in DIT's pre-fabricated ducts will claim no additional payment. This work includes laying of fiber optic cable right upto the equipment room termination joint box.

- **Action Where No Specification Is Issued**

  In case of any class of work for which there is no SPECIFICATION supplied by the OWNER as mentioned in the Tender Documents such work shall be carried out in accordance with Indian Standard Specifications and if the Indian Standard Specifications do not cover the same, the work should be carried out as per Standard Engineering Practice subject to the approval of the Engineer-in-charge.

- **Measurement Sheet**

  IA shall make every effort to keep SHSB adequately informed as to the progress of the work through out the contract period. For this purpose, contractor shall submit daily/weekly/monthly progress reports as given in the Measurement Sheet.

- **AS-BUILT Drawings**

  Upon completion of work, the IA shall complete all of the related drawings to the "AS-BUILT" stage and provide SHSB , the following:

  (a) One complete set of all original tracings

  (b) One soft copy

  (c) Four sets of As-Built drawing

  The IA shall propose the format of as built drawings and document and utilize the formats which have been duly approved. As built document shall contain but not limited to, the following information:

  (1) Is should indicate the depth of the duct laid wherever duct have been laid at lesser depth with type of protection provided.

  (2) Position of G.I / DWC pipe laid.

  (3) Position of the road crossing / rail crossing and culvert crossing etc.

  (4) Position of the duct in concrete.

  (5) Position of the city limit where extra protection have been provided by laying half DWC pipe.

  (6) Position of the joint chamber and joint of OFC.

(7) Position of route / joint marker along with the electronic marker.

(8) In city areas in particular, location of the OFC should be shown along with other underground utilities in the vicinity and also the above ground landmarks/road center be marked in the drawings to delineate the OFC route precisely.

Note: The fiber and other related components should be compatible with the already commissioned SWAN Network

Necessary Clearances/Permission from different Govt agencies should be taken and same should be submitted to SHSB

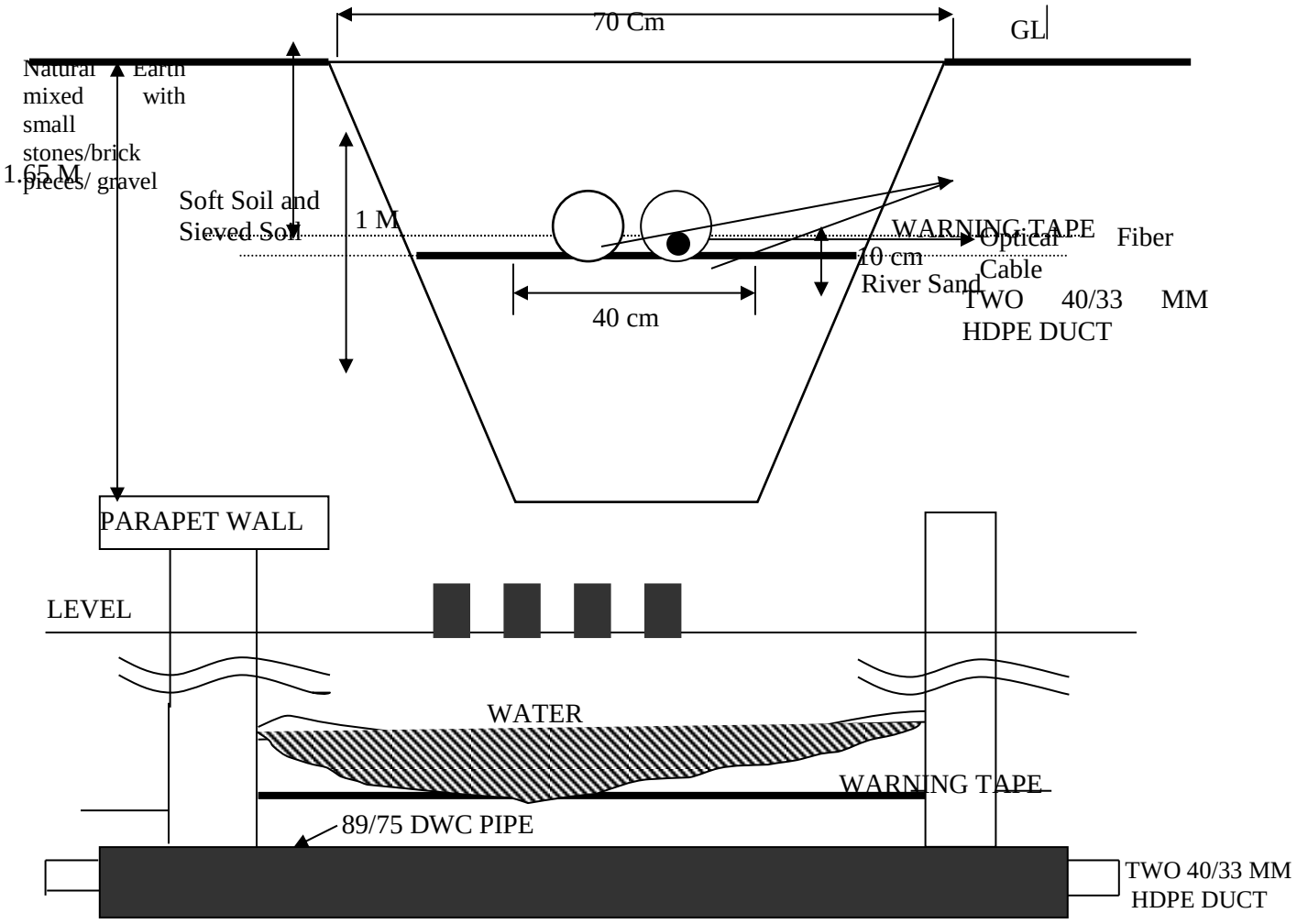


Fig 2: CABLE PASSING THROUGH SHALLOWCULVERT / NALLA

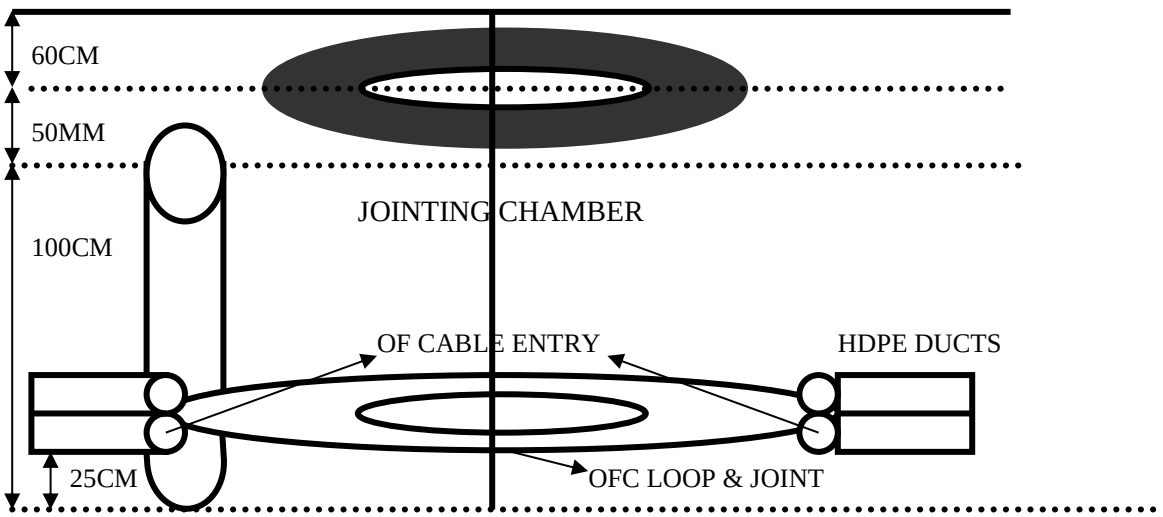


Fig 3: LAYOUT OF JOINTING PIT

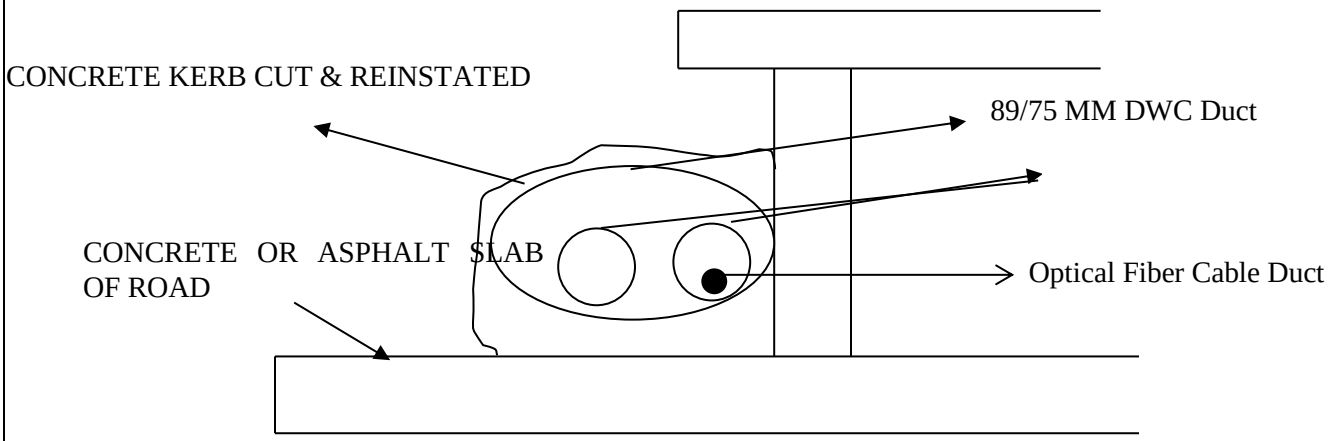


Fig 4: Laying Of Duct Along Bridges

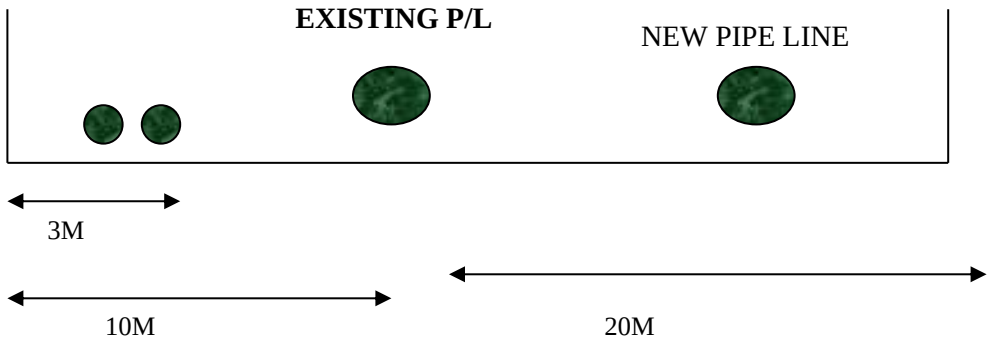


Fig 5: LAYOUT WITH RESPECT TO PIPELINES

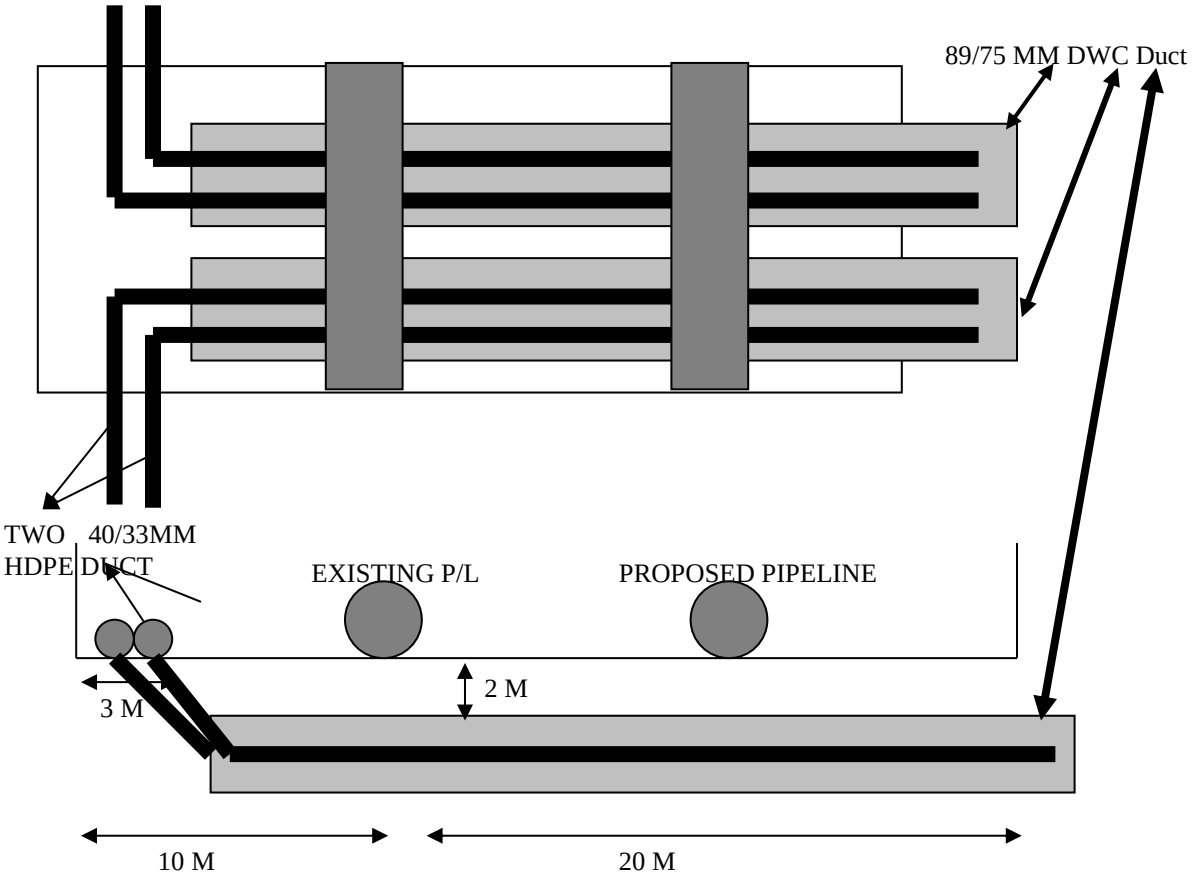


Fig 6: LAYOUT FOR CROSSING PIPELINES

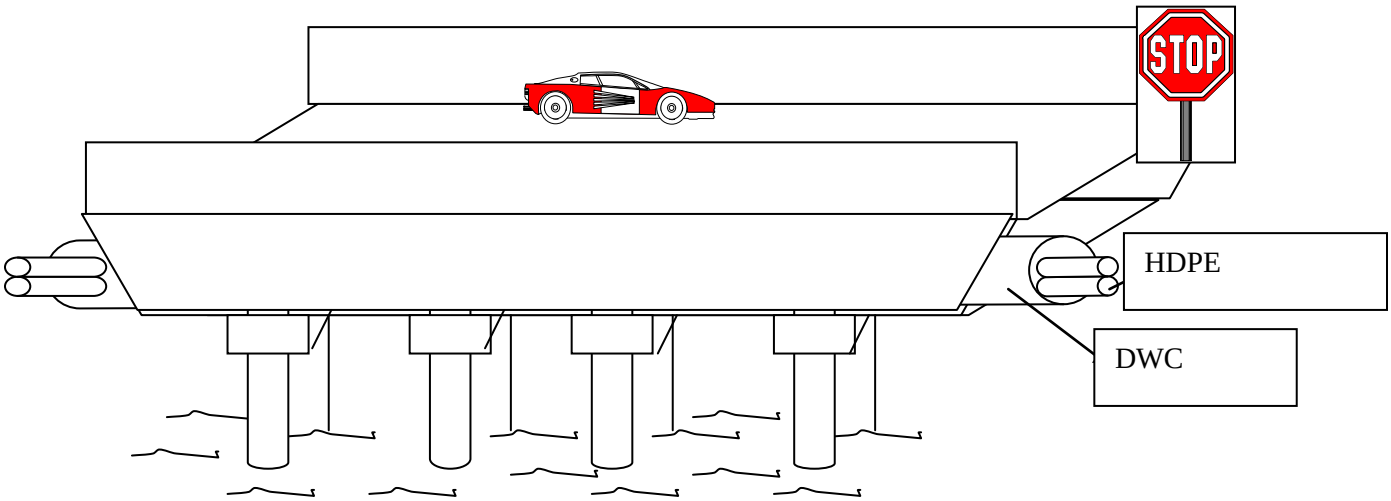


Fig 7: OFC LAYING ON PERMANENT BRIDGE

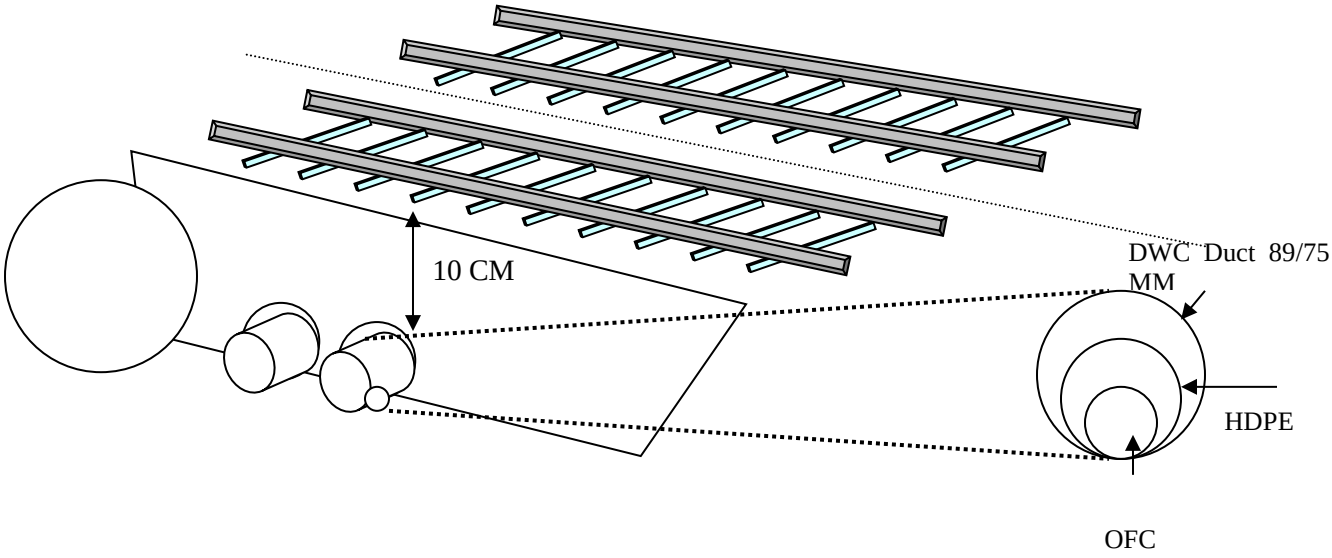
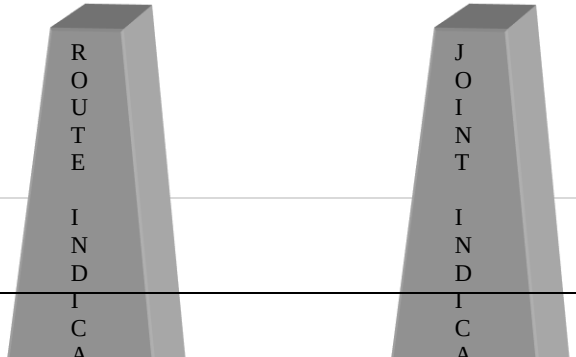


Fig 8: OFC LAYING ON RAILWAY LINE



(a) (b)

Fig 9: OFC Route In

FIBRE OPTIC CABLE SPECIFICATIONS

FIBRE OPTIC CABLE SINGLE MODE

12 Core Single Mode Outdoor ITU-T G652 CSTA (Corrugated Steel Tape Armored Cable should meet the following specifications : 9/125µm.

ITEMS	UNITS	SPECIFICATION
Attenuation	dB/km	≤ 0.35 at 1310nm ≤ 0.20 at 1550nm
Chromatic Dispersion	Ps/nm.km	≤ 3.2 at 1285nm ~ 1330nm ≤ 18 at 1550nm
Zero Dispersion Wavelength	Nm	1300 ~ 1324
Zero Dispersion Slope	Ps/nm 2 .km	≤ 0.093
Cut-off Wavelength (λ cc, 22m of a cabled fiber)	Nm	≤1270
Mode Field Diameter	µm	9.3 ± 0.4
Mode Field Concentricity	µm	≤ 0.8
Cladding Diameter	µm	125 ± 1.0
Cladding Non-circularity	%	≤1.0
Coating Diameter	µm	245 ± 10
Proof Test change Attn <=0.05 db/Km	kpsi	≥ 100 Proof strain 0.5%
PMD	PS √km	≤0.2
Effective Area	Sq Mm	>60
Fibre Curl	m	4
IOR of Fibre	mfr	1.47

CABLE CONSTRUCTION

The construction of the cable shall be in accordance with Table below.

ITEMS		DESCRIPTION
Number of Fibers		12
Type of Fiber		Single Mode
No. of Fibers per Tube		Max. 4
Filling Compound in Loose Buffer Tube		Thixotropic Jelly Compound
Filling Compound between Loose Buffer Tubes		Polybuthane Type Jelly Compound.
Central Strength Member		FRP(Fiberglass Reinforced Plastic)1mm ± 10% Dia.
Number of FRP's		2
Core Wrapping Tape		Plastic Tape (To provide heat barrier and good forming of core)
Dielectric Strength Member		Glass yarn (To provide the required tensile strength together with the central strength member)
Water Blocking Material Water Blocking Tape min 0.15 mm thickness and 6mm overlap		Water Swellable Tape. (To prevent the ingress of water)
Armour		Steel Tape Armoring (CSTA) Min 0.15 mm thick 6mm overlap, Polymer layer =0.04 mm, outer sheath min1.5mm thick
Inner Jacket	Material	HDPE
	Thickness	1.8 mm (nominal)
Outer Jacket	Material	Polymide – 12
	Thickness	0.65 mm (nominal)
Cable Diameter		14 mm

FIBER AND LOOSE BUFFER TUBE IDENTIFICATION

Give constructional cross section
The color code of the loose buffer tubes and the individual fibers within each loose buffer Tube shall be in accordance with Table below.

The Color Code of the Individual Fibers and Loose Tubes

Loose Buffer Tubes	Color	Fiber No.	Color
1	Blue	1	Blue
2	Orange	2	Orange
3	Green	3	Green
		4	Natural

PHYSICAL / MECHANICAL / ENVIRONMENTAL PERFORMANCE

The mechanical and environmental performance of the cable shall be in accordance with Table below. Unless otherwise specified, all attenuation measurements required in this section shall be performed at 1550nm for single mode fiber (SM).

The Mechanical and Environmental Performance of the Cable

ITEMS	TEST METHOD AND ACCEPTANCE CRITERIA
Tensile Loading And Bending Test	# Test method: TIA/EIA-455-33A -. Mandrel diameter: 30D (D = cable diameter) -. Short term tensile load: 2,700N for 1 hour -. Long term tensile load: 1,000N for 10 minutes # Acceptance Criteria -. Fiber strain: Less than equal 0.25% of the fiber proof strain for short term tensile load -. Attenuation increment: ≤ 0.05 dB for long term tensile load
Compressive Loading Resistance Test	Test method: TIA/EIA-455-41A -. Applied load: 110 N/cm -. Duration of loading: 10 minutes # Acceptance Criteria -. Attenuation Increment: ≤ 0.05 dB
Repeated Impact Test	# Test method: TIA/EIA-455-25B -. Height of impact: 150mm -. Drop hammer mass:5.0kg,10 impacts -. No. of impact cycles: 25 cycles # Acceptance Criteria -. Attenuation Increment:≤ 0.05 dB -. No jacket cracking and fiber breakage
Cyclic Flexing Test	# Test method: TIA/EIA-455-104A -. Sheave diameter: 20D (D = cable diameter) -. No. of flexing cycles: 25 cycles -. Flexing speed: 30 cycles/minute # Acceptance Criteria -. Attenuation Increment: ≤ 0.05 dB -. No jacket cracking and fiber breakage
Cable Twist Test	# Test method: TIA/EIA-455-85A -. Cable length twisted: 2m -. No. of twist cycles: 10 cycles -. Twist angle: ± 180° # Acceptance Criteria -. Attenuation Increment: ≤ 0.05 dB -. No jacket cracking and fiber breakage
Temperature Cycling Test	# Test method: TIA/EIA-455-3A -. Temperature cycling schedule : 23°C → -30°C → 65°C → -30°C → 65°C → 23°C

	-. Soak time at each temperature: 8hours # Acceptance Criteria -. Attenuation increment: ≤ 0.05 dB/km
Water Penetration Test	# Test method: TIA/EIA-455-82B -. Length of specimen: 3m -. Height of pressure head: 1m -. Test time: 24 hours # Acceptance Criteria -. No leakage through the open cable end
Drip Test	24 hrs No leakage of jelly at 700 C
Kink Test	Attn Change ≤ 0.05 db/Km
Snatch Test	Attn Change ≤ 0.05 db/Km

PACKING AND MARKING

Cable Marking

The sheath shall be marked at intervals of one meter with following information.
Cable type and fiber counts with Laser Icon
Name of the manufacturer
Length marking
Name of the client
Year of Manufacture

Cable Packing

Standard length of cable shall be 2Km +/- (5%)
Each length of the cable shall be wound on a separate wooden reel.

Both ends of the cable shall be sealed with a suitable plastic cap to prevent the entry of moisture during shipping, handling and storage.

Wood-fiber board or circumference battens shall be laid on cable between flanges and fixed by steel bands.

The cable ends shall be securely fastened to the reel to prevent the cable from becoming loose in transit or during placing operations.

Direction of Drum Rotation should be arrow marked

Fibre Patch panel

24 Port Rack Mount Fibre 1U Patch panel should be of the design below:

Should accept SC Duplex, SC Simplex, MT-RJ and ST Adaptors

Should have snap-in sub modules with six single fibre or 3 dual fibre ports.

Should have a fibre management system moulded in to the unit structure to effectively route fibres from an incoming cable through to the connector interface.

Should have knockouts at the rear to enable termination of loose tube or tight buffered cables as well as blown fibre tubes.

Should be slide able and should have tamper proof positive locking mechanism by means of clips supplied as standard with each unit.

Should be able to accept 4 different types of Adaptors for ease of installation/addition of different types of cables.

Should be made up of polycarbonate, PC/ABS.

Should meet EN50173 and ISO/IEC 11801 operating specifications.

Fibre Pigtail – Single mode

Fibre cable diameter of 0.9 mm.

SC connector with ceramic ferrules.
Length of pigtail --- as desired
Insertion Loss----- 0.5db

Fibre Couplers.
SC Coupler must be of duplex type.

Should have a rugged ceramic (zirconia) sleeve for Singlemode

Should meet:

Insertion loss (Max):	0.5 dB
Service life (Cycles):	1000
Operating temperature:	-40 to +75
Storage temperature:	-55 to +85

Fibre Optic Closure
Easily re-enter with closure lower plate unit and upper plate unit.

Must be re-usable.

Should accommodate splice trays to splice upto 24 core fibre. One splice tray should have capability to hold 12 splice protection sleeves and should be designed to maintain the minimum bend radius.

Closure must be consisting of one lower plate unit and one upper plate unit and must be rugged in construction for long term reliability.

Closure must provide water tight protection and should be resistant to vibration and temperature fluctuation, termites, corrosion, chemicals ,water proof.

Fibre Patch Cord Singlemode.

Shall consist of one duplex or two simplex, 9 micron core and a 125 micron cladding.

The fibre patch cord shall be factory terminated with SC ceramic connectors at one end and other end should have connectors as required by the switch port.

The fibre patch cord shall meet the following specifications:

Insertion Loss: < 0.5 dB
Service Life : 1000 cycles.
Tensile strength : 100 N
Cable OD: 3 mm

Annexure 11: Specifications of various components

Blade Enclosure:

Sl	Features	Specifications	Compliance (Yes/ No)
1.	Form Factor	Latest generation up-to 10U Form factor per enclosure with all redundancy features (Hard Drives, Power, and Cable Management). The requisite number of Enclosures to be configured to populate the Servers and Storage/Expansion Units. The blade enclosure should support Intel/AMD Latest generation of blades from the OEM. However, it is open for the bidder to	
2.	Blade Bays	Blade Chassis to accommodate minimum of 16 hot pluggable blade servers with SAS HDDs.	
3.	Enclosure Feature	Dual network connectivity for each blade server for redundancy should be provided. Backplane should be completely passive device. If it is active, dual backplane should be provided for redundancy. Bidder should provide the Midplane Throughput details. Single console for all blades in the enclosure or KVM Module DVD ROM can be internal or external or virtual, which can be shared by all the blades allowing remote installation of S/W and OS, Minimum 1 external USB connections functionality	
4.	Ethernet	Two hot-plugs, redundant 1Gbps Ethernet switch module which enable connectivity to Ethernet via switch with minimum 4 uplink ports per switch.	
5.	SAN Connectivity	Redundant SAN connectivity to the external SAN switch either via FC pass-through or SAN Switch.	
6.	Redundancy	Mechanical Devices such as Hard Disks, Fans and Power Units should be completely Hot Swappable and Redundant to ensure High Availability	
7.	Management	Systems Management and deployment tools to aid in Blade Server configuration and OS deployment Remote management capabilities through internet browser Blade enclosure should have provision to connect to display console / central console for local management like trouble shooting, Configuration, system status / health display	
8.	Power	Hot Swap redundant power supplies to be provided Power supplies should have N+1/ N+N. All Power Supplies modules should be populated in the chassis/enclosure	
9.	KVM	To be enabled Virtually over IP for Remote Access or Provided Locally.	
10.	Warranty	3 years comprehensive OEM Warranty	

Database Server / Application Server: (Production/Testing)

S. No.	Features	Specifications	Compliance (Yes/ No)
1.	Form factor	Blade	
2.	Processor	Two numbers X86 based Processor. Processor Core per CPU should be Minimum Six. The Frequency should be minimum 2.2 GHz. Processor should be latest series/generation for the server model being quoted	
3.	Memory	256 GB ECC DDR3-SDRAM DIMMs expandable to 512 GB	
4.	Controllers	Integrated SAS Raid Controller with support for Raid 0/1/10	
5.	Hard Disk Drives	Two 600 GB 6G 10K RPM 2.5" SAS Hard Disk Drive hot swappable system disk with mirroring using integrated RAID 0,1 on internal disks	
6.	Clustering	Should be configured in a OS clustering Mode for High Availability	
7.	Ethernet Adapter	Minimum dual Port 1 Gig Ethernet Adapter	
8.	SAN Connectivity	Redundant 8 Gbps Fibre Channel HBA Port	
9.	I/O Expansions	Minimum two PCI 3.0 slots	
10.	System Management and Diagnostics	System management via remote management port. Virtual KVM and Remote CDROM drive mapping functionality should be included.	
11.	Software	Server Management software with the device drivers	
12.	OS Compatibility	Microsoft Windows Server latest version Standard and datacenter Edition (64 bit) Red Hat Enterprise Linux latest version (64 bit) SUSE LINUX Enterprise Server latest version (32 bit and 64 bit)	
13.	Warranty	3 years comprehensive OEM warranty	

E-mail Server / AD Server / LDAP Server:

S. No.	Features	Specifications	Compliance (Yes/ No)
1.	Form factor	Blade	
2.	Processor	Two numbers X86 based Processor. Processor Core per CPU should be Minimum Six. The Frequency should be minimum 2.2 GHz. Processor should be latest series/generation for the server model being quoted	
3.	Memory	256 GB ECC DDR3-SDRAM DIMMs expandable to 512 GB	
4.	Controllers	Integrated SAS Raid Controller with support for Raid 0/1/10	

5.	Hard Disk Drives	Two 600 GB 6G 10K RPM 2.5" SAS Hard Disk Drive hot swappable system disk with mirroring using integrated RAID 0,1 on internal disks	
6.	Clustering	Should be configured in a OS clustering Mode for High Availability	
7.	Ethernet Adapter	Minimum dual Port 1 Gig Ethernet Adapter	
8.	SAN Connectivity	Redundant 8 Gbps Fibre Channel HBA Port	
9.	I/O Expansions	Minimum two PCI 3.0 slots	
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11.	Software	Server Management software with the device drivers	
12.	OS Compatibility	Microsoft Windows Server latest version Standard and datacenter Edition (64 bit) Red Hat Enterprise Linux latest version (64 bit) SUSE LINUX Enterprise Server latest version (32 bit and 64 bit)	
13.	Warranty	3 years comprehensive OEM warranty	

Core Router

S. No.	Features	Compliance (Yes/ No)
A	Architecture	
1.	The router shall support data, voice and security feature.	
2.	The router shall have six WAN/LAN Interface card slots.	
3.	The router should be delivered with two 10/100/1000BASE-TX LAN ports (RJ-45) & two 10/100 Base-T WAN ports (RJ-45).	
4.	The router shall support LAN, WAN, Voice interface cards.	
5.	The router shall support Hardware-based encryption acceleration.	
6.	The router performance shall be minimum 300 Kpps. This performance should not be degraded for enabling Firewall feature.	
7.	The router shall have IPSEC Throughput 75 Mbps.	
8.	The router shall be configured with minimum 256MB Flash and 512MB DRAM.	
9.	The router shall support external power supply.	
B	Features Supported	
1.	The router shall support the following WAN Protocols - HDLC, PPP, Multilink PPP, Frame Relay, PPPoE, ISDN.	
2.	The router shall support the following IP Routing Protocols in IPv4 & IPv6 - RIP, OSPF, BGP, IS-IS from day 1.	
3.	The router shall support the following Interface Modules – E1, Ch- E1, V.35 Serial, Ethernet, FXS, FXO, E3.	
4.	The router shall support MPLS features like LDP, MPLS, RSVP, Layer 2 VPN, Layer 3 VPN.	
5.	The router firmware shall have security features such as firewall, ACLs L2TP, IPSec.	

6.	The router shall support multicast features including IGMP, PIM-SM, PIM-SSM, MSDP.	
7.	The router shall support Policy-based routing.	
8.	The router shall support common industry voice protocols including Session Initiation Protocol (SIP) and H.323.	
9.	The router shall support QoS features including WFQ, CBQ, WRED, PQ or LLQ`	
10.	The router shall support Network Address Translation, URPF, GRE.	
11.	The router shall support central management through SSH, SNMP v1, v2, v3 and RMON.	
12.	The router shall support CLI, Telnet.	
C	Warranty	
1.	5 years comprehensive OEM Warranty	

Central Switch at SHSB (2 Nos.)

S. No.	Features	Compliance (Yes/ No)
1.	The chassis based switch should have dual switching fabrics or MPU, 4 payload I/O slots and redundant Power supplies	
2.	The switch should have upto 1 TBPS switching capacity	
3.	The switch should have upto 700 MPPS switching throughput	
4.	The switch should have 48 x 10/100/1000 Mbps ports and 36 x 100/1000 Base-X SFP slots populated with 12 No 1000 Base-SX MM modules.	
5.	The switch should support 40G interfaces	
6.	The switch should have multisession port mirroring or equivalent.	
7.	The switch routing table size should be scalable to 500000.	
8.	The switch should have STP, SSH, rip, http, OSPF, BGP etc process restart without rebooting the switch and Graceful Protocol Restart for OSPF/BGP/IS-IS	
9.	50K or more ACL in IPv4 & Ipv6	
10.	ISO/IEC 15408 Common Criteria EAL3+ certified from day 1	
11.	The switch should have 24 x 10/100/1000 Base-T ports including 2 x 100/1000 Base-X SFP combo Slots for Fibre connectivity and 2x10Gbps Stacking ports. The SFP slots shall support 1000 Base-SX, LX Mini-GBICs / SFP transceivers.	
12.	The switch should have 88 Gbps switching capacity.	
13.	The switch should have MAC Address table size of 16000 entries.	
14.	The switch should support RIPv1, RIPv2 & RIPng from day 1.	
15.	ISO/IEC 15408 Common Criteria EAL3+ certified from day 1	
16.	IEEE 802.1p, 802.1Qat, 802.1Qav	
17.	8 or more Hardware QoS queues	
18.	The Operating System Should be Modular	

Edge switches – PoE Based

Technical Specifications for (24 Port POE) switch		Compliance (Yes/ No)
Feature	Details	
Form Factor	1 RU Switch	
Switching Capacity	shall support 128 GBPS or more total switching capacity or more with non blocking architecture per switch.	
Forwarding Rate	Minimum 65 Mpps or more per switch	
Architecture	shall have minimum 256 MB RAM from day 1 for efficient performance	
	shall support redundant power supply	
	Shall have dedicated stacking ports with minimum 32 GBps Stacking Bandwidth. Should be able to stack minimum 8 switches together Should be cross stackable with their other 1RU Model Switches	
	20 ports of 1G Base T with 802.3 af + 4 Combo ports + option to add 2 X 10G ports in future	
Interface support	Interface Support : 10/100/1000 base T , 1000 base X (SX, LX, ZX, BX) , 10G Base (SR, LR , ER)	
IP v6 Support	shall support hardware and software configuration support for IPv6 at L2 switching and L3 routing from day 1	
Layer 2	shall support 1000 active VLANs (IEEE 802.1Q) from day 1	
	IEEE 802.3ad Link Aggregation, with support for minimum 128 aggregation groups	
	Should support minimum 8 K MAC system wide	
	shall support command for turning on and off MAC address , Learning, Flooding and ageing on a per port and Vlan basis.	
	shall support Port based VLAN, MAC based VLAN and Private vlan	
	shall support minimum 64 active STP instances	
	shall support SNMP and syslog Notification for MAC addition, deletion and movement across ports	
	shall support Multicast traceroute , Layer2 Ping and Layer 2 Traceroute for connectivity and Fault Management	
QOS	shall support Eight hardware queues per port.	
	shall support Diffserv –RFC 2474, RFC 2475 RFC 2597 and RFC 2598	
	shall support port mirroring with 1:1, 1:N capabilities. Shall have support for Remote mirroring capability & acl based selective traffic mirroring	
	shall support rate limiting with Configurable bandwidth granularity in steps of 64 Kbps minimum	
	shall support Strict Priority Queuing & WRR	

	shall support Link Layer Discovery Protocol (802.1ab) & LLDP-MED to allow auto recognition of third party network devices.	
Layer 3	shall support RIP , RIP ng from day 1 and upgrade path to support OSPF (Open Shortest Path First) v2,v3 , PIM SM, SSM in future	
	shall support Policy based Routing and Traffic Redirection	
	shall support configuration support for Static Unicast routes, Telnet, SSHv2, Multicast listener Discovery v1,v2,Ping and Trace-route over IPv6	
	shall have support for DHCP Option 82 , DHCP server and BootP/Dhcp relay .	
SECURITY	shall support 1 K Hardware based ACLS	
	shall support mechanism to guard against BPDU attacks for edge ports or equivalent	
	Network login with IEEE 802.1x user authentication and web browser based walled garden Network login for non 802.1x clients	
	Unidirectional Link Detection (UDLD] or equivalent for detecting and disabling unidirectional links on fiber-optic interfaces caused by incorrect fiber-optic wiring or port faults	
	Local authentication database and RADIUS Authentication for 802.1x, TACACS+ Authentication	
	shall support binding of mac address to port, MAC security – Lockdown & Limit	
	shall be scalable to support Minimum 1K ACL wire-speed L2/L3/L4 ACLs in Hardware	
	shall support SSH-2, SCP-2 , SFTP with encryption/ authentication	
	Support for kerberos	
	shall support DHCP snooping and blocking of static IP usage in DHCP environment	
	shall support packet flow export standards sFlow/ Ipfix/Netflow in Hardware from Day one for Network visibility and security audits.	
Management	Web based Graphical User Interface with ssl support	
	Support fetaures / protocol to mesaure Frame Delay and Latency between devices to pinpoint slow traffic paths	
	shall have Serial RS232 port and dedicated Out Of band Management Ethernet Port	
	shall support more than one firmware image and more than one configuration file as backup on the switch locally.	
	automatic provisioning of VoIP parameters like QOS / VLAN / IP Phone gateways on connecting of VoIP phones to switch port.	
	shall support scheduled archiving / uploading of configuration and system log to a Central server	
	shall support ability to monitor CPU process and utilization percentage.	

Operating Specifications	Operating Temperature Range: 0° C to 40° C	
	Operating Humidity: 10% to 90% relative humidity, non-condensing	
Power	90-240 VAC	
Standards and Certifications	OEM shall be ISO 9001:2000 certified ETSI EN 300 386:2001 NEBS GR-63	
Standards and Certifications	OEM shall be ISO 9001:2000 certified ETSI EN 300 386:2001 NEBS GR-63	

FIREWALL

Firewall	Compliance (Yes/ No)
The Firewall should be Hardware based, Reliable, purpose-built security appliance with hardened operating system that eliminates the security risks associated with general-purpose operating systems	
Proposed Firewall OEM should be in the Leaders Quadrant of Gartner's Magic Quadrant for Unified Threat Management for the last 2 consecutive years.	
Firewall appliance should have at least 12 x 10/100/1000 GE interfaces & 4 x 10G SFP+ Interfaces.	
Firewall Throughput should be 16 Gbps and should have 3DES IPSec throughput of 10 Gbps	
Firewall should support unrestricted site-to-site VPN Tunnels.	
Firewall should support 130,000 new sessions per second	
Firewall should support 3 Million concurrent sessions	
The Firewall solution should support Static, dynamic, 1:1, IPSec NAT traversal, Policy-based NAT, Virtual IP	
The proposed system shall be able to support Port independence, WAN failover, load balancing, transparent/drop-in mode	
The physical interface shall be capable of link aggregation like - 802.3ad dynamic, static, active/backup. It also allows Active/Passive, Active/Active with load balancing for high availability (HA)	
The proposed system should have integrated Traffic Shaping functionality.	
The Firewall should have Unrestricted SSL/L2TP VPN solution	
a) IPSEC VPN	
b) PPTP VPN	
c) L2TP VPN	
d) SSL VPN	
The device shall have:	
a) IPSEC (DES, 3DES, AES 128-, 192-, 256-bit) encryption/decryption	
b) SHA-1, MD5, IKE pre-shared key, 3rd party cert	
The system shall support the following IPSEC VPN capabilities:	
a) Multi-zone VPN supports.	
b)Single Sign-On with transparent Active Directory Auth.	
c) Supports NAT traversal	
d) Supports Hub and Spoke architecture	

e) Supports VPN Failover	
The system shall support 2 forms of site-to-site VPN configurations:	
a) Route based IPSec tunnel	
b) Policy based IPSec tunnel	
The system shall support IPSEC site-to-site VPN and remote user VPN in transparent mode.	
High Availability	
The proposed system shall have built-in high availability (HA) features without extra cost/license or hardware component	
The device shall support stateful session maintenance in the event of a fail-over to a standby unit.	
High Availability feature must be supported for either NAT/Route or Transparent mode	
The proposed system shall support multiple heartbeat links	
The solution should support Web-based and dedicated management server	
The management server should support Logging, Reporting, Quarantine, Webfilter database server, Management	
Web based console should supports Windows, Mac, Linux, and Solaris OS with most common browsers	

Web Security Gateway

	Features		Compliance (Yes/ No)
1	Hardware	The solution should be a dedicated appliance based solution for web security.	
		The Appliance should consist a minimum of 24 GB RAM.	
		The Appliance should have a minimum of 1 TB Hard disk	
		The Appliance should have minimum 6 x GE interface	
2	Web Threat Protection	The solution should provide proxy, caching, on box malware inspection, content filtering, SSL inspection, protocol filtering on the same appliance. It should have malware scanning and content inspection through third party integration, however all inspection needs to be local and on-premise.	
		The Solution should intercepts user requests for web destinations (HTTP, HTTPS, and FTP)	
		The solution should have gateway level AV and malware protection.	
		The solution should have at least 30+ million websites in its URL filtering database and should have pre-defined 100+ URL categories,	
		The solution should have partnerships or third party inputs for web threat ratings like facebook.	
		The solution must detect and block outbound Botnet and Trojan malware communications. The solution must log and provide detailed information on the originating system sufficient to enable identification of infected units for mitigation.	

	बिहार सरकार	The solution should be capable of dynamically blocking a legitimate website which has become infected and unblock the site when the threat has been removed	
		The solution should be able to perform SSL inspection to detect and block malicious content downloaded through SSL and also blocking sensitive information uploaded to SSL websites.	
		The solution should support policy enforcement for users even when they access Internet outside the corporate network, this should be enforced through an agent deployment on roaming endpoints. And this solution should be on premises or SAAS based, but not with the help of VPN or complete traffic redirect to corporate network.	
		The agent on the roaming user machines should be tamperproof, for example, the agent cannot be uninstalled by the user even with admin rights to the system or the user cannot stop the services	
		The solution should have management and validation of SSL certificates. Validation checking can be set as certificate revocation (CRL), online certificate status protocol (OCSP).	
		The solution should have ability to block anonymizer sites or proxy avoidance tools.	
		The solution should have automated support for the Malware Sandbox to evaluate the malicious code.	
		The solution should have range based IP spoofing to provide accurate representation of the IP addresses as it exits the proxy.	
	Web content, video& social Media control	The solution should apply security policy to 100+ protocols in 15 categories. This includes the ability to allow, block, log, and assign quota time for IM, P2P, and streaming media.	
		The solution should filter out embedded objectionable or unproductive content, this includes examination of the source server, URL, page content, and active content	
		The solution should support custom allow/deny web ratings. The administrators can create, modify, and manage URL categories to accommodate specific needs for controlling users' web access	
		The solution should have granular control over popular social web applications like Facebook, LinkedIn, Twitter, YouTube, and others.	
		The solution should have social social control Video uploads to Facebook and YouTube applications.	
		The solution should have functionality to control web 2.0 and real time content categorization.	
		The solution should have support for YouTube for Education, It should simplifies design and implementation of policy to ensure user compliance to company AUPs.	
4	Content Control	The solution should have atleast 500+ pre-defined content rules inbuilt with web Security & embedded in the product	
		The solution should have pre-defined dictionaries, keyphrases to detect financial terms, offensive language etc.	

	बिहार सरकार	The solution should have ability to detect slow cumulative data leaks through web channel.	
		The solution should have capability to analyse text inside image going through web channel	
		The solution should have ability to provide geo-location awareness for security incidents	
		The solution should be able to fingerprint files, folders, databases and prevent the information from being sent over outbound mails.	
5	Administration, Authentication and Policy Controls.	The management console provides Security administrators with a comprehensive, up-to-date view of threat characteristics and response, user activity, network load, system stats and more.	
		The solution should have authentication options for administration, the specific permissions available depend on the type of administrator and Administrator activity is logged and available for auditing or troubleshooting.	
		The solution should have authentication options for users/groups, It should supports authentication of users via Integrated Windows Authentication (Kerberos), NTLM (NTLM v1 and v2 in Session Security), and LDAP.	
		The solution should have support of multiple domains, the administrators can specify the sequence (domain controllers checked first, second, next, etc.) used to authenticate users who login from different locations.	
		The solution should supports credential caching (for transparent and explicit proxy) to reduce load on domain controllers.	
		The solution should have centralized management for multiple web egress points	
		The solution should have Multi-Domain authentication to allow the admin to create rules that authenticate against multiple domain controllers in a sequence	
		The solution should have support two factor Authentication for Management Server.	
6	Logs and Reporting	The solution should support real time graphical and chart based dashboard for the summary of web filtering activities.	
		The solution should pre-built report templates which the administrator can use for generating reports.	
		The solution should support custom report creation in HTML, Excel and PDF.	
		The solution should have capabilities to automatically deliver reports based on schedule to selected recipients	
		The solution should be able to consolidate reports from multiple boxes for centralized logging and reporting.	
		The solution should provide detailed information on security incidents to comprehensively investigate individual threat events	
		The solution should be integrated to third-party SIEM applications like syslog/CEF (ArcSight), syslog key-value pairs (Splunk and others), syslog LEEF (QRadar), and	

	बिहार सरकार	Custom.	
		The solution should have ability to capture data for security incidents and the captured characteristics include: Source of the request, destination IP, File name and size , parameters and Body (CGI and HTML information from the file header).	
		The solution should provide a Web UI to manage Internet usage policies, it also should support delegated administration and reporting capabilities so different roles can be created to manage policies and view reports.	
		The solution should provide native system health monitoring, alerting and troubleshooting capabilities.	
		The solution should provide reports based on hits, bandwidth and browse time.	
		The solution should support configuring scheduled automatic backup of system configuration	
		The solution should support automatic download of available patches or fixes	
		The Solution should have inbuilt reporting feature like real time monitoring, reporting templates and investigation drill down report.	
		The solution should have reporting on the user agent strings of applications to provide details on application usage and version details including browser version reports.	
7	Supports, Third party recognitions	The solution must be present in the latest Gartner's leader quadrant for Secure Web gateways.	
		The OEM should have Standard Support, Premium Support, and Mission Critical Support options available globally	
		The OEM should have own TAC center in India.	

Data Security / Data Leakage Prevention (DLP)

1	Hardware	The proposed system should be an dedicated appliance based solution for email security.	
		The Appliance should consist a minimum of 24 GB RAM.	
		The Appliance should have a minimum of 1 TB Hard disk	
		The Appliance should have minimum 6 x GE interface	
		The solution should have performance capability of processing at least 2,00,000 message per hour.	
		The solution should have license of minimum 10000 users	
		The solution should have Virtual Appliance image.	
2	Malware/Anti-Virus Protection	The Solution should have feature of virus scanning engine strip the infected attachments.	
		The Solution should detect known or suspect secure-risk URLs embedded in the email, which are reliable indicators of spyware, malware or phishing attacks.	
		The Solution should have multiple AV engines for anti-virus and malware scanning.	

		The Solution should provide proactive virus detection methods for new email-borne virus.	
		The Solution should have feature of virus scanning engine strip the infected attachments.	
		The Solution have the management on virus quarantine and should have the access and manipulate the quarantined virus emails.	
		The solution virus engine should support scanning by inbound, outbound and internal direction and configure the policy per direction.	
		The Solution should have close to 100% virus detection rate for known viruses.	
		The Solution should provide email attachment sandboxing	
3	Antispam	The Solution should provide an attachment scanning capability to detect file-based spam messages	
		The Solution should support URL classification of the embedded links and it contributes for SPAM detection.	
		The solution should support image based spam detection capability, such as the pornography images within the email and it allow customer to adjust the sensitivity level.	
		The solution should support dictionaries scanning and dictionaries are built-in the product and allow customer to create his own dictionary.	
		The Solution should report the false positive email and a button in the quarantine queue thus customer can simply click to have a report.	
		The solution should also allow users to report SPAM mails.	
4	Content Control	The solution should have at least 500+ pre-defined content rules inbuilt with Email Security & embedded in the product	
		The solution should have pre-defined dictionaries, key phrases to detect financial terms, offensive language etc.	
		The solution should be able to look for content in the email header, body of message and also attachments.	
		The solution should be able to restrict incoming, outgoing and internal mails based on file types, file size and also by file name and also through a combination of them.	
		The solution should be able to fingerprint files, folders, databases and prevent the information from being sent over outbound mails.	
		The solution should have capabilities to quarantine mails with content that violates the policy and notify sender or sender's manager automatically. The mails that are quarantined because of content control policies should be released if the sender's manager replies to the notification mail.	
		The solution should monitor and control sensitive emails downloaded to mobile devices through ActiveSync.	

		The solution should perform image based filtering. It's should use sophisticated analytical algorithm to analyse image to determine attributes that indicate the image may be of a pornographic or non- pornographic nature in known and unknown spams emails.	
		The solution should have capability to analyse text inside image going through email.	
5	MTA Functionality	The solution should allow to set SMTP greeting message, delay time and the full qualified domain name for SMTP session establishment.	
		The solution should support policy based TLS encryption between mail domains.	
		The solution should provide the capability of connection control and message rates control for inbound and outbound respectively.	
		The solution should have directory harvesting and DoS prevention capabilities.	
		The solution should allow the administrator to specify the re-try time for a delivery failure.	
		The solution should provide real time IP reputation system.	
		The solution should support internal sender authentication.	
		The solution should support user group(LDAP) or domain based routing and delivery.	
		The solution should support message stamping by adding notes or disclaimer in the message.	
		The solution should support IP/address/domain based whitelist and blacklist.	
		The solution should have capability for Outbound throttling by IP/address.	
		The solution should support Inbound mail routing delivery preferences to accommodate larger, more complex network	
6	Management	The solution should support centralized management, including policy configuration, quarantines and logs/reporting.	
		The solution should support the real-time graphical and chart-based dashboard for the summary of email filtering activities.	
		The Solution should support quarantine administrator role. Thus only the delegated administrator is allowed to access the message in specific queue.	
		The solution should search a message in the queue and should have multiple options.	
		The Solution should have option for end user notification for email quarantining letter to be customized and click boxes that enable the user to release e-mail, report false positives, add senders to allow-or-block lists and direct links to personal email management portal.	

		The solution should allow where Administrator can specify which queues can be accessed by end user.	
		The Personal management portal should be a web-based UI for end users.	
		The solution should allow email reply to release the email quarantined by solution.	
		The solution should support native system backup and software update functionality.	
7	Logs and Reporting	The solution should support real time graphical and chart based dashboard for the summary of email filtering activities.	
		The solution should pre-built report templates which the administrator can use for generating reports.	
		The solution should support custom report creation in HTML, Excel and PDF.	
		The solution should have capabilities to automatically deliver reports based on schedule to selected recipients	
		The solution should be able to consolidate reports from multiple boxes for centralized logging and reporting.	
		The solution should provide detailed information on messages to comprehensively track messages.	
		The solution should allow parameters to be defined for searching message logs.	
		The solution should have True Source IP Detection and Connection Blocking feature should work even if Email Security is deployed behind Corporate Email Relay Server/Firewall SMTP .	
		The solution should have option to monitor traffic in real time for easier troubleshooting	
8	End user management	The solution should provide capabilities for end users to search on quarantined messages specific to them.	
		The solution should allow end users to release mails from quarantine if approved.	
		Automatic notifications should be sent to end users whenever mails are quarantined for them.	
		The notification message to end users should be completely customizable.	
		The solution should allow end users to create their own personal allow and block lists.	
		The solution should allow administrators to define which queues can be accessed by end user	
		The solution should have a central end user management portal for multiple appliances.	
9	Support	The OEM should have own TAC center in India.	
10	Network Data monitoring and Prevention	The solution should be able to inspect HTTP traffic and HTTPs traffic either natively or by integrating with third party SSL engine but SSL solution should be in Gartner leader Quadrant.	
		The solution should be able to enforce policies by URL's, domains or URL categories either natively or by	

	बिहार सरकार	integrating with a Web Security solution.	
		The solution should be able to prevent content getting posted or uploaded to specific geo-destinations.	
		The solution should be able to monitor FTP traffic including fully correlating transferred file data with control information and should be able to monitor IM traffic even if its tunneled over HTTP protocol	
		The solution should monitor and control sensitive emails downloaded to mobile devices through ActiveSync	
		The solution should be able to block outbound emails sent via SMTP if its violates the policy. The proposed solution should work as a MTA to receive mails from mail server and inspect content before delivering mails to next hop and should quarantine emails that are in violation of company policy.	
11	Endpoint Data Monitoring and Prevention	The end point solution should inspect data leaks over HTTP , HTTPs and SMTP.	
		The endpoint solution should have pre-defined applications and application groups and allow each application/application group to monitor operations like Cut/Copy, Paste, File Access and Screen Capture.	
		The endpoint solution should be able to monitor data copied to network file shares and should enforce structured and unstructured fingerprint policies even when disconnected from corporate network.	
		The endpoint would be able to store both structured and unstructured fingerprints on the endpoint itself and should perform all analysis locally and not contact network components to reduce WAN overheads. The solution should be able to enforce different policies for desktops and laptops.	
		The endpoint solution should have capabilities to monitor applications and ensure unauthorized applications do not have access to sensitive files. The endpoint solution should be able to perform discovery only when the endpoint is connected to external power.	
		The endpoint solution should encrypt information copied to removable media	
		The endpoint solution should Blocking of non-Windows CD/DVD burners, it should also Inspect and optionally block Explorer writes to WPD class devices	
		Endpoint solution should support win 32 and 64 bit OS, Mac & Linux OS	
12	Data Identification and Policy management	The solution should have a comprehensive list of pre-defined policies and templates with over 1700+ patterns to identify and classify information pertaining to different indutry like Energy, Petroleum industry vertical etc and India IT Act.	
		The solution should provide capabilities to identify data based on keywords or dictionaries and the solution should be able to enforce policies based on file types, size	

	बिहार सरकार	of files and also the name of the file	
		The solution should be able to detect encrypted and password protected files. The solution should be able to do full binary fingerprint of files and also should be able to detect even if partial information gets leaks from fingerprinted files or folders	
		The solution should be able to recursively inspect the content of compressed archives	
		The solution should be able to fingerprint only specific fields or columns within a database and should be able to identify information from databases by correlating information residing in different columns in a database	
		The solution should have printer agents for print servers to detect data leaks over print channel.	
		The Solution should have advanced Machine Learning – Ability to automatically learn sensitive information from copies of information that needs to be protected and also automatically learn false positives.	
		The solution should enforce policies to detect low and slow data leaks	
		The solution should be able to enforce policies to detect data leaks even on image files through OCR technology.	
		The solution should support integration with Microsoft file classification infrastructure (FCI) for data classification.	
		The solution should be able to identify data leaked in the form unknown and kwon encrypted format like password protected word document	
		The solution should be able to identify malicious traffic pattern generated by Malware infected PC in order to prevent future data leakage by the malware	
13	Automated Response & Incident management	The solution should be able to alert and notify sender, sender's manager and the policy owner whenever there is a policy violation, Different notification templates for different audience should be possible.	
		The solution should support quarantine as an action for email policy violations and should allow the sender's manager to review the mail and provide permissions for him to release the mail without logging into the UI	
		The incident should include a clear indication of how the transmission or file violated policy (not just which policy was violated), including clear identification of which content triggered the match and should allow opening of original attachment directly from the UI	
		The incident should display the complete identity of the sender(Full name, Business unit, manager name etc.) and destination of transmission for all network and endpoint channels. The solution should also allow assigning of incidents to a specific incident manager	
		The solution should provide automatic notification to incident managers when a new incident is assigned to	

		them and the incident should not allowed for deletion even by the product administrator	
		The solution should allow a specific incident manager to manage incidents of specific policy violation, specific user groups etc.	
		The solution should have options for managing and remediating incidents through email by providing incident management options in the email.	
14	Role Based Access and Privacy Control	The system should control incident access based on role and policy violated. The system should also allow a role creation for not having rights to view the identify of the user and the forensics of the incident	
		The system should create separate roles for technical administration of servers, user administration, policy creation and editing, incident remediation, and incident viewing for data at rest, in motion, or at the endpoint	
		The system should allow a role only to view incidents but not manage or remediate them	
		The system should have options to create a role to see summary reports, trend reports and high-level metrics without the ability to see individual incidents	
		The system should allow incident managers and administrators to use their Active directory credentials to login into the console	
15	Reporting & Analytics	The solution should have a dashboard view designed for use by executives that can combine information from data in motion (network), data at rest (storage), and data at the endpoint (endpoint) in a single view	
		The system should allow reports to be mailed directly from the UI and should allow automatic schedule of reports to identified recipients	
		The reports should be exported to at least CSV, PDF, HTML formats	
		The system should provide options to save specific reports as favorites for reuse	
		The system should have lots of pre-defined reports which administrators can leverage	
16	Storage(Data at Rest)	The system should allow automatic movement or relocation of file, delete files during discovery	
		The system should display the original file location and policy match details for files found to violate policy	
		The system should leave the "last accessed" attribute of scanned files unchanged so as not to disrupt enterprise backup processes	
		The system should support incremental scanning during discovery to reduce volumes of data to be scanned.	
17	Supports, Third party recognitions	The solution must be present in the latest Gartner's leader quadrant for Data Loss Prevention.	
		The OEM should have own TAC centre in India.	

LINK LOAD BALANCER:

Link Load Balancer	Compliance (Yes/ No)
Hardware	
should be appliance based solution with purpose built hardware for high performance.	
Memory 8 GB RAM	
The appliance should have minimum 4 x1G copper ports and 2x 10 G Ports	
The appliance should have 5 Gbps of system throughput and scalable to 10 Gbps on same appliance.	
Should provide 4M concurrent connections.	
Appliance should provide full ipv6 support and have phase-2 certification.	
Load balancing Features	
Support for multiple internet links in Active-Active load balancing and active-standby failover mode.	
Should support Outbound load balancing algorithms like round robin, Weighted round robin, shortest response, hash ip, target proximity and dynamic detect.	
Should support inbound load balancing algorithms like round robin, Weighted round robin, target proximity & dynamic detect.	
Should support Static NAT, Port based NAT and advanced NAT for transparent use of multiple WAN / Internet links.	
IPV6 support with IPv6 to IP4 and IPv4 to IPv6 translation and full IPv6 support.	
Domain name support for A-record, MX record for inbound load balancing.	
Dynamic detect (DD) based health check for intelligent traffic routing and failover	
In case of link failure, device should detect it in less than 30 seconds and divert the traffic to other available links.	
Shall provide individual link health check based on physical port, ICMP Protocols, user defined l4 ports and destination path health checks.	
Should provide mechanism to bind multiple health checks, support for Application specific VIP health check and next gateway health checks.	
Should support persistency features including RTS (return to sender) and ip flow persistence.	
High Availability and Cluster	
Should provide comprehensive and reliable support for high availability and N+1 clustering based on Per VIP based Active-active & active standby unit redundancy mode. Stateful session failover with N+1 clustering support when deployed in HA mode Should support USB based FFO link to synchronize configuration at boot time of HA Support for multiple communication links for realtime configuration synchronizations including HA group, gateway health check, decision rules, SSF sessions etc.. and heartbeat information should support floating MAC address to avoid MAC table updates on the upstream routers/switches and to speedup the failover should support for secondary communication link for backup purpose	

should support floating IP address and group for statefull failover support. Appliance must have support 256 floating ip address for a floating group should support built in failover decision/health check conditions including, CPU overheated, system memory, process health check, unit failover, group failover and reboot should also have option to define customized rules for gateway health check - the administrator should able to define a rule to inspect the status of the link between the unit and a gateway Configuration synchronization at boot time and during run time to keep consistence configuration on both units.	
Security and Application Performance	
Should provide performance optimization using TCP connection multiplexing, TCP buffering and IEEE 802.3ad link aggregation.	
should support TCP optimization options including windows scaling, timestamp & Selective Acknowledgement for enhanced TCP transmission speed.	
TCP optimization option configuration must be defined on per virtual service basis not globally.	
Software based compression for HTTP based application, SSL acceleration support and high speed HTTP caching on same appliance.	
Should support QOS for traffic prioritization, CBQ , borrow and unborrow bandwidth from queues.	
Should provide QOS filters based on port and protocols including TCP, UDP and ICMP Protocols.	
Should support rate shaping for setting user defined rate limits on critical application.	
should support integrated firewall module to protect the device itself from network based DOS and DDOS attacks.	
Appliance should have security features like reverse proxy firewall, Syn-flood and dos attack protection features from the day of installation .	
Management	
The appliance should have extensive reporting and logging with inbuilt tcpdump like tool and log collection functionality	
The appliance should have SSH CLI, Direct Console, SNMP, Single Console per Cluster with inbuilt reporting.	
Should support XML-RPC for integration with 3rd party management and monitoring of the devices.	
The appliance should provide detailed logs and graphs for real time and time based statistics	
Appliance must support multiple configuration files with 2 bootable partitions for better availability and easy upgrade / fallback.	
The system should support led warning and system log alert for failure of any of the power and CPU issues	
Technical center must be available in India from last 3years.	

Application/Server Load Balancer:

Application Load balancer	Compliance (Yes/ No)
Hardware	
should be appliance based solution with high performance purpose built hardware.	
The appliance should have minimum 4x1 GE copper ports and 2x 10G SFP+ fiber port	
The appliance should have 5 Gbps of system throughput and scalable to 10 Gbps on same appliance.	
Should have minimum 4M concurrent connections	
Appliance should provide full ipv6 support and have phase-2 certification.	
Load balancing Features	
The appliance should support layer 2 to layer 7 load balancing	
The appliance should support server load balancing algorithms i.e. round robin, weighted round robin, least connection, Persistent IP, Hash IP, Hash Cookie, consistent hash IP, shortest response, proximity, snmp, SIP session ID, hash header etc.	
should support one arm, reverse and transparent proxy mode deployment scenarios and should support nested layer7 and l4 policies.	
Should maintain server persistency based on source ip and destination ip, http header, url, cookie and SSL ID.	
The appliance should support multi port, scripted and custom health check with content verification	
Should provide application & server health checks for well known protocols i.e. ARP, ICMP, TCP, DNS, RADIUS, HTTP/HTTPS, RTSP etc..	
The appliance should have and/or relationship to check various dependencies for the application delivery	
should support layer4 and layer 7 load balancing for HTTP/HTTPS, FTP/FTPS, SIP, RTSP , RDP, TCP, TCPS and UDP protocols	
Should support grace full shut down of real services	
Clustering and failover	
Should provide comprehensive and reliable support for high availability and N+1 clustering based on Per VIP based Active-active & active standby unit redundancy mode.	
Stateful session failover with N+1 clustering support when deployed in HA mode	
Should support USB based FFO link to synchronize configuration at boot time of HA	
Support for multiple communication links for realtime configuration synchronizations including HA group, gateway health check, decision rules, SSF sessions etc.. and heartbeat information	
should support floating MAC address to avoid MAC table updates on the upstream routers/switches and to speedup the failover	
should support for secondary communication link for backup purpose	
should support floating IP address and group for statefull failover support. Appliance must have support 256 floating ip address for a floating group	
should support built in failover decision/health check conditions including, CPU overheated, system memory, process health check, unit failover, group	

failover and reboot	
should also have option to define customized rules for gateway health check - the administrator should able to define a rule to inspect the status of the link between the unit and a gateway	
Configuration synchronization at boot time and during run time to keep consistence configuration on both units.	
The appliance should have software based site selection feature to provide global load balancing features on same appliance	
Should support global load balancing algorithms like global round robin (grr), VIP based weighted global round robin, global connection overflow, global least connections, IP overflow, Proximity etc.,	
SSL Features	
should provide Secure online application delivery using hardware-based high performance SSL acceleration with minimum 3 Gbps of SSL throughput and 25,000 ssl TPS.	
The appliance should support Certificate format as "OpenSSL/Apache, *.PEM", "MS IIS, *.PFX", and "Netscape, *.DB".	
The appliance should have additional hardware card to perform the SSL offloading / acceleration for 1024 and 2048 bit certificates.	
The appliance should support use of password protect Certificate/Private Key backup/restore to/from local disk or remote TFTP server, and through WebUI	
The appliance should support Self generates CSR (Certificate Signing Request), self-signed Certificate and private key for specified host.	
The appliance should support customization for SSL Error pages.	
The appliance should support HTTP to HTTPS location header rewrite for enhanced application delivery support	
The appliance should have end to end ssl support to act as a SSL Server and/or as SSL Client	
Should support client certificate verification, certificate bases access control, CRL's (HTTP, FTP ,LDAP) and OSCP protocol	
Security and Application Acceleration	
Should provide performance optimization using TCP connection multiplexing, TCP buffering and IEEE 802.3ad link aggregation.	
should support TCP optimization options including windows scaling, timestamp & Selective Acknowledgement for enhanced TCP transmission speed.	
TCP optimization option configuration should be defined on per virtual service basis not globally.	
Appliance should provide real time Dynamic Web Content Compression to reduce server load.	
should provide selective compression for Text, HTML, XML, DOC, Java Scripts, CSS, PDF, PPT, and XLS Mime types.	
should provide have provision to define policy to skip compression for selected trouble URL (RegEx, Web Objects) for the specified Virtual.	
should provide Advanced high performance memory/packet based Web cache; fully integrated with HTTP/HTTPS	
should provide support for customized cache rules including max object size, TTL objects, refresh time interval etc..	
should provide detailed cache access statistics based on ip or http hosts	

should support cache refresh with CLI, XML-RPC input commands and "PURGE" request	
The appliance should support transparent, layer 7 proxy and triangular mode support	
The appliance should support L7 rule based application firewall to protect the internal applications within base license	
Appliance should have security features like reverse proxy firewall, Syn-flood and dos attack protection features from the day of installation .	
Management	
The appliance should have extensive reporting and logging with inbuilt tcpdump like tool and log collection functionality	
The appliance should have SSH CLI, Direct Console, SNMP, Single Console per Cluster with inbuilt reporting.	
Should support XML-RPC for integration with 3rd party management and monitoring of the devices.	
The appliance should provide detailed logs and graphs for real time and time based statistics	
Appliance must support multiple configuration files with 2 bootable partitions for better availability and easy upgrade / fall back.	
The system should support led warning and system log alert for failure of any of the power and CPU issues	
Technical center must be available in India from last 3years.	

SAN Storage:

S. No.	Storage Parameter	Functionality	Compliance (Yes/ No)
1.	Operating System & Clustering Support	The storage array should support industry- leading Operating System platforms including: Windows Server latest Version, Linux and proposed OS, VMware, SUSE LINUX, RED HAT LINUX standard and enterprise edition. Offered Storage Shall support all above operating systems in Clustering.	
2.	Capacity & Scalability	The Storage Array shall be offered with 15 TB Usable space using 300GB/450GB/600GB/900GB/1.2GB TB Disk drive after Raid 5 Implementation Storage shall be scalable to 30 TB Usable space /450GB/600GB/900GB/1.2GB TB Disk drive after Raid Implementation after Raid Implementation	
3.	Architecture & Processing Power	The storage array should support dual, redundant, hot-pluggable, active-active array controllers	
4.	No Single point of Failure	Offered Storage Array shall be configurable in a No Single Point of configuration including Array Controller card, Cache memory, FAN, Power supply etc. It should have Redundant power supplies, batteries and cooling fans and storage controller.	
5.	Disk Drive Support	Offered Storage Array shall support dual- ported	

		300GB / 400GB / 450GB / 600GB/1.2TB hot-pluggable Enterprise FC/SAS hard drives, along with 1000 GB SAS MDL/SATA drives in the same device shelf.	
6.	Cache	Offered Storage Array shall be given with Minimum of 8GB cache	
7.	Raid Support	Offered Storage Subsystem shall support Raid 0, 1, 1+0, 5 and 6	
8.	Data Protection	The storage array must have complete cache protection mechanism either by de-staging data or providing complete cache data protection with battery/equivalent backup for up to 72 hours or more.	
9.	Host Ports & Back-end Ports	Offered Storage shall have minimum of 4 host ports for connectivity to servers & minimum of 2 device ports/lanes for Disk shelf connectivity	
10.	Ports Bandwidth	Offered storage shall be end to end 6Gbps or higher where each drive and drive shelf shall be connected through dual active-active paths.	
11.	Global Hot Spare	At least 2 Global hot spare drives shall be configured for every 30 drives.	
12.	Load Balancing & Multi-path	Multi-path and load balancing software shall be provided,	
13.	Maintenance	Offered storage shall support online non-disruptive firmware upgrade for both Controller and disk drives.	
14.	Business Copy	Shall support Snapshot or any other means to support Business copy.	
15.	Storage Array Configuration & Management Software	Implementation Partner shall provide Storage Array configuration and Management software	
16.	Performance Management	Implementation Partner shall also offer the performance management software for Storage Array	
17.	Model Upgrade	Storage should have capacity to support 400 TB from day one and also it should have Model upgrade options with data in place to 1000 TB	
18.	Warranty	3 years comprehensive OEM warranty	

SAN Switch:

S. No.	SAN Switch Parameter	Functionality	Compliance (Yes/ No)
1.	Capacity	SAN switch shall be configured with minimum of 16 Ports.	
2.	Scalability	To be scalable up to 24 ports	
3.	Throughput	Should deliver 8 Gbit/Sec Non-blocking architecture with 1:1 performance for up to 24 ports.	
4.	Auto sensing	Should protect existing device investments with auto-sensing 1, 2, 4, and 8 Gbit/sec capabilities	
5.	Configuration	The switch shall support different port types such as FL_Port, F_Port, M_Port (Mirror Port), and E_Port; self-discovery based on switch type (U_Port);	
6.	Form Factor	The switch should be rack mountable	
7.	Upgrade	Non-disruptive Microcode/ firmware Upgrades	
8.	Bandwidth	The switch shall suppor Aggregate bandwidth of 192 Gbit/sec: 24 ports × 8 Gbit/sec (data rate) end to end	
9.	Management	Switch shall have support for web based management and should also support CLI.	
10.	Interface	The switch should have USB port for firmware download, support save, and configuration upload/download.	
11.	Warranty	5 years comprehensive OEM warranty	

Tape Library

S. No.	Features	Specifications	Compliance (Yes/ No)
1.	Capacity	Shall support Native data capacity of 60TB (uncompressed) expandable to 150TB (2.5:1compressed). Shall be offered with Minimum of One LTO6 FC tape drive and minimum of 24 cartridge slots. Shall support encryption	
2.	Tape Drive Architecture	Offered LTO6 drive in the Library shall conform to the Continuous and Data rate matching technique for higher reliability.	
3.	Speed	Offered LTO6 drive shall support 160MB/sec in Native mode And 400MB/sec in 2.5:1 Compressed mode.	
4.	Scalability	Tape Library shall be scalable to 4 Number of LTO-6 and 48 slots either within the same frame or by cascading another frame.	
6.	Connectivity	Offered Tape Library shall provide 4Gbps/8Gbps native FC connectivity	
7.	Management	Tape Library shall provide web based remote management.	

8.	Barcode Reader and Mail slots	Tape library shall support Barcode reader and mail slot.	
9.	Other Features	Tape Library shall have GUI Panel Shall be rack mountable.	
10.	Warranty	5 years comprehensive OEM warranty	

Specification Computing Hardware:

A. Laptops:

S. No.	Parameter	Desired Specification	Compliance (Yes/No)
1.	Make & Model :-	To be clearly mentioned. All the relevant product brochures and manuals must be submitted.	
2.	Processor	3rd Generation Intel Core i5-minimum 2.0 GHz or equivalent or higher AMD Processor SYSMARK rating/equivalent or proper documentation by any recognized 3rd party needs to be submitted for comparison.	
3.	Chipset	Latest Generation compatible chipset to the supplied CPU	
4.	System Memory	System Memory 4GB Up to 8GB supported, 1333MHz Dual Channel DDR3,2 DIMM slots	
5.	Graphics	Integrated Graphics	
6.	Hard Drive	500 GB 7200RPM SATA Hard Drive	
7.	Optical Drive	Optical Drive 8X or above DVD+/-RW with double-layer DVD+/-R write capability	
8.	Display	Display 14.0" High Definition Wide LED Anti-Glare Display (1366x 768)	
9.	Audio	Two Built In Speakers, Hi Definition audio support, Built in Digital Microphone, Headphones /speaker and microphone-in jacks, HD Webcam	
10.	Communications	Gigabit Ethernet network;	
11.	Wireless	Integrated Wireless LAN: 802.11b/g/n and Bluetooth (BT V3.0)	
12.	Keyboard	Spill-resistant keyboard with standard keys	
13.	Pointing Device	Multi-gesture touchpad, supporting two- finger scroll, pinch, rotate, flip. On/Off button with LED Indicator.	
14.	Battery	Battery Options 6-cell (47 WHr) Lithium Ion battery integrated with optional long life cycle battery	
15.	Interfaces / Ports	Multi in one card reader/VGA Port/HDMI Port/RJ-45/2 USB 2.0 Ports/1 USB 3.0 port/Power connector	
16.	Carry Case	To be Provided	
17.	Operating System	Windows 8 Professional or higher OS with driver CD	

18.	Anti-virus	Preloaded Standard Symantec/MacAfee/CA/Quick Heal Desktop version with 4 years update	
19.	Others	Drivers for different Operating systems : Drivers should be freely available on OEM's web site and should be supplied in media along with PC	
20.	Warranty	5 years comprehensive OEM Warranty	

Desktop Specifications:

S. No.	Feature	Desired Specification	Compliance (Yes/No)
1.	Make & Model	To be clearly mentioned. All the relevant product brochures and manuals must be submitted.	
2.	Processor	3rd Generation Intel Core i3-minimum 2.9 Ghz processor or equivalent or higher AMD Processor SYSMARK rating/equivalent or proper documentation by any recognized 3rd party needs to be submitted for comparison.	
3.	Motherboard	Compatible Chipset on OEM Motherboard	
4.	Chipset	Latest Generation compatible chipset to the supplied CPU	
5.	RAM	Memory 4GB (1x4GB) expandable to 16 GB Non-ECC DDR3 1333MHz SDRAM Memory	
6.	Hard Disk Drive	HDD 500 GB 7200 RPM 3.5" SATA Hard Drive	
7.	Optical Drive	Optical Drive 16X Max DVD+/ RW	
8.	Graphics	Integrated Graphics	
9.	Audio	High Definition Audio	
10.	Ethernet	NIC 10/100/1000	
11.	Slots:	Minimum 3 nos. PCI Slots	
12.	Ports	Minimum 4 no USB, (1) RJ-45, (1) VGA, audio in/out, headphone and microphone	
13.	Power Supply	240 watt ATX Power Supply with – Energy 5.0 compliant, > 85% efficient	
14.	Keyboard	104 keys keyboard (Same make as PC)	
15.	Monitor	18.5" LED Monitor , Maximum resolution - 1366 x 768; Response time (typical)- 5ms ; TCO 5 certification for Monitor (Same make as PC)	
16.	Mouse	USB 2 Button Optical Scroll Mouse (Same make as PC)	
17.	Operating System	Windows 8 Professional or higher OS with driver CD	
18.	Compliance and Certification	For OEM: ISO, RoHS; For quoted Products: DMI, UL, FCC, Energy Star 5.0, TCO 05, Windows, Linux, EPEAT Gold, Copies of certifications to be submitted along with the offer	
19.	Anti-Virus	Preloaded standard Anti-virus - Symantec/McAfee/CA/Quick Heal Desktop	

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20.	Others	Drivers for different Operating systems : Drivers should be freely available on OEM's web site and should be supplied in media along with PC	
21.	Warranty	5years comprehensive OEM Warranty	

Multi-Functional Laser Printers:

S. No.	Features	Specification	Compliance (Yes/ No)
1.	Print speed, black	18 ppm or more	
2.	Print resolution, black	Up to 600 x 600 dpi	
3.	Print technology	Laser	
4.	Monthly duty cycle	8000 pages or more	
5.	Memory, standard	64 MB	
6.	Print languages, standard	Host-based printing,	
7.	Processor	400 Mhz or higher	
8.	Media sizes, standard	Letter, legal, executive, postcards, envelopes (No. 10, Monarch)	
9.	Media sizes, custom	150-sheet input tray: 5.8 x 8.27 to 8.5 x 14 in; priority feed slot: 3 x 5 to 8.5 x 14 in	
10.	Media types	Paper (laser, plain, photo, rough, vellum), envelopes, labels, cardstock, transparencies, postcards	
11.	Scanner type	Flatbed, ADF	
12.	Scan resolution, optical	1200 dpi or more	
13.	Scan size	8.5 x 11.7 in	
14.	Scan speed	6ppm or above	
15.	Supported file formats	PDF; TIF; BMP; GIF; JPG	
16.	Copy resolution	600x 400 dpi or more	
17.	Maximum number of copies	99 copies or more	
18.	Fax transmission speed	3 sec per page	
19.	Fax memory	500 pages or more	
20.	Fax resolution, black	300 x 300 dpi or more	
21.	Speed dials, maximum number	More than 100 numbers	
22.	Auto redial	Yes	
23.	Fax delayed sending	Yes	
24.	Accessories	USB cable , Driver CD ,Utility software , UTP patch	

	included	cable & One printing cartridge	
25.	Connectivity	Hi-Speed USB 2.0 port; 10/100Base-T Ethernet network port; RJ-11 Telephone port for Fax	
26.	Network ready	Standard (built-in Ethernet)	
27.	Operating temperature range	(50 to 90) degree Fahrenheit	
28.	ENERGY STAR® Qualified	Yes	
29.	Warranty coverage	3 years comprehensive OEM warranty	
		All the required software subscription should be for 3 Years	

EMS/NSM Application

Make & Model Offered - (To be filled by the bidder)	**Compliance (Yes/No)**
Basic Requirements	
Enterprise Management System should provide for end to end performance, availability, fault and event correlation and impact management for all enterprise resources that encompasses the heterogeneous networks, systems, applications and databases present in the system. OEM should provide this compliance on a letter head.	
The Service Management solution namely Service desk (incident and problem mgmt), Change and Release, Asset, Service Request/Self Service, Knowledge and Service level management should be built on the same platform/code and leverage the same common, shared configuration database with a unified architecture. The same platforms should be used across all modules, requiring no complex integrations to leverage the combined benefits offered by the integrated platform. The solution should also have client automation tool.	
The Service automation solution should be a unified solution supporting provisioning, configuration management and compliance assurance across servers, networks, databases and applications and should support end to end full stack and dynamic server, network and application provisioning. Solution should provide for future scalability of the whole system without major architectural changes. Solution should be open, distributed, and scalable and open to third party integration.	
Performance Management	
The solution should provide Agent-based or Agentless Monitoring in a single architecture – that will allow an organization to choose the level of management required and deploys the right-sized solution to meet those requirements. The agent and agentless monitor should be able to collect event/fault, performance and capacity data and should not require separate collectors.	
The solution should reduce manual customization efforts and should speed-up problem identification and resolution of the IT performance anomalies with intelligent events.	
The solution should accelerate problem isolation through accurate analysis of probable cause through end-to-end correlation.	

The solution should have the capability to identify probable root cause using a variety of filtering and statistical correlation methods to shift through every metric to determine their relevance to the issue being researched.	
The solution should possess capabilities that deliver self-learning capabilities to virtually eliminate the ongoing costs of manual threshold, rule, and script maintenance.	
The solution should be able to generate dynamic performance baselines and continuously update and refine these normal operational bands by automatically adapting the changes in enterprise infrastructure.	
The solution should have predictive analytics and intelligence in-built into it so as to detect any anomaly before it could potentially hit the threshold thereby giving enough lead time to users to resolve the issues before the threshold is breached.	
Solution should carry out automated probable cause analysis by picking up feeds and scoring to reduce the number of alerts generated thereby helping operations to identify the probable cause without having to write complex rules for correlation.	
Solution should carry out auto-diagnosis on occurrence of a type of event and should provide the ability to extend this based on users knowledge.	
The solution should provide end users with the ability to search for known errors and knowledgebase.	
Solution should be able to score the events and display the highest impacting events in descending order.	
The Solution should offer the ability to monitor custom/homegrown applications.	
The solution should integrate network, server, application and database performance information and alarms in a single console and provide a unified reporting interface for all network and system components. The current performance state of the entire network and system infrastructure shall be visible in an integrated console.	
Should automatically create Service models to describe how IT infrastructure supports business services.	
Application Performance Management	
End User Experience Management	
Easy to install for on-premise Management Console (in minutes)	
Software-as-a-Service (SaaS) deployment option for Management Console	
Ease of integration into existing network infrastructure	
Deployment as a Virtual Machine on premises if needed	
No instrumentation needed in application for end user experience - understands end user behaviour from a wire-only perspective	
Discovery of all sites, urls, requests and responses without requiring rules	
Ability to define and categorize traffic by any part of url, site, POST, Query, etc.	
Ability to support compound logic including AND, OR, Boolean and Regex to categorize traffic	
Discovery of new sites and urls as soon as they show up on the wire	
Ability to store/deploy configuration and grouping rules as a simple file up/download	
Patch management over the web with appropriate user rights	
Security Officer role controlling ability to see/not see secure data	

Ability to deploy multiple collection points focused into a common analysis point	
Simple SSL key logic for deployment	
Performance Impact / Overhead	
Zero performance impact to web site(s) for end user experience capture	
Ability to start/stop solution independent of the web site itself.	
Works with network TAPs, SPANs from switches or load balancers, or can work with data provided by only Akamai or end-users running javascript, depending on the customer's need	
Business Transaction Detection & Discovery	
Ability to define custom errors based on any part of the request/response including HTTP content	
Ability to discover Usernames from any part of the authentication process - or later in the session if necessary	
Flexible Geographic Tracking, choosing client IP, X-Forwarded-For, or other user-defined value	
Automatic discovery of all key urls and the performance (host, network, end-to-end time) observed for each	
Build data to full page understanding, not just individual requests (understands container -> object relationship)	
End-to-End Web Performance	
Sees every user all the time in real time	
Manages both real user and synthetic transactions with equal visibility	
Manages both end user and web service (SOAP/XML) visitors with equal visibility	
Captures end user visit data including ISP, Browser,	
Understands network performance from a TCP perspective (out-of-orders, drops, retransmits)	
Performance Behaviour Learning & Anomaly Detection	
Automatic detection of what is normal for each key transaction on a web site	
Self-learning over time, automatically deprecating/de-weighting data over time	
Provides direct line-of-sight into impacted users durign site-wide performance problems	
Considers number of impacted sessions as a key determinant in problem severity	
Permits drill-down into a customer-defined number of dimensions, across customer-defined dimensions	
Can produce a full session transcript around impacted users, showing all pages, with timings, errors and performance indicators as forensic detail for application development to understand the source of problems	
Permits the exporting of one or more sessions with an easy 'export' mechanism for trouble ticketing	
Performance Data Retention, Trending & Analysis	
Ability to keep both a near-term store and longer term store to serve different audiences	
Ability to keep 90 days of performance data entirely within the solution at 5 minute summaries	
Ability to store transcript (end user visit) data securely for as long as client desires	

Simple HTTP API's to take information to other interfaces both as summary or transcript data	
Simple integration with other event management solutions	
Network Management	
The Network Management function must monitor performance across heterogeneous networks from one end of the enterprise to the other.	
It should proactively analyze problems to improve network performance.	
The Network Management function should have extensive reporting facility, providing the ability to format and present data in a graphical and tabular display	
IT Service Management	
The Solution displays the complete ITIL process flow for Incident, Problem, and Change Management through Service Management Process Model (SMPM). The solution should have the capability to automatically create a copy of the ticket to an archival server based on conditions like after a particular date or every ticket/change or assigned to a particular group etc. The solution should provide email based interactions allowing ticket creation, update and approval of request. The support person can interact with the end users through chat in built and add those chat transcripts in the ticket. The solution should give all the details related to a particular business services. The system should have graphical interface to define, visualize and update ITIL processes	
The solution should have Service Management Process Model in built based on ITIL v3 best practices.	
At each stage in the cycle of the incident, the system should prompt users on the status and the missing information that is required to complete the flow through Assignment scripts	
In case any process step is missed, the system prompts users to complete that step before they move to the next step.	
Solution should support reporting on the process flow to allow management to understand how organization is performing in terms of process adherence.	
Solution should support multi-tenancy with complete data isolation as well as with ability for analysts based on access rights to view data for one, two or more organizational units. Also the ability to restrict to particular organizations.	
Solution should provide L1 engineer an ability to see the list of assets used by the end user. This list should be displayed within the ticket (incident, Change and Release, Problem etc).	
The solution should provide Live as well as Virtual Agent chat capabilities to the End Users	
The solution should support social collaboration like Live Twitter feeds, RSS feeds, Salesforce chatter feeds etc.	
Should provide relationship viewer to L1 from within the ticket. The relationship viewer should display the dependencies and impact relationships to other assets and users.	
Solution should automatically provide solutions from the knowledge base to L1	
L1 should be able to view detailed configuration of a selected asset (Eg - amount of CPU, RAM, Disk Space, IP address, software installed, software used etc). Should be possible to do this from within the ticket.	

The solution should be bundled with a tool that will allow administrators to customize the GUI using a point-and-click interface to add and change forms, objects, and fields in forms.	
Workflow must be able to perform notification via email, pager, SMS and the have provision to interface with other communication modes. The solution should provision the administrator to create new or modify existing workflow by using actions like set fields, push fields, SQL query etc.	
Provide the ability to develop workflow for data level operations like record create, update, modify and delete operation. Same workflow could be executed for both Window and Web client.	
Provide option for approval engine so that any customized applications developed could incorporate the hierarchy, role based, level based, ad-hoc approval structure. Include notification and escalation capability if approval is not performed.	
The solution should provide the functionality of executing searches to the entire database. It should be possible to provide query criteria using AND, OR conditions through Common Data Model database. This allows the users to create and view workflows/reports based on their needs rather than using only the set of workflows/reports provided out of the box.	
Incident/Problem Management	
Flexibility of logging incidents via various means - web interface, client interface, phone, auto integration with EMS tools.	
Service Desk solution should allow detailed multiple levels/tiers of categorization on the type of incident being logged.	
Service Desk solution should provide classification to differentiate the criticality of the security incident via the priority levels, severity levels and impact levels.	
It should allow SLA to be associated with a ticket based on priority, severity, incident type, requestor, asset, location or group individually as well as collectively.	
Solution should support fast service restoration leveraging previous incident data through Incident matching	
It should be possible for L1 to view the 'Health of a selected Service' from within the ticket.	
The health view should be consistent across platform (Windows & flavours of UNIX).	
Should support automatic assignment of ticket to the right skilled resource based on business priority Ex - Database crash issue need not be assigned to an L3 DBA unless the business service is completely down.	
Asset causing the business failure and business service that has failed should be automatically related to the ticket.	
It should be possible to architect a decentralized service operations (across OS, database and application versions).	
Should be able to implement a Follow the sun support.	
Should be able to consolidated view/reports across locations while maintaining localized views/reports.	
For integrations with other EMS/NMS tools, various options for integration should be provided - APIs, web services, SDKs.	
It should have an updateable knowledge base for technical analysis and further help end-users to search solutions for previously solved issues. Should support full text search capabilities.	

Change Management	
Should support Change Impact and change collision detection based on affected CIs from CMDB.	
Solution should provide for Change Calendar with periodical views.	
Should support self service change request and fulfilment with standard change requests via service catalogue.	
Should support Incident & problem driven change-release-deployment activities. End to End Release Management workflows should be supported with in-built rollback capabilities.	
Should support unified change and release tools (planning, risk assessment, scheduling, and execution tools) for complete enterprise across virtual & physical environments, applications, etc.	
Asset Management	
Should manage complete lifecycle starting with the initiation of the procurement through to retiring and (if applicable) harvesting unused software.	
Should be integrated with ITSM Solution (Service Desk, Change and Release Management, Problem Management, Service Level Management) for maintenance and support of assets.	
Should support IT Business Management data and metrics to manage asset lifecycle TCO, ROI and Depreciation from acquisition to support to retirement.	
Should support Integration with supplier, contract, e-procurement data.	
Mobile Device Management	
Mobile Device Management(MDM) solution should help the organization in managing the entire lifecycle of Mobile Devices which includes Deploy, Configure, Secure, managing Application and content, Monitor and manage devices, support device and retire devices.	
It should be possible to activates devices using SMS, email, URL and other flexible options. The solution allows organizations to enroll corporate and employee-liable devices individually or in scale.	
It should provides organizations with the capability to configure mobile devices automatically as they get enrolled. IT can define profiles that can include details like password lengths, restrictions if any like access to camera, certain application etc, Wi-Fi settings, VPN configurations, LDAP settings, configure CardDAV, CalDAV settings etc	
Solution should ensure that only authorized and compliant devices have secured access to business resources and accounts. It should be possible to protect personal and corporate data and the entire device through encryption and pass-code policies and also organizations should be able to prevent the unauthorized device use by locking down device features and enforcing restrictions.	
It should be possible to audit devices for compliance with corporate policies, settings, applications, third parties and automate business policies for non-compliant or jail broken devices can be triggered that includes automated device wipe or enterprise wipe.	

It should ensure security across applications by authentication users before allowing them to view and download internal applications. Organizations can create a list of blacklisted and white-listed applications to enforce Application compliance. Users can create policies that automatically uninstall applications when devices are un-enrolled. To ensure maximum compliance, users can also be alerted when unapproved applications are installed and organization scan define un-installation policies in such cases.	
The solution should also allow multiple versions of the same application to be installed on devices. It also allows for "roll-backs" to previous versions if required on failure.	
It should provide comprehensive monitoring capabilities that include both devices and network health status and statistics for exceptions. Organizations can track user activity such as app downloads, voice, SMS and data usage against pre-defined thresholds, white or black lists. Organizations should also be to track and Monitor system access and console user activity through detailed event logs. IT users can setup alerts and automated business rules for specific device or network actions, user actions or system performance.	
Client Management	
Tool should have capability to discover the hardware and software inventory and should automate inventory tracking to help guide investment decisions, reduce manual processes, and maintain compliance.	
It should have a centralize and automate system for deployment of OS & Application and it should also support OS migration — with no configuration—for minimal disruption (Bare Metal Provisioning/PXE Boots).	
It should reduce costly audit failures by understanding software license usage and the associated financial liabilities.	
It should be possible to centrally assess, manage, deploy, and report on patches to ensure that systems are secure and that the integrity of your business is never compromised.	
It should be possible to extend monitoring and custom alerting capabilities to proactively track, manage, and automate remediation when key infrastructure events occur.	
It should help in making informed decisions to optimize spending and eliminate compliance penalties.	
It should reduce the hassle associated with monitoring IT assets and defining policies, and provide auditors with records of compliance levels from a centralized console.	
It should help in lowering energy bills and reduce the environmental footprint associated with PC energy consumption and easily establish return on investment (ROI) and total cost of ownership (TCO) with granular power management settings.	
It should help in securely managing routine desktop management tasks with administrators being able to detect, diagnose, and resolve PC issues without leaving their desk.	
It should be possible to centrally define and enforce device usage policies, control upload and download activity, log peripheral device events for proactive response, and audit any unwanted activity.	
It should simplify the migration of user data and personalities, including desktop layout, metadata, drive mappings, customized settings, and file/folder structure.	

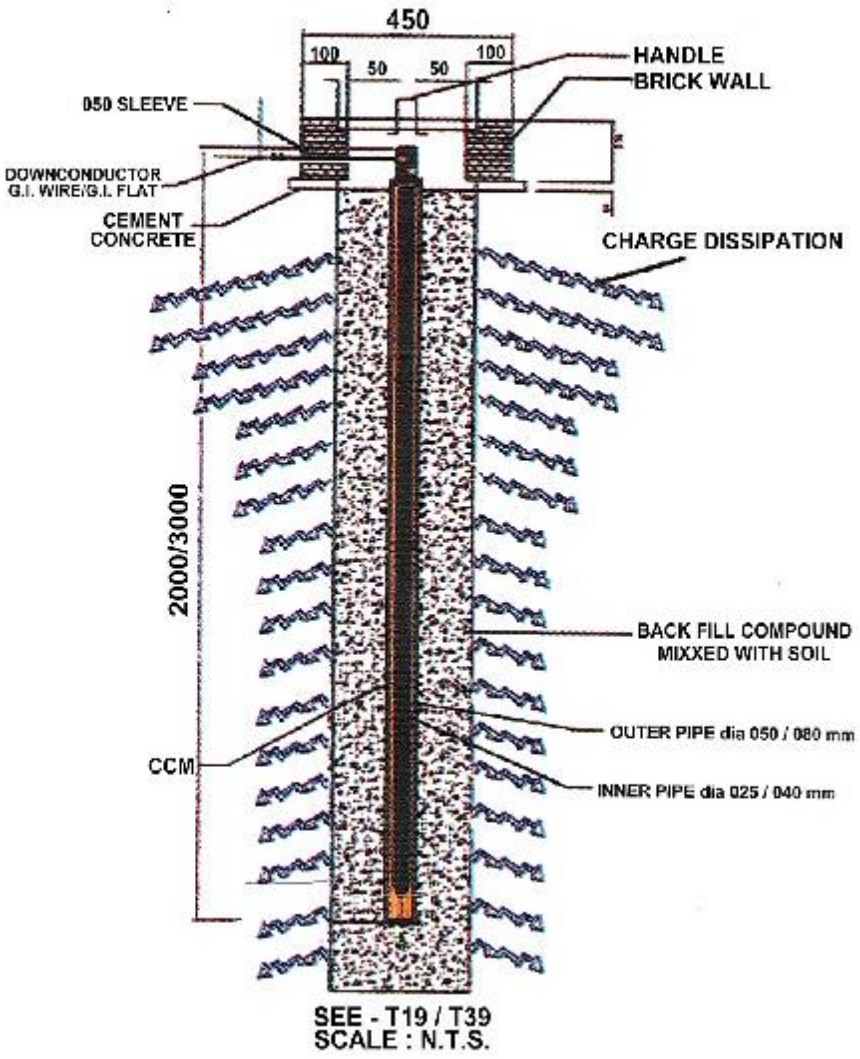
It should be possible to puts pre-approved software and access requests in the hands of the end user without going to any websites and without submitting any forms. It should have the app store for the desktop – IT can advertise available software applications, advanced actions and quick links for the end-users to access on their schedule.	
It should seamlessly integrates with the CMDB.	
Server Automation	
Should support all major OS and virtualization platforms.	
Should Support comprehensive and configuration-level roll-back for changes.	
Automated provisioning for physical, virtual, and cloud-based environments.	
Policy-based, Cross-Platform patch support across Windows, Linux, and Unix.	
Support compliance Policies for regulatory and security standards with integrated exception documentation.	
Support Granular and environment-aware configuration policies and deployment.	
Automated packaging, promotion, and deployment of applications.	
Should support cross-platform and reusable packaging with built-in rollback support.	
Should maintain complete configuration for all managed servers at completely granular level ensuring any minor change is also tracked and reported on.	
Should have ability to monitor the parameters in real time and confirm compliance to security policies.	
Integrated with Closed loop change Management workflows that monitor and track these compliance changes.	
Should have audit capabilities that compare the server status to policies defined in real time.	
Database Automation	
Should provide automated provisioning of standalone and clustered databases, including complex dependencies across all platforms	
Should support automated "Pre-Flight Checks" against hundreds of prerequisites to validate environment readiness before changes	
Should have the capability to provide automated upgrades and patching for standalone and clustered database	
Should be tightly integrated with Change and Release management to deploy and document the change across multiple databases and database cluster	
Should have "Model-driven Configurations" to automatically adjust for complex database interdependencies	
Network Automation	
The solution should be able to support configuration management across the network infrastructure, including routers, switches, firewalls, load balancers, wireless access points, and other network devices.	
The solution should be able to instantly provide the who, what, where, and when of planned, unplanned, and unauthorized network changes.	

The solution should be able to audit and enforce configuration standards, such as those around security, performance, and routing which would help in proactively assessing the impact of change and also quickly recover from problematic changes".	
The solution should be able to dynamically create scripts to allow for changes to be pushed into the device without having to reboot the device (i.e., non-disruptive rollback).	
The solution should be able to provide the mechanism to push access control lists (ACLs) into a device without exposing the device to potential security vulnerabilities".	
Should support Standard Authentication Methods, Role Based Access Control (RBAC), Realms and Groups, Sensitive Data Masking, Telnet SSH proxy.	

EARTHING:

DRAWING.

CHEMICAL EARTHING



ALL THE DIMENSIONS ARE IN MM

SPECIFICATIONS & FEATURES OF EARTHING

Sl. No.	Parameters	Features	Compliance (Yes / No)
1	Type of Earthing	Chemical, as per above mentioned Drawing	
2	Length of the Electrode	3000 mm	
3	Outer Pipe Diameter	62 mm	
4	Inner Pipe Diameter	32mm	
5	Hygroscopic Material	GRIP (Ground Resistance Improvement Powder)	
6	Desired Earth resistance	< 0.5 Ohms	
7	Earthing Strip	25 X 3 mm thick	
8	Grounding Wire	Pure Copper, AWG 10 or 6mm2	
9	No. of Earthing pits per site	2	
10	Earth Distribution	From Earth pit to equipment rack bus bar by 16 sq. mm green insulated multistrand single core copper cable	
11	**Connecting lugs:**	16 sq. mm Copper lugs	
12	**Type of fastners:**	SS Nuts, bolts and washers for fitting of copper plate with copper strip, for interconnection of pits by copper lugs etc.	
13	Warranty	The Chemical Earthings shall be warranted for TEN (10) years.	

CABLE CONSTRUCTION

The construction of the cable shall be in accordance with Table below.

ITEMS	DESCRIPTION	Compliance (Yes/No)
Number of Fibers	6 or 12	
Type of Fiber	Single Mode	
No. of Fibers in tube	2-16 fiber	
Max Tensile strength	1000N	
Installation	500N	
Operating		
Minimum Bend Radius	110mm	
Loaded	2000N	
Compressive strength (crush)		
Thermal Characteristics	-40˚C to +70˚C	
Storage Temperature	-20˚C to +70˚C	
Operating & Installation Temperature	-30˚C to +70˚C	
Fiber property and Transmission Performance	9/125µm	

Fiber Type (µm)	G.652.A/B/C/D (low water peak)	
Type of Fiber	<=0.39 dB/Km	
Maximum Attenuation (db./km) 1310 nm-1625nm	<=0.25 dB/Km	
At 1550 nm	125.0 ± 1	
Cladding Diameter (µm)	245 ± 10	
Coating Diameter (µm)		
Cable properties	ø2.8 mm jelly filled loose tube with 2-16 fibers	
Loose Tube	E- Glass Yarns	
Strength Member	15mm Corrugated Steel Tape	
Armoring	1.15 mm black MDPE Sheath, IEC 60811, IEC60708	

PASSIVE COMPONENTS SPECIFICATION

CAT 6 UTP Cable		
Description		Compliance (Yes / No)
MAKE	LEVITON/HENRICH/CORNING	
Type	Unshielded Twisted Pair, Category 6, ANSI/TIA/EIA 568-B.2.1	
Conductors	23 AWG	
Insulation	Polyethylene	
Jacket	LSZH	
Approvals	UL Listed	
	TIA-568-C.2 CAT 6 (formerly TIA-568-B.2-1)	
Operating temperature	-20 Deg. C up to +60 Deg. C	
Frequency tested up to	250 MHz	
Delay Skew	25ns-45ns / 100m MAX.	
Impedance	100 Ohms + / - 6 ohms	
Performance be provided along with bid	Attenuation, Pair-to-pair and PS NEXT,ELFEXT and characteristics to PSELFEXT, Return Loss, ACR and PS ACR	
RL	17.3 dB min.	
Attenuation	32.8 dB min.	
NEXT	38.4 dB min.	
PS-NEXT	36.4 dB min.	
ACR	5.6 dB min.	
PS-ACR	3.6 dB min.	
ELFEXT	19.8 dB min.	
PSELFEXT	16.8 dB min.	
UTP Patch Panel		

Type	24-port, Modular, PCB based, Unshielded Twisted Pair, Category 6, ANSI/TIA/EIA 568-B.2.1	
Description	extreme 6+ 24-Port Patch Panel	
Standard Compliance	extreme 6+ system components meet or exceed the requirements for channel and component-level performance for TIA Category 6, cULus Listed, NOM and ACA.	
Features	The patch panel shall meet or exceed the requirements for Category 6 described in TIA-568-C.2 as well as the Class E requirements described in ISO/IEC 11801-B.	
	The panels shall be made of 16 gauge steel, and shall have a black painted finish with white silk-screening	
	The plastic elements shall be fire-retardant with a UL flammability rating of 94V-0.	
	The patch panel shall be configured with six port modules.	
	The patch panels to include Retention Force Technology or equivalent which promotes consistent performance over the life of the system.	
	Should have Installer friendly design to allow for quick installation due to standard 110 terminations on the rear of the panel which follows the normal installation color sequence (blue, orange, green, brown) from left to right.	
	Should have T568A and T568B wiring cards for 110-style IDC terminations	
	Should have Color-coded front labeling for easy port identification (TIA-606-A compliant)	
	Terminates 26-22 AWG solid conductors	
	Capable of multiple determinations	
UTP Patch Cord (3 Feet or 7 Feet)		
Description	Low Smoke Zero Halogen CAT 6 Patch Cord	
Features	The cable jacket for these cords is designed to minimize the release of halogen gases and toxicants into the air, reducing the potential of hazardous contact in occupied spaces.	
	Low Smoke Zero Halogen CAT 5e and CAT 6 Patch Cords are for use in patching environments with poor air circulation where personnel and equipment may be exposed to corrosive gases and fumes during combustion.	
	Must Independently tested and verified by Intertek (ETL) for CAT 6A component performance	
	Should have Cable construction provides excellent alien crosstalk suppression and EMI/RFI protection	

	Should have Slim Line plug features a narrow profile for less congestion in higher density applications	
	Strain relief boot ensures long-term network performance	
	Outside diameter of .240" easier to manage	
	26 AWG stranded conductors for maximum flexibility	
	Same cord for UTP or Shielded installations	
STANDARDS COMPLIANCE	TIA-568-C.2	
	IEC 61935-2	
	Flame Propagation IEC 60332-1 [1,2] (2004-07)	
	RoHS compliant	
	ISO/IEC 11801	
PHYSICAL SPECIFICATIONS		
Materials:	Conductor: 24-gauge, Category 5e/6 stranded UTP	
Plug:	94V-0	
Cable Sheath:	PVC, Low Smoke Zero Halogen	
Dimensions:	Lengths: 1, 2, 3, and 5 meters	
Color:	Blue, White, and Grey with matching boots	
INFORMATION OUTLETS		
MAKE	LEVITON/HENRICH/CORNING	
Description	extreme 6+ Connector	
Standard Compliance	extreme 6+ system components should meet or exceed the requirements for channel and component-level performance for TIA Category 6, cULus Listed, NOM and ACA.	
Features	Should terminates 26-22 AWG solid conductors	
	Should be Capable of multiple determinations	
	Must have Gas-tight IDC connectors prevent corrosion	
	Should have Dual-layer T568B/T568A wiring label simplifies punch down	
	Should have Patented Retention Force Technology or equivalent to protects tines from damage from 4- or 6-pin plugs	
	Must have Pair Separation Tower design or equivalent which facilitates separation of conductors	
	To Comply with TIA-568-C.2 requirements	
	The connector is configured in a 180° configuration such that the punch field is in the back, allowing for rear termination	

	The connectors shall also be in compliance with all National Electrical Codes; compliant with FCC Part 68; UL listed; and independently verified.	
	All plastics used in construction of the connector bodies shall be fire-retardant with a UL flammability rating of 94V-0.	
	The connector shall provide a ledge directly adjacent to the 110-style termination against which the wires can be terminated and cut in one action by the installation craftsperson	
	Connector wiring is universal and will accommodate installation color codes for T568A and T568B wiring schemes	

65 inch Display and SHSB & 13 Locations:

S/No	Description	Specification	Compliance (Yes/No)
1	Size	65 inch diagonal	
2	Resolution	1920 x 1080	
3	Aspect Ratio	16:9	
4	Brightness	450 nit	
5	Contrast Ratio	min 4000:1	
6	Viewing Angle (H/V)	178/178	
7	Response time	less than 7 ms	
8	RGB & Video Input	Analog D Sub, DVI-D,CVBS, HDMI, Display Port 1,2	
9	Audio Input	Stereo mini Jack	
10	Audio Output	Stereo mini Jack	
11	Control	RS 232 C IN/OUT, RJ-45	
12	Power Consumption	max 253 W	
13	Power Consumption at Standby	less than 1 W	

Multipoint Control Unit (MCU) for Video Conferencing		
Description		**Compliance (Yes / No)**
Make & Model		
Protocols	H.323 , SIP, H.281	
	G.711, G.729	
	H.263, H.264 AVC/SVC	

System Capacity	Must support 13 locations at 1080p symemtric resolution in CP mode and should be software upgradable to support 20 locations at 1080p symmetric resolution in CP mode, with out any change in hardware.	
SIP Protocol Support	Interoperability support for H.323, SIP	
Audio	H.323 conference participants: G.711, G.722	
	SIP conferencing participants: G.711, G.722 audio encoding	
Video / Display	Voice-activated switching with adjustable switching delay (H.263/H.264 AVC/SVC video)	
	Continuous Presence conference:	
	Must show minimum eigth conference participants at a time	
	Voice detection: In conferences with five or more participants, voice detection automatically switches an off-screen speaker into one of the display windows	
	Picture in Picture	
	Dynamic layout according to the number of conference participants	
	Able to see site names during the conference	
Bandwidth Matching	Each endpoint in a video conference should participate according to individual video bandwidth capabilities without affecting the connection of other participants	
Quality of Service (QoS)	Support for Differentiated Services markings (ToS,CoS) if required in the system.	
Security and Privacy	Password protection for conferences to ensure privacy for participants	
	Administrative functions should be password protected	
Scalability	Capable of scaling to support 20 locations at 1080p resolution with out replacing and adding the hardware.	
Web-Based Monitoring and Management	MCU Administration Web interface should provide remote monitoring and configuration from any location using a Web browser:	
	Real- time conference control	
	Password protection	
	Access levels required:	
	a. Administrator	
	b. Conference manager	
	c. User	
	Conference statistics	

LAN Interface	1 x 10/100/1000 Mbps LAN interface	
Power	220 V AC, 50 Hz	

High End Conference Room End Point

Feature Description	**Compliance(Yes /No)**
Endpoint should support the latest video coding standard either H.264AVC/H.264SVC	
Endpoint should support bit rate up to 4Mbps or more	
Endpoint should support transmit and receive of video at 1080p30fps and must support dual monitor.	
Video Resolutions supported	
1920 x 1080@30fps: HD1080p30fps	
1280 x 720@60fps: HD 720p60	
1280 x 720@30fps: HD 720p30	
Content Resolution:	
Up to 1080p or better	
HD Camera	
Resolution: 1920 x 1080,30fps; with 1/3 type cmos/ccd	
Field of View (horizontal) - 8° - 70° or similar or better	
PAN / Tilt: ±100° / ± 25° or similar or better	
Zoom: 10x (optical) or better	
Audio Features	
It should support Audio coding G.722/G.711/ wideband audio coding or	
System should be capable to do automatic GainControl, Automatic Noise Suppression and must have Automatic Echo Cancellation with Audio Error Concealment facility	
The solution must be equipped with omni-directional digital microphone array pod for better pick-up range	
Video inputs:	
1 x DVI/HDMI or similar or better for camera and 1xDVI/HDMI/USB for HD	
Video outputs:	
2 x DVI / HDMI or similar or better	
Audio inputs:	
Minimum 1 x RCA/USB Compatible Audio Input with Eco Cancellation or similar	
Audio outputs:	
Minimum 1 x RCA/USB Compatible Audio Output or similar or better	

Network	
Support NAT/firewall traversal for connecting users on internet	
1 X Gigabit Ethernet: Should support 10/100/1000 BASE-T	
Encryption	
AES 128bit, TLS, SRTP, HTTPS or similar or better	
Camera Control Interface	
VISCA, RS232 for PTZ camera control similar or better. Far End Camera Control is also required.	
User Interface	
Windows based GUI for Secretary / remote IT admin support and/ or Hand held remote control	
Directory Service	
Directory Sync with management/control server and provide user presence status like Online, Offline, busy.	

Technical specification for 20 KVA UPS System			
Specification			Compliance (Yes / No)
TECHNOLOGY:	True On Line Rack Mountable DSP based UPS with double conversion technology.		
	UPS should be capable of paralleling upto 4 units		
	UPS should have IGBT based rectifier and inverter		
	Temperature compensated battery charging feature should be built-in for prolonged battery life		
INPUT	VOLTAGE RANGE	228-478 V AC. 3 phase	
	FREQUENCY	40-70Hz	
	POWER FACTOR	0.99 (With p.f correction)	
	CAPACITY	20KVA/18 KW	
OUTPUT	VOLTAGE RANGE	3 phase 380V AC ,Single phase 220V AC +/-1%	
	HARMONIC DISTORTION	<2%(Linear Load); <5%(Non-Linear Load)	
	FREQUENCY	+/-0.25% free run	
	POWER FACTOR	0.9	
	CREST FACTOR	3:01	
EFFICIENCY	AC – AC	>93%	
BATTERY	TYPE	Sealed, lead acid, maintenance free (SMF)	
	BACKUP TIME	30 min 21216 VAH	

	TRANSFER TIME	Zero	
	AUDIBLE NOISE	<55dB	
	DISPLAY	LED	
	INTERFAVE SLOT	USB & Intelligent Slot (SNMP)	
	PROTECTION GRADE	IP 20	
	AUTO SHUTDOWN SOFTWARE	Ups should come with Auto shutdown and monitoring software in CD media	
	CREDENTIALS	Manufacturer Should be ISO 9001:2000 certified Manufacturer Should be ISO 14001certified UPS should meet ROHS R5 standards	
Scope of Transient Voltage Surge Suppression (TVSS) -			
Critical and expensive electronic equipment should be protected from transient over-voltages by TVSS. The selection of surge protective devices typically depends on the location of the device. TVSS device for ITE equipment shall be as per following specifications.			
	Surge Current Capacity	50kA	
	All Modes Protection	L-L, L-N, L-G, N-G	
	Connection Type	Parallel	
	Protection Level	< 1 kV	
	MCOV	Min. 320 Volts	
	Response Time	< 0.5 nanoseconds	
	EMI/RFI Attenuation	40 dB typical	
	Status Indication	LED, Dry contacts	
	Monitoring	Monitoring of All Modes, including N-E	
	Fusing	Individual Fusing of MOV's including N-G	
	Certification	UL 1449-3	
	Enclosure	NEMA Tested	
	Mounting	Wall Mounting	
	Warranty	3 Years	

60 KVA Silent Diesel Gen-set

Sl. No.	Description	Compliance (Yes/No)
1.	**GENERATOR TYPE:** i. Heavy duty fabricated steel skid type base-frame with anti-vibration mounting isolators. ii. Skid mounted radiator, fan & protecting guards.	

	iii. Diesel fuel tank capacity : 90/120 litre iv. Earthing & Neutral connections up-to first water level. v. Automatic / Manual start-up option vi. AMF/Manual	
2.	**ENGINE** i. Prime Power 60 KVA ii. 4 Stroke Diesel Engine with Electronic / Mechanical Fuel Governor iii. Water Cooled iv. Direct coupled with Alternator v. Self Ventilated / Regulated vi. Speed 1500 RPM vii. No. of Cylinder: Vertical or Inline viii. Aspiration: Natural / Turbo charged. ix. Ambient Temperature: 50 Degree Centigrade x. Cooling system: Water cooled. Tropical Radiator	
3.	**ALTERNATOR** i. Brushless ii. Self excited iii. Automatic Voltage Regulated iv. Automatic Frequency Regulated v. 230/400 Volt 3-Phase, 4 Wire, 50 Hz (Nominal frequency) vi. H Type Insulated	

Annexure 12: Functional Requirement Specification:

The broad level FRS (not limited to) of the required system is as follows:

Hospital Management System

General Architecture

The proposed architecture is based on a centralized hosted environment consisting of a standards based clinical data repository that contains a longitudinal record of patients. The central repository is a collection of documents for patients created at different points in time across clinical encounters and episodes. To enable interoperability of clinical information across points of care for patients, the central repository shall be compliant with HL7 CDA and CCD document structures. There will be a Lean Local Server in the Institutions. The main purpose of this local server is to hold data to ensure business continuity in case of a connectivity failure. The solution proposed should be in line with this requirement.

The detailed General Architectural Requirements of the Hospital Management System are described below:

Central System

The central system shall have the following capabilities

Unique identifier (Centralized Master Person Index)	1. The centralized master person Index shall provide a single point of reference to a patient, clinician, payer, or other healthcare entity within the state environment. This shall be the central single source of data for patient demographic information 2. Centralized master person index should be capable of handling multiple identifiers (Hospital registration numbers, govt issued identities, UHID/Aadhaar. 3. The system should be able to de-duplicate person's information for multiple registrations using a heuristic algorithm and establish a unique identifier for the patient 4. The master person index shall be able to interact with external systems through open standards web services based architecture 5. The Centralized master person Index shall be capable of integrating (Data exchange and de-duplication) with other govt citizen databases)
Longitudinal Clinical repository	1. The centralized Clinical Data Repository (CDR) shall be the common longitudinal repository of clinical episodes, clinical encounters, medication, lab and diagnostics results 2. The repository should support HL7 CDA and CCD document structures 3. The repository should be able to normalize these CDA documents in the database so that a sub section of CDA can be queried independently and also used for analytics. 4. The key function of the CDR is to capture and store healthcare transactions from any relevant healthcare domain (Diagnosis, Lab, Medication etc). To enable interoperability, central Software requires an open HL7 V3 standards based repository to ensure data can be reused for secondary purposes, such as continuity of care. 5. Interfaces: The CDR must be exposed through open standards based (Java/J2EE) application-programming interfaces. Local (hospital, CHC/PHC) applications should be able to interact with the central repository to submit and extract required information leveraging the document index. 6. Terminology Services: A collection of services allowing the CDR to utilize the prevailing clinical terminologies for coding data including

	LOINC, CPT4, ICD 10, SNOMED and drug databases. Terminology services should also provide a provision to load custom terminologies and custom terminology maps. In addition the Terminology Services should provide mapping functionalities between the loaded terminologies – current and future terminologies – in effect ensuring consistency of data in the CDR over the years, allowing for the creation of a true longitudinal patient health record. The Terminology services should allow for the uploading of custom, implementation specific concepts and terminologies. 7. Inbound and Outbound Messaging Services: A collection of services that will allow the CDR to exchange inbound and outbound HL7 CDA and CCD documents.
Document Index	The Clinical Document Index (CDI) operates as an adjunct to the Clinical Document Repository. It provides a central location which the document consumers (Hospital/PHC/CHC systems) can query for information about availability and location of shared clinical documents in one or multiple repositories.

Hospital System

The point of care shall have a lean application designed to meet the particular needs of the point of care. The lean application will leverage the centralized patient health record to view and later update the patient history. The requirements of this local Hospital system are discussed here.

Outpatient Management	The outpatient setup in PHCs and CHCs shall request the centralized patient record for clinical history documents of the patient once the patient is checked into the hospital/PHC/CHC. Once the patient is in the queue in the backend the system shall get the relevant documents and cache these documents in the local point of care application for doctor to view the patient history. The following defines the data set that should be available to the doctor

Title	Content
Demographics	Name, Age (Calculated) , DoB, Father/Spouse name, Phone Number, Address
Vitals	Height (Multiple readings for under 20 yrs) Weight (last 3-5 Encounters) Pediatrics Patients Pediatric Parameters like Head Circumference
Conditions	Current Active conditions (ICD 10 Codes) Past Notable Conditions (ICD 10 Codes)
Family History	Relevant family history Chronic conditions Relevant Acute Conditions (Cancer)
Social History	Relevant Lifestyle related information Diet and exercise Smoking and Alcohol Living Conditions
Immunizations	Record of Immunizations
Medications	Active Medications (Currently active prescriptions) In-active Medications (6 Months) Significant Medications (Past Chemotherapy)

Alerts/Intolerances	Allergies (Medication/Food/Substances/Medications)
Procedure History	Past Procedures and amputations if any
Past Encounters	Past 6 Months Encounter History Chief complaints, Diagnosis, Outcome, Investigations Medications
Care Plan	Active Care Plan
Results	Past One year investigation orders Past One year investigations results
Notes	Clinical notes

Registration

- Patient Search: This feature will provide a search screen wherein the user will be able to retrieve a particular patient's record by keying in the search/filter criteria. This will also facilitate the user to drill down on a particular record by putting in more search criteria.
- Patient Merge: This feature will enable the user to merge two or more records if they are found to be duplicates. It will also give the user the option of selecting the particular record he/she wishes to retain and the others will be merged to this record
- Patient Unmerge: This feature will enable the user to undo any incorrect merging. The user will have the facility of assigning the merged information from the date of merger back to the corresponding records by assigning them appropriately

Appointment

- Reminders (including emails/SMS to patients) with log
- Cancellations with reasons
- Repeat appointments
- No show capture
- Allows physicians to invoke clinical orders and view previous records during consultation
- Allows scheduling of surgical procedures from the clinic
- Allows standard order sets associated with clinics.
- Links with EMR to allow Doctor to record history, physical examination, investigations and other clinical details/observations & view them
- Allows linked appointments & consultations between departments e.g. Imaging and OPD, or between doctors with cross-viewing of records
- Allows specified resources to be associated with an appointment (personnel, equipment etc)
- Alert if there are conflicting appointments

1. The screening process by a nurse shall also be able to identify the relevant documents required for the clinical encounter with the specialist. However the nursing staff shall be able to request for the documents but not view these documents for patient privacy purposes.
2. In this case the patient once checked in and queued for a specific doctor shall be deemed to have provided consent to the doctor to view his clinical history. The consent shall be implied once the appointment is fixed. Based on the need the doctor can ask the central patient record system to provide more detailed history or search for specific document and view a broader range history of the patient.

	3. In case of larger hospitals once the appointment is fixed the system should be able to schedule caching of relevant documents from central patient record before the appointed time 4. The new data generated as part of the encounter shall be captured in relevant templates; these templates can be designed as per the needs of the facility/clinical practice or chronic /acute disease, based on the CDA architecture. The encounter information (Observations, results, medications, notes) shall be captured in these documents and uploaded to the central patient record as a part of its continuum of care. 5. The data captured shall be stored in a temporary local storage system for the day in case of OP. This is a back up to take care of the business continuity in case of a loss of connection with the central server.
In-patient Management	In patient scenario is higher in transactions and shall follow similar process to the outpatient scenario, where the patient history (Longer duration than outpatient) shall be cached in local system once admission is done. In this case the consent shall be implied to the care provider organization as in many scenarios multiple physicians maybe coordinating care for one patient. The local history shall be kept in the facility till the completion of the episode of care and data generated in multiple clinical encounters in the episode shall be captured in clinical documents and regularly (daily) synchronized with the central patient record. At the end of the episode the discharge summary shall be prepared and stored in the central patient record for continuum of care. **Bed and ward management** ➢ Provides accurate and timely information for bed management decision-making and present the information in a way that is comprehensible. ➢ Enables inclusion of expected discharge planning. ➢ Provides bed-waiting facility to track time from when a patient is to be transferred till such time it actually takes place. ➢ Allows designation of male/female/children beds/ rooms/suites etc ➢ Allows flexible occupancy of rooms e.g. mother and baby, twins, siblings ➢ Allows creation / maintenance of Wards/Beds/Cots Master File ➢ On-line Bed Status / Census ➢ Automatic capture of 'midnight' Bed Status / Census report ➢ Auto change of bed status, post Admission, Discharge or Transfer ➢ Pre-Admit and Bed booking ➢ Ability to add / modify ward details in Master File ➢ Create / Modify Room and Bed details in a ward, including transfer to another bed/ unit ➢ User defined type of beds, including multiple occupancy – mother/baby beds ➢ Out of service beds ➢ Bed status management ➢ Housekeeping notification after discharge ➢ Housekeeping schedule reminders ➢ Daily census ➢ Admission / Discharge / Transfers notification to kitchen
Specialty providers	In case of specialty providers using local specialty systems like Oncology system, Cardiology application, the point of care specialty system can be

	used as a source system to the central patient record. The local specialty system should be capable of exchanging CDA documents with the patient record
PACS	1. Major Hospitals shall have a **Picture Archiving and Communication System** (**PACS**) which provides economical storage of, and convenient access to, images from multiple modalities (source machine types). 2. The format for PACS image storage and transfer is DICOM (Digital Imaging and Communications in Medicine). 3. Non-image data, such as scanned documents, may be incorporated using consumer industry standard formats like PDF (Portable Document Format), once encapsulated in DICOM. 4. Images pertaining to the current episode / encounter alone are proposed to be stored in the local server. 5. Medical Images which have academic importance alone are proposed to be uploaded to the Central server.

Other General Requirements are described below:

Alerts, Warnings and Exceptions:	Software shall have a Decision Support System (DSS) built over the existing protocols prevalent in the Department. The Decision Support System of the Application shall throw appropriate alerts and warnings which are rule based and relevant for the stake holders. At various points there can be situations which the system cannot handle due to various reasons. The system shall have foolproof methods to handle such exceptions. This means that if the system fails to generate an output or complete the process as described in the FRS at that point there shall be alternate methods to continue the process. The system shall also generate meaningful messages to help the user solve the problem. The methods to continue the process shall be clearly defined in the SRS in consultation with the Users.
User Interfaces (UI):	The number of persons approaching Public Healthcare Institutions for medical care is huge. It is very obvious that every individual healthcare provider in the system starting from the Nursing Assistant at the OP Ticket counter to the Specialist Doctor in the OP Clinic or IPD are hard pressed for time and resources to service such an enormous crowd in front of them. The system shall be designed in such a way as to make the task easy. The user interfaces shall be designed in close interaction with the users and shall be efficient, User-friendly, simple and easy to learn. The individual screens shall not be crowded. The screen designs shall be department/specialty specific. The menus, contents, list boxes, labels etc shall be based on the Specialty. As far as possible lists will be provided for the user to choose from. Some of the data items which can be provided as lists are given below. This is not exhaustive and given only as an indication. • Patient signs, complaints and symptoms • observations, diagnosis with status • outcome of treatment • drugs, quantity and dosage • laboratory investigations • Radiological investigations

	The lists may be based on standards such as SNOWMED-CT, Drug Codes etc
Logging:	The system shall keep a log of all transactions with User, Date and time.
Integration with Medical equipment:	The system shall be capable of interfacing with digital medical equipment providing standard digital output.
Performance Indicators:	Software Application shall be able to evaluate and provide all required Performance indicators pertaining to each Institution.

Offline Mode

Ability to capture encounter data	In case of loss of connectivity, the local Point of care solution should be able to provide ability to capture encounter data for the patient. The data capture can be based on most frequently used templates. For example, General template to capture patient encounters. Pediatric template for children, Woman care/pregnancy templates for pregnancy cases. These templates shall be defined with clinician inputs. These templates can be based on HL7 CDA standards.
Temporary local storage	The local solution should provide a temporary local storage of clinical data CDA/CCD based templates. a. The temporary storage should store the encounter data locally until its synchronized with the central patient repository b. The temporary storage should provide ability to store data received from central patient repository for the duration of patient visit c. The temporary storage should be capable of providing persistence for long term care plans for Inpatients d. The temporary storage should be secure and encrypted and should provide access control based on confidentiality and privacy requirements e. Temporary store should be tamper proof and should not allow any unauthorized access, including system administrators access to patient clinical data
Synchronisation with Central Server	The system shall initiate a synchronisation process with central server as soon as connectivity is restored.

Reception Counter Module

Introduction:
This module will handle the following functions:

1. OP Registration
2. Token issue
3. Issue of UHID Cards
4. Print outs of different documents required by the patients such as Reference Document
5. Enquiry
6. Online Registration
7. Report Generation

The detailed requirements of the Reception Counter Module is as follows

OP Registration	OP registration has the following tasks: 1. Identify and locate the patient from the Software Database. 2. If UHID is already allotted, retrieve the UHID 3. Retrieve the Clinical Data if the Patient has a different 'Registered Hospital' 4. Generate UHID, if no UHID is already generated 5. Register the Patient if not already registered in the database and allot a UHID 6. Allocate to the doctor based on specialty, patient preference or current work load 7. Print Token
Identifying and locating the Patient	Implementation of the Software Project begins with the creation of a demographic database of citizens in the state**.** This database has nearly all important personally identifying data pertaining to all citizens who are normal residents of the state. This database has the Aadhar Number, ration Card number, Mobile phone number etc. This means that, when the system is implemented in a hospital there will be a full-fledged citizen database at the back end.
Retrieve the Clinical Data if the Patient has a different 'Registered Hospital	The relevant Clinical Data of the Patient has to be extracted from the Central server and cached in the local server for the doctor to view later in the OPD.
Generate UHID if no UHID is already generated	The patient may be visiting the Public Healthcare institution for the first time after the Software is implemented. Her name may be in the demographic database but no UHID is generated yet. Then the system shall generate a UHID now.
Register the Patient if not already registered in the database and allot a UHID	If the patient is not registered in the Software database at all, then the earlier search will return a NULL. Then the system shall do the registration first and then create the UHID. This is a very delicate process and has to be handled with care. Case 1: A normal resident of the State: If the patient is a normal resident of the State then the requirement is that all data items required in the Family Health Register is to be captured. This is time consuming and cannot be done at the Reception when there are others waiting in the queue. So the following procedures are suggested: 1. Check if she has an Aadhaar. Do a Biometric verification. If Aadhaar is authenticated then use it to do the registration 2. If she does not have an Aadhaar and if she has any other identity such as Driving License, PAN, Voters ID, Mobile number etc use it for registration 3. If she has no identification proof then capture name, DoB/Age, Address with District and generate a temporary ID. In this case the District Official shall be given an SMS/System alert to locate this person later and add in the database. Non Resident Citizens can be registered provided they have a local address.

	Case 2: Citizens from other states who have migrated to the State: Citizens from other states who have migrated to the State shall also be registered as described above. However the system shall use a flag to distinguish them in order to help the Government plan welfare measures. Case 3: Travelers and Tourists: System need not keep a trail of Medical Records of each tourist/traveler. The records can be stored with separate IDs and stored only in the Central Server. Any of the above mentioned numbers viz. Aadhaar, Mobile, Voters ID, License Number etc can be used for registration along with the name and address. In case of a Foreigner capture the name of Country and Passport Number and do the registration. There is a system of registration for every foreigner arriving in the country and staying in Hotels and Home stays. This is a computerized system and Software may have to have link with the system.
Multiple registrations to be avoided	In all cases the system shall carry out exhaustive validations to ensure that a person is not registered multiple times and given more than one Health ID.
Registered Hospital	Every Patient has a Native Hospital which is the PHC/CHC in the area where they reside
Photo	The system may have a facility to capture the Photograph of those who do not have an Aadhaar Card. The OP counter may have a web cam with good resolution to capture the photo and add to the database.
Token Issue	The system shall display the OP wise list of doctors on duty on the day. There shall be a facility for the Patient to choose a doctor, if she desires so. If the policy of the Hospital does not allow this, then this option has to be disabled. The Medical Officer in charge of the Hospital shall have the privilege to disable this. The system shall print a Token with the following information. • Name of Patient • Gender • Age • Address • Name of Registered Hospital in case it is a different Hospital. • Name of the OP clinic the patient wants to visit • Name of Doctor (Not mandatory) • Bar code
Issue of UHID Cards	Patients can be issued a UHID card on request. This may be free of cost for the first time and subsequent issues may be charged. The system shall keep a track of this and manage the issue of UHID cards. The UHID card need contain only basic information such as Name, Date of Birth/Age at the time of issue, Aadhaar Number / UHID Number etc. Bar code with required basic data for identifying the patient shall also be printed on the UHID Card.
Print outs of different documents	There are only few centers where print outs are to be given to patients. At OP clinics no print out is given to them. Hence the required prints are to be issued from reception. Some of the print outs are listed below: • Prescription for Drugs if patient wants to buy from other Drug stores • Prescription for tests if patient wants to do it outside

	• Reference Document
Enquiry	This module shall be capable of providing various general information to the Patients. Some are listed below: • Availability and Duty time schedules of doctors • Timings of various services • Information on all services available in the Hospital • Important telephone numbers • Information on all services available in the higher level referral Hospitals nearby • Status of Pay ward Bookings
Online Registration	There shall be facility to do online registration for OP consultation. The Medical Officer in charge of the Hospital shall have the privilege to determine the number of days allowed for advance booking and the percentage allowed for advance booking. There shall be facility for patients registration for online services. Patients can log in and view the doctors on duty and register online for consultation. The system will allot a token number based on a logic to sandwich the online and walk-in patients based on the percentage allotted for online booking. The system shall send SMS and email confirmations of the token number with necessary disclaimers.
Report Generation	This module need to generate several reports. An indicative list is given below. These reports will have to be generated daily or for a specified period. • OP Register • Review OP Register • Foreigners OP Register • Accident Register • Department/Unit wise OP Statistics • Income wise OP Statistics • District region wise OP Statistics • Incident Register

OP Clinical Module

This module will handle the following functions:

1. Queue Management
2. Intermediary Nursing station
3. Past Clinical History
4. Symptom Capturing
5. Diagnosis Capturing
6. Protocols and Guidelines
7. Prescription of Drugs
8. Prescription of Tests
9. Prescription of Clinical Procedure
10. Admission to IP
11. Coding of Diseases:
12. Issue of Medical Certificates:

Queue Management	Patients will report at the OP clinic after registration at the OP counter. They will have tokens issued to them from the OP registration counter. The tokens are issued Specialty / Unit / Doctor-wise. Each Doctor shall get the list of patients waiting to see them. Patients who have not indicated any preference for any doctor shall be included in the list of all doctors on OP duty in the Specialty. The topmost token shall be highlighted and the Doctor shall have the option to move the highlight to any token in the queue. The system shall push the highlighted token number to the token display. In case the patient with the displayed token number is not available at the moment for consultation the token may be pushed a few steps down the list so that it will reappear at top after a few turns. Also there may be facility to remove the token from the list if required.
Past Clinical History	The system shall display the past clinical history of the selected patient in a standard format as available in the system. This may begin with the most recent history with facility to drill down and view all the past history. This interface shall display all the clinically relevant information such as allergy to drugs etc.
Capturing additional History	The doctor shall have an interface to capture the history and additional information if necessary. The interface shall be User friendly, interactive, menu driven, ICD 10 based and designed specifically for each specialty to avoid keyboard entry to the extent possible.
Symptom Capturing	The system shall have interface to capture the symptoms as the patient narrates them. Here the emphasis is to make the screen as user friendly as possible, minimizing key board entry and designed to suit each specialty. The system shall use standard coding system for recording the symptoms.
Vitals: Physical examination and Findings	a. The system shall have interface to capture the Physical examination findings. The UI shall provide user friendly screens to enter all the parameters related to physical examination. There shall be validation and alerts for unusual entries. b. The system shall provide facility for an intermediary nursing station where the vitals of the patient are captured by a Nurse and entered. However in smaller hospitals where such a facility is not available this will be done by the doctor. The system shall have flexibility to configure an intermediary nursing station
Diagnosis Capturing	The system shall capture provisional & final Diagnosis. The interface shall be User friendly, interactive, menu driven, ICD 10 based and designed specifically for each specialty to avoid keyboard entry to the extent possible.
Protocols and Guidelines	The system need to have embedded Protocols and Guidelines to assist the Physician to carry out the clinical activities as per the accepted norms and best practices. Protocols, Norms, Best Practices and Guidelines as used in the clinical practice in the state shall be incorporated in the system. In the absence of documentation of such standard practices in the state, the solution provider shall suggest guidelines based on National or International practices based on their previous experience in the field. This will be reviewed by an expert panel. The approved Protocols, Norms, Best Practices and Guidelines shall be incorporated in the system.
Advise	The system shall have facility to for the Doctor to record the advice. Some of the advice will comprise of the following, though this is not an exhaustive list. 1. Investigations orders: Some of the typical orders are a) Lab Test b) X Ray

	c) ECG d) EEG e) TMT f) Scan There shall be user friendly menu driven screens for Doctors to prescribe Tests. All the standard Tests shall be available as drop down lists for the Doctor to choose from. National and International coding systems shall be used for tests and clinical procedures. All the Tests prescriptions shall be queued at the Laboratory. The Clinical Procedures shall be queued at Nursing Stations or mini Operation Theatre or other locations depending on the nature of the procedure. The services shall be delivered as per the queue. 2. Prescription of drugs. There shall be user friendly menu driven screens for Doctors to prescribe Drugs, Tests and Clinical Procedures. All the standards Drugs, Tests and Clinical Procedures shall be available as drop down lists for the Doctor to choose from. There shall also be facility to enter the names of Drugs, Tests and Clinical Procedures with auto-complete facility. The Doctors web page shall display the drugs available in the Hospital Pharmacy. It shall also have an exhaustive list of drugs which can be prescribed and purchased from outside also. For this the system may be linked to any standard drug specification publications such as CIMS, MIMS etc. with regular updating arrangement. The cost for such subscription shall be borne by the Solution Provider throughout the contract period. All the drug prescriptions shall be queued at the pharmacy. The pharmacist will deliver drugs to each patient based on this queue. The department has evolved a drug code for its use. The solution provider is free to use this or another standard drug code if it suits the Software Application. If a drug code different from that of the department is chosen then the chosen drug code shall be mapped with that of the department so that both systems interact seamlessly. 3. Clinical Procedures , Injection, Dressing wounds (Cleaning & Dressing, Incision & Dressing), Administering Intravenous Fluid: There shall be user friendly menu driven screens for Doctors to prescribe Clinical Procedures. All the standard Clinical Procedures shall be available as drop down lists for the Doctor to choose from. National and International coding systems shall be used for clinical procedures. All the Clinical Procedures prescribed shall be queued at Nursing Stations or mini Operation Theatre or other locations depending on the nature of the procedure. The services shall be delivered as per the queue.
Observation	There may be an observation room attached to Casualty and other OPs.

Ward	Nurses at these wards shall have facility to record all the incidents happening at these wards similar to the other in-patient wards.
References within same Hospital	The system shall have facility to refer patients to other OPs or Other Doctors within the same Hospital. This will require a reasonable logic to be evolved for managing the queue without hassles. A patient may be referred to one or multiple Doctors for consultation from the OP where she reported. This could be either because she reported at the wrong OP or because she needs further consultations. The patient already has a token number. How this token is to be queued at the subsequent OPs where the patient is redirected is to be decided and the system developed accordingly.
Reference to other Hospital	These are cases when the patient is referred to another hospital for treatment. This process shall mark the patient as a referred patient in the database in the Central Server. The system will have facility to create and transmit the relevant clinical data in a standard format to the other hospital where the patient is referred so that when the patient visits the referred hospital within a specified period, the clinical data will be available in the hospital. In case the system fails to transmit the relevant clinical data of the referred patient to the referred hospital due to connectivity failure, then a reference document shall be generated at the referring Hospital by the Doctor who is referring the patient. This document will have necessary clinical data in a standard format. This is printed and handed over to the patient with necessary directions. This printed reference document will also have a bar code. A printed reference document may be required in the following occasions as well: 1. When the patient is not referred to any specific hospital (Eg: Consult a Cardiologist of your Choice) 2. Patient wants to consult somebody in the private sector. At the OP ticket counter of the referred hospital the system will recognize the patient as a referred patient and a token printed with information such as the name of the Referring Hospital and reference status. The Doctor at the OP will have necessary clinical data at his terminal when the Patient walks in for consultation in his cabin. If necessary the Doctor can also access the central server and get additional information directly. If there is no connectivity then the OP module will not be able to get the digital data and the doctor will have to go by data in the printed reference document. The data input by the referred hospital will be cached in the local server initially and later the Central Server database will get updated by this data.
Tentative appointment	The system shall provide the referring Doctor a facility to view the availability of the Doctor to whom he is referring the patient, and if necessary, take a tentative appointment. The referred Doctor will then get the details of the patient in advance.
Admission to IP	The system shall have facility for the Doctor to order Admission. Doctor's direction will contain Ward Number, Unit and other orders. These details

बिहार सरकार	shall be queued at the IP registration counter (Admission Counter).
Casualty	Processes in Casualty are similar to that of other OPs except that they have to deal with Medico Legal Cases. The system shall have facility for the following: • Generate Police intimation form. • Generate Accident Register cum wound Certificate. • Certificate of Examination of a person under police or judicial custody • Drunkenness certificate Register • Examination of potency • Scheme of examination of rape • Update Death Register • Update Brought Dead Register
Key Board entry with auto completion	In all cases described above where standard menu driven interfaces are provided there shall be an alternative facility to enter data through key board, in case the doctor is more comfortable in using key boards. This facility shall be augmented with auto completion facility. In all cases there shall be a list of favorites for each doctor so that the selection becomes easier.
Coding of Diseases	The system shall suggest ICD-10 codes based on the diagnosis. There shall be an interface for the Medical Record Librarian to verify the Code and confirm it or enter a new code.
Issue of Medical Certificates	Doctors may be required to issue various certificates to patients. A list of Certificates to be issued by Doctors is given in Annexure: ……. The system shall have interface to issue all such certificates which can be issued from the OP Clinic. These certificates will be digitally generated by the Doctor and printed at the OP Nursing Station. The printed certificates are then signed by the Doctor. Some Certificates are free and some are paid. The system admin shall have facility to mark certificates as free or paid and update the fee to be paid for each type of certificate. For paid certificates the system shall capture details such as amount to be paid to the hospital, that to be paid to the doctor. The certificate may only be generated after the requisite fee has been paid. The amount collect on behalf of the Doctor is to be credited to the account of the Doctor directly.
Reports	The system shall have facility to generate all statistical Reports and MIS reports.

In-Patient Management

This module shall have the following requirements:

Admission	The Doctors at OP Clinics may order a patient for admission to a specific ward under his department. The doctor's directions are expected to contain the following mandatory items:- • Name of Doctor • Provisional Diagnosis • Ward Number and Unit Number (Normally there is a linkage for Ward/Bed to Unit.)
IP registration	The patient is then queued at the IP registration counter (Admission

Counter	Counter). The Nursing Assistant at the Admission will verify the data, confirm the identity of the patient and complete the process by making necessary entries in the system. These details entered shall be stored as the Main IP Register. Only the admission part is entered by the Nursing Assistant. Rest of the data is entered by the Medical Records Department. A new IP Record is generated and a unique IP number is allotted to the Patient. The Patient is flagged as an In-Patient. The IP record shall be linked to the demographic data of the Patient. No clinical data is filled up by the Nursing Assistant.
Sociological Data	Essential sociological data of an identifying nature is required in the Case record. In case this is not available in the database at the time of admission of the patient, then this data is to be gathered either from the patient or from the nearest relative present at the time of admission and then entered in the Main I.P Register and in the Case Record.
Ward	The then patient is directed to the Ward. The IP record now created shall be available at Nursing Station attached to the Ward where the Patient is admitted. The Duty Nurse shall have facility to enter any hand written directions by the Doctor. The previous case records of the same patient shall be automatically retrieved by the system and made available to view.
Allotment of Bed and allotment of Linen	The system shall have facility for allotment of Bed and allotment of Linen. There shall be interfaces for recording all the Nurses activities.
Clinical data entry by Doctors	Duty MO/MO in charge of the Ward shall have privilege and UI to view all new admissions daily and give further clinical directions from anywhere in the Hospital. Duty MO may order further investigations, medications and other directions. User friendly Interface shall be made available to record subsequent directions by the concerned MOs during routine rounds . The Medical Officer attending the case shall have facility to record all details of the patients regarding the onset and cause of the present illness, personal and family history and also that of physical examination conducted. All investigation reports concerning Laboratory, X-ray, E.C.G. etc are to be captured. It shall also be possible for the Medical Officer to record daily the progress of the patient along with his directions regarding the treatment to be carried out until the discharge of the case.
Accident cases	In accident cases there shall be facility to record external cause of the accident and the nature of injury.
User Interfaces for the Nurses	There shall be User Interfaces for the Nurses to record the observations of the Nurses and also details of treatment and services rendered by them to the patient. The system shall have facility for the preparation of Graphic Chart and Nurses records.
User Interfaces to record references	There shall be User Interfaces to record references to other Hospitals or to other Specialties within the same Hospital.
Temporarily shifting for tests etc	Patients may have to be shifted out temporarily for tests and other procedures that may not be available in the hospital. There shall be User Interfaces to record this.
Registers	The system shall have facility to generate the following Registers: • Report book • Costly Medicine Book: • Diet Register • Complaint Book (Office Information Book):

	• RMO Stock Register: • Referral Book: • Daily Discharge register: • Discharge Card to be issued to the Patient • Daily Admission / Discharge / Census Report
Ambulance Service Requests	The system shall have facility to request for Ambulance services by Duty MO. This interface shall have a link to the 108 Services so that a request is generated automatically. The system shall have linkages with other Ambulance services as well. It should be possible for requesting Ambulance from other sections such as OP etc.
Delivery	The system shall have facility to record the following: • To record shifting of Patient to the Labour Room • To record Delivery and update the Birth Register. • To report the Birth to Local Body through MRD. • To update the Report Book in Labour room • To update the Case Record Book with the type of labour and the details of the new born baby by the attending Medical Officer. • To update the following registers ➢ MTP Register ➢ Sterilization registers ➢ Abortion Register ➢ Laparoscopic Sterilization Register
Operation Theatre	The system shall have facility to record the following: • Pre - operative diagnosis before the operation is performed • Pre-anesthesia check up details • Anesthesia procedure • The procedure followed and findings immediately after the operation • The post-operative diagnosis. • Surgery procedure • Anesthesia recovery details • Findings in the Surgery • Provisional/Final diagnosis The system should update the following registers: • Minor surgery register • Major surgery register • Anesthesia register The system shall have the following facilities: • Manage Operation Theatre consumables • Operation Theatre scheduling • Pre- Operation Theatre Checklist • Surgeons Notes • Keep track of Operation Theatre Equipment Usage • Generate Operation theatre reports • Generate Operation Theatre & Operation Resources Usage Report
Discharge:	The system shall have facility to record the following: • The final diagnosis

	• The date and time of discharge from the hospital • The condition of the patient at the time of discharge • Cause of death in cases of Death • Other Discharge Data etc
Discharge Register	The system should update the Discharge Register.
Final diagnosis	The final diagnosis recorded should be complete in all respects and should be accurate and in conformity with the accepted terminology of the standard nomenclature of diseases and operations. The Discharge condition may have the following options: a. Cured b. Relieved (Condition Improved) c. Referred d. Death e. Left Against Medical Advice (LAMA) f. Discharged Against Medical Advice(DAMA) g. Absconding
Discharge summary	The system shall have facility to give the Discharge summary to the patient as a Discharge Card and a Reference Card to the referred patients. The reference may be of two types: i. To a higher Level Hospital for further investigation and treatment ii. To a lower level Hospital for continuance of care
Discharge process in emergency situation	The system should have facility to allow the Duty MO to initiate discharge process in emergency situation if necessary.
Reports	The system shall generate necessary reports for the privileged users. The report shall contain the following data: • the ward and the date to which it relates • I.P.No. Name, age, unit, diagnosis and date of admission of the cases discharged from the hospital for that particular day. • Details of outstanding cases, admissions, transfer in discharges, deaths, transfer out, balance remaining, (classified into male, female and children).
Death	The system shall have facility to update all the related registers and forms such as: • Death Register • Death Report (Form No 2) • Medical Certificate of Cause of Death (MCCD - Form No.4). Part 1 of Death Report and MCCD is sent to the Local Body (LSG) for registration of death. When body is handed over the duty nurse shall get acknowledgement of the relation who is taking over the body, in a printed form (Death register) The system shall have facility for the following • To authorize autopsy if required. • To record that the body is 'Transferred to Mortuary' in the death register. • To generate and Print the Police intimation form • To update the Mortuary Register by the Nursing Assistant.

	It shall be feasible to send information to the Police Computer system through web service at a later stage. The system shall have facility for giving permission to store the body in the mortuary, if necessary, for prolonged periods.
Patients Search & Select	The module shall have facility to search patients based on various search criteria and dispay details based on the access rights.

Store and Pharmacy Module

The Pharmacy Module shall carry out the following functions:

1. Stock Updating
2. Issue of Drugs to Patients
3. Billing
4. Drug Requisitioning
5. Automatic downloading of patient demographics from the MPI at each hospital site including date of admission and discharge.
6. Automatic updating of user defined patient demographics from the PMI to Pharmacy System including MRN, patient billing category, and any health insurance details.
7. The system will support Discharge Prescriptions for patients going home.
8. The system will support barcoding for stock selection from the pharmacy.
9. Support for clinical ward pharmacy functions including individual patient supply via drug trolleys.
10. Support for taking and entry of Patient Drug Histories (Pre-Admission or Admission Histories) by a clinical pharmacist.
11. Full support for Intravenous Admixtures
12. Transfer items between stores, imprest and sub-stores.
13. Supports Patient Drug Profiles (Patient Drug History)
14. Manages all stages of bill from the creation of an invoice through to receipting i.e. create invoice, debtor management, cashiering system, trial balance and audit reports.
15. Billing module defines different billing categories within each practice eg. Private, Public

Stock Updating	Pharmacy gets the stock of drugs from the Hospital Store. The store is part of the department network. Hence the Software system should be linked to the department system to get stock data real-time. The Pharmacy module shall have interface to receive the stock issued from the store to the Pharmacy and also to return stock when necessary. The system shall update stock position to the central server at a given interval, say weekly.
Issue of Drugs to Patients	The Drugs prescribed by the Doctors are queued at the Pharmacy. Pharmacists issue drugs to patients based on this list. The system shall print out the details including dosage. The system may also need to print out the list of drugs which are not available at the pharmacy for allowing the patient to buy it from outside.
Billing	Normally the supply of drugs to patients is free of cost. However the system shall have facility to calculate the cost of Drugs and also to print them on the document handed over to the patient. The cost of the drug may be shown and the entire amount deducted as subsidy so that the patient need not pay anything.
Requisitioning of Drugs and other Store	Pharmacy module shall have interface to do the requisitioning of drugs and other items from store regularly. Such requisitions can come from Pharmacy, IP wards, Doctors who want a specific drug or item and even other employees.

items	This data shall be compiled for the Hospital and transmitted to the department regularly. Head of the Institution shall have a privilege to overrule the periodicity of the central server updating and update data instantaneously in case of urgency requirements.
Drug Requisitioning	The system shall have facility to intend drugs online. Every such request originated in an Hospital shall be compiled by the system and transmitted to the department for arranging purchase. The Head of Institution may also arrange to purchase some drugs locally using the HMC fund or Government fund.
Reports	The system shall generate various reports. Few examples are given below: • Drugs Available • Drugs Details Listing • Drug Sales Daily • Drug Sale Patient Wise • Drug Stock • Indents and Issues to Other Depts. / General Store / Sub- Stores • Batch details of drugs • Sale Report • Store-wise medical consumable stock • Prescriptions versus Issues / Sale • Pending Prescriptions (IP/OP)

Drug Procurement Management	
1	List of the drugs and medical supplies used in the wards should be maintained
2	Should be able to enter supplies needed bed-wise by entering/selecting: • Name of item • Quantity
3	Should be able to update consumption details
4	Should be able to consolidate & aggregate the prescription details for all patients in a ward and raise indent based on that
5	Should be able to save the data updating the Drug & Distribution Management System
6	Should be able to print the indent sheets according to prescribed format
7	The system will have the ability to display the alert for the indent approving authority on receipt of indent approval requests in the system
8	The system will have the ability to capture the approval of the Indents & transmit the approved indent details to the stores/warehouse/accountant.
9	The system should provide facility so that ; Allowing tracking of the indent throughout the creation and approval cycle using the unique indent number

Drug Dispensing	
1	The system will have the ability for Pharmacist to check for availability and quantity of required drug for issue

2	The system will facilitate retrieving details of available drugs (batch number, expiry date, location) in the pharmacy / drug store & reserve drugs for the indent based on the item code and quantity mentioned in the approved indent
3	The system will have the ability to reserve / release an item or batch for a specific indent and display reservation status
4	The system should provide facility so that ; If the drugs under the batch numbers retrieved by system are found missing/ destroyed in the warehouse, The system will facilitate marking the batch as Missing/ Destroyed & retrieve the next batch of drug with least shelf life
5	The system will have the ability to capture the re-assortment details of the drugs to be issued. The details may include • Name of Drug • Drug quantity • Batch number • Expiry date
6	The system will have the ability to support planning methodologies; re-order point, safety point, lot sizing, lead times, min/max levels etc
7	The system will have the ability to provide information on Expected Delivery dates for each location
8	The system will have the ability for stock transfer between health delivery units, based on stock transfer note
9	The system will have the ability to automatically deplete the inventory of each drug when it is issued
10	The system will have the ability to maintain detailed audit trails for the transactions carried out in the system for issuing the drugs including date & time and details of user conducting the transaction in the system
11	The system will be able to view the available medications category wise
12	The system will be able to Update the available medications to reflect their issuance
13	The system will be able to locate the UHID and details of patient for whom the medications are issued
14	The system will be able to print medication issuance report
15	The system will be able to enter the issued medications against the recipient UHID
16	The system will have the ability to record the details of drugs received against the approved indent including the following: • Date of Receipt • Drug Name • Drug Quantities • Batch Number • Expiry date
17	The system will have the ability to interface with barcode readers and retrieve the bar coded information from the received batches of drugs.

18	The system will have the ability to validate the receipt against the Indent & Dispatch note
19	The system will have the ability to assign physical location (box, rack, bin, etc)
20	The system will have the ability to automatically update to the inventory of the drugs in pharmacy in field units
21	The system will have the ability to generate Receipt Report in which item details like quantity, Expiry date, Batch number, quantity accepted, quantity rejected, portion of purchase order received etc are included
22	The system will have the ability to record the details of drugs procured through local purchases against the approved indent including the following: • Date of Purchase • Drug Name • Drug Quantities • Batch Number • Expiry date • Supplier details (if not purchased through existing rate contracts)
23	The system will have the ability to create and maintain audit trails for the receipt and update of the inventory including date and time of receipt, user performing the transaction in the system etc.
24	The system will have the ability to maintain Location master data (Addition/ Modification/ Deletion/ Search).
25	The system will have the ability to maintain storage locations available at each unit (Addition/Modification/Deletion/ Search)
26	System to facilitate creation of standard and unique codes for department and locations
27	Application workflow and privileges should be capable of being configured based on the organization structure of the department. Further, The system will allow re-configuration at a later date by the authorized user
28	Support for time stamping of all workflow steps such as creation, submission, approval, rejections, etc
29	Support event based alerts to the authorities during the creation and approval process
30	The system should provide facility so that ; Maintaining auditable logs of such activities for future referral, dispute resolution, MIS generation, etc
31	The system should provide facility so that ; Each user is associated to a unique identifier, which can be used by the audit trailing facility of the system, in order to record all user activities, and to identify the initiator/actor of each activity
32	The system will have the ability to capture the drug usage rate at each location
33	The system will have the ability to forecast usage rate for each drug at each location & for each month based on historical data on usage
34	The system will have the ability to plan inventory against Drug usage Forecast

35	The system will have the ability to define and modify the minimum inventory levels & order quantity based on the forecasted usage rates

Purchase Order Processing	
1	The system will facilitate the matching of purchase orders, receiving reports and Supplier/Contractor invoices
2	The system will produce exception reports of unmatched invoices
3	The system will facilitate the matching of purchase orders, receiving reports and Supplier/Contractor invoices
4	The system will permit matching for both whole invoice and manual matching
5	The system will produce exception reports of unmatched invoices
6	Capability to raise Indents with the following information: · Requesting Department · Indent Date · Indent No. · Material Specifications · Material Code (in case existing) · Quantity required · Unit · Date by which required / Delivery Schedule · Approval of Department Head
7	The movement of indent to the purchase department and its approval by various departments should be done through the system and final decision can be taken in hard copy for records
8	Facility to maintain approval hierarchy
9	Ability to raise indents by more than one department
10	It should be possible to link all indents to Purchase Orders and vice-a-versa
11	It should be possible to raise a common Purchase Order for multiple indents
12	Enabling various levels of approvals before purchase request can be converted into an order
13	Workflow-based requisition Approval which needs approval from different departments like engineering division, finance department etc.
14	Blocking indent if there is no sufficient budget against the cost center
15	Maintaining Supplier Quotation File (comparative position)
16	Comparing "Landed Cost" of various vendors
17	Maintaining and tracking Requisition History
18	Provision to generate requisitions automatically for items replenished frequently like Consumables, based on re-order level
19	Provision to check the availability of free or reserved stock available at different storage locations while creating requisitions

20	Provision to store terms and conditions of the Supplier for material supplies and services?
21	Option for conversion of a) Requisition directly into PO, b) Tender into PO
22	Automatic conversion of purchase requisition to Purchase Orders as per user-defined criteria (Single Source Supplier)
23	Facility to generate PO based on the information from the indent and the vendor database / comparison sheet
24	Facility to have the option to either pick up standard terms of payment and delivery and modify the terms to specific requirements while preparing a PO
25	Facility to print PO on pre-printed stationery
26	Facility to print draft PO for review before approval
27	Facility of online approval of PO
28	Facility to carry out bulk or lot approval of POs
29	Each purchasing department to have a separate PO number identification
30	POs should capture the following information : - PO number - PO Date - Item code and description - Unit and Quantity - Rate - Cash discount percentage - Net Amount - Delivery period (date) / Delivery schedule - Other terms regarding Charges (Tax, Packing and Forwarding, Freight, Insurance, Dispatch instructions, Payment terms) as per company's purchase manual
31	Facility to link PO number directly to the indent number.
32	Facility to generate blanket PO with only the required quantity against a particular requirement
33	Facility to generate standing POs (i.e. POs in the nature of term contracts)
34	Automatic sequential Purchase Order numbering scheme
35	Maintaining various types of Purchase Orders including Standard PO, Contract, Sub-Contract Order etc.
36	Provision to create Purchase Orders for Miscellaneous (Non-Inventoried) Items / job work
37	Provision to configure default Order Type by Project/Service / Production Order
38	Provision to manage multiple Lead Time Components in purchasing cycle
39	Option to mandate multiple deliveries per item in a PO /
40	Maintaining Purchasing Unit of Measurement with conversion factors
41	Option to create Blanket Orders with value and quantity limits

42	PO / Blanket Orders and Sub-Contracts can contain one or more items
43	Tracking shipments by Order Number
44	Specifying special Purchasing Conditions for an item
45	Option to add 'Inspection Required' flag on selected items
46	Option to define separate Due Date per item or job in a single Order
47	Support for review of PO prior to the release
48	Tracking PO Status
49	Sending reminders for Due Deliveries / completion dates of jobs
50	Creating PO for each division and cost to be allocated accordingly
51	Option to automatically create and maintain Sub-Contracted PO upon creation of sub-contracted work orders
52	Option to modify order quantity in ongoing parallel Purchase Orders for service jobs.
53	Provision to define various types of taxes on purchase order
54	Provision to define 'other charges' like Freight, Insurance, Handling Charges on PO
55	Purchase order line should show both item price and landed cost
56	Provision to record and account of Import levies (duties, clearance etc.)
57	Provision for tracking changes to the purchase orders
58	Enabling short closure of PO
59	Creation of a purchase commitment in finance as soon as purchase order is approved
60	Calculation of landed cost taking into account freight, insurance, customs, clearing cost, even though the actual invoice is not yet received
61	Registering Latest Purchase Price for an item
62	Option to designate Discount by Order and by Order-Line
63	Option to configure Price / Discount Grades (by quantity and by amount)
64	Maintaining Effective Dates for Prices and Discounts
65	Updation of Prices and Discounts (by a fixed amount or a percentage) globally
66	Placing PO in any currency
67	Creation of rate Contracts (general, service, by product-class and by product) utilizing pre-defined Templates
68	Managing and monitoring of User-defined Contract Milestone Dates
69	Option to specify Delivery Date and Quantity along with Contracts
70	Option to create Price and Discount Agreements
71	Option to define Shipping and Handling Costs alongside a Contract
72	Option to associate and monitor Delivery Schedule with a Contract
73	Option to receive Acknowledgement from Vendor upon acceptance of purchase or release order
74	Contract History Maintenance

75	Contract Documentation and Reporting
76	Contract linked with PO
77	Option for Centralized or Distributed Purchase Monitoring
78	Configuring PO Milestones (Internal Lead Time)
79	Retaining PO Data for audit purposes
80	Generating Stock Replenishment Orders
81	Maintaining detailed Purchase Statistics
82	Specifying and managing a purchase budget department wise / project wise
83	Procurement is to be linked to purchase budget
84	Tracking PO History
85	Maintaining Shipment Notification from vendor in the system
86	Option to maintain different vendors for material, freight, insurance in same PO.
87	Facility to verify vendor invoice before actual payment based on PO terms and conditions and goods receipt
88	Option to create subsequent credit or debit note to vendor
89	Set-up a tolerance limit for invoice verification
90	Management of multiple currencies
91	Sending Reminder for Overdue Shipments to Vendors via Fax or e-Mail
92	Auto-Faxing a Purchase Order to the Vendor
93	Facility to call the PO reference number and pick vendor details and rate information automatically
94	Track of purchase order placed against which materials are yet to be received.
95	Facility to receive part of the total consignment mentioned in the PO
96	Facility to generate Material Receipt Note (MRN) on pre-printed stationery and Updation of stock ledger
97	Facility to create a MRN including the following information: - MRN No. & Date (system generated) - PO reference - Vendor Code and name (automatically) - Supplier Bill No./Delivery challan No. and Date - S.No. / Description of material / Units - Quantity ordered / received / rejected
98	Facility to receive goods in a measurement unit different from the measurement unit in which the order was placed (e.g.; in weight rather quantity) with appropriate conversion
99	Facility to hold MRN booking in case the actual quantity of goods received is less / more than a particular amount of value or a certain percentage in quantity
100	Facility to book MRN for specified items with a variation in both quantity and value of a specified percentage or amount

101	Facility to print draft MRN before QC check
102	Facility to capture the QC check in case of items requiring the same.
103	Facility to capture quantity rejected by QC against the MRN
104	Facility to generate a Debit Note to be sent to the vendors for all rejections. The Debit Note should be linked to the Rejection Note in the system.
105	Facility to book add-on costs (incidentals) for each line item on the MRN
106	Facility to use the MRN and authorize credit to vendor account on receipt of vendor invoice after comparison of terms with PO
107	Facility to link multiple MRNs to a single vendor invoice and vice-a-versa (i.e. multiple invoices from a vendor to a single MRN)
108	On the validation of invoice details a purchase voucher (or sanction order) should be generated by the system
109	Managing Receipt by Project / Location / Lot Number / Plant
110	Managing Receipt of consolidated POs on a single shipment
111	Sequential Receipt Numbering Scheme
112	Option for Rejection of Items
113	Provision to trigger a notification to quality upon registering the receipt of goods
114	Provision to block the usage of goods till certified by quality control
115	Generating Claims for non-conformance receipt and for return of goods
116	Option to book Invoice upon receipt
117	Cumulative tracking of Receipts / job completion certificates
118	Provision to update Purchase Statistics, Financial Accounting and Project Accounting as per Invoice
119	Provision for Part-Rejection of received Goods
120	Interface with General Ledger to increase the Materials Account and Credit Accounts Payable upon receipt
121	Enabling seamless integration of purchasing system with Inventory Management System
122	Purchasing Materials directly for a project
123	Processing emergency purchases without tendering process
124	Automatic Intimation to finance department for actual payment to suppliers
125	Enabling import process
126	Monitoring payment process based on payment terms established in the PO
127	Facility to automate incoming invoice management
128	System should give various option to determine source for any material automatically
129	System will provide an online collaboration platform with vendors
130	Vendors will be able to login through vendor portal and see open purchase orders
131	Vendor will be able to send order acknowledgement through vendor portal on real-time basis

132	Vendor will be able to register shipping notification through its portal which will directly be reflected in company's system
133	Vendor will be able to see order statuses, raise invoices over internet.
134	Vendor will be able to publish its catalogue over internet which will reflect in company's system
135	System will enable employees of the company to raise purchase request from a online catalogue
136	Storing Telephone number, E-Mail Addresses, and Fax Numbers in Vendor Profiles
137	Capturing Vendor Lead Times (external and transportation)
138	Maintaining Main / Default Vendor for an Item or service
139	Identifying vendor by the type of material or service provided
140	Maintaining statistics for On-Time, Early, Late deliveries/ completion and number of quantities supplied, for each Vendor
141	Enabling indent to be directly converted into a purchase order if there exists an contract or agreement
142	Option to include Delivery Schedules and Quality Specs within the Requisitions
143	Creation of Contracts for set items, set time period and set quantity/monetary value
144	Configuring Contract Effectivity Dates
145	Provision to update PO and Purchase Cost as per Invoice
146	Provision to update Purchase Statistics, Financial Accounting and Project Accounting as per Invoice
147	Provision for Part-Rejection of received Goods
148	Option to enter excise details and claim input credit upon receipt of goods
149	Opiton to create a new Requisition similar to an existing Requisition
150	Creation of a Purchase Order from an existing Requisition
151	Storing Vendor Qualification Level (e.g. qualified, non-qualified, and under evaluation)
152	Auto-Faxing a Purchase Order to the Vendor
153	Provision to electronically transmit a Purchase Order to the Vendor (on mail ID extracted from predefined Vendor Profile)
154	Marking charateristic of Item like Domestic, Imported, Excisable etc
155	Searching for existence of an Item based on multiple search options

Blood Bank

Most of the Large Hospitals have Blood banks whereas some of the smaller hospitals have Blood Storage facility. Software system shall have a module to manage the Blood bank functionalities.

Donors Database	The system shall have an interface for Donor registration and shall maintain a database of Donors. There shall be a link to the web portal so that Donors can register online through Software portal There shall be facility for Donor search
Results of each tests and	The system shall capture and store the results of each tests and

quality of blood collected	quality of blood collected
Blood Inventory Management	The system shall have facility for Blood Inventory Management including stock register and issue register
Online requests	Doctors shall be able to register their requests for Blood online. The Blood bank managers shall be able to view the requests and respond.

Laboratories

- Lab Registration
- Test Scheduling
- Sample Collection
- Sample preparation
- Analyzing
- Authorization
- Results,
- External Samples,
- Referred out Samples,
- Inventory Control,
- Instrument Maintenance,
- Specimen reception with time frames
- Accession number allocation
- Specimen tracking
- Re-ordering of corrupted specimens
- Manual Entry of text results
- Manual entry of numeric results
- Specification of normal ranges – linked to age and gender
- Results back to patient EMR
- Manual/scanned entry of outsourced specimens by scanner
- Printing of test results available
- Specification of normal ranges – linked to age and gender

The system shall have the following

Reception:	1. Provide Token numbers for Queue management 2. Capture the id of the patient from the citizen database available in Software 3. Retrieve the prescriptions from Government Hospitals generated through Software and available in the Software database 4. Enter test prescriptions from the following sources: a. Govt. hospitals not yet covered under Software b. Private hospitals c. Private doctor referrals d. Direct request from Patients for routine clinical tests without a formal prescription from a Doctor. 5. Store rates of different tests 6. Generate bills for the three categories viz. a) Free category b) Concessional Rate

	c) Full payment category. 7. Receive payments and issue standard Treasury receipt viz. TR5. 8. Account the collected money
Sample collection	1. Queue management at Sample collection counters 2. Flag the two categories sample collection viz. a. sample collected and brought from outside b. patient coming for sample collection 3. Master table for different sample types – Blood, Urine, Sputum, Pus, needle aspirates etc. 4. Uniquely identify the multiple samples for a each patient and multiple tests for each sample. 5. Print labels for each sample 6. Generate separate requests for separate sections.
Sections	1. The data from Reception and Sample collection counters shall be available at the sections. 2. Standardised UIs to enter Test results 3. Alerts for abnormal values 4. Facility to verify and approve by superiors 5. All results once approved will not be editable by the staff. 6. Editing privilege is only to section head.
Result issuing	1. Queue management at Result issuing counters 2. Alerts when the results of a patient are available 3. Print the results 4. Print the names/designation of concerned authorities in the print out. 5. SMS and email alerts to the patients when result is ready. 6. Web portal shall have facility for the registered Users to download their test results. 7. Facility for the Doctors at Hospitals covered under Software to view the result.
Supporting sections	Reagents are prepared in these sections for supply to outside institutions like CHCs and Hospitals. There shall be facility for accounting stock (manufacture and issue) of reagents prepared in the sections.
Clinical Laboratories in Hospitals	Clinical Laboratories in Hospitals have similar requirements except that patients approaching them for service are those from the OP or IP of the same hospitals. So the queue management system need to consider only such cases. The tests are prescribed by the doctors and hence the data entry by staff at laboratories is practically limited to result entry.

Billing

The Public healthcare services are provided free of cost to citizens. However there are certain services which are billed also. For example OP tickets are given for a very nominal fee. Pay wards have rental charges. The Software system shall have a billing module to mange the billing and collection.

The system shall have the following facilities:

Patients Search & Select	The module shall have facility to search patients based on various search criteria and display details based on the access rights.
Adding and modifying Charges	The system shall have facility to add new charges as well as modify existing charges

Bill Generation	The system shall generate bills
Payment collection	The system shall have a collection interface to collect payments at the cash counters through Cash / Credit Card / Debit Card / Cheque
Online payment	The system shall have linkage with the State Governments payment gateway to collect online payments.
Advance and Part Payments	The system shall have facility to receive Advance and Part payments.
Refund	The system shall have facility to refund excess amount collected
Patient Dues Report	The system shall generate Patient Dues Report

Queue Management System - Token Display System with Digital Signage Solution

This will be an integrated solution of Token Display and Digital Signage. Digital Signage is a system for disseminating information to intended audience. The type of contents can be full motion video, photo-realistic graphics, text, presentations, animated flash images and much more. This is a dynamic scenario comparing to that of old conventional static boards, banners etc.

The proposed system will take care of displaying the token numbers being allotted to specific counters along with Digital signage for displaying various schemes and other information such as Videos, Slides, Tickers etc. The token numbers along with counter numbers will be displayed in a portion of LCD display. Video relating to various healthcare schemes and other information will be displayed in the LCD screen along with the token numbers with the help of a digital signage software. In this way, the public / patients waiting for their turn can watch other useful information along with token numbers. This way the healthcare authorities can convey any information relevant to public effectively using this media.

Queue management	The queue management and token display will be handled by the central Software Hospital Management System at each hospital level and the token numbers generated will be displayed in the respective portion of the LCD display unit. The system will fetch the queue token data sent from the data centre and display it along with the media content at the designated area of the TV screen. The screen layout of the LCD display shall be configured as per requirement with reference to the QMS and Signage application.
LED Token Displays	In addition to the above facility, dedicated LED counter token display units shall also be provided in each Hospital. These counter display units are to be installed in the counters which are located away from the normal patient waiting area. Departments like Labs, Pharmacy, Radiology etc which may be in separate buildings can be provided with these LED displays for showing the token numbers. Transmitting token numbers to these counter display units will be through the central Queue Management System.
Ethernet LAN connectivity and specific IP addresses	Both the above displays shall have Ethernet LAN connectivity and specific IP addresses. The token data received from data centre specific to an IP address will be displayed with an alert.

Maintenance Management

Introduction:

Repairs of all equipments purchased through the department are arranged for by the department during the period of their Warranty and AMC. Repairs of all equipments after the warranty and AMC period as well as repairs of equipments purchased are to be arranged by the respective officers who are the custodians of the equipments directly.

Equipment Purchased through the department and are Under Warranty/AMC

If the equipments are procured through the department and are still under Warranty or AMC arranged by the department, then the information shall be transmitted to TASK. The concerned officer at the department managing the Warranty/AMC through TASK will arrange the repairs through authorized service centers. Software System shall have facility to monitor the progress of the repair and send required alerts to the concerned authorities in this regard.

The System shall have the following facilities in the Software System:

1. Plan both Minor repairs and major Repairs by employees of the repair unit
2. Report the requirement of spares for the repair.
3. To create and submit all forms and reports linked to the repair so that the process can be completed paperless.
4. To issue necessary sanction for the repair of the equipment by the concerned authority
5. To arrange the repair as per the sanction obtained

The Maintenance Management system shall have following facilities:

Integration with Asset database	Maintenance Management system shall be integrated to Asset Database to use Asset Database functionalities and information.
Reporting Breakdowns	Authorized users of the system shall have the facility to report breakdown of equipments.
Reporting Preventive Maintenance requirement	Users shall also have facility to report the need of a preventive maintenance for equipments.
Creation of Work requests	Ability to raise maintenance Work Requests after receiving notification from operations about a breakdown. The system shall have facility for graphical, Colloquial searches for equipment IDs, drop down menus for selectable fields and sizeable descriptive fields for recording job/fault information.
Notification to Supervisor	The Work Request should then be capable of triggering electronic notification to the maintenance supervisor.
Search capability for all work requests	Ability to easily review / search for equipment related Work Request and/or any other Work Request problem
Classification of work requests	Ability to classify Work Request/Work Order by user defined variables. For example safety, modification, new work, rework, breakdown, preventive etc.. It should be possible to report by each of these classifications.
Prioritization of work requests	Ability to assign a priority to a Work Request.
Ability to view any work request	Ability to view details of any outstanding Work Requests on a specific job or related piece of equipment in order to avoid duplicating work requests. Also, ability to link / reference a Work Request against a customer reference or location.
Status of a work	Ability to record the status of a Work Request via user defined

request	variables eg. Awaiting approval etc.
Feedback to requestor	Ability to inform requestor via e-mail or otherwise upon approval / action /rejection of Work Request.
Automatic creation/ linking of WO to a work request	Ability to automatically and manually create / link Work Orders to a Work request.
Transfer of information from work request to work order	Ability to transfer (manually or automatically) information captured within a Work Request directly into a Work Order fields e.g. Job Type. Once entered in the Work Order, it should be possible to alter this information e.g. fault description.
Defining of work	Ability to clearly define work, in terms of attributes (nature, type, driver etc), by populating fields and allowing user to enter a suitable long/short text description.
Defining of critical dates	Ability to define critical dates against a Work Request. E.g. Required By dates.
Approval to closure of request online	Ability to approve, maintains, complete and close Work Request online.
Creation, review and deletion of WO	Ability to create, maintain and delete Work Orders.
Creation of Work orders	Ability to create a work order for all types of work by estimating the job duration, resource requirements, material requirements, contractor requirements and allocate a work priority to the request. The work order shall also identify the labor type and/or crew (s) allocated to the work, description of the work and the duration of the work. It is likely that for Emergency work, the Work Order details could be provided in via an electronic interface.
Generation of WO number	The Work Order reference number should accommodate existing numbering and naming conventions used by the utility.
Linkage of WO with account code	Ability to link a Work Order to a financial account code.
Defining of critical dates for a WO	Ability to define critical dates against a Work Order e.g. Required By date, planned start date, planned end date, job duration etc.
Postponement of WO	Ability to postpone Work Orders to a certain date
Ability to change a WO	Ability to make changes to a Work Order (e.g. change maintenance steps, change material requirements, change labour requirements).
Ability to view details of a WO	Ability to view details of any outstanding Work Orders on specific or related pieces of equipment.
Recording the status of a WO	Ability to record the status of a Work Order via user defined variables e.g. on stand-by awaiting materials, partially closed, closed etc.
Online approval of WO	The ability to approve work orders on-line via workflow is required. This could be performed by different incumbents within the organization, depending on work order size/cost, priority, mode and Delegated Financial Authority levels etc. If a work order is not approved within a specified time it should be forwarded to the next appropriate person.
Closure of WO online	Ability to maintain, complete and close Work Orders online.
Adjustment in WO	Ability to adjust all elements of the Work Order including : Materials, Resources, Tools, Timings
Creation of an emergency WO	Ability to create and issue an emergency Work Order that does not require approval. An audit trail will record the user who authorized

	the Work Order.
Review of maintenance history	Ability to review maintenance history for a specific item of equipment and/or on a particular manufacturer based on Work Order history.
Attachment of documents to a WO	Ability to attach documents to a Work Order including detailed work instructions, safety requirements and checklists, drawings etc. Upon issue of a Work Order, it should be optional as to whether attachments are printed automatically or at the discretion of the user.
Review and printing of tech information	Ability to review and print any technical information associated with the work parcel.
Status on warranty	Ability to check whether there are any current warranties on the equipment, or 'related' equipment. This will require a link to the equipment database where all warranty information will be kept.
Automatic dispatch of work to crews	Ability to dispatch work to crews automatically (Manually function should be able to overwrite the automatic function.) based on user defined criteria.
Integration with mobile messaging and CC system	Ability to integrate with Mobile messaging and/or Internet systems for electronic dispatch of work to work groups or crews.
Modification in work crew / teams	Ability to create, review and modify the structure and make- up of the work teams / crews including skills and competency requirements.
Standard Jobs	Ability to create, retain and use standard jobs including specification of tasks, materials requirements, labour, hours and skills and contractor hours and skills, in-house and outsourced tools / plant requirements, outage requirements, priorities, accounting information etc.
Creation of standard jobs for specific equipments	Ability to create standard maintenance jobs for activities involving specific equipment, specific 'classes' or 'groups' of equipment or some 'general' jobs.
Linkage of documents to a standard job	Ability to link to a standard job(s) any required documents including technical information, safety instructions, method sheets, checklists etc.
Tasks during a standard job	Ability to specify the type of tasks that will be performed during a standard job.
Linkage of safety documents to a standard job	Ability to link to a standard job any required safety instructions. Linkage is also required to be maintained to Safety procedures within externally maintained documentation.
Linkage of inspection checklists to a standard job	Ability to link a standard job to any inspection checklists.
Viewing of backlogs	Ability to view all work, review the backlog, and availability of resources to see which of the jobs can be absorbed into the current or next schedulable period(s). Should be possible to review all work, including backlog, by user-defined codes
Complete closure of WO	Ability to completely close off work order. System should inform user that all outstanding commitments and invoices have been met. After this step, no more costs can be charged to the order.
Maintain Bill of Materials	Ability to maintain the parts list contained in the equipment. The list should also include the quantities of parts involved. Ideally a

	graphical parts book referenced to the catalogue would support this.
Creation of asset	When an equipment item / component is created, it is required to reference the item / component to an asset in the fixed assets register. Where a relevant asset hasn't been set up, it is expected that the system would require the creation of an appropriate asset.
Maintaining the warranty details	Ability to record the warranty duration, the warranty period end date, the warranty number and any warranty notes. If a WO is raised on an asset under warranty, the system should flag that the vendor is responsible for repairs and that maintenance is required to be performed in accordance with warranty supply and contract conditions.
Recording of vendor recommendation maint. freq, type, procedure etc.	Ability to record the maintenance frequency, type and procedure recommended by the vendor.

General Administration Module
Introduction:
Software shall have a General Administrative Module to handle the Office Administrative Functionalities. This will be mainly used by the Administrative cadre officers. This module is expected to provide a framework for the employees to manage their routine administrative and personnel matters with ease so that they can focus on their areas of core competency viz. providing healthcare. This module will take out the drudgeries of office work to some extent and will make the administrative hierarchy function more efficiently. The General Administrative Module consists of the following sub modules:

1. Institutional Database
2. Human Resources
3. Accounts
4. Medical Reimbursement

The requirements of each sub module is described below
Human Resources Module:

Software shall have a HR Module with the following functionalities. The requirements of this module are described below.

Organizational Hierarchy	There shall be facility to capture the Organization Hierarchy and then display it in a dynamically generated tree structure. The system shall allow editing the Hierarchy as and when changes occur. The user interface shall facilitate display of the following pertaining to each Institution in the hierarchy: 1. The basic details about the Institution 2. List of employees in each Institution 3. Drilldown facility to view the details of each employee
ID Cards	The system shall have facility to print and issue ID Cards with Photograph. The Cards for Medical Education wing will be issued for DME and that of Health Service will be issued from DHS.
Attendance Module	There shall be a simple attendance module to capture the daily attendance of every employee. The UI for this module shall allow the Users to mark their own and their subordinates' attendance. The UI shall allow capturing different service status for each employee as below: ➢ Leave

	➢ Unauthorized Absence ➢ Promotion ➢ Transfer ➢ Deputation ➢ Suspension ➢ Retirement ➢ Termination ➢ Death ➢ Joining Each one of the above events will close the current record in the 'Service Data Table'. However, in the following cases a new record shall be created. 1. Retirement 2. Termination 3. Death
Duty Scheduling	There shall be facility for scheduling duty for the employees, including Doctors and other Clinical staff. The attendance module shall confirm that the employee has reported for duty as per the schedule. Thus the service history of each employee will get updated automatically after the implementation of Software.
Shifting of Posts Due to exigencies of services	Due to exigencies of service, posts will be shifted temporarily or permanently to other institutions. The system shall have facility to capture such changes and reflect that in the cadre strength.
Working Arrangement	Employees may have to be posted in excess of the sanctioned number in an institution. This is often done by posting the employee on 'Working Arrangement' in an Institution where there is no vacancy. Software system shall capture all this types of postings and the working strength in each Institution shall be updated dynamically.
Vacancy Position	The system shall also have facility to derive the vacancies in each institution by deducting the actual number of employees in a cadre from the sanctioned number. The system shall be required to generate various reports based on sanctioned strength, working strength and vacancies.
Contract Employees	Employees including Doctors are posted on contract basis for a specific Period. The system shall keep track of this and shall have the details such as the scheme under which they are posted etc. The system shall be required to generate reports based on these data.
Leave Management	System shall have facility for employees to apply leave online. The sanctioning by the superior officer shall also be done online. In case of Officers the system shall generate the sanction letter for Accountant General.
Online Application for Transfer	The system shall have facility for employees to apply for transfer online.
Transfer Lists	There is a precisely defined norms for transferring employees. The system shall generate a ranking of employees eligible for transfer based on the guidelines.
Transfer Orders	The system shall have an interface to generate the transfer orders online.
Relieving and Joining of Employees	The system shall capture the relieving and joining of employees based on the transfer orders. The system shall have the facility to generate the Charge Transfer Certificate (CTC) in case of Gazetted Officers.

Gradation	The employees are ranked in each cadre based on a Gradation List. This ranking is used for their promotions to next higher cadre. The system shall capture the gradation of employees.
Cadre Hierarchy	The designations of employees shall also be linked different cadres and the system shall create a Cadre Hierarchy.
Confidential Reports (CR)	The system shall have an interface to capture the Confidential Report (CR) of employees provided by their superiors. The CR has a defined format. The system shall prompt the respective Officer to submit the CR in time. The CRs shall be documented and stored with confidentiality with a well defined retrieval system
Promotions	The system shall provide a list of employees due for promotion to the next cadre based on anticipated vacancies in any cadre. The system shall alert missing CRs or any other documents required for effecting promotion.
Training	There shall be a master data of trainings. The mandatory trainings for each position in the Health Service shall be mapped to the position. The system shall keep a track of trainings being imparted to employees. The system shall be able to verify whether the employees have undergone all the mandatory trainings prescribed for the position they are holding.

Accounts

Money is collected at various points in hospitals. Some collections in the Hospital are to be remitted in the Treasury and some are to be remitted in the Bank account of agencies such as Hospital Management Committee etc.

Scheme-wise accounting	Hospitals receive money from various sources such as NRHM, RSBY etc. Software shall have a standard Accounting module to keep track of the receipts and expenditure pertaining to different Accounts including the financial transactions of HMCs. The system shall be able to keep accounts of receipts and payments with a standard classification of expenditure and income. The system shall generate Account Head-wise reports relating the income and expenditure. The module shall have standards features such as Accounts Payable/Receivable, General Ledger (GL), Cash Management, Internal Auditing, Budgeting & Planning
Collection reports	Software shall have facility to generate reports giving details of collections at various cash counters in each institution.
Expenditure base Performance Indicators	The accounting module shall also generate report on various performance indicators relating to the income and expenditure pertaining to each fund.

Financial Accounting	
General	
1	The system will have the ability to support single chart of accounts across departments/units/program etc.
2	System has the flexibility to define complex organization structure
3	The system will have the ability to provide for numerical and alpha numeric chart of accounts
4	The system will allow for account description to be given for each account code in the Chart of Accounts

5	The system must permit additions and amendments to the chart of accounts structure without corrupting existing data at any level in a simple and efficient way; i.e. without the need to rebuild the chart of accounts.
6	The system must permit the deactivation of elements so that no postings are possible (subject to user access controls)
7	The system must prevent active elements from being deleted; i.e. when there are postings to the account.
8	The system will control user access to individual elements and combinations of account codes, in terms of posting and enquiries/reporting etc.
9	The system will support various accounting standards and also different accounting principles
10	Balanced Financial Statements should be available at various levels within the organization
11	The system should support defining of closing activities and tracking of these activities
12	The system should have the ability to enter recurring entries and accruals.
13	The system should support electronic bank reconciliation with complete audit trail
Accounts Payable **The "Accounts Payable" service will allow the authorised users to manage accounts payables of the hospital**	
1	The system will be able to handle online data entry for: • Supplier/Rate Contractor Details • Voucher Entry • Payment Processing • Continuous online display of List and Total Accounts Payable • Supplier/Rate Contractor Details
2	The system will allow the setting up an "irregular suppliers" account for processing transaction for rarely used suppliers or one-time suppliers/rate contractors
3	The system will produce a listing of supplier/rate contractors with no activities for a specified period of time
4	The system will allow the automatic of flow of transactions from the inventory/pharmacy management module
5	The system will automatically reflect the moment material purchase is made in the inventory/pharmacy module
6	The system will have adequate controls to check on duplication of submission of claims or bills from the inventory/pharmacy module
7	The system will automatically generate the Material Received Note (MRN) date-wise under the purchases functionality
8	To perform accounting audit, the system will inform whether any bills are not processed at inventory/pharmacy
9	The system will provide functionality for finance to check for the bills generated but not presented or settled.

10	The system will allow the issue and printing of cheques only after proper authorisation of the bills raised have been done
11	The system will allow automatic generation of financial statements in cash book and ledger
12	The system will automatically record all expenses incurred with details once it is captured in a transaction.
13	The system will automatically post in particular patient record at billing all cheques issues as refund to patients
14	The system will check for duplicate supplier/rate contractor invoice numbers
15	The system will validate online the general ledger codes in the Accounts Payable functionality and all invalid transactions will be rejected
16	The system will check that the total recorded against various items in the invoice equals the total invoice sum
17	The system will automatically post a discount to the correct general ledger account for discounts given
18	The system will permit authorisation of a group of invoices in a batch
19	The system will allow matching of items both invoice-wise and individual items within a single invoice
20	On posting the system will automatically update the accounts payable and the general ledger simultaneously
21	The system will handle accruals with automatic reversal in the next applicable period
22	The system will allow the specification of an end date for recurring payments
23	The system will allow the payment of more than one Cheques for Supplier/Contractor
24	The system will allow stop payments of a specific invoice temporarily
25	The system will allow the payment of invoices as specified without regard to the scheduled payment date.
26	The system should provide facility so that ; Interfacing with the general ledger functionality will allow the Cheque number to be passed to the general ledger to assist with bank reconciliations
27	If a posted payment is made void, then the system will allow the general ledger posting to be automatically be reversed
28	The system will allow processing of more than one accounting period, which would typically be previous and current periods
29	The system will generate a report before the payments are made that will list payments made to each Supplier/Contractor
30	The system will produce comprehensive cash requirements reports by period planned as per the payment run date
31	The system will show amounts expected to be paid in all planned payment runs within a user specified period
32	All cash requirements reports and enquiries will take into account the projected payments in respect of goods received but not invoiced
Accounts Receivable	
1	The system will allow online data entry of customers
2	The system will allow invoices, credit/debit notes and payments to be entered
3	The system will generate customer statements at the end of the period

4	The system will maintain customer balances on open item basis
5	The system will record adjustments to the Accounts Receivable module that will include a reference number and reason
6	The system will track full exposure by customer (i.e. customer credit limit minus outstanding receivables)
7	The system will permit authorised users to override customer credit limits
8	The system will permit credit note entries to update accounts receivable and sales analysis
9	The system will allow the handling of internal adjustment (e.g. negative credit notes)
10	The system will allow partial billing of an invoice amount
11	The system will maintain daily Accounts Receivables billing control totals with supporting details
12	The system will post cash receipts online
13	The system will display all open customer invoices during payment posting
14	The system will allow for partial payments to be made
15	The system will permit the write-off of a receivable amount at the time of cash application
16	The system will allow the storing of partial payments and over-payments as separate open items against the original invoice amount until the invoice is fully cleared
17	The system will allow reviewing on-line customer aging and other statistic data such as last payment date, etc.
18	The system will display online the Billing Statements, including beginning open items, new charges, credits and payments, ending open balance and aging recap, invoice number, date and date due, customer name, patients name, and admission number
19	The system will display the Detailed Aging Trial Balance for each active customer showing open invoice and AR activity (e.g. payments, debit and credit memos, write-off, comments) and summary total balance across all customers
20	The system will maintain Accounts Receivable Invoice Register that includes list of automated and manually entered invoices with control totals
Cash Book Management	
1	The system will be capable of maintaining different cash books
2	The system should provide facility so that ; The cashbook will receive automatic postings from purchase, sales ledgers and the payroll system, together with manual batch posting of other payments and receipts
3	The system should provide facility so that ; The cashbook will be integrated with the general ledger and the postings will be updated with specified general ledger accounts and general ledger cash book balances
4	The system will facilitate bank reconciliation, using bank statements inputs either manually or automatically
5	The system should provide facility so that ; The receipts and payments from sales and purchase ledgers and the payroll will be posted as separate postings
6	The system should provide facility so that ; An audit trail of all cashbook transactions will be maintained
General Ledger	
1	The system will provide the facility to have multiple, independent general ledgers

2	The system will allow information to be consolidated within and across general ledgers for month-end reporting purposes
3	Each general ledger will be capable of supporting and fully integrating with sales and purchase ledgers, payroll and cash book
4	Each subsidiary ledger will relate to a separate control account in the general ledger
5	Postings to subsidiary ledgers will result in automatic postings to the control accounts in the general ledger
6	The system should help in identification of costs with various departments / units / programmes
7	The system should be able to identify all the charcteristics or master data for the different units and departments
8	Plan and budgets should be supported at unit / department level to track the performance of the unit / department
9	The system should allow allocation and apportionment of costs from servicing departments
10	Certain Key figures important for the units should also be captured within the system for reporting purposes
11	Variance analysis can be done at the unit/department level to check for efficiencies / inefficiencies
12	The system should allow capture of costs to a temporary programme or bucket so that these are tracked separately
13	The system should allow to capture the costs incurred for construction or acquisition of an asset before capitalization
Budget Control	
1	The system will have the ability to capture the budget amounts for the defined budget heads for each implementation location defined for the programme
2	The system will have the ability to import or export budget details from / to external systems electronically (using spreadsheet)
3	The system will have the ability to navigate within the budget hierarchy (e.g. expand / collapse structure, drill down for details)
4	The system will have the ability to calculate and compare budget versus actual in terms of amount variance and percentage variance
5	The system will support multiple iterations of budgets.
6	The system will associate each budget set with a unique identifier, for audit purposes.
7	The system will provide budget cap
8	The system will have the ability to freeze/ unfreeze budgets.
9	The system will provide the access controls and data validation control when uploading budgets.
10	The system will allow budget information to be exported in the following formats: • Spreadsheets • XML • CSV, ASCII text file etc.
11	The system will allow budgets to be copied from one period to another from plan versions
12	The system will have the ability to revalue budget by percentage and fixed amounts

13	The system must roll closing balances from one period into the opening balances for the subsequent period(s).
14	The system will record the history of changes and preserve the original budget; in all cases where the budget is modified.
15	The audit trail should include the username, the date and time of the operation and data before and after change concerned.
16	The system will have the ability to have multiple levels of budgeting and reporting.
17	The system will have the ability to roll-up budgets from the lowest level.
18	The system will have the ability to generate budget data on multiple dimensions - combinations of programme, implementation unit, duration etc
19	The system will have the ability to provide drilldown for actual versus budget reporting.
20	The system will have the ability to reallocate budget items ensuring the reallocation is maintained in history
21	The system will provide the flexibility to: • Maintain original budget version and revised budget version • Update the original budget by - Increasing the budget amounts - Reducing the budget amounts • Transferring budget amounts (transfer between locations, transfer between heads of account etc.)
22	The system will have the ability to carry forward the budget amounts to the following fiscal year
23	The system will have the ability to perform automatic budget availability checks during transaction posting
24	The system will have the ability to define budget tolerance limits either as a percentage or absolute value and trigger warning to all concerned users on exceeding the limits fixed
25	The system will have the ability to navigate within the budget hierarchy.
26	The system will have the ability to specify the sanctioned/released amounts for the implementation unit for month, quarter, year
27	The system will facilitate reconciliation of fund transfers from one account to another
28	System should have the flexibility to create temporary budgets for non routine activities
Expenditure Tracking	
1	The system will have the ability to capture the individual voucher details (voucher number, budget head, expense details, expenditure amount, date etc)
2	The system will have the audit trails to log the entire chain of activities performed by the users across the locations and levels for all the programmes
3	The system will have the ability to drill down the expenditure data from top-down
4	The system will have the ability to generate individual location and group-wise expenditure reports for the programmes
5	The system will have the ability to generate the budget versus actual comparison reports for each location and at aggregate level

6	The system will have the ability to export the expenditure data to the well formatted spreadsheets, word for printing and distribution
7	The system must provide the functionality to open and close accounting periods to control posting of transactions into current and/or previous/future periods
8	The system must allow prior year and audit adjustments to be made throughout the current year. This must be subject to strict security/ access control. All such adjustments must be also applied to the current year where relevant

Medical Re-imbursement:

Medical Reimbursement	The system shall have a database of all medicines and Clinical Procedures and Lab Tests which are reimbursable to the Government employees. The Web portal should facilitate verification of admissibility of all Medical reimbursement claims of Government and PSU employees.

Inventory Procurement and Asset Management

Procurement of equipment is to be arranged by the competent authority by observing rules and regulations contained in Store Purchase manual.

The inventory module would include all the business processes of inventory management of a back-office organization. All required inventory control features such as batch & bin tracking, expired items tracking, re-order level, min & max quantities are present here. Planning features such as suggested order quantities, vendor to item cross-referencing are very well mapped here. Apart from the stock transaction documents such as stock request/indents, issues, transfers, returns, reservation, adjustments, stock taking there are a host of power packed features such as user configurable reports, user configurable document printing etc
Item UOM Item tracking Item Pricing Stock Taking Destruction Certificate Document Stock Adjustments Stock Transfers
Stock Request Stock Issues Stock Receipt Stock returns Stock Ledger Stores Management Approval mechanism Consumption Entry Goods Receipt Note
The report groups Items based on the stratification code, viz A, B, C or X, Y, Z etc assigned to it by the system. The rules for the Stratification are user definable and the system re-classifies an Item, if necessary on a monthly basis.

Stock ledger - By Date, By Item, By Store, By Batch, By department Consumption analysis Stock transfer report Inventory listing List of all items in physical inventory with stock status Pending Material requisitions Critical items report
Ratio of First time Issues versus Requisitions made Report listing of stocks Received, Accepted & Rejected for a specific period. Report on stock lying in the Quality stores Report on stock lying in the Rejected stores Monthly consumption report by Item, by Store

Management Information System

One the key objectives of this application is to enable better insights into the health system to enable multiple stakeholders to make evidence based decision based on reliable and relevant data. The scope of MIS is covering cross domain healthcare analytics for the entire healthcare system in the state.

The solution shall integrate clinical, operational and financial data and create one single data source to drive cross domain analytics in a data warehouse with the following capabilities

- Easy data acquisition from central patient record as well as from other clinical and administrative applications providing a reliable source of data for analytics applications
- Data cleaning with healthcare specific logic like terminology management , units of measure etc
- Maintain data lineage and handle healthcare environment data warehousing concepts like late arrival of data
- Rules based data quality and data cleansing
- Cross Domain data model which can integrate clinical, financial, operational and administrative domains
- Proven data model which shall require minimum changes in the data model when a new data source is added to the warehouse
- The warehouse should be agnostic to the analytics tools and should support fit for purpose tool for end user analytics
- Rapid deployment of analytics applications

The requirements of MIS module is as follows:

General Requirements	The system shall generate various management information reports required for top management, middle level management and respective Institutions. These are generally based on the data generated under different other modules covered in this section. The MIS Module should include • Information capturing • Information processing • Information management

बिहार सरकार	• Information based decision- making & reporting
Pre-implementation study	Before finalization of MIS requirements and formats, a through study of the existing business process shall be carried out along with the ----------. Based on the organization structure and requirement of decision support system at organization level, a comprehensive MIS requirement document shall be prepared. The actual MIS requirement shall be finalized at implementation Stage.
Format of reports.	The system should be ableto generate reports on regular basis. ---------- will finalize the periodicity and the format of report.
The granularity and format of report	The granularity and format of report on same subject will vary for different levels. For example format and content of a report relating to disease surveillance for DHS will vary substantially from that of Institution.
Data to be collected from source	Data acquisition for MIS should preferably be without human intervention as far as possible. The data should be collected only at the lowest level and from the same source and in the standard formats.
MIS reports for external agencies	MIS reports are also to be generated for external agencies such as Planning Board, Finance Department etc. The formats and the periodicity of the same will be finalized with the ----------.
Performance Indicators	This module should provide performance monitoring system based on the Performance Indicators. Some of the Indicators are of general nature and it may not be feasible to create the indicators from the data captured and stored by Software. In such cases there shall be UIs to input data manually and generate the required Performance Indicators.
Business Intelligence Tools	This module should provide Business Intelligence Tools for data mining, analysis, trending, simulation, manage reporting, **On-Line Analytical Processing** (**OLAP**) analysis, Ad-Hoc querying, dash boarding, score carding, business activity monitoring, MS Office, Open Office Integration. etc. Essentially, a BI solution is normally implemented with following components • An Extraction, transformation and loading (ETL) component which extracts data from OLTP systems, transforms it and load it to the data warehouse • A data warehouse component which will host the data. • A reporting component which will allow on-the-fly reporting on the data from data warehouse.
Graphical User Interface	The system shall generate reports for all the modules in user-defined formats. The system will have a graphical user interface with a capability for generating customized reports, apart from the regular ones mentioned above, as per the requirement of management and operations staff. Display of statistical data shall be presented additionally in graphical formats such as bar-graph/pie diagram etc. for convenience of analysis.
General	The MIS module shall have the following general facilities

Facilities	• Centralized Health Dashboard and Score-card for all program specific KPI's • Overall Status : State/District Healthcare level Health managers shall get to see the change in different Healthcare parameters • Drill down to see individual KPIs specific to context of relevant health events • Identify the resources around the incident location, nearest health facilities • Real Time Reports on Different layers of map based on facilities like PHC, District Health Center, Laboratory, Radiology etc • Staff Tracking • Patient Tracking
Alerts	State/District Healthcare Executive gets alerts over series of events which have relevance in Public healthcare
Identify the resources around the incident location	Facility to identify the resources around the incident location, nearest hospital with Burn unit, Cardiac unit, Spine unit etc
Real time reports on healthcare schemes	Real time reports related to different healthcare schemes
Point to epicenter	Point to epicenter of Disease, Events, Incidents view over the GIS Map
Facility Locations	Different layers of map based on facilities like PHC, District Health Center, Laboratory, Radiology etc.
Dashboard view	Dashboard view for District HQs/State Healthcare officials for review, reporting, planning and decision making regarding • Disease surveillance • Resource Management and Procurement • Human Resource Management

System Security Requirement

Functionality	**Description**
	Audit Trails and Reports
Tracking key system accesses	The system must be capable of generating log trails, which contain details about any read / write access to sensitive data. Details must relate activity to an identifiable person. They must be configurable, so that filters and switches can be used to lower performance overheads and focus on areas of concern. It is important that the audit trail that is generated contain enough information to support after-the- fact investigation of loss or impropriety.

Exception reporting	Where the security audit trail becomes unavailable for any reason, the system shall continue to operate but will trigger an alarm. Action shall be taken as soon as possible to rectify the situation
Detailed system access tracking	System and application use and attempted use will be monitored to ensure that the integrity and security of the client and customer data is maintained. The documented process shall include details of: who will monitor what event and how, the frequency of monitoring, what to do when suspicious activity is noted, when to escalate and the escalation path. All events logged in the audit data shall be taken into account when deciding what to audit and the appropriate actions to take. The log must record the user or process responsible for the event, terminal ID where available, and the date and time of the event The following shall be monitored :- 1. Enabling and disabling of the audit process 2. Any changes to the type of events logged by the audit trail 3. Any changes to the audit trail itself 4. Start up parameters and any changes to them 5. System or application start- up and shut-down 6. Use of selected transactions Changes to any of the data base or records
Disaster recovery	A recovery options analysis shall be carried out to produce the practical options for those systems and networks, which are deemed to require recovery in the event of a disaster. The most effective option shall be chosen, taking into account the cost of recovery and the cost to the business of unavailability of the application.
System Integrity	
User process protection	The system should be able to protect the user process and local data from other user.
Versioning	Software used on systems/ applications shall be subject to version and change control to ensure that only the current authorized software is used at all user location.
Modification of the system	Modification or replacement of the software provided with the system would require special privileges
System maintenance	Execution of system maintenance and repair software would require special privileges
Basic checks on data input	Data input to an application shall be validated by the application to ensure that the data is correct and appropriate. As a minimum, an application shall check input data is complete. Within the required ranges, and contains no invalid characters. Procedures shall be established to deal with any input data violations.
Time stamping modifications	The system should be able to track the date and time at which a resource was last modified.

Confidentiality	
Use of encryption	The system should have the flexibility of encrypting the data stored online.
Approval for cryptographic techniques	Any cryptographic techniques or encryption systems used to safeguard information shall have been approved by relevant authority on data security prior to their use.
Approval for security components	Only security components which have been approved bythe Purchaser shall be used to protect the Purchaser's sensitive information and processes.
Networking and Data Transfer	
Authorized data transfer	All data transfers must be documented and authorized by the owner of the donor system. They must only be authorized where the receiving system has the capability to protect the data, i.e. it has an acceptable security rating.
Customer needs	
Documentation of risks and	System vendor responsible for customization should consider and document the risks and associated mitigation in the design.
Installation and configuration	Vendor will document instructions on how the system is to be delivered, installed and configured in a secure manner.
Startup documentation	Vendor will document instructions for the secure start-up, re-start and operation of the system.
Interface designing	Interface designs must include the capability to selectively deny access to certain types of data.
Scope control	Vendor supplied software packages must not be modified outside of the scope recommended by the Purchaser.
Software change control	A mechanism for controlling software changes during development shall be implemented. This mechanism shall, as a minimum, ensure that : a) The change is reviewed by appropriate groups prior to authorization, b) Changesare properly authorized prior to implementation, c) All change requests are logged. d) All associated documentation is altered along with the software change. e) Version control records are maintained.
Internal data	All applications shall be designed to minimize the risk of corruption by processing errors by building in validation checks, reconciliation checks etc., where necessary.

Module and product testing	All new and modified software to be used on system/application shall first be tested by expert personnel to ensure that the software have been subjected to the rigor of test and thereby - a) Does not introduce added security risks b) Functions according to design specifications c) Does not adversely affect the operation of the system d) Introduces no unauthorized system changes.

Grievance Redressal	
1	The system will able to capture the details of the grievance including contact details of the individual filing the grievance, description of grievance, date & time, details of specific location/individual concerning the grievance, reference to earlier grievance registered (if any) etc.
2	The system will be able to define the criticality and priority of the grievance based on the nature of compliant
3	The system will allow to track status of complaints with complaint number
4	The system will be able to retrieve grievance by grievance number
5	The system will be able to retrieve grievance based on grievance number
6	The system will be able to view status of all grievances

Quality Management	
General	
1	Ability to manage quality information for materials, vendors / suppliers / contractors etc.
2	Ability to integrate quality management with cost accounting and allocate costs to quality processes to capture costs of quality management functions
3	Ability for any concerned department from materials, operations, maintenance, finance across multiple units and locations to view quality management information related to their respective units
4	Ability to capture various accepted standards, manuals, templates, reporting requirements and necessary data in the system and revise them with track of changes when required
5	Ability to maintain online Quality Manual to be accessed by personnel across multiple locations and units
6	Ability to integrate quality inspection results with performance management, rating system of rate vendors/suppliers/contractors
Quality Planning	
1	Ability to plan for resource requirements during annual budgeting exercise (personnel of various skills, test equipments, lab facilities, outsourcing contracts etc.) for executing QM functions
2	Ability to generate all documents (plans, checklists, instruction sheets for test/inspection, result records, test certificates, reports, MIS etc.) required to carry on quality management functions

3	Ability to prepare a Quality Plan which specifies target compositions, desired sizes and other product specifications of different materials.
4	Ability to customize standard quality activities workflow as per requirement.
5	Ability to define various business scenarios related to quality management using catalogs (by defects / deviations, follow-on actions, tasks, characteristics, attributes, chemical / physical / mechanical / process properties etc.)
6	Ability to define additional customized catalogs to capture specific quality management parameters
7	Ability to define various inspection / test / analysis characteristics to describe the criteria for acceptance / rejection / down gradation etc.
8	Ability to define the inspection / test / analysis methods for each characteristic defined to standardize and have uniformity of quality management process
9	Ability to define the inspection characteristics unique to each material being tested, and also to configure number of measurements per sample.
10	Ability to define sampling strategy (sampling procedures / sampling schemes / rules of sampling) at various stages / departments.
Quality Inspection	
1	Ability to support planned as well as unplanned quality inspections
2	Ability to define detailed steps in each inspection and assign resources to such steps with capability of monitoring the completion/ outcome of each step
3	Ability to capture standard time for inspection, no. of resources required for inspection and to record actual inspection time by the quality inspectors and consumption of resources issued to capture costs / variance for conducting quality inspections
4	Ability to record inspection / test / analysis results against defined inspection lots per characteristic / attribute as defined in the quality management catalogs
5	Ability to record defects during quality inspections against standardized defect categories / codes
6	Ability to handle in the system acceptance,usage or rejection decisions for the inspection batch/lot from the results/defects recorded in quality inspections
7	Ability to conduct inspections at vendor's premises outside the company premise and recording results of the same
8	Ability to let 3rd party inspection authorities authorized by customers to conduct inspections.
9	Provision for automatic transfer of goods to quality inspection stock so that before inspection goods will not be used.
10	Storing incoming materials temporarily for visual and other inspection before creating SRV.
11	Provision to reject material and send back to vendor directly from quality module
12	Provision to maintain qualitative and quantitative characteristics
Quality Control	
1	Ability to plan for different types of Quality Certificates, Inspection Reports, Measurement Sheets, Test Sheets from special test equipment.
2	Ability to print multiple / single / specified no. of copies of the certificate as per control defined by the quality management team
3	Ability to retrieve / print specific test certificates from remote locations through internet

4	Ability to create daily worksheets / job sheets for individual inspectors / testers.
Test Equipment Management	
1	Ability to manage all pertinent test equipment information and located in different facilities across different geographies
2	Ability to plan / maintain schedules for maintenance and calibration of different test equipment as per policy / AMC contracts with the OEMs and appropriate notification for the same
3	Ability to conduct calibration of different test equipment and recording the measurements / results of the same with details of date of calibration / observations / party details
4	Ability to maintain a history of calibrations done on different test equipment.
5	Ability to initiate and manage repair job contracts issued on 3rd parties who offer calibration and equipment testing services with relevant integration with finance
6	Ability to generate job completion reports, service reports and other relevant MIS
7	Ability to conduct testing and calibration of test equipment on a un-planned / ad-hoc basis over and above planned schedules

Web Portal

Objective :

The goal is to provide the citizen in general and Patients in particular a user friendly portal that will make it easy for them to communicate with the Health Department through the web. This portal will also act as a source of information for the citizen regarding policies and procedures. This in turn will improve customer satisfaction and reduce work load on the employees. The portal shall also provide a platform for forming a social network of Healthcare Professionals such as Doctors, Nurses, Lab Technicians, Pharmacists etc.

Functionality	**Description**
Design of the Portal	Web Pages shall be designed to render a logical and professional layout for the Website enhancing the overall user experience. Uniform look and feel is to be maintained across all pages of the website. Site shall be well organized, information being available with minimal number of clicks and navigation clear and consistent
Content Management System	CMS for the Portal shall be configured with appropriate business flow required to authenticate of publication of content in the site. CMS must be easily manageable and authorised staff must be able to add, change and delete Portal contents without manipulating any HTML or scripting code as and when required
Content organisation	Contents shall be organised meaningfully in manageable units with appropriate meta-tag/ labelling scheme. Visual elements are to be appropriate and well organised
Delivering different types of contents	Capable of hosting and delivering different types of contents including HTML documents, word documents, PDF documents, Images, Photographs and Multimedia files.

Plug-ins	Plug-ins shall be embedded for opening and viewing various contents including audios and videos.
Floatable and collapsible menus	Floatable and collapsible menus and icons shall be effectively used to enhance the content presentation.
dynamic generations of links	The design should support the dynamic generations of links on the page.
No broken links	There shall be no broken links (causing 404 Error) in the site, at any given point of time.
Search Facility	The Portal shall be search enabled.
Search Engine Optimization	Search Engine Optimisation shall be provided for the Portal with respect to all major search engines such as Google, Bing, Yahoo, Alta Vista etc
CSS	CSS based design approach and W3C compatible coding style shall be used for developing the site.
Browser Compatibility	The site must be compatible with the current versions of Browsers - Firefox, Internet Explorer, Safari, and Chrome.
Mobile Compatibility	The portal shall be mobile compatible rendering well on mobile and tablet devices.
GIGW Compliance	The portal shall be compliant with the Guidelines for Indian Government Websites (GIGW) as applicable.
Visitor Counter	The Portal shall have Visitor Counter.
Event count-down Clock	The Portal shall have Event count-down Clock for specific events such as Pulse Polio vaccination etc.
Online contests, quizzes and polls	Portal shall have facility to host Online contests, quizzes and polls related to the Healthcare to generate awareness and interest among the public.
'Home page' for each Healthcare institution	The portal shall have a 'home page' for each Healthcare institution with institution specific details such as List of Specialties and Doctors, photo galleries, location map, Venue Maps, Contact numbers etc.
publicity and bulk outreach programs	Software Portal shall also provide a platform for publicity and bulk outreach programs. Communication tools such as bulk e-mails, newsletters and SMS are to be integrated in the Portal.
RSS feed	Dynamic RSS feed facility shall be incorporated in the Portal.
live feeds to social networking sites	Portal shall render live feeds to Twitter, Facebook, other social networking sites.
Virtual media rooms	The Portal shall provide virtual media rooms from where media can pull live updates, audio, video etc for publishing and broadcasting.

Hosting	The Portal shall be hosted in Web Servers co-located in the SHSB
Service Level	Average Response Time for all Web Pages shall be less than 4 seconds. The Vendor shall be responsible for maintaining of service levels and necessary hardware, software and connectivity so as to achieve the service levels stipulated for the Web Portal.
Integration with other components	The Portal must be integrated with other components of the Software Solution as applicable.
Security	Portal shall have security solutions for protection from hackers, malware, Virus, Trojans, un-authorized access/intrusions and other threats. STQC Security Audit of the Portal shall be completed before hosting. Portal shall be accessible through HTTPS protocol over SSL layer.
Audit trail	Audit trail of content updation of the site shall be maintained.
Home	This page provides a brief description about the site, the various functionalities it provides and promotional features or any kind of advertisement for special programs can be placed in this page. Login Component is provided and registered users may login using their username and password. New Users can also register by clicking on the First Time Users Register link. The Forgot Password link helps the user to retrieve their password.
Log In	The Log In page asks the registered users for their username and password while the new members can also register through this page.
Registration	Aadhaar Number may be made mandatory for registration
Forgot Password	The user is asked for his first name, last name, PIN code, birthday and his primary email address before being provided with the security question.
Security Question Answer	The new password is sent to the user by email (his primary email address as in his profile) on answering the question correctly.
Change Password	Once the user has logged in, he can change his credentials i.e. Username and Password by clicking on the Change Credentials link
My Page	This is the landing page for the citizen. The screen contains a description of the account. Any status messages pertaining to the account involving immediate user action is also presented here.
Encounter/Episode History	The page provides a line history of the encounters or episodes during a selected period. A more detailed view of each encounter /episode may be provided on clicking each encounter/episode.
Images	User can open and view the stored X Rays etc, if any
Lab Results	User can open and view the stored Lab results etc

Online Appointments	The system shall have options for Booking Appointments online. The queuing logic for those booking appointments online will decided in the system study.
Book Pay ward online	Facility to book Pay ward online
Online payment	The user shall have multiple modes of online payment such as Credit Card, Debit card, net banking etc. The online payment shall be processed through secured payment gateways
Pay for Services	Facility to make Payments online for all the available services such as Medical Certificates, Lab payment, Pharmacy, Pay ward etc
Service Requests	This page allows user to post request for services such as house visit by Health worker, enrollment in service schemes etc.
Service Request Status	This is a read only screen which the user can view. Status of various pending requests for the user are listed here.
Complain	Under this page user can log his complaint using a drop down menu and also through key board entry.
Complaint Status	This is a read only screen in which user can view the complaint status.
Report Outbreaks etc	This screen contains contact information to report Outbreaks etc to authorities.
Online Reporting of Outbreaks etc	This screen allows the user to report any incident which has significance such as Outbreaks etc. The user has to fill up the specific information provided in the screen in order to locate the region/house etc
SMS facility	'Push' and 'Pull' SMS facility shall be integrated into the Web Portal. Portal shall have the capability for forwarding SMS alerts both on demand (pull) and on prescribed schedules (push) to both Healthcare providers and Public. Interested parties can pull pertinent information using simple and easy-to-use query formats. Portal shall also support bulk information dissemination (Immunisation Schedules, Disease prevention tips etc.) through SMS (push mechanism) to registered
Update Profile	This screen enables the user to update his/her profile information. The user can make changes to his email id, Mobile phone number etc..
Report relocation	User can report relocation and change of address etc. The Health worker will make on site verification and update the demographic database.
Healthcare Information	This screen displays the relevant Healthcare information for Public view.
Associated Sites	This screen provides the link to all associated sites
Contact Us	This screen displays the information of the vital contact persons, who should be contacted for any information or for providing any feedback

Business Associates	This screen enables business Essential associates (contractors) to register online, view tenders, purchase tenders, etc
Medical Reimbursement	Administrative user shall have privilege to update database on Drugs, Lab Test and Clinical Procedure eligible for reimbursement
Medical Reimbursement	There shall be an interface to check whether a Medicine/Lab Test/Clinical Procedure is reimbursable by Public sector employers
Medical Reimbursement	Government Departments and PSUs shall have accounts to post the claims of employees and get recommendation from DHS regarding admissibility of claims

Public Health Monitoring System

Introduction:
The Public Health Monitoring System has four distinct functionalities.

1. Create and Maintain a Digital Family Health Register
2. Reproductive and Child Health (RCH) Monitoring
3. Integrated Disease Surveillance Programme (IDSP).
4. Provide Data to all the centrally sponsored Public Health Schemes

Family Health Register:- The State Health Department is maintaining a Family Health Register which provides comprehensive information about the households in the state. This register contains Village level details, House Details and Demographic Details. The first task is to digitize this Family Health Register and then keep it updated. Once created, the Software system should keep the register constantly updated.

RCH Monitoring:- The functionalities covered under the RCH head include Ante natal Care, Post partum Care, Mother and Child tracking, Immunisation Monitoring etc.

IDSP:- Non Communicable and Communicable Disease Control is the main objective of IDSP. The Multipurpose Health Workers go out to the community for early detection of potential high-risk individuals and offer secondary preventive options. Detection of malaria cases by blood smear examination, pulmonary tuberculosis by sputum AFB examination, diabetes and high blood pressure screening, immunizations, etc are examples of this category of services.

In the above measures, individuals or families are the targets. But certain aspects need concerted action from the community, as these interventions are beyond the scope of individuals or family. Air pollution, provision of safe drinking water, vector control, etc are examples of this kind of activities. The Multipurpose Health Workers need to keep track of such public health interventions also in the Software platform.

Public Healthcare Schemes:- Central and State Governments have initiated several schemes with the aim of improving Public Health. Some of these Central schemes are monitored using a centralised digital frame work. State Governments shall provide data to these digital frameworks at defined intervals. Software system shall provide data to these Central systems. Software shall also generate reports on these schemes for both State and Central governments.

The SHSB has a well structured network of field workers and supervisory staff and Officers to handle the Public Health Functionalities. Providing the technical infrastructure, training and necessary hand holding for efficiently carrying out these tasks will be the responsibility of the Vendor.

The IT infrastructure for the Public Health Monitoring Functionality include the following:

1. Central Database and Central Application to manage the Public Health related functionalities
2. A Hand Held Device (HHD) with an user friendly Application to carry out the field activities.

As described earlier, the basic reporting for Public Health Monitoring is primarily done by the Multi Purpose Health workers and their supervisory staff. This functionality is to be carried out using a Hand held device which should have the required database and Software Application installed in it. The database in each device will pertain to the population each Multi Purpose Health worker is responsible for. The Application shall facilitate data collection and generation of reports offline. The Multi Purpose Health workers can also access the Central Software Database and Application, view and print the reports according to their access rights.

The details of training and hand holding support to be provided by the Vendor is described elsewhere. The following descriptions relate to the requirements of the Public Health Monitoring Functionality with respect to the Hand Held Device (HHD) and the Central Application.

All the functionalities described below shall be available in all types gadgets used such as Hand Held Devices, Tablets, Netbooks, Laptops and PCs. Some requirements are specific to the central Application and hence need not be available in the Hand Held Device Application. These requirements are separately described.

RCH (Reproductive & Child Health) Monitoring:

The requirements of the RCH Monitoring Application described below:

Reproductive Health and Family Planning	The module focuses on the family planning services provided to couples and has three sub modules: ➢ Eligible Couple Registration ➢ Family Planning Registration ➢ Family Planning Follow-up This module shall generate reports such as: ➢ Eligible Couple Register ➢ Target Couple register ➢ Family Welfare Acceptance Register
Eligible Couple Registration	The Eligible Couple (EC) Registration module identifies and records some basic data pertaining to eligible couples in each family. The term Eligible Couples targets couples who are eligible for receiving any type of family planning services. The basic data collected include name of couples and their marriage date. With this interface, one can enter data on new registration, edit data on existing registration or view registration details. The registration shall normally be based on UID or a Unique Health Id (UHID). The UHID is a unique identifier created in Software Database to take care of situations where the citizen do not have UID (Aadhaar) Inputs • Name of Wife (Select name of the person) • Age of Wife • Name of Husband (Select name of the person) • Age of Husband • Survey Date

	• Marriage Date • Remarks
Family Planning Registration - Target Couple details	Family Planning Registration module is used to enter the details of the couples who have accepted any kind of family planning methods. The family planning methods are categorized as two types, Permanent and Temporary. The system itself maintains a list of family planning methods and the health worker is required to only select the required method. The interface also facilitates entry of data on institution, if the person visited an institution for accepting the method. In addition to the above, the system will also seek data on any complications suffered by the method accepted. Inputs • Name • Survey Date • FW Acceptance Date • FW Acceptance Method a. Conventional Condon (CC) b. Conventional VAS c. CUT d. E-Pills e. Laparoscopic Sterilization f. Minilap Sterilization g. NSV h. Oral pills i. PPS j. Others/histractomy, etc • Institution Category a. Government b. Private • Remarks
Family Planning Follow-up	Once a family planning method is accepted by a couple, it has to be followed up by the health workers on a routine basis. The data on each follow up visit is entered through the module Family Welfare Follow-up. The data collected for follow-up include whether there were any complications since method was accepted and whether the method was discontinued.
Family Planning Follow-up - Data entry	Family Planning Registration & Follow-up module facilitates entry of data on ▪ Family Planning Method Accepted ▪ The Institution visited for method acceptance ▪ Complications, if any suffered by the method acceptor
Family Planning Follow-up - Inputs	Name Visit No Visit Date Previous Visit Date Complication • Failure • Recanalization • Sepsis • Death • Bleeding • Pain

	• Expulsion • Infection • Migraine • Vomiting • Allergy
	Complication Date Discontinue Date Discontinue Reason • Recovered • Continuing with Treatment • Dead • Transferred out • Relapse Remarks
Maternity Module	Maternal care includes care during pregnancy, delivery and immediately following delivery, along with the care of the new born. Women can get maternal care services either by visiting a health center where such services are available or from health workers during their domiciliary visits. One of the most important components of antenatal care is to offer information and advice to women about pregnancy-related complications and possible curative measures for the early detection and management of complications The health workers collect details of the services given to pregnant women and new born child using HHD. The maternity module involves the Antenatal Care module coupled with Postnatal Care module.
Antenatal Care Module	Ultimate goal of Ante Natal Care module is to reduce Maternal & Infant Mortality. This module comprises of the following components ➢ Antenatal care Registration ➢ Antenatal care Follow-up ➢ Antenatal care Termination
Antenatal care Registration - Inputs	Name Survey Date Name of Husband Order of Pregnancy (Gravida) No. of Living Children Date of Last Menstrual Period (LMP) Expected Date of Delivery (EDC) Trimester (The system to automatically calculate the Trimester) Remarks
Antenatal care Follow-up-Inputs	• Name • Survey Date • Name of Husband (System to display the name) • Blood HB • Height of Uterus • Result of Urine Test o Albumin o Deposits-Others o Deposits-Pus Cells o Deposits-RBC o Sugar

	• Danger Signal
	  ○ Bleeding
	  ○ Others
	  ○ Viral Infection
	• Quantity of IFA (Quantity of IFA tablets recommended for the pregnant woman)
	• Weight
	• Blood Pressure
	• Prophylaxis Drugs (recommended for the pregnant woman)
	• Complications "Abnormal movement of baby"
	  ○ Anemia
	  ○ APH
	  ○ BP above 140
	  ○ Epilepsy
	  ○ Others
	  ○ Pregnancy <20y or >30y
	  ○ Previous ANC Caesarean
	  ○ Weight increase more than 3 Kg/month
	• Referred Institution Category
	  ○ PHC
	  ○ CHC
	  ○ THQH etc
	• Referred Institution Name
	Remarks

Antenatal care Termination - Inputs:	Name Survey Date Name of Husband Termination type • Delivery • Abortion • MTP If Termination type is Delivery: Delivery Date Delivery outcome • Alive • Still Birth Delivery Type • Forceps • Normal • LSCS • Vacuum Attended by • Doctor • ANM/LHV • Trained Attendant • Untrained Attendant • Skilled Attendant Complication

	• Bleeding • PPH Obstetric Complication • Septic <u>If Termination type is MTP or Abortion:</u> Type • No • Induced • Spontaneous Patient Status • Alive • Dead Place Complication • Wound in Uterus • Bleeding • Pus Reason • Medical • Eugenic • Humanitarian • Socio-economic • Others Abortion/MTP Date Remarks
Postnatal Care Module	The postnatal period (or called postpartum, if in reference to the mother only) is defined by the period beginning one hour after the delivery of the placenta and continuing until six weeks (42 days) after the birth of an infant. Care during this period is critical for the health and survival of both the mother and the newborn. This module records Post Partum Care details such as PPC methods and PPC given Date etc. Inputs Name Survey Date Postpartum Care Date Name of Husband Type of Termination Date of Termination Mother Complication • Fever • Bleeding • Bad Smelling • Discharge • Abdominal Pain • Abnormal Behavior

	• Painful and Swollen less • Painful Breast Child Complication • Refusal of Feeds • Increased Drowsiness • Cold to Touch • Difficult of Rapid Breathing • Abdominal Distension • Convulsion or Stiffness • Persistent Vomiting • Deep Jaundice Remarks
Child Care Module	The Child Care Module is for recording data about individual children, for scheduling appointments for their immunization and for producing aggregated statistical information. This module comprises of the following components: ➢ Child Registration. This is done through Birth Registration process in the Demographic Module. The module will collect following data about an infant: ▪ Child birth information (Birth Date, weight, Condition up to 28 days etc). ▪ Risk factors, Abscesses, Complications. ➢ Immunization ▪ Scheduled and optional Immunization details (immunization name and Date). ▪ Immunization Alerts The software shall generate Immunization reports such as: ▪ Lists the names of the Infants due for immunization services for the next 30 days. ▪ Immunization services due against each Infant.
Child care Module - Reports	1. Immunization due date list 2. Unimmunized/drop out list

Disease Monitoring Module:

A cadre of trained field workers equipped with HHD Application, Standardized practices and procedures, timely alerts, quick response coupled with service on a 24/7 basis will ensure a very effective Disease Surveillance mechanism in the State. Software shall leverage the existing framework into an effective Disease Surveillance Network in the state. The requirements are described below:

This Application Module in the hand held device is to be used for recording of any kind of communicable /non communicable diseases. The data will be collected by the Multi Purpose Health Workers and regularly uploaded to the Central Software server.

The Central Software server also receives data from various sources viz. Hospital OPD, IPD and Laboratories. The central IDSP Module shall keep track of incidence of diseases based on these different sources of data and give alerts in case the number of incidences of diseases cross the pre-defined limits and qualify to be notified as alarming stage. The purpose is tracking incidence

of diseases, the detection and control of diseases through regular and timely reporting, ensuring prompt treatment, planning & monitoring preventive and remedial measures.

Following are the purposes of Disease monitoring module:

- Tracking incidence of diseases
- The detection and control of diseases through regular and timely reporting
- Ensuring prompt and complete treatment
- Planning & Monitoring preventive and remedial measures
- Help to conduct awareness programmes and to give prevention advices

The following is the description of requirements of the Application Module for Disease tracking to be used by the Multi Purpose Health Workers.

Real-time Data collection:	Real-time data on reporting of Communicable diseases from Sub Centres, OP Clinics, IP Wards and Clinical Laboratories shall be transmitted to the central server at very frequent intervals. Data from Sub Centres captured using the HHD Application shall be transmitted at a pre-defined interval. Data from OP Clinics across the State will also be transmitted frequently. The central system will aggregate this data and will constantly evaluate the situation based on an intelligent algorithm to detect any abnormal rate of incidence of diseases.
Disease Monitoring using HHD	The Disease monitoring module in the HHD Mobile Application collects communicable and non communicable disease details. This module shall keep record of the people affected with any kind of communicable /non communicable disease.
Private Institutions	In the present scenario reporting of diseases from Private Institutions is very low. In the new system there will be a web interface for each private institution to report the data on diseases regularly. This will make the system complete and accurate.
Central Government IDSP framework	The system shall send aggregate reports in the prescribed formats weekly to the Central Government IDSP framework.
Healthcare notification messaging service	The Software System shall have facility to automatically send out alerts in the form of SMSs, emails etc to all the concerned authorities. In addition there will be general Healthcare messages such as precautions to be taken during an outbreak etc. There is also facility to send out SMS to the concerned person regarding clinical test results and sensitive reports on communicable diseases.
Receiving Messages	The system can accept SOS SMSs from individuals and make it available to the concerned authorities. There shall be a facility for public users to text a particular keyword to receive information on a range of topics such as H1N1 fever symptoms.
Sub Modules	This module has been divided into following sections: ➢ Disease Registration (Suspected Case and Confirmed Case). ➢ Disease Follow-up.
Disease Registration - Suspected Case Registration - Inputs	Name UID Age Sex Survey Date Symptoms • Acute Flaccid paralysis<15 years of age

- Cough with or without fever <2weeks
- Cough with or without fever >2 weeks
- Fever<7 days
- Fever>7 days
- Jaundice cases<4 weeks
- Loose watery stools<2 week
- fever with rashes (DF, Rubella, Measles)
- Fever with vesicles
- Fever with jaundice
- Fever with Arthralgia (CGF)
- Fever with Vomiting (Viral hepatitis, Meningitis , Viral fever with Gastritis)
- Fever with Delirium
- Hypopigmented Patches
- Itching
- Other Symptoms

Onset Date
Other members affected/contacts
H/O travel to endemic areas
Visited Doctor? (No/Yes)
Admitted Hospital? (No/Yes)
Diagnosis
Probable Cases

- Acute Diarrheal
- Acute Encephalitis Syndrome
- Acute Flaccid paralysis<15 years of age
- Acute Respiratory Infection (ARI)
- Bacillary Dysentery
- Cholera
- Chickenpox
- Chikungunya
- Dengue Fever
- Dengue Hemorrhagic Fever (DHF)
- Dengue Shock Syndrome (DSS)"
- Diphtheria
- Enteric Fever
- Fever of unknown origin
- Influenza Like Illness (ILI)
- Leptospirosis
- Malaria
- Measles
- Meningitis
- Pertusis
- pneumonia
- Tuberculosis
- Rubella
- Hand foot mouth disease
- Viral hepatitis (A, B , Non B)

	• HiN1 • Filariasis • Scrub typhus • Leishmaniasis • Typhus fever • Leprosy • Scabies Other Probable Cases - Retro Viral Infections and Opportunistic infection Remarks
Confirmed Case Registration - Inputs	Name UID Survey Date Confirmed As • Acute Diarrheal • Acute Encephalitis Syndrome • Acute Flaccid paralysis<15 years of age • Acute Respiratory Infection (ARI) • Bacillary Dysentery • Chickenpox • Chikungunya • Dengue Fever • Dengue Hemorrhagic Fever (DHF) • Dengue Shock Syndrome (DSS) • Diphtheria • Enteric Fever • Fever of unknown origin • Influenza Like Illness (ILI) • Leptospirosis • Malaria • Measles • Meningitis • Pertusis • pneumonia • Viral Hepatitis Rubella • Hand foot mouth disease • Viral hepatitis (A, B, Non B) • HiN1 • Filariasis • Scrub typhus • Leishmaniasis • Typhus fever • CHOLERA • Leprosy • Scabies • Cancer • Diabetes • Disability requiring medical care • Hyper Tension

	• Stroke Confirmed Date Visited Doctor? (Yes/No) Admitted Hospital? (Yes/No) Medicine Taken Lab Result Details Patient Status • Continuing with Treatment • Dead • Other • Recovered • Relapsed • Transferred Out • Referral Remarks
Vector Study	Data from periodic surveys carried out at houses for the presence of vectors in used tyres and water-holding containers shall be captured through the application. <u>Inputs:</u> Survey Date Previous Date Container Examined No: of containers examined having larvae Container Reduced (No: of containers with larvae reduced) Aedes Breeding (Yes / No) Remarks
Health Advice	Health worker will give health tips and conduct awareness programmes in public for their better day to day life. Inputs Survey Date Select House No Previous Visit Date Health Advice given • Public Health • Mother and Child Health • IEC • Family Planning More Details
Non Communicable Disease Monitoring - Inputs	Name UID Type of NCD **Diabetes** **Hypertension** **Cholesterol disorders** **Coronary Artery disease** **Stroke** **Cancers** **Others**

	Age of Patient **Have you checked your BP (Yes/No)** **Have you checked your Sugar Level (Yes/No)** **Any one in your family Have NCD (Yes/No)** If yes Relationship

Mobility:

Platform Support
Supports the following smartphone mobile OS @ Android 2.2, 2.3, 3.0, 4.0 and above @ iOS 4, 5 and above @ Blackberry 6.0 and above @ Windows Phone OS 7.5 @ Mobile Web App
Supports the following desktop interfaces and widgets @ Adobe AIR @ Windows 7 and Vista @ Max OS X Dashboard
Supports the following web interfaces and widgets @ iGoogle @ Facebook @ Embedded web page
Supports the target packaging components like @ Mobile Website @ Hybrid App @ Native App @ Web App
Application Development
Eclipse tooling platforms
Supports the ability to write code once and deploy on multiple mobile operating systems
Supports drag-and-drop editor for building mobile UI applications
Supports generation of native application packages for multiple mobile operating systems
Supports integration with 3rd party UI and form-based libraries
Supports integration with native device API
Supports utilization of all native device features
Supports development of applications in a common programing language
Supports integration with mobile vendor SDKs for app development and testing
Supports tooling environment on @Windows @Macintosh environments
Supports HTML5, CSS3, JS features for smartphone devices (mainly applicable for hybrid framework since they have a browser of their own)

Supports browser simulator for quick preview of mobile apps in the absence of a physical device
Supports shell-based development approach to ensure that the HTML code in the browser can only access sanctioned services
Server
Supports common protocol adapters for connection to back office systems (i.e. HTTP, HTTPS, SOAP, XML for format)
Supports JSON /equivalent to XML or provide XHTML message transformations
Supports runtime skinning and optimization to align to different mobile device specifications
Supports native push notifications for multiple mobile service providers
Supports encrypted messaging between server and client gateways
Supports the ability to log all messages that pass through the server
Supports the collection of usage statistics and reports that are accessible over Eclipse /equivalent using Eclipse's BIRT plug-in / equivalent
Supports integration with backend server components on standard protocols like REST, SOAP, Web Services etc
Supports data XSL transformation techniques through light-weight protocols to minimize data transfer to mobile device
Supports multi-lingual and language internalization
Supports an app store to distribute mobile apps to authenticated and authorized users
Supports clustering at the application level for high-availability and load-balancing
Supports disaster recovery mechanisms for data recovery and business continuity
Mobile Security
Supports enteprise-wide SSO authentication with 3rd party LDAP repositories - for example like LTPA tokens/ equivalent
Supports device-specific security IDs to support installation of business applications on sanctioned devices
Supports on-device encryption storage using AES256 and PCKS #5 - generated encryption keys
Support offline user-authentication
Supports user authentication through 3rd party LDAP repositories / equivalent
Supports user role authorization to provide specific access rights to execute sensitive transactions with enterprise identity and access management solutions
Supports app authenticty testing to prevent risk of phishing through repackaging or app forgery
Supports authenticated user sessions with configurable expiration timers
Supports server-side services that can be grouped into separate protection realms for different authentication levels
Supports client to middleware server over HTTPS communication channel to prevent data leakage and maintain information integrity and privacy
Supports authentication tokens as HTTP headers or cookies
Supports data encryption for on-device data storage
Messaging with Device Client

Supports messaging with server for multiple mobile operating systems
Supports encrypted messaging between server and client components
Supports encrypted storage of applications and application data
Supports flexible API framework to build offine apps and enable offine usage
Supports APIs for connection failure and exception handling for offline apps
Supports APIs for cutomizable heartbeat mechanism with middleware server
Supports APIs for tracking foreground events i.e. when an offline app is brought back into the foreground
Application Management
Supports remote disabling and removal of applications
Supports remote application distribution
Supports remote application updates for the web HTML resources
Supports silent direct updates for the web HTML resources
Supports multiple and different application versions management for each mobile operating environment
Supports remote disable of application version by device environment and environment
Supports customization of user messages when app versions are disabled
Supports customization of user notifying messages when app versions are to be disabled in the future
Management Console
Supports monitoring of messaging server status
Supports viewing of messaging server statistics and reports

Reporting and Analysis

SR NO.	Reporting and Analysis Solution
1	The tool should have the ability to use In-Memory Analytics to enable users to conduct fast, thorough exploration and analysis on all data across different data sources
2	The tool should be able to analyze big data and generate visualizations on the fly, without any performance degradation
3	The tool should enable different types of users to perform Analysis on data across the Enterprise without the need to Subset / sample / create multiple views of data by use of in-memory technology
4	The offering should have integrated modules for in-memory analytics comprising data preparation, exploration, visualization and administration
5	The tool should provide Self-Service platform without the need to build a semantic metadata layer for End users, thus reducing dependency on IT
6	The tool should provide Scalability and High Performance leveraging cost-effective

	architecture
7	The tool should have the ability to be configured on commodity hardware which gives the scalability and brings down upfront capital investments for an organization
8	The tool should have been designed from the ground up for integration with Hadoop for performance optimization and scalability.
9	The tool should provide a user friendly, web based , drag and drop interface for data preparation for data tables available in-memory
10	The tool should visually prepare data for analysis, including joining tables, defining custom calculated columns and creating custom expressions for data tables available in-memory
11	The tool should allow data to be accessed from any industry standard data source using native connectors and load the same in to memory
12	The tool should provide the capability to search for data tables available in-memory
13	The tool should provide the capability to upload data from a spreadsheet in to memory for analysis
14	The tool should provide self service analytics on data in-memory without the need to create a semantic metadata layer prior to exploration, thus reducing dependency for end users
15	The tool should allow data load jobs to be scheduled to automate the process of loading data into memory
16	The tool should be compatible with both Windows and Linux operating systems
	The tool should provide the following capabilities for analytics using in-memory technology:
17	The tool should have the capability to explore and seek correlations on data sets using in-memory server sources for any size data analysis.
18	The tool should provide analytical capabilities such as Correlations , Regression, Text Analytics/Word Cloud using predefined ontologies, Network Plot, Decision Trees, Scenario Analysis, Statistical Analysis
19	The tool should provide Text Analytics capabilities and lets you represent it over Word Cloud using predefined ontologies
20	The tool should provide capabilities to create Network Plot which can be plotted over a GeoMap
21	The tool should provide the capability to build interactive Decision Trees
22	The tool should provide capabilities to forecast on the fly with forecasting confidence intervals to further enhance data exploration and analysis.
23	The tool should automatically selects the most appropriate forecasting algorithm for the selected data.
24	The tool should provide enhanced forecasting capabilities with Scenario Analysis allowing users to see impact of variable values on the forecasted trend
25	The tool should provide a clear explanation of Analytical results by providing “What does it mean” capabilities
	The tool should provide Scalability and High Performance leveraging cost-effective architecture
26	Built on top of commodity hardware which gives the scalability and brings down upfront capital investments for an organization
27	Ability to scale on commodity hardware architecture with increasing needs of managing Big

	Data
28	Use large amount of Distributed Memory as if it was a Single Platform enabling superfast analytic operations on Data
	The tool should provide the following capabilities for analyzing / exploring data and creating reports using in-memory technology:
29	The tool should provide Auto charting. Based on data items selected for analysis, the tool should automatically choose best visualization suited for representation
30	The tool should provide Geographical map views (Chloropeths, custom conditional highlighting) to provide a quick understanding of geospatial data.
31	The tool should allow users to change queries by selecting items to be displayed from a sidebar or dynamically filtering and grouping.
32	The tool should provide viewable descriptive statistics, such as min, max and mean, enabling users to gain an overall sense of a particular measure.
33	The tool should provide the capability to link to an external url from a visual object with relevent context
34	The tool should allow 'On-the-fly' hierarchy creation for adding drill-down capabilities to visualizations and reports.
35	The tool should provide capabilities to Slice and dice multidimensional data by applying filters on any level of a hierarchy.
36	The tool should provide capabilities to Drill up and down through hierarchies, or expand and collapse entire levels.
37	The tool should provide a data acquisition wizard for previewing, filtering or sampling data prior to creating visualizations or reports.
38	The tool should provide selection and brushing modes for discovering relationships while exploring data
39	The tool should provide users the capability to save and share their analysis as exploration, report, or PDF
40	The tool should provide the capability to export data to Excel and CSV/TSV document formats
41	The tool should be capable of read and write of comments on reports to aid in collaboration
42	The tool is capable of emailing a report link with comments to others.
43	The tool should allow users to Capture screenshots and share comments with others.
44	The tool should provide progressive filters. This refers to cascading relation between filter controls in the report body with bi-directional filter support i.e., each linked filter control acts as a source as well as target for other prompts
45	The tool should provide collaboration support with Annotation on Tablet
46	The tool should allow users to Receive alerts to updated reports on mobile devices.
47	The tool should provide a thumbnail view of recent and favorite items to select and open.
48	The tool should provide precision layout capabilities provide flexibility in report layout and design
49	The tool should provide filtering and selection capabilities with easy-to-integrate action elements such as radio buttons, drop-down selections, check boxes, sliders, etc

50	The tool should provide Percentage of Records as part of Filtering and Result Data set giving a purview of the amount of data being Analyzed
51	Capability to calculate new data items on the fly from existing data items using expressions
54	The tool should allow the analysis / explorations / reports based on in-memory data to be pushed for offline viewing to mobile devices
55	The tool should have the ability for Interactive report viewing for information consumers using iPad and Android devices using a native application most popular gestures and capabilities, including zoom, swipe, etc., to optimize ease of use and user engagement.
56	The tool should allow users to securely view reports on mobile devices while online or offline.
	The tool should have the capability to monitor the In-memory server environment including:
57	Resource utilization including CPU, I/O and Memory, User Sessions, Mobile Device logging History
58	The tool should provide support for Mobile Device Management (MDM) integrating with 3rd party technologies.
59	The tool should provide ability to Refresh reports from the device
60	The tool should provide server side logging for user actions – reports downloaded
	The tool should have the capability to manage the In-memory server environment including:
61	Start/stop in-memory server
62	Load/unload tables to/from memory and local data providers
63	Reuse existing queries by Scheduling of the jobs to run data preparation queries in off-peak times
	The tool should provide the following capabilities pertaining to security of the environment:
64	Table and row level security for the data tables loaded in memory
65	Mobile device blacklisting through the web based security and administration interface
66	Mobile device whitelisting through the web based security and administration interface

Annexure 13: Guidelines for preparation of Technical Proposal:

Technical Proposal should comprise of the following:

A printed covering letter, on the bidding organization's letterhead with all required information and authorized representative's initials shall be submitted along with the proposal.

The technical proposal should contain a detailed description of how the bidder will provide the required services outlined in this RFP. It should articulate in detail, as to how the bidder's Technical Solution meets the requirements specified in the RFP. The technical proposal must not contain any pricing information. In submitting additional information, please mark it as supplemental to the required response.

Proposals must be direct, concise, and complete. All information not directly relevant to this RFP should be omitted. Department will evaluate bidder's proposal based upon its clarity and the directness of its response to the requirements of the project as outlined in this RFP.

The bidder is expected to provide un-priced bill of materials for the proposed solution as part of technical proposal. The Bill of materials/deliverables as given in the technical solution should be in consonance with the financial proposal. Any deviations in the final deliverables between technical and financial proposals shall make the proposal as being unresponsive and will lead to disqualification of the proposal. SHSB reserves the right to take appropriate action in this regard.

Bidders are required to provide in their proposals, details and sizing estimates of hardware required to be procured. The hardware and network equipments should be planned keeping in mind the application and data requirements for a period of at least 3 years. The hardware and networking equipment face technological obsolescence and thus proper planning for procurement and management is very critical.

The bidder must address the following in their project implementation strategy:

- Approach and Methodology of design, development and management of the Application software. The plan should adhere to the software development life cycle (SDLC)
- Project Management tools proposed to be used for project.
- A detailed Project schedule with detailed work breakdown structure
- Bidder's plan to address the key challenges of the project.

The technical proposal should address the following at the minimum:

The proposal should have information specific to the HMS Project only.

It should describe how the functional requirements will be translated into technical implementations, that is, it should map with the Functional Requirements Specifications.

Provide an infrastructure growth plan, including mechanisms for coping with a mismatch of traffic demand and network capacity, both at the time of launch and thereafter.

It should propose how availability, performance rates for the system will be measured and maintained.

Project Management Plan including
- Team deployment to cater to the daily growing public emergencies.
- Implementation Methodology and Plan to include:
  - Key implementation objectives, key deliverables and an implementation schedule for the same
  - Roll-out Plan at the specified locations including PERT chart of activities proposed.
  - Indication of Time Frame
  - Acceptance Testing Plan
  - Data Backup plan
  - Escalation Process during implementation

- Quality and Security Assurance Plan
- Training Plan
- Hand holding, Operations and Maintenance Plan
- Bill of Materials (without price) location wise to include all Hardware, Software
- Detailed specifications including make, model and version of Hardware and Networking equipment
- Licensing details of software with details of maintenance arrangements with OEM
- Manufacturer Authorization letters to be attached of all the components of the Bid
- The Service Provider shall be responsible for providing the Exit Management Plan for the project to SHSB at the time of submission of bids
- Post Implementation Plan
  - ✓ Manpower Deployment to support operations and maintenance of Services and IT infrastructure
  - ✓ Location, Manpower Structure and Services offered from Help desk
  - ✓ Method of calculating uptime of IT infrastructure and reporting format
  - ✓ Maintenance arrangements with OEM for all supplies arranged through them
  - ✓ Exit Management Plan

Technical proposals should not be more than 50 pages (using Georgia font ; size :11) printed back to back.

- CVs of the key resources per location along with one PD to be submitted separately as per Annexure 6.

Data Sheet Mapping:

It should be submitted as separate document with all the datasheets. Without this the Bids will be summarily rejected.

Bidders should also provide mapping of the datasheets in the following ways:

Name of the Product				
Model	Specification as per RFP	Specification as per BOQ	Reference in Data sheet as	Remark if any

बिहार सरकार			page no., etc	

Functional Requirement Specification mapping:

Sl. No	Functional Requirement Specification	Response S: Standard W: Work around C: Customization T: Third Party N: Not Possible	Remark

Annexure- 14: Financial Bid Format

Financial Format
Summary of Cost Tables

S.No	Items	Total Price (INR) inclusive of all Taxes	Total Price (In words)
1.	Hardware Cost		
2.	Application Cost		
3.	Training Cost		
4.	Site Preparation Cost		
5.	Operation cost for 3 (three) years including FMS		
	Grand Total (INR)		

Break up of Hardware at SHSB:

Sl	Description	A/U	Qty	Rate	Tax if any	Total
1	Blade Chassis	No	1			
2	Blades	No	5			
a	Application Server (Live)	No	1			
b	Application Server (Testing)	No	1			
c	AD/LDAP Server	No	1			
d	Database Server	No	1			
e	NMS Server	No	1			
3	Link Load Balancer	No	1			
4	Application Load Balancer	No	1			
5	Web Security & Proxy Appliance	No	1			
a	Log & Management Server	No	1			
b	Web Security & Proxy Application	No	1000			
6	Data Security Appliance	No	1			
a	Log & Management Server	No	1			
b	DLP Application	No	1000			
7	Firewall	No	1			
8	Core Router	No	1			
9	Central Switch	No	2			
10	SAN Storage	No	1			
11	SAN Switch	No	1			
12	Tape Library	No	1			
13	NMS Application	No	1			
14	42U RACK	No	2			

15	60 KVA Diesel Genset	No	1			
16	UPS (20 KVA x 2)	No	2			
17	Cabling & Accessories	Lot	LS			

Description	**A/U**	**Qty**	Rate	**Tax if Any**	**Total**
Router	Nos.	13			
Central Switch L3 (Rack Mountable)	Nos	13			
Layer 2 Edge Switches (24-Port) PoE	Nos	52			
Laptops	Nos	70			
Desktops	Nos	400			
Multi-Function Printer	Nos	52			
UTP Cat 6 Cable Box (305 Mtrs)	Nos	As per requirement			
OFC Cable (6 Core - Armoured)	Mtrs	As per requirement			
Info-Outlets with RJ-45 Jacks Cat-6 (Dual)	Nos.	1300			
24-Port Jack Panel Loaded for Data	Nos.	65			
24-Port Jack Panel Loaded for Voice	Nos.	65			
1Mtr Patch Cords	Nos.	As per requirement			
2 Mtrs Patch Cords	Nos.	As per requirement			
LIU Loaded 6-Port	Nos.	As per requirement			
OFC Patch Cords 3 Mts	Nos.	As per requirement			
UPS 20 KVA	Nos.	13			
60 KVA Diesel Gen-set	Nos	13			

Summary of Operational Expenditure: OPEX

Sl.No.	Description	Rate(Rupees)
1.	Operations Cost of Manpower towards Salaries, Transportation etc	
2.	Site rental if any	
3.	Miscellaneous viz- Electrical bills, Telephone bills, Stationary, Housekeeping etc	
4.	Band-Width charges	
	Total (INR)	

Training Cost

Sl.No.	Description	Rate(Rupees)
1.	Training of Doctors and other relevant staffs at IGIMS & 6 Medical colleges	
2.	Training of Doctors and other relevant staffs at 6 district Hospitals	
3.	Hands on Training at 13 locations	
4.	Total (INR)	

Site Preparation Cost

Sl.No.	Description	Rate(Rupees)
1.	Site Preparation Cost at IGIMS and 6 Medical College	
2.	Site Preparation Cost at 6 District Hospital	
3.	Total (INR)	

Note:

1. Contract value is the sum total of capital expenditure and operational expenditure quoted by bidder
2. All unit rates indicated in the schedules shall be inclusive of (not limited to supply), installation, duties, transport, packing and transit insurance charges etc. Taxes should be indicated under the relevant column in the schedules.
3. Department reserves it right to alter the scope (increase quantity / remove certain items).
4. The basic cost is all-inclusive of setting up costs of HMS Project like salary & allowances, recruitment & training, staff insurance & others, telephone, Mobile, internet etc., housekeeping, AMC of hardware & software, up gradation of software, equipment, postage & courier, printing and stationary and all other miscellaneous expenses inclusive of all taxes, duties, fees etc.
5. All other tasks pertinent to the contract even though may not have been mentioned in the bid document are assumed to have been included in the work
6. Deduction of taxes at source will be made as per applicable laws from the payments to be made to the vendor.

Place : Bidder's signature
Date : and seal

Annexure 15: Unpriced BOQ:

SHSB

Sl	Description	A/U	Qty	Make	Model
1	Blade Chassis	No	1		
2	Blades	No	5		
a	Application Server (Live)	No	1		
b	Application Server (Testing)	No	1		
c	AD/LDAP Server	No	1		
d	Database Server	No	1		
e	NMS Server	No	1		
3	Link Load Balancer	No	1		
4	Application Load Balancer	No	1		
5	Web Security & Proxy Appliance	No	1		
a	Log & Management Server	No	1		
b	Web Security & Proxy Application	No	1000		
6	Data Security Appliance	No	1		
a	Log & Management Server	No	1		
b	DLP Application	No	1000		
7	Firewall	No	1		
8	Core Router	No	1		
9	Central Switch	No	2		
10	SAN Storage	No	1		
11	SAN Switch	No	1		
12	Tape Library	No	1		
13	NMS Application	No	1		
14	42U RACK	No	2		
15	60 KVA Diesel Genset	No	1		
16	UPS (20 KVA x 2)	No	2		
17	Cabling & Accessories	Lot	LS		

13 Locations:

Sl.No	Description	A/U	Qty	Make	Model
1	Router	Nos.	13		
2	Central Switch L3 (Rack Mountable)	Nos	13		
3	Layer 2 Edge Switches (24-Port) PoE	Nos	52		
4	Laptops	Nos	70		
5	Desktops	Nos	400		
6	Multi-Function Printer	Nos	52		
7	UTP Cat 6 Cable Box (305 Mtrs)	Nos	As per requirement		
8	OFC Cable (6 Core - Armoured)	Mtrs	As per requirement		
9	Info-Outlets with RJ-45 Jacks Cat-6 (Dual)	Nos.	1300		
10	24-Port Jack Panel Loaded for Data	Nos.	65		
11	24-Port Jack Panel Loaded for Voice	Nos.	65		
12	1Mtr Patch Cords	Nos.	As per requirement		
13	2 Mtrs Patch Cords	Nos.	As per requirement		
14	LIU Loaded 6-Port	Nos.	As per requirement		
15	OFC Patch Cords 3 Mts	Nos.	As per requirement		
16	UPS 20 KVA	Nos.	13		
17	60 KVA Diesel Gen-set	Nos	13		

It should be part of Technical bid document. Without this the bids will be summarily rejected.

Annexure 16: Name and Address of the locations:

Sl.No.	Hospital Name	Address
1	IGIMS	Patna
2	PMCH	Patna
3	NMCH	Patna
4	SKMCH	Muzaffarpur
5	ANMCH	Gaya
6	DMCH	Darbhanga
7	JLNMCH	Bhagalpur
8	District Hospital	Purnia
9	District Hospital	Nalanda
10	District Hospital	Bhojpur
11	District Hospital	Khagaria
12	District Hospital	Saharsa
13	District Hospital	Samastipur