DTE GEN OF MEDICAL SERVICES (

Presentation for Hospital Information System RFP





07 April, 2021

GTI Infotel Pvt. Ltd.

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MEDIC

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MEDICAL





GTI's Partners & Ventures:

























About GTI Infotel Pvt . Ltd.

About Us:

- Established in 2008
- A CMM L5 & ISO 9001:2015 Co.
- HQ in Noida/Delhi
- Subsidiary GTI Infotel, Inc. in the US
- 200 employees worldwide

Recognition & Awards:

- Paper Presentations: Vista Community Meet, Fairfax, VA & Sacramento, CA, HIMSS, AIIMS, IIHMR & others
- Awards: OSEHRA, eIndia 2010, eIndia 2011, eHealth Expo 2011, mBillionth South Asia 2010 & IETE Gadadhar Memorial

Technology Expertise:

- DB: SQL, PostgreSQL, GT.M, Cache & Oracle
- **Tech:** Java, JavaScript, PHP, C#, C++, .Net
- **OS:** Windows & Linux
- Mobile: Android & iOS
- AI: IBM Watson





GTI's Telemedicine Solution caters to:

- Population of over 220,000,000 in the state of UP
- Implemented for NHM (National Health Mission)
- Project includes
 - Teleconsultancy: Medical Call Center
 - Electronic Medical Record (EMR)
 - Central Patient Portal (CPP)









Products: GTI HIMS: Engineered for Hospitals, By Doctors

The GTI Hospital Information & Management System (HIMS) is a flexible, affordable and intuitive software solution developed collaboratively with healthcare professionals including physicians, nurses and pharmacists and designed to empower them to make better decision and enhance patient care and safety, while minimizing costs, resource expenditure and loss of revenue.

GTI HIMS is an integrated and scalable webnative platform that optimizes clinical, financial and operational outcomes. Its modular capability supports simple integration with additional clinical and ancillary solutions to support the continuum of care. Developed using healthcare industry standards. GTI HIMS also allow seamless integration with third-party IT solutions.

It's EHR is powered by one of the world's best <u>VistA EHR</u>, fully supported by GTI & Medsphere.

Management efficiency for the Directors

- Maximize revenue & ROI
- Minimize disruptions & exposure
- Improve staff efficiency & prodcutivity
- Lower administravie cost
- Lower Lab/Radiology rework
- Constants updates on Open Source



Efficiency for Technologists

- Prioritize based on data
- Application Integration & expansion
- Quality Certifications
- Standardized templating
- Information Security
- Vendor Neutral



Quality for the Clinicians On-demand access to patient data

- Improve outcome
- Error Reduction
- Clinical Research
- ICD, HL-7, HIPAA & DICOM Compliant
- Evidence based Clinical Practice

Care for the Patient

- Improved Patient Safety
- Improved quality of care
- Information availability
- Assured of professional treatment
- Transparency for Patients

GTIVistA EHR: HIMS incorporates Open Source VistA EHR







Most Recognized & awarded EHR worldwide

GTI has expertise in development, customization, and deployment of VistA EMR across several hospitals. It has been instrumental in developing and giving back to the Open Source VistA community.

"The VistA system will take about \$4 billion to develop", according to Roger Baker, the Assistant Secretary for IT at the VA. This quote does not include implementation costs.

Implementation around the world

Besides being implemented at hundreds of Government & non-Government Hospitals in the USA, VistA has been implemented in several hospitals at WHO, Mexico, Samoa, Finland, Germany, Jordan, Kenya, Nigeria, Egypt, Malaysia, Brazil, Pakistan, Denmark, etc. In India it has been implemented at JPNATC, AIIMS, Max Hospital, Rajiv Gandhi Cancer Institute & others.

survey overview: 30 EHR systems ranked on 17 dimensions

		Abbreviated survey statements																
	The rankings in this table are based on the percentage of respondents for each system who agree or strongly agree with the survey statements represented in brief form across the top. For each statement, rankings run from 1 (best) to 30 (worst). For each state- ment, the five best rankings are color coded green and the five worst orange. Systems are listed in order of the sum of their rankings.	0rdering lab tests	Ordering imaging studies	ordering referrals	ools for health maintenance	ools for disease management	atient engagement tools	bocum enting care	inding and reviewing information	-prescribing	-messaging and tasking within the office	Meaningful use"	raining and support	ligher quality than with paper charts	ustomization at the user level	asy and intuitive to use	lighly satisfied	Vould buy again
		~	~	2	—	-	-	-	2			•	-		<u> </u>	-	-	>
	MEDENT (N = 33)	3	2	3	0	5	4	/	3	1	2	1	4	6	1	/	2	3
	Amazing Charts (N = 99)	12	10	8	3	6	9	2	1	4	3	3	3	4	2	1	1	1
	e-MDs (N = 120)	7	9	9	4	2	1	5	5	6	7	4	7	7	8	5	6	5
_	Praxis (N = 26)	15	14	15	1	3	8	3	2	23	6	2	1	2	6	6	3	2
5	EpicCare Ambulatory (N = 392)	5	5	6	9	8	2	10	10	7	9	7	5	10	4	11	10	7
6	VistA CPRS (VA) (N = 15)	1	1	1	2	1	15	6	7	18	25	15	13	1	25	8	4	8
	Point and Click EHR (N = 18)	2	4	2	23	25	11	1	14	12	1	21	9	3	23	2	9	14
	athenaClinicals (N = 28)	6	7	4	24	9	12	13	9	10	18	10	6	13	10	9	8	9
	Allscripts Professional (N = 106)	9	12	12	14	15	7	16	8	2	4	8	12	16	5	14	12	12
	SOAPware (N = 41)	22	22	20	10	11	6	8	6	17	19	5	8	11	3	3	5	-4
	eClinicalWorks (N = 244)	8	8	7	17	18	16	12	13	8	11	6	11	12	7	10	11	11
	Centricity EMR (N = 209)	11	13	13	8	4	14	15	16	11	10	11	21	5	17	16	14	19
	PrimeSuite (N = 20)	14	11	10	13	16	10	9	15	22	13	14	10	19	11	13	16	10
	Practice Partner (N = 123)	20	15	16	11	10	13	11	11	19	14	12	25	14	9	12	15	15
	Practice Fusion ($N = 17$)	29	29	14	26	21	21	4	4	15	23	17	2	9	14	4	7	6







GTI HIMS Modules





PATIENT REGISTRATION MODULES

 Out Patient Department (OPD), IPD & Emergency Registration.

RADIOLOGY INFO. MGMT SYSTEM

Patient Registration and scheduling, Patient List

· Radiology Department workflow management,

Request and document scanning, Result(s) Entry,

Interface with modality via Work list.

Integration of HIMS with CR system.

· Provsion of tagging images with reports for

Provision to develop online teaching library.

Reporting and printout.

Integration with PACS.

viewing with HIMS.

- Online appointment system.
- Queue management system
- Emergency/Admission Registration.
- Registration for Admissions.
- Issue of Attendant Pass.
- Issue of Attendant Pass.

Management.





MEDIC

LABORATORY MODULE

- Laboratory orders registration. Bar coded specimens and traceability to results and patients.
- Templates for normal and abnormal results. Billing integration to payable patients.
- Integration to patient records. Integration of Laboratory Equipments (Analyzers) with LIS.
- Integration of LIS with HIMS, Inventory, Lab Reagents, etc.



BLOOD BANKING MODULE

- Inventory with blood component type, ID numbers, date of collection, date of receiving, source of blood (mother center) expiry date, volume and blood group.
- Bar-coding and trail of all requests pertaining to blood grouping.
- Donor details and results updation. TAT calculation as per NABH norms.
- Information regarding arranged/ cross-matched bags/issue ready bags/ partially used bags. Various reports including KPIs, Transfusion



MATERIALS MGMT & FACILITY MGMT

- Module includes equipment procurement detail: warranty, AMC, installation, maintenance schedi and records, calibration records with due dates. part replacement details, condemnation records Reminders to department and the vendors for Preventive maintenance schedule, calibrations,
- Equipment led-ger including down time/uptime calculations should be included. o Generates breakdown register, history card and
- other records.
- Equipment log is available for machines integration to HIMS system.
- Audit forms for monitoring legal requirements a per NABH standards.



PHARMACY

- Allow entries for drugs dispensed through OPD/IPD pharmacy.
- Report consumption pattern by drug or group, stock position etc.
- System generates instructions for use to patients attending pharmacy counter.
- Module also has provision to enter drugs prescribed but not available in the inventory for assessing needs and prescription practices of the prescribers.
- Drug entry and dispensing of all the drugs. · GTI's manpower also maintain upkeep of the drug/pharmacy inventory,



DIGITIZATION OF MEDI, RECORDS DPMT

- Electronic records of all the patients is maintained. Patient Discharge Details and case sheets are digitally scanned with certain additional parameters.
- Capture primary and secondary diagnosis for all indoor patients as per ICD codes. Retrieve the history of the patient including OPD/Emergency/Admission for the entire duration.
- System is capable of storing x-ray image records retrieved from radiology department as part of



FINANCIAL MGMT MODULE

- Enable budget estimates to be provided by different clinical and support departments under various heads.
- Provide hospitals insights to the planned and unplanned expenditure and expenditure under various heads.
- Provide insight to the assets and provide assets balance.
- History of the records for asset depreciation according to the fiscal period or defined period. · Generate reports such as : Balance pursuing, fixed assets turnover at different levels, place, origin,



LIBRARY

- · Online process of books/journal issuance and reminder SMS.
- books and journals.
- in the library.
- Medical Record Department
- Stores & Purchase Departments
- o Pharmacy



BILLING MODULE

- · HIMS' Billing module is provided for the private ward (Room rent, Diet charges, laboratory tests, drugs and consumables, procedures etc.) and in radiology department for ultrasonography (USG) and CT scan and MRI charges.
- Provides disease based per patient expenditure reports under various head described above under this section.



MIS MODULE Statistical, analytical & MIS reports generation and

printing is done as per contents and format for each report. Live dashboard for various indicators and data sets with traceability to raw data is available fo Patient demographic details and is mapable in mapinfo GIS or equivalent software. Reports under different modules are listed below:

- Laboratory Module



- Deal with Hospital Equipment/Material/Inventory/ Purchase and Supply to different department.
- o Item, Vendor, Area, master details. Supply Order & Challan Detail Entry (with expiry/shelf life and batch no) with Inspection of items.
- Raising Indents from various Area Stores. Issue of Items from the Central Store & Area Stores.
- Generation and printing of Purchase orders/Supply Orders. Gate Pass And Entry Pass. Rate contracts details.

- **STORE & PROCUREMENT**

Material return / recall details.

- reaction report.
- - - Provide audit trails as perNABH standards.





- Real time online access to the books and journals inventory to the hospital staff.
- The module facilitates online procurement of
- Generate unique barcode identifiers for each item





GTI Telemedicine

Fixed Telemedicine Room

- Improved Access: GTI telemedicine has been used to bring healthcare services to patients in distant locations.
- **Cost Efficiencies:** GTI Telemedicine has been shown to reduce the cost of healthcare and increase efficiency through better management of chronic diseases, shared health professional staffing, reduced travel times, and fewer or shorter hospital stays.
- Improved Quality & Education: The quality of healthcare services delivered via GTI telemedicine are as good those given in traditional in-person consultations.
- Physician Outreach: OPD counter manned by Physician are equipped with peripheral equipment and diagnostic tools for live video consultancy & recording
- **Post-op support:** Remote center equipped to handle post-op patients as well
- Specialist Access: Physician & patient can connect with specialist at Hospital at prescribed time



- Desktop computer + GTI Telemed software
- PTZ Pro cam up to 1080p
- Sennheiser Conference Unit
- Selected set of medical peripherals
- Medical Cart with Integrated computer + GTI software
- PTZ Pro cam up to 1080p
- Sennheiser Conference Unit
- Selected set of medical peripherals







Central Patient Portal



The system has the ability to capture at minimum the following data from the CPP:

- Registration details of the patient.
- EMR sheet generated for every consultation including diagnosis, prescriptions Record of consultations carried out that day at every Patient Node.
- Schedule of consultations for the next two days at every Patient Node.
- Utilization of specialists/doctors/ paramedic/ counsellors and other manpower deployed as a part of telemedicine project.
- Record of bio-metric attendance of doctors/ Paramedics/ Counsellors and other manpower deployed as a part of telemedicine project.
- Change of registered mobile number of the patient.
- The system captures details of any complaints registered.
- The system provides view and comment only access of previous medical records of a patient through EMR integrated with the portal to the doctor.



MEDICAL FEATURES

- The system has a provision for the consulting doctors /paramedics/ counsellors to modify clinical details of the patient captured during registration such as chronic conditions, long term medications.
- The system alerts the referral centre regarding the patient through EMR integrated with the portal, SMS and Email.
- Integration with SMS gateway and Email: For information or notification of case to the concerned Public Healthcare Facilities.
- The system generates unique user id and password for all registered patients and forward the same via SMS/E-mail to the patient.
- The patient is able to retrieve information related to medical advice, treatment, diagnosis report, prescription, registered complaints etc. related to the patient.
- The system maintains a databank of addresses and contact numbers of Public Healthcare Centres, government diagnostic centres and medicine dispensaries at government facilities and Patient Node(s) established as a part of Tele-Medicine project.



TECHNICAL FEATURES

- The system enables the patient to download prescriptions and reports in PDF format once they login using his unique id and password.
- All displays are in English and Hindi language.
- The system supports HIPAA standards for electronic transactions.
- The system include extensive error checking of all user input data, including, but not limited to ICD-10 (Check diagnosis against gender, age, other as necessary) & ICD-10 procedure checking against diagnosis.
- The system maintains a master database of doctors, paramedics, counsellors other manpower employed under Telemedicine Project. The database at minimum shall contain name, Aadhaar number, contact number, Age, Date of Birth, Qualification, Designation, years of experience, location.
- The system facilitates generation of MIS dashboard.
- The system provides for various levels of secure access based on defined roles and responsibilities within NHM based on units (Project locations) with attached roles and privileges.





GTI's AI based Oncology Intelligence Platform developed on IBM Watson and a leading Cancer Institute in India

A TOOL TO ASSIST ONCOLOGISTS MAKE PERSONALIZED TREATMENT DECISION

In India as in other developing countries, 80% of patients are from stage III & IV where the success of treatment is very low. Our objective is to reach the patients while in stage I & II thus increasing the success of treatment and life expectancy.

Analyze the patient's medical record

Ability to analyze the meaning and context of structured and unstructured data in clinical notes and reports, easily assimilating key patient information written in plain English that may be critical to selecting a treatment pathway.

Identify potential evidence-based treatment options

By combining attributes from the patient's file with clinical expertise, external research, and data, will identify potential treatment plans for a patient.

• Find and provides supporting evidence from a wide variety of sources

Will rank identified treatment options and provides links to supporting evidence for each option to help oncologists as they consider treatment options for their patient. Will draws from an impressive corpus of information, including

- Existing and old patient data
- 290 medical journals,
- Over 200 textbooks



12 million pages of text





and **remembering** millions of pages of medical literature and practice guidelines.

Reading



Continually "learning" over time from aggregated genomic research and clinical data from all patients.

Matching patients to clinical-trial protocols



Ranking potential treatment options based on the most up-to-date medical evidence.



Offering care advice to help manage a patient's treatment by alerting less-experienced physicians or nonspecialists to aspects of therapy they might not be aware



Medical Tourism in tie up with leading hospitals (niceskymed.com)

Avail the best in-class medical treatment at a reasonable cost away from your home country. We make your travel easy by facilitating each step - Right at the step of deciding to travel abroad to avail any medical service to help you getting a medical visa.

On your arrival here, we are always present by your side to help you guide through your entire stay by first arranging a safe, hygienic, comfortable place of stay and helping you choose the top hospital, best doctor. We also provide you on call transportation service to help you commute to places.

We provide the services for the treatment of the following diseases:







Know More »



Orthopaedic

Know More »



Transplants





Know More >>





Other Medical Services (niceskymed.com)



Ň

Skilled Nursing Facility(SNF)

A skilled nursing facility (SNF) is an inpatient rehabilitation center staffed with trained medical professionals. Nice's SNF caters to Medical Tourism Patients coming to India for treatment.

Read More »



Senior Care @ Home(SC@H)

NICE provides meticulous care to elderly people whose children are living abroad due to the dynamicity of schedules or for better prospects in life and cannot be with their parents to look after their medical needs.

Read More »



Telemedicine

Telemedicine is the distribution of health-related services and information via electronic information and telecommunication technologies.

Read More »















PRODUCTION MGMT

Improve production scheduling with visibility into products, parts, components and ubassemblies availability and inventory levels.



Enable customer to verify the authenticity of the product. This module has is available on mobile and across all platforms.



INVENTORY MGMT

Easily identify finished goods, components, and raw materials associated with a recall by lot number, serial number, and other identifiers as they move up and down the supply chain.



TRANSIT MGMT

Enables transit visibility - stock status across the storage locations and intransit stock status visibility.



DISTRIBUTION MGMT

Enables automation of inward and outward stock process at the distributor end. Handling sales returns as well as financial modules.



LOYALTY PROGRAM

Andriod/iOS based system featuring analytics, Geo mapping, authorization & much more.



ANTICOUNTERFEIT

Feedback on the unauthenti- cated codes. The UID that is not available in the databas will create a RED flag when scanned.



Reports include Production planned vs actual metrics, stock ageing report, In transit report, channel dispatch report, FIFO viloation report, user activity report & much more. **Client/Partners/Press release/Awards List (Excellent execution certificates from all clients)**

minute. The initiat

complaints about le to store information. hours in emergency. Instead of issuing hance if the waiting period ten cards, the doctors.

mented it would det started typing details on

from wasting time, let. The patient is given a

Nearly 400 people vis

OPDs of the hospital or

given day, Of them, abou

turn up without their

cards, hindering the treat

process as the doctor h clue about the case. "Earlier, we would not much information with

Confidenti

reduce the wait peri out of the information



hindustantimes

Live stats on Aiims trauma centre site

TRANSP HINDUSTAN TIMES, NEW DELHI TUESDAY, APRIL 02, 2013 Rhythma Kaul

rhythma.kaul@hindustantii New DeLH: Now yc exactly how long it get an X-ray CT-see get an X-ray, CT-sca and suturing do tablets at AIIMS centre The endless wait past as the hospita

online with informat TRAUMA CENTRE Instead of issuing handwritten OPD cards, info will be stored ing period for the v cedures, number in tablets and printouts issued. Move will help hospitals restore nationt history seen, admissions and 04 | metro | hindustantimes made in a day, etc, t automatically upd Rhythma Kaul

hythma.kaul@hindustantimes.com fixing accountabilit NEW DELHI: Troubled wit taining transparent for any hospital in t department (OPD) cards SECOND OF THREE PARTS Dr Deepak Agra contain vital information HEALTH AT HAND ate professor, neuros the nature of injuries, li Life-saving tips a phone call away is also in-charge of I'l treatment and overall pro the hospital, was the lof patients, the AIIMS Tr this idea. His inspir: Centre has begun using ta

> 24X7 The trauma unit at AIIMS is to get a medical call centre, new wards and more beds in time for Games 2010

"People had start way, even if the patient ly complaining abou the OPD card, the hospit, ing how long they w the information that is s to get a test done. In its database.

EW WARDS, MORE BED



men package, the facilities will be open to public



MEDICAL



HINDUSTAN TIMES, NEW DELHI THURSDAY, MARCH 25, 2010





GTI Infotel





Ingenious Leadership



• Meddiff shows the way...



Advanced RIS for Mobiles (ICS + Android)

Ingenious Leadership - 2010



• Educating & Promoting VNA ...

"Vendor Neutral Archives are critical for healthcare providers organizing unstructured data to use at the point of care".

VNA helps in centralized storage and the universalization of the image format

CONCEPT INTRODUCED IN RSNA 2009

DEPLOYED FIRST VNA IN INDIA IN 2010 (6TH IN THE WORLD)



•••• Our Solutions Portfolio



 \sim Technology is best when it brings people together – InstaRAD product offerings from Meddiff Technologies



InstaRISPACS, a customizable WEB based RIS/PACS solution, is an archiving database server that stores high quality DICOM images and reports related to Radiology, Cardiology, Nuclear Medicine, Echo-Cardiology, Orthopedics, etc. It is a one-point source of information that is accessed by physicians over a local area network (LAN) and other specialists over the internet. InstaRISPACS is designed for single hospitals or medical centers.



InstaCath is a customizable Cardiology Imaging Solution designed for hospital networks that archives, manages, transmits and displays cardiology images. Cardiology images are heavier than radiology images and require higher bandwidths.

It is designed to handle Cath-Lab, 2DEcho, 64slice CT cardiac studies & Cardiac Nuclear Medicine





At this time of fight against Corona Virus, people are our biggest resource

Our Healthcare IT staff deployed in the front lines across 8 Hospitals are helping the Patients as well as the Doctors 24x7

We're truly grateful & inspired by the selfless healthcare members of GTI's family and other healthcare workers around the world who are on the front lines working tirelessly to care for people in need.





Manpower/HR Management: Multiple Teams for the DGMS, Project

MEDICAL

STEERING TEAM

The Steering Team is responsible for ensuring that the project follows DGMS, ARMY 's technical, policy and quality standards and procedures. The Steering Team has the following roles and responsibilities on a project:

- Ensure project alignment with overall Department objectives
- Review and sign off on project charter
- Strategic planning and executive decision point resolution
- Cross Agency/Department coordination and stakeholder communication
- Monitor project risks and next steps
- Maintain knowledge of project status to apply to executive decisions across business areas
- Develop, maintain and carryout the business case (concept paper) for the initiative
- Provide advice and guidance to the other project governance teams
- Support the Project Management team with resource acquisition
- Establish overall project requirements and priorities
- Communicate DGMS needs, define the business problem, identify expected benefits, and manage expectations
- Outreach to the DGMS community and stakeholders
- Articulate a project vision (What it is and what it isn't)



GTI InFotel

PROJECT TEAM

The Project Management Team, drives the critical decisions necessary to release the right product, according to the Steering Team's direction, at the right time and within the project's established resource constraints. The Project Team has the following project roles and responsibilities:

- Owns and drives the project schedule, business requirements, application functionality, and budget
- Drives core project level decisions requiring integration across the other project governance teams
- Submits final deliverables to customer and obtains acceptance sign-off
- Manages the project scope and specifications to meet the Steering Team's requirements
- Identifies tradeoffs between cost, schedule, and deliverable product
- Integrates detailed work plans into one overall project plan
- Develops and executes project quality and configuration mgmt plan
- Manages all subordinate teams' resources and roles
- Coordinates resources, facilities, and team communication
- Tracks project status against project plans
- Communicates with the Steering Team and the other project governance teams
- Escalates unresolved issues to the Steering Team

DEVELOPMENT TEAM

The Development Team designs and implements a quality product or service that meets the specification and DGMS expectations. The Development Team has the following roles and responsibilities on a project:

- Design and build product to requirements specification
- Validate potential solutions through input to design, technology evaluations and proof-of-concept prototypes
- Estimate time and effort to complete the design and product build
- Develop, configure and customize the product
- Serve as technical consultants
- Support the product installation and deployment

At a minimum, the Development Team is accountable for the following project deliverables:

- Detailed System Design (DSD)
- Production code
- Interface and exchange capabilities, utilities and tool sets
- Converted data from the system that is being replaced, where required Specific responsibilities and activities of the Development Team





... Management Teams

User Training Team

The User Education/Training Team will enables DGMS to maximize the product or service through performance solutions such as job aides, FAQs, online help and education systems. The User Education Team has the following roles and responsibilities on a project:

- Act as the advocate for the User of the product
- Participate in designing the features to ensure that the product is usable and useful
- Participate in defining user requirements
- Design and develop user support materials
- Participate in product prototyping
- Perform usability testing
- Ensure that changes in the product are reflected in the support materials

At a minimum, the User Training Team is accountable for the following project deliverables:

- Documented process impacts and change requirements
- Employee transition plan
- Training plan and materials including outreach presentations, online help, user manuals, training content, FAQs and job aides
- Updates to policy and procedures
- Training delivery

LOGISTICS TEAM

The Logistics Team ensures a product or service rolls out, installs and implements smoothly during the Operations Support Phase. The Logistics Team has the following roles and responsibilities on a project:

- Serves as advocate for operations, product support, help desk, and product delivery channels
- Participates in design phase
- Supports the product through beta testing
- Ensures that product will be deployable and maintainable
- Ensures product installation sites have the appropriate IT infrastructure
- Provides education to the operations and help desk personnel.

At a minimum, the Logistics Team is accountable for the following project deliverables:

- Project configuration management plan
- Security plan
- Disaster recovery plan
- Capacity plan
- Acquisition and configuration of technical environments for development, testing, training and production
- Installation plan
- Maintenance and on-ongoing operation strategy



MEDICAL



The aim of the project is to IT enable various healthcare processes involved in patient care at the army medical complex at Lucknow, by the development and implementation of a Hospital Information System (HIS). The HIS has to comply with the latest National and International healthcare standards (both IT and Clinical), ensuring fast and reliable information flow. The Application Software for the HIS is also required to be capable of generating and monitoring all relevant Health and Hospital performance indicators. This is a pilot project with implications for panarmy deployment. Though the title of the project in generic English states 'Development', the scope of the project as per definitions in ISO/IEC 12207 : 2008 - *Systems and Software Engineering, Software Life Cycle Processes* includes, Development, Operation and Objectives of the current pilot project of a Healthcare Information System (HIS) at Medical Complex, Lucknow are as follows:

(a) State-of-the-Art and compliance with Indian Standards on EHR.

MEDIC

(b) Patient-Centric.

(c) EMRAM Stage 7.

(d) Responsive GUI.

(e) Data Storage Architecture.

(f) Finalisation of Model and Enterprise Architecture.

(g) IPR, Future Implementation and Roll-out Methodology.





... Functional Scope: Architecture















GTI HIMS at DHS, Govt. of NCT of Delhi

सत्यमेव जयते

Government of National Capital Territory of Delhi

Directorate of Health Services (DHS) of Government NCT of Delhi provides health care facilities at primary and secondary level to the citizens of Delhi through various types of health outlets.

GTI's Solution caters to:

- 12 Hospitals under DHS with over 3500 beds
- Over 1,00,00,000 (one crore) patients/year for over four (4) years: one of the largest such solution deployed in the country
- HIMS solution deployed across hospital, Mohalla Clinics and Poly clinics
- Turnkey solution including HIMS software, hardware, network, manpower, service and O&M
- Govt. of Delhi Health Analytics



DHS Implementation: Catering to 10 Million Patients per year



- Turnkey solution including
 - HIMS software,
 - hardware,
 - network,
 - manpower and
 - 0&M
- Govt. of Delhi Health Analytics being provided by GTI

			# OF PATI		TIENTS AS OF 2015			
#	HOSPITAL NAME	# of Beds	OPD NEW REGNS.	SPECIAL CLINIC REGNS	CASUALTY REGNS.	NO OF IPD REGNS		
1	Guru Teg Bahadur Hospital	1,500	1,361,687	162,176	237,737	78,065		
2	Babu Jagjiwan Ram Hospital	100	503,340	28,612	137,465	12,250		
3	Baba Saheb Ambedkar Hospital	500	1,009,198		128,171	47,809		
4	Deep Chand Bandhu Hospital	100						
5	Dr. Headgeware Hospital	200	189,707		423,921	18,060		
6	Dr. NC Joshi Hospital	30	167,000		14			
7	Jag Parvesh Chandra Hospital	300	629,435		75,224	11,422		
8	Kanti Nagar Mother & Child	100	49,568			256		
9	Lal Bahadur Shastri Hospital	100	657,121	12,774	190,438	18,723		
10	Maharishi Valmiki Hospital	150	322,831	6,011	92,142	9,179		
11	Sanjay Gandhi Hospital	376	697,772	10,123	112,955	27,228		
12	SRHC Hospital	200	475,691		23,765	8,031		
	TOTAL	3,656	6,063,350	219,696	1,421,832	231,023		

NHM, UP Tele Consultancy across the state catering to 220 million

लन निरा

SIO V





HEALT

UP Tele Consultancy Contract	 Project awarded by the Government of UP & implanted across the state of UP catering to a population of 220
Under NHM	million. The services has been envisaged and designed by NHM.
Dial 104 Call Center	 GTI has developed and operates the Medical Call Centres through toll free health helpline which provides medical advice and health related information to users who connect by dialling 104 in the state of UP.
Medical Call Center with Doctors,	 The Medical Call Centres, having sitting capacity of a minimum of 50 call operators including Paramedics,
Consular and ANM/GNM	Counsellors, AU Doctors & MBBS Doctors for providing the Services. It is being extended to 200 seats.



UP Tele Consultancy: Health Services Provided

HEALTH SERVICES



MEDICAL ADVICE

- Information on disease conditions, health facilities available in the particular regions, advice on local epidemics and prevention etc. and suggestive medication.
- Basic health advice that does not require any advanced medical suggestion through paramedics.
- Medical doctors (MBBS)/AU doctors provide advice on medical conditions. All such advices shall be issued on e-prescription digitally signed by the doctor issuing the prescription. The e-prescription shall be shared with patients and with nearest Public Healthcare



COUNSELLING & INFORMATION

- Family Planning advice to eligible couple as per defined protocols.
- Rehabilitation counselling (Alcohol, Drugs, Smoking);
- Psychological counselling (Anxiety, Depression, suicidal tendencies, chronic diseases like cancer etc.):
- Stigmatized diseases (HIV, AIDS, Leprosy).
- Non-communicable diseases -Prevalent lifestyle diseases conditions, its symptoms, precaution and prevention.
- Nutrition and hygiene related Information.
- · Women and child care information.



REFERRALS & INFORMATION DIRECTORY

- Health care services / facilities.
- Hospitals, Pharmacies and Diagnostic centers;
- Rehabilitation centers.
- Referrals to Public Healthcare Facilities.



MEDICAL EMERGENCIES

Assist Authority in taking faster action during medical emergencies such as disaster/epidemic breakout by sharing health information etc.



UP Tele Consultancy: Technology Developed & Deployed

TECHNOLOGY DEVELOPED

& DEPLOYED



ELECTRONIC MEDICAL RECORD (EMR)

GTI has developed an EMR especially for Tele-Consultation. The EMR is integrated with Central Patient Portal. The EMR registers a patient, record medical history and any other detail as be required. The EMR is developed in compliance with Electronic Health Record guidelines issued by Ministry of Health and Family Welfare, Government of India. It has the following major functionalities:

 Generate & Maintain Aadhaar number based Unique Health Identifier (UHID) and in the absence of Aadhaar, mobile number or Ration card number shall be used.
 Progress note digitally signed at the end of every consultation by the

लन्तु निरा



CENTRAL PATIENT PORTAL

GTI has also developed a Central Patient Portal that shall store electronic medical records ("EMR") of all patients, maintain a record of consultations carried out as a part of telemedicine project, maintain a record of availability and utilisation of manpower deployed as a part of telemedicine project and execute other operations. It has the following major functionalities:

- Registration details of the patient.
- Schedule of consultations for the next two days at every Patient Node.
- Utilization of specialists/doctors/ paramedic/ counsellors and other manpower deployed as a part of telemedicine project.



AI BASED ALGORITHMS & CDSS

GTI is developing an AI based Algorithm & Clinical Decision Support System (CDSS) for a Tele-Medicine Medical Consultant to improve their online treatment and reduce the time spent with each patient. It will have the following functionalities:

- Standardized and validated algorithms
- Disease summaries that cover major prevalent diseases in India, for use by the staff while providing the Services.
- Understand the population, geographical, disease and weather related parameter for each patient call.
- Understand the patient demographic & Symptom.



MEDICAL CALL CENTER

The Medical Cell center solution deployed by GTI provides the interface to the users and helpdesk operators for logging, tacking, resolution & closing of calls. The services and information will be provided in Hindi or English language. An administrator to receive call. transfer to appropriate agent/doctor, record call, enter patient information, such as name, age, as per authority's demand etc. That information is then stored, and shared with other users as appropriate. It shall also alert the medical staff when a patient that requires different treatment is admitted, such as some with an infectious disease. The Solution consists of:





Other Major Healthcare implementations (all with execution certificates)



INDRAPRASTHA CANCER SOCIETY & RESEARCH CENTRE



Medical Call Center & EHR

- Implemented India's first medical call center catering to Calls from several stake holders including
 - Patients
 - Physicians
 - Roster Management
 - Equipment Management
 - 0&M
 - Appointments
- GTI VistA EHR Implementation
 - Several EMR modules Implemented
 - Machine Integrations
 - eMLC
 - CPRS
 - Vitals
 - Intake/Output
 - Manpower to handle the Clinical Operations

VistA EHR based BMS

- North India's leading 600 bed Cancer Hospital
- GUI based Bed Management System deployed across Clinicians, Registration, Finance, Accounts integrated with VistA EHR
- GUI displayed on Video Wall for information to Staff at various locations .
- View availability of the beds graphically incorporating all the blocks & wards where the Administrator is be able to view the complete hospital including all the Blocks & Wards.
- Mirth Integration Engine used
- Integration with existing HIS systems

HIMS

- Chacha Nehru Bal Chikatsalaya
- Largest Children Hospital in NCT, Delhi with 215 beds
- Complete HIMS implementation including
 - Registration: ADT (Admission, Discharge & Transfer)
 - Radiology
 - Lab
 - Pharmacy
 - Inventory
 - Cloud based
 - Portal Access
 - Manpower to handle the Clinical Operations



- BITS Pilani: HIMS implementation and support
- VIMHANS Hospital: HIMS implementation and support
- State of Uttrakhand: HIMS implementation and support
- Cantonment Board General Hospital: HIS software implementation and support
- & many more ...







MEDICAL







Similar Works by Meddiff

- TNMSC- Connected 90+ hospitals (Medical colleges, District hospitals & Talk hospitals) with Enterprise InstaRISPACS solution and the same is deployed in Microsoft Cloud.
- KMC Manipal- Deployed InstaRISPACS around 6 years back on VNA architecture and migrated the data from earlier PACS.
- Columbia Asia Hospitals- Deployed 13 hospitals in India with Enterprise InstaRISPACS solution.
- Aster Connected 4 hospitals in Kerala and 3 hospitals in Karnataka with the Enterprise InstaRISPACS solution.
- Fortis- Deployed 13 standalone PACS installation and in the process of upgrading the same to centralized architecture.
- & Many more ...









•••• Mediff Government Projects



• Satisfaction is a rating – Loyalty is a brand

STATE OF STATE	 Tamilnadu Government (NHM Project) Statewide Tele-Radiology Network 90 Hospitals connected with Tele-Radiology link Cloud Deployment on Microsoft Azure Daily Volume is 2000+ Cases (CT & MRI) 	RURAL HEALTER RURAL HEALTER MADE MILLIFECARE Limited (A Covernment of India Enterprise)
	 29 Hospitals in Uttar Pradesh under PPP (HLL) RIS + PACS implementation Centralized Tele Reporting Dashboard and MIS 	NO T. MEDICAL COLLEGE
	 eHealth, Kerala Govt 37 hospitals (All medical college, DH and GH) Centralized architecture at SDC ,Trivandrum Under implementation on Linux platform 	Kalpana Chawla Govt. Medical College & Hospital Karnal (Haryana)
	 22 Hospitals in Haryana (United Health Group) Integrated with HIS Distributed Architecture 	VARDHMAN MAHAVIR MEDICAL COLLEGE & SAFDARJUNG HOSPITAL Ministry of Health & Family Welfare, Government of India, New Delhi

- FPA has been approximated with the following factors with their weightage factor.
 - 1. External inputs,
 - 2. External outputs,
 - 3. External inquiries,
 - 4. Internal files &
 - 5. External interfaces.
- In the present case its shall be available after the Inception stage when we shall be able to do the effort estimations correctly. The table is presented on the basis of the numbers of modules which are required to be customised for this tender.
- There are 23 modules and 7 other system functions that need to be studied fully, designed and presented for the respective approval.
- Whereas only 2 persons may be sufficient for RIS, PACS, CDSS & HIE. 30 persons shall be deployed for HIMS for inception stage, 50 for the construction stage & 12 during warranty period. Only 6 trainers will be adequate for training.





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GTI Infotel

S.No.	Stage	HIMS	RIS&PACS	CDSS & HIE	Total Man Months
1	Inception stage.	30	2	2	34
2	Elaboration stage.	50	2	2	54
3	Construction stage	50	2	2	54
4	Warranty	12	2	-	14
5	Training	4	1	1	6
6	Total				162

#	Stage	HIMS	RIS&PACS	CDSS & HIE	Total Man Months
1	Inception stage.	30*3	2*3	2*3	102
2	Elaboration stage.	50*5	2*5	2*5	270
3	Construction stage	50*17	2*17	2*17	3780
4	Warranty	12*36	2*36	-	504
5	Training	4*36	1*36	1*36	216
				TOTAL	4872~ 5000



(iv) Proof Of Concept

POC will be demonstrated at the main hospital. The following Software shall be connected in the POC

MEDIC

- HIS
- PACS
 - CT
 - MRI
 - X-Ray



HIS workflows: Various work flows related to User, Physician, admin modules

HIS Modules: Specific Modules will be part of the POC

Modality Interface: Image Transfer from modalities to the local server

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Radiology Workflow: Local Radiologists accessing the images and doing the reporting & CD Creation

Physician Access: Local distribution of images inside the hospital at selected locations: Wards, ICUs, OPDs

Tele-Reporting/Tele-Access Workflow: Radiologists accessing images from their home and reporting for scans. Physicians accessing images on their mobile devices

1:		
SN	Item	Description
1	Local HIS/PACS server	 Quad Core Intel Xeon 64bit 2.0+ Ghz Processor 8 GB RAM 500GB SATA 10K Disk
		Windows 2019/ CentOS
2	Radiology Workstation	I5/i7 Intel processor8 GB RAM
		• Windows 10 or higher – 64 bit
		• 19' Square Monitor
3	Physician PC in the hospital	Dual Core Intel 2.0+ Ghz processor
		• 4 GB RAM
		• 19' TFT monitor



- i. Technology Stack: OS, Application etc.
- ii. Security
- iii. Recommendations
- iv. Platform & Architecture for WBT
- v. Performance, Reliability & Response Time
- vi. Methodology for data porting
- vii. SW maintenance & warranty
- viii. QC
- ix. CASE tools proposed
- x. Team Size with Technical & Functional Qualifications
- xi. Other Suggestions





(i) Technology Stack

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... Proposed Technical Architecture

Built on cutting technologies...

- Latest Framework components
- n-tier architecture
- Loosely coupled Web Services architecture
- Three ways security solution covering firewall, role based user authentication and authorization
- High availability, reliability, flexibility, interoperable, secured, maintainable, manageable, optimized and scalable architecture
- Provides the enterprise management system for remote management, asset management, event management, performance monitoring and management, network management, service level agreements
- Complaint to National e-Governance Data Standards Definition, metadata framework and operational specifications.



Open Standards



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	Application Details							Sizing		
S no	Application name	Virtual/Physical	Operating system Name & Version	Database Required (Y/N)	DataBase Name & Version	Qty	Cores	RAM (GB)	Storage Data Disk Sapce	Backup Requirement
1	HIMS	Physical	MS Windows server	YES (DB1)	MS SQL SERVER	SERVER 1	32 CORE	64 GB	4TB With RAID	YES
			2012		ENTRIPRSE	Quad Core				1
					EDITION					
2	Staging/Training	Physical	MS Windows server	YES (DB1)	MS SQL SERVER	Server 2	8 Core	32 GB		
			2012		ENTRIPRSE	Dual Core				
					EDITION					
3	PACS/RIS	Physical	MS Windows server	YES (DB3)	MS SQL SERVER	SERVER 3	64 CORE	128 GB	4TB with RAID	YES
			2012/Linux Centos		ENTRIPRSE	Dual Dexa				
					EDITION/MySQL	Core				
4	SAN/NAS	Physical				1			40TB	
5	Backup Server	Physical	MS Windows server	YES (DB4)	MySQL/SQL	3				I
	(one for each		2012							l
	application)									
6	HIE & CDSS	Physical	Windows server	Yes	My SQL, Mongo	Server 4	8 Core	32 GB		YES
			2012		DB	Dual Core				





(ii) Security Measures

IT SECURITY FOR DGMS WILL HAVE 5 MAIN GOALS:

- **Integrity**: guaranteeing that the data are those that they are believed to be.
- **Confidentiality**: ensuring that only authorized individuals have access to the resources being exchanged.
- **Availability**: guaranteeing the information system's proper operation.
- Non-repudiation: guaranteeing that an operation cannot be denied.
- **Authentication**: ensuring that only authorized individuals have access to the resources.



Security policies will be formulated with respect to access to HIS environment and applications Framework which builds upon ITIL/ITSM best practices. These would cover:

- Security organization structure
- Physical Security
- License Management
- Incident Management
- Backup & Recovery Procedures
- Logical Access
- Network Security
- Operating Systems Security
- Password Security and controls
- Internet/ Extranet access security
- Application Security
- Virus Protection
- Encryption policies
- Intranet security
- Remote Management/Terminal Server access



... Security Measures

Security is the core of the whole product. Designed to meet the highest security standards, HIS/InstaRISPACS is a HIPAA compliant solution. Highlights of the security features:

MEDIC

- Audit Trail : All the user events are logged into the database and can be searched upon
- Password regular expiry : Provision of strong passwords and their regular expiry
- Secure Communication (TLS) : All the communication is encrypted using 256-bit TLS certificate
- VA/PT Approved : The product has gone through the several tests related to VA/PT and has been certified with no security vulnerability

Other Considerations:

- Administration privileges all the privileges are given to administrator.
 Administrator have complete access of all the specific pages of the software also all the activities on that particular page.
- Audit Trail a trigger has been fired which audit all the transactions.
 Helpful in managing all the logs.

Authentication of Transaction.

- Implementation of form based security
- IIS Authentication SSL



Prevention from Cross Site Scripting.

System Administration, Audit Trail, Authentication of Transactions, etc are all within master system and network setup.

- In our system System Admin is setup on a role based model.
 So there is a Master Admin and a Site Admin. The Site
 Admin is someone within the client site (e.g. Army). You will set up the hospital / clinics / care delivery organizations (with name / address / phone / specialties to be covered etc.). The Site Admin will also set up sub-hospitals, clinics, doctors (including specialization), nurses, and helpdesk.
- Helpdesk : is used to onboard patients
- Nurse: enters vitals for the patient
- Doctor: enters the entire clinical visit data
- Data security- we are encrypted end-to-end with a 128 AES encryption.
- Audit Trail no data entered can be edited. New record can be created but no Patient Data is editable. The system logs access to the database with a login, time and date stamp.
- Authentication of Transactions since no data can be edited there is no actual need for authentication. However, Doctors / Nurses etc. have login and passwords. Each will log out after an x duration of time of no-activity. Also – standard security features of no-multiple logins permitted / one-patient-record in-one-place only etc. are also implemented.

- The involvement of users in the process of customisation till finalization of screen design and continued involvement of users will be the key to making HIS user friendly, and making them feel the ownership helps in attaining this goal with perfection.
- It is therefore proposed that a larger group of users who can convince their colleagues on using the system may be included in the process of design and customization of the application.

Enrich User Experience

- We propose the users may be given opportunity to practice freely & teaching their colleagues and supporting them in resolving their problems in using the system.
- The feedback will be collected by our team during and after the training.

Data Entry Validation

- The system designed and to be implemented has a provision of autofill of words and templets that are available to users for directly choosing from the screen once the scanning is done.
- However certain items like name etc need careful attention of the data entry persons. Options are available to edit a record by the in-charge of the facility.
- Due QC mechanism will be put in place.





MEDICAL

(iv) Proposed platform & architecture for WBT: Selenium

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Selenium standard framework addresses existing and future challenges, delivers optimum test coverage, and ensures time and cost efficiencies. The Framework contains:

- Well-designed and flexible structure for enhancements and changes
- Easy-to-use test data and data pool integration using XML
- Enhanced error logging and screenshots for test execution
- Automated nightly builds for finding defect
- Integration with Quality Center versions
- Cross browser support Internet Explorer, Google Chrome, Opera and Mozilla Firefox

This framework comprises of the following sub components: Source files, Browser, Selenium drivers, Library, Scenarios, Batch files Quality Center, Test Data & Reporting. The significant features of this selenium automation framework are as follows:

- Object repository
- Data-driven testing
- Calling functions and reusable actions
- Exception handling
- Generates snapshot on error
- Reports



Quality Center integration







- Our system has been tested to yield high level of performance. The software package is very reliable and tested for 99.99% of uptime with a response time of 0.5 – 1.2 seconds in an environment of 500-800 concurrent users.
- The proposed package is assured to provide a response time of <1.25 seconds for the entire duration of the operation, both in lean and peak period for any number of concurrent users in the Base & Command Hospital.





MEDICAL

(vi) Methodology for data porting:

GTI has been working with the proposed OEM partners in PACS, HIMS, HIE & CDSS as well as several third party vendors on many projects. It has inter-operated and transported data across networks and systems.

- Data porting & Inter-operability is crucial, while designing and developing the system. GTI will be using APIs / Web Services already developed.
- GTI will use Single Source of Truth (SSOT) in consultation with DGMS.
- It will further use its Enterprise Service Bus.
- It will uniquely identify data/ so as to avoid be duplication, over-writing or wrong sequencing. Accordingly, the following will have to form part of each file:
 - UHID
 - SUS No A unique identifying No for every unit of the Indian Army.
 - Date-Time Stamp.
 - Any other Unique Key
- It will further ability to integrate with Epocrates.
- GTI has implemented several SAP projects for IOCL with huge amount of data in real time across platforms & netowrks.



... Data porting: Longitudinal Data Transfer HIE

MEDICAL







... Architecture

MEDIC



... HIE Inter-operability & Functionality

provided by MarSha



the primary key

GTI InFotel

... CDSS Inter-operability & Functionality

Care Delivery

across network using HIE

Organization (CDO) 1

Doctor pulls up Patient using ID / Name

System will call MarSha to look for Patient



Central Server in Army Net

Process for CDSS API calls (Option 2)

- Doctor ID and Patient's demographics are sent to the CDSS
- CDSS sends symptoms list to the HMIS
- Doctor chooses the symptoms and HMIS sends chosen symptoms to the CDSS
- CDSS sends most probable diseases
- HMIS sends chosen / over-ridden disease diagnoses to the CDSS
- **CDSS sends Investigations and Treatment Plans**
- HMIS makes a call for Medication names
- HMIS sends final chosen medications for contraindications

Option 1: CDSS runs like a frame-in-frame model within the HMIS solution **Option 2: HMIS (Doctor Screens) make API** calls

Process for CDSS Frame-In-Frame model (Option 1) – no additional APIs or Integration is needed

- Patients and Doctors are on-boarded in the HMIS system and data is passed to the **CDSS**
- Doctor pulls up Patient Record (link to the HIE already present)
- Doctor chooses from a symptoms dropdown
- MarSha suggests probable disease diagnoses
- Doctor chooses investigations and treatment plans based on drop downs
- Doctor chooses medicines from dropdowns
- Final prescription sent to the HMIS solution



Meddiff RISPACS Third Party Integration



90% of our Installations are integrated with HIS and successful integration with 25+ HIS Software Companies

MedTrak at Fortis Escorts	Tata Trust HIS at Tata hospitals,Varanasi
SAP at Reliance-HN Hospital, Mumbai	Kameda Infologics at KIMS,Kerala &DAE,Abudhabi
CSC at Artemis Hospital, Delhi	JKTech HIS at Kerala govt
Wipro at Siloam Hospital ,Hemas& Fortis Malar,Fortis	CARE21 at CA
Mulund	
TCS at Apollo, Bangalore&Kolkata	Napier at Star hospitals, Hyderabad
Akhil Systems at Aster Medcity ,Venkateshwara	Symphony HIS at Yashoda Group
,Paras ,Kohinoor and BL Kapur hospitals	
CHIPS at CMC, vellore	Suvarna at KIMS,Hyderabad
Telstra at Cytecare, Bangalore	IT dose at Karauli, Varanasi & GenNext, Jammu
IdMsys at Chettinad Hospitals,Chennai	Seven hills at Aster, Bangalore
kranium at Global Hospitals, Mumbai and MVR cancer	UBQ at Haryana state govt
centre,Calicut	
Aosta at JSS hospitals, Mysore, Yenopaya & Fr muller	Impact at Muthoot,Pathanamthitta(Ongoing)
Mangalore	
MicroPro at Alexis Hospital, Nagpur	Software Assosiates at Moulana(Ongoing)
Triotree at Nayati hospital & Ayushman hospital	Manoramasoft at Safdurjung Hopsital, Delhi &
	Kalpana Chawla





an IQVIA business

(vii) SW Maintenance Task & O&M/SLA

GOALS AND OBJECTIVES

The goal of the service level management/O&M function is to maintain and improve the quality of IT services. The service level management function is responsible for ensuring that service level agreements (SLAs) and the underpinning operational level agreements (OLAs) or contracts are met, as well as seeing that any adverse impact on service quality is kept to a minimum.

SCOPE

In order to achieve the service level management/O&M goal of maintaining and gradually improving IT service quality, GTI's scope involves a constant cycle of negotiation, monitoring, and reporting on IT service achievements and initiating actions to eliminate poor service. The service level management process is designed to establish, maintain, measure, and adjust to service requirement changes through agreements with DGMS involved in the service delivery process. In order to ensure proper service delivery, IT establishes formal agreements with:

- Customers in the form of service level agreements (SLAs).
- Internal IT organizations in the form of operating level agreements (OLAs).
- The service catalog defines the hierarchy of services provided by identifying exactly what type of service is being addressed. The catalog also includes business functions and their relationship to those IT processes and resources required to properly support them.

SERVICE DESK

- Owns all service requests and reported incidents by DGMS
- Ensure that all service requests and incidents received by the Service Desk are recorded in CRM
- Identify nature of service requests and incidents based upon reported symptoms and categorization rules supplied by provider groups
- Prioritize requests and incidents based upon impact to the users and SLA guidelines
- Responsible for request and incident closure
- Delegates responsibility by assigning requests and incidents to the appropriate provider group for resolution based upon the categorization rules

Performs post-resolution customer review to ensure that all work services are functioning properly and all incident documentation is complete Prepare reports showing statistics of Incidents resolved / unresolved



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... SW maintenance: GTI's responsibilities

Provide a single-point-of-contact: for responding to DGMS queries or accepting its problem management requests. Monitor availability & Escalate to service provider and Notify DGMS for WAN Outages.

Fault Detection and Notification: The bidder shall diagnose problems that could arise as part of the LAN/WAN network. These include connectivity problems due to failures in communication transport links, CPE, routing configuration points, or from software bugs etc.

Fault Isolation and Resolution: All faults that have been identified need to be isolated and rectified appropriately. The resolution measures undertaken by the bidder and results produced accordingly shall be documented in the report.

Carrier Coordination: Carrier Coordination implies providing a single point of contact to resolve network related problems involving carrier circuits, whether equipment or circuit related.

Hardware/Software Maintenance and Monitoring: This would include problem determination, configuration issues, and hardware and software fault reporting and resolution. All such issues would need to be recorded and rectified.

24x7 Network Monitoring and reporting: The bidder shall monitor the network on a continuous basis using the NMS and submit reports on a monthly basis with instances from the NMS system. System performance is to be monitored independently by the bidder and a monthly report mentioning Service up time etc. is to be submitted to HIS. The report shall include:

- Network configuration changes
- Network Performance Management including bandwidth availability and Bandwidth utilization
- Network uptime
- Link uptime
- Network equipment health check report
- Resource utilization and Faults in network
- Link wise Latency report (both one way and round trip) times.
- Historical reporting for generation of on-demand and scheduled reports of Business Service related metrics.





... SW maintenance: GTI's Deliverables

- Maintenance of Documentation. The entire process will be thoroughly documented on the Modification Request Management & Control Module if any.
- GTI will keep one isolated terminal so that All updates/patches should be first deployed in a test environment and duly certified by the QA team before deploying the same on the live system
- SLA for fixing Minor Defects/Bugs (Corrective Maintenance). Minor defects/bugs reported till the second month of a quarter will be fixed in the same quarter and will be released in the forthcoming quarterly patch/upgrade. Minor defects/bugs reported after the second month of a quarter will be fixed in the following quarter and will be released in the next quarterly patch/upgrade.
- The response time for a major breakdown, will be <= 6 hours from the time the breakdown intimation is provided by concerned Dept.

SLA for fixing Major Defects/Bugs (Corrective Maintenance). The following SLA will be maintained for fixing a major defect/bug.

- (a) First year of Warranty Within One Day -50% Within Two Days-30% Within Three Days-20%
- (b) Second year of warranty Within One Day -70% Within Two Days-20% Within Three Days-10%
- (c) Third year of warranty Within One Day -80% Within Two Days-20%
- (d) All years of post-warranty Operation & Maintenance support for seven years 80 % 20 % 26.





QC TEAM

The QC Team ensures all issues are known before the product release. This role is independent of development to be truly effective. Testing provides independent product quality verification and validation in relation to baseline specifications. The QC Team evaluates and integrates the IT product and deliverables and determines whether project requirements have been satisfied. The Team has the following roles and responsibilities on a project:

- Early involvement to gain a clear understanding of DGMS's needs and how the product will meet the needs
- Review and validate the project deliverables' quality
- Ensure the product conforms to the project's specifications
- Technical performance and reliability
- Participate in the design phase
- Develop test strategies, plans, and scripts
- Conduct tests
- At a minimum, the Testing Team is accountable for the following project deliverables:
 - Detailed test plan
 - Test scripts
- Test report confirming project is ready to be moved into production





Test Phases	Focus
Unit Testing	Testing individual modules and programs, and testing them in sufficient context to insure that work flows correctly through the affected business process.
Integration/System Testing	Validates that all processes, including customizations and interfaces, work together to support the business functions
User Testing	Validating production-ready functionality and data integrity
Regression Testing	Ensures that the application doesn't negatively impact previously migrated objects/modules. Re-tests the application to ensure that the application performs correctly after a package upgrade or change.

C





(ix) Case Tools

GTI proposes an integrated approach for software development and as such we propose integrated case tools. Integrated Case tools are set of software application programs, which are used to automate SDLC activities.

Considering several variations and phases during SLDC so are the CASE TOOLS used. Integrated CASE tools support both the early and later stages. Further classifications usually list which functionalities are supported by the tool, such as data flow diagrams, entity relationships data models, etc. provides a different type of model of CASE functionality which helps organize CASE tools

Upper Case Tools

Upper CASE tools are used in planning, analysis and design stages of SDLC.

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Lower Case Tools

Lower CASE tools are used in implementation, testing and maintenance.

Integrated Case Tools

Integrated CASE tools are helpful in all the stages of SDLC, from Requirement gathering to Testing and documentation



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(x) The proposed team size with the Technical and Functional qualifications

List of staff (Technical, Managerial)

Э. М	Name	Designation	Qualification	Total Experience	Expertise Skill set
			TEAM -1		•
1	Rohit Kumar	CEO	M.S. (USA)	10 years	Software
2	Aarti	Technical Support	Diploma IT	3 years	I.T & Database,
3	Anku Bhgat	Technical Support	B.E.	2 Years	I.T & Database,
4	Shahrukh Khan	Technical Support	B.E.	2 Years	I.T & Database,
5.	Dr. Anil Vij	Consultant	M.B.B.S MD	5 years	Consultation
	DEEPESH SHUK LA	General Manager	M.B.A	15 years	Program Managing & Client handling
		•	TEAM-2.1		
1	Pradeep Kumar	Senior Engineer	Diploma I.T.	3 years	
2	Anupriya Puri	Software Developer	Msc (CS)	4 years	Software
3	Purnima Mishra	Senior Associate (HR)	Diploma IT	5 years	HR management
4	Lokesh Tiwari	Engineer (GPS SUPPORT	Diploma IT	4 years	I.T & Database
5.	Akhilesh	Technical Support	B.E	4 years	I.T & Database, Networking
6.	Rahul Kumar	I.T. Engineer	B.Tech.	2 years	I.T & Database, Networking
7.	Bharat Raj	I.T. Technician	B.Tech.	1 years	Networking
8.	Prashant Jha	Technical Support	B.Tech.	2 years	Desktop Engineer
9.	Neeraj Jha	Technical Support	B.Tech.	2 years	Networking
			TEAM-2.2		
1	M AYA JAI SWAL	Project Manager	B.E.	5 years	Managing
2	Sstyadev	Technical Support	B.E.	3 years	I.T & Database, Networking
3	Chandrabhan Singh	I.T Manager	Diploma IT	3 years	I.T & Database, Networking
4	AtantikaShukla	I.T. Technician	Diploma IT	3 years	Networking
5	Dishant	Technical Support	B.E	3 years	I.T & Database, Networking
6	Rahul Sharma	I.T. Technician	B.Tech.	2 years	I.T & Database, Networking
7	Ravi Kumar	Technical Support	B.Tech.	3 years	Networking
8	Rahul Dev	I.T. Technician	B.Tech.	1 years	Desktop Engineer







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	TEAM-2.3										
1	ANTI KA RAJPUT	Project Manager	M CA	6 years	Software						
2	Ashok Kumar	Assistant Manager	B.Tech.	4 years	Software						
3	Ankit Raj	Technical Support	Diploma IT	1 years	Networking						
4	Rohit Yadav	Software Developer	B.Tech.		Networking						
5	Naresh kumar	Software Developer	MCA	4 years	Software						
6	Kajal Rajput	Software Developer	MCA	1 years	Software						
7	Ajay Kuamr	Software Developer	MCA	2 years	Software						
	TEAM-2.4										
1	Dr. N P SEN	Advisor	B.Sc. Eng & PHD	5 years	Advising						
2	Aprna Shukla	Technical Support	PGDCA	5 years	I.T & Database, Networking						
3	Anup	I.T. Technician	Diploma I.T.	3 years	I.T & Database, Networking						
4	Kapil	Technical Support	MCA	1 years	I.T & Database,						
5	Raushan Kumar	Technical Support	Diploma I.T.	lyears	Networking						
6	Kapil	Technical Support	MCA	lyears	I.T & Database,						
			TEAM-2.5	•							
1	MEGHNA	Project Manager	MBA	5 years	Advising						
2	Nitin Gupta	Assistant Manager	M. A(ECO).	5 years	Managing & Customer handling						
3	Dinesh Tomar	Consultant	MCA	5 years	Consultation						
4	Shikha Singh	Tender Expert	Diploma I.T.	3 years	Tendering						
5	Kiran Pandey	Junior Associate (HR)	Diploma IT	4 years	HR Management						
6	Shashi Kumari	Technical Support	Diploma I.T.	3 years	Technical Support						
7	Abhishek Kashyap	I.T. Technician	B.Tech.	2 years	Networking						

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(xi) Any other aspect: Training & Change Management

We will follow a synchronized methodology for imparting various trainings to the representative users .The various activities carried out during the training programme will be:

PRE-SKILLS EVALUATION:

The trainer shall evaluate the current level of the training group through various mechanisms. This shall help in revealing the strengths and weaknesses of the group. The primary purpose of the evaluation is to assure proper focus and spin on course materials.

CUSTOMIZED CURRICULUM

Based on the evaluations the training contents are modified and customized to match the training needs of that group in specific. The training is then imparted through verbal and visual presentations with the help of projectors and audio aids.

PRACTICAL SESSION

To ensure better understanding and learning of the training group the trainers shall conduct hands-on session for the users (if required). The users shall be exposed to demo version of the actual system that shall make them more conversant with the various functionalities and technicalities of the system.

PROVIDING TRAINING MANUALS

In order to make the training participants more comfortable with the training sessions, they shall be provided with the training manual well in advance. This shall help them in revising through lessons already covered and lessons to be covered in future sessions.









The entire solution and environment will be controlled via complete change management processes and archives that includes, without limitation, configuration of each component, all aspects of the database(s) except the application data which is to be archived and backed up, applications, interface configurations, custom software developed for this project, and test, production and other environments. Such configuration will be sufficiently rigorous to make the entire system restoration from the change management process including each operational environment. At a high level, the change management process including that occur sequentially:

- Change request. The formal initiation of a change through the submission of a request for change (RFC).
- **Change classification.** The assigning of a priority and a category to the change, using its urgency and its impact on the infrastructure or users as criteria. This assignment affects the implementation speed and route.
- **Change authorization.** The consideration and approval or disapproval of the change by the change manager and the change review board (CAB), a board containing IT and business representatives.
- **Change development.** The planning and development of the change, a process that can vary immensely in scope and includes reviews at key interim milestones.
- **Change release.** The release and deployment of the change into the production environment.
- **Change review.** A post-implementation process that reviews whether the change has achieved the goals that were established for it and determines whether to keep the change in effect or back it out.





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