

Transforming Healthcare Delivery



Through Innovation & Performance Measurement

By: Crane Global Solutions Ltd

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CGSL Overview



About CGSL

- Headquartered in Hyderabad, India, CGSL is part of Crane Group of Industries (Diversified business group), which is a 65 years old Group.
- We are a Public Limited IT company with focus on Healthcare vertical.
- We have grown at an average of around 18% over the past 3 Financial years, which is higher than the industry average of 12%.
- We believe that CGSL is the first Technology Solution Provider to develop a **truly integrated Best Practices Engine for Healthcare Industry which includes HIS, EHR & ERP as a Unified & Integrated Solution.**
- An ISO 9001 Company
- Our HIS is certified by leading Technology OEMs like IBM & SAP

Consortium Partners to enable Integrated Healthcare Informatics Solution



➤ Technology Partner for Hardware, Cloud, Mobility, Analytics, Web Application Server, Database



➤ Technology Partner for ERP, Analytics, Mobility and High speed in-memory computing



Microsoft

➤ Technology Partners for Web Application Server & Database



ORACLE®

➤ Technology Partner for Web Application Server & Database



Consortium Partners to enable Integrated Healthcare Informatics Solution



- Accredited global technology partner and certified digital pen & paper service provider Anoto
- Dedicated 24/7 accredited global technology support
- Can deliver & support multilingual data capture globally
- Across Mobile and fixed network



- Comprehensive PACS with next-generation Web technology utilizes the latest compression technology for on-demand compression and access of large files quickly and easily regardless of location.



- Our Solution is ported on Panasonic Android based Tablet which is a MIL-STD-810G, 5ft. Drop and All-weather IP65 Dust and Water-resistant Design Tablet

Customer Snapshot in India



Value Delivered to our Clients in India – A Snap Shot

About the Client	Solution	Benefits of the Solution
<p>Our Client is India's first LEED qualified super specialty hospital.</p> <p>700-bed super specialty tertiary care facility with 30+ specialties, 21 modular Operation Theatres and advanced ICU's (90 Beds) in its 18 floor structure.</p>	<p>Implementation of CGSL HIS (leveraging Oracle Database & WAS)</p> <p>Implementation of SAP ERP</p> <p>Integration of HIS with ERP</p> <p>Interface with medical equipment, PACS , Bar Code reader</p>	<p>Real-time performance monitoring to optimize hospital asset usage, minimize costs and improve clinical and financial outcomes.</p> <p>Plug revenue leakage and efficient cost controlling at each specialty and package level.</p> <p>Provide accurate & up-to-date information about patients at point of care</p> <p>Reduce medical errors and provide safer care through DSS.</p>

Value Delivered to our Clients in India – A Snap Shot

About the Client	Solution	Benefits of the Solution
<p>450+ beds Multi Super-speciality Hospital in Eastern India including 22 medical departments like Cardiology, Gastroenterology, Orthopaedics, Neurology, Nephrology, General Medicine, General Surgery, etc.</p>	<p>Implementation of CGSL HIS (leveraging SAP NetWeaver)</p> <p>Implementation of SAP ERP</p> <p>Integration of HIS with ERP</p>	<p>Centralized management of chain of hospitals.</p> <p>Integrated holistic view of the resources utilization including Human and equipments.</p> <p>Improve clinical, operation & back-office operating ratios including patient turnaround time.</p>

Value Delivered to our Clients in India – A Snap Shot

About the Client	Solution	Benefits of the Solution
<p>Our Client is one of the leading Chain of Hospitals including 2 own hospitals in Hyderabad and 2 affiliated satellite hospitals in Latur and Vijayawada.</p>	<p>Implementation of CGSL HIS (leveraging IBM Database & WAS)</p> <p>Implementation of CGSL ERP</p> <p>Integration of HIS with ERP</p> <p>Interface with medical equipment & PACS</p> <p>Supply, Installation & Commissioning of Hardware & Infrastructure</p> <p>Outsourced IT service including Infrastructure support for a period of 3 Years</p>	<p>Seamless tracking of referral management across chain of Hospitals</p> <p>Creation of EHR of a patient across the chain of Hospitals</p> <p>Enabled merger and consolidation of back-office operations like Finance, HR and Purchase leading to substantial cost reduction and increased efficiency of operations.</p> <p>Comparison of performance of Human resources, material & equipment across the chain of Hospitals</p>

Value Delivered to our Clients in India – A Snap Shot

About the Client	Solution	Benefits of the Solution
<p>Multi discipline Charitable Trust Hospital including Allopathic, Homeopathy and Ayurveda.</p> <p>Free of cost treatment and issue of drugs to people below poverty line but chargeable for others.</p> <p>First referral unit for accident & emergency cases in that locality</p>	<p>Implementation of CGSL HIS (leveraging Open source mySQL & JBOSS)</p> <p>Implementation of CGSL ERP</p> <p>Interface with medical equipment & PACS</p> <p>Offline Solution at OP Clinics,</p>	<p>Availability of information to recognize and respond to event/trends early and shape outcomes proactively.</p> <p>Improve quality of healthcare, for optimal clinical and financial outcomes and real-time performance optimization.</p> <p>Reduction in Hardware cost by deploying HMS Application Server, HMS Database Server and PACS server on a single Physical box using Virtualization solution instead of using 3 separate physical boxes</p> <p>Reduction in patient waiting time in Registration and OPD.</p> <p>Application can be accessed even in Offline mode by Outpatient Clinics whenever there is internet connectivity outage.</p>

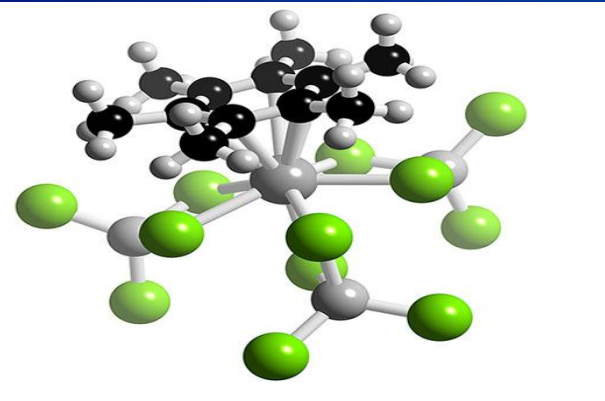
Value Delivered to our Clients in India – A Snap Shot

About the Client	Solution	Benefits of the Solution
<p>400+ beds Regional Cancer Centre serving not only the state of Andhra Pradesh but also neighbouring states.</p> <p>Provide free treatment to approximately 10,000 new patients & 50,000 follow-up patients.</p>	<p>Implementation of CGSL HIS (leveraging Open source mySQL & JBOSS)</p> <p>Implementation of CGSL ERP</p>	<p>Seamlessly mapped both old and new patient records by unique patient identification number.</p> <p>On fly submission of claims data for patients enrolled in both government and non-government healthcare schemes.</p> <p>Track drug movement from the time of procurement till dispensing to the patient based.</p> <p>Track medical equipment utilization for both material and resource.</p> <p>On fly generation of MIS reports both pictorial and tabular form to be submitted to government health department.</p>

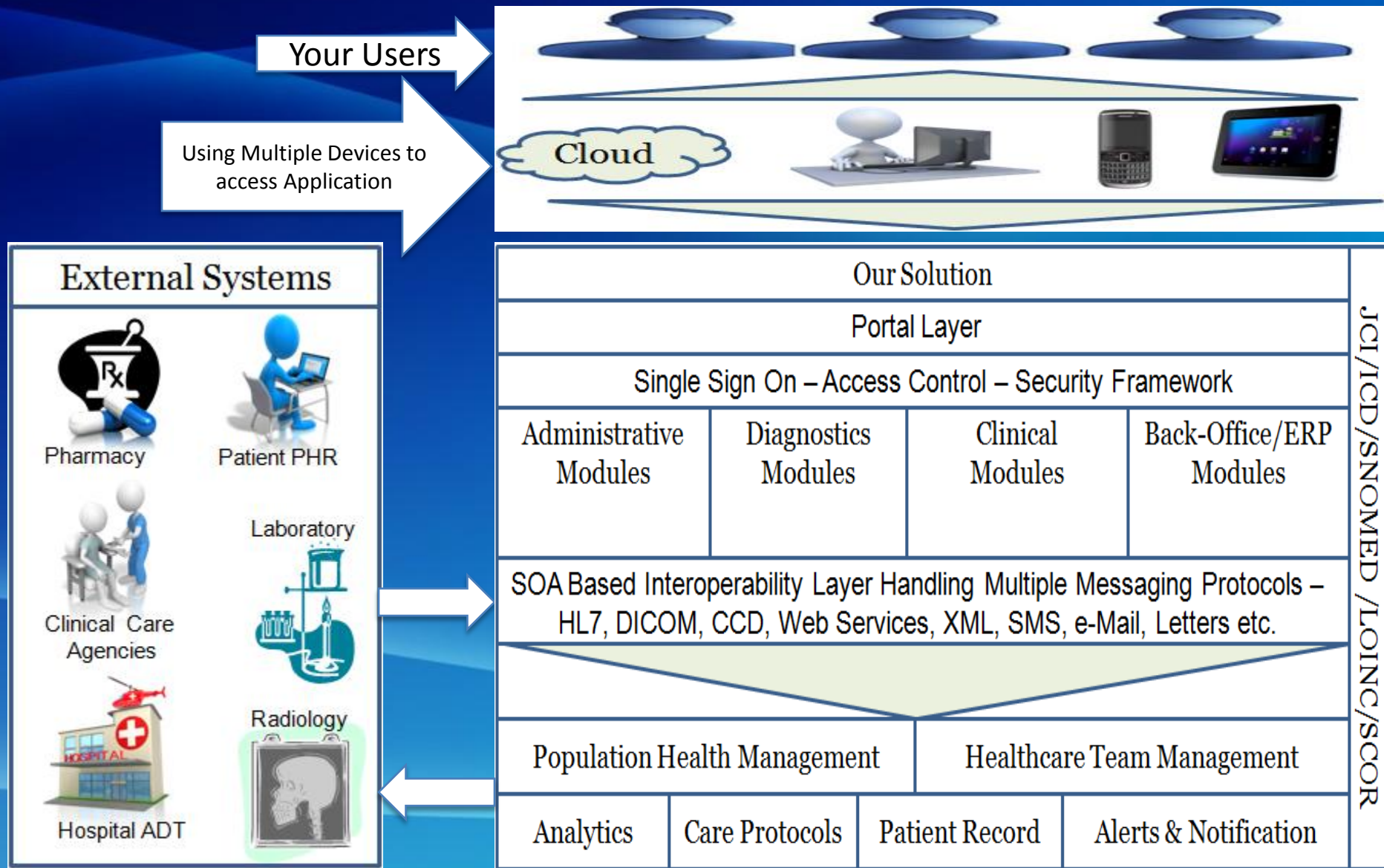
Value Delivered to our Clients in India – A Snap Shot

About the Client	Solution	Benefits of the Solution
<p>Super specialty hospital for woman and child healthcare in Eastern India.</p>	<p>Implementation of CGSL HIS (leveraging SAP NetWeaver)</p> <p>Implementation of SAP ERP</p> <p>Integration of HIS with ERP</p>	<p>Improve operational efficiencies and process,</p> <p>Monitor data and process events as they occur,</p> <p>Enable clinicians to significantly improve clinical outcomes while reducing mortality</p> <p>Reduce length of stay (LOS) and avoid the increased costs associated with treating complications.</p>

Our Solution


















Our Solution is based on CCR Solution Architecture.....



.....including Clinical, Diagnostics, Administrative & ERP Modules.....



 Registration
 Consulting
 ADT
 Nursing
 Stores & Purchase
 Pharmacy
 Birth & Death
 Laundry & Housekeeping
 Order Communication
 Clinical Documentation
 Executive Information System
 Medical Records
 Enterprise-wide Scheduler
 CSSD
 OT
 Billing & Cash Counter
 Radiology
 Laboratory
 Blood Bank
 Diet & Kitchen

Assets and Materials Management

Enables asset tracking and inventory monitoring



Financial Accounting



HUMAN RESOURCES



DOCUMENT MANAGEMENT



.....thereby enabling Care Vigilance Patient Centric Health Management System

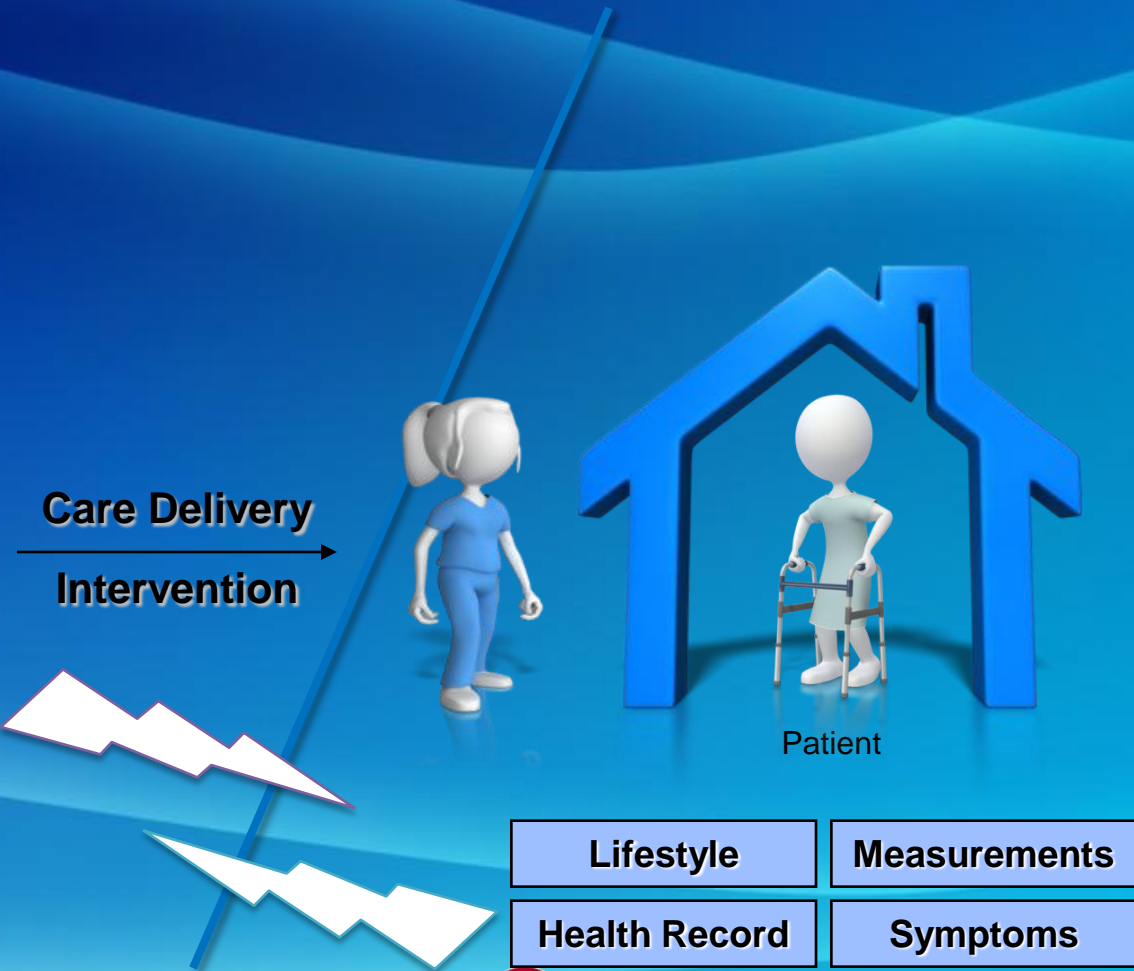
Monitoring, Caring & Protecting

Chronic Disease Management

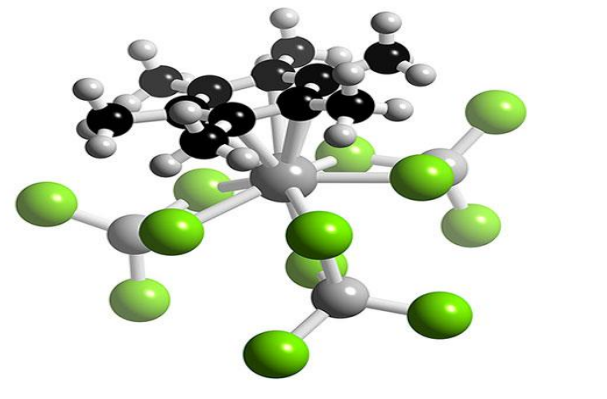
Assessment

Care Coordination

Care Management



Technical Components Of The Solution



Technical Solution Components

HIS/ERP Architecture

- 3-Tier including logical separation between the presentation layer, the business logic layer, and the database layer
- Multi-Tenant/SOA Based/Web Services & API Framework Enabled

Analytics Solution

- Predictive/ Trend Analytics including Disease surveillance and GIS based hot-spot analysis
- KPI based reporting

Mobility Solution

- Application for CPOE & EMR already available
- Public Health Application for Mother & Child available
- Capability to develop Client-specific mobile Applications
- Solution agnostic to OS

Rugged Tablet for Clinical use & Last-mile Healthcare Delivery

- Compliant with MIL-STD-810G (5 ft drop, shock, vibration, rain, dust, sand, altitude, freeze/thaw, high/low temperature, temperature shock, humidity, explosive atmosphere protection)
- Integrated 3G/2G mobile broadband sim-card to ensure Online connectivity

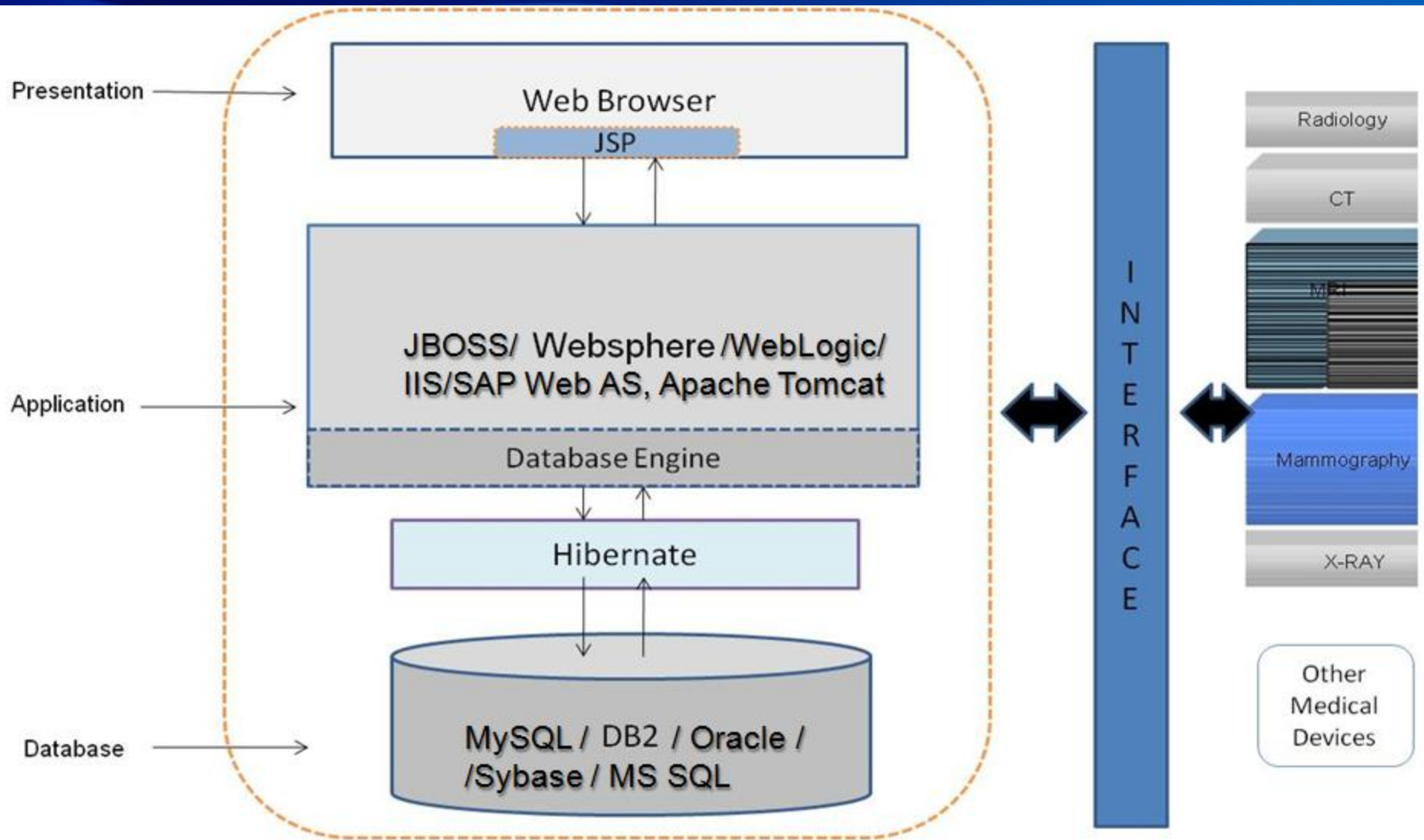
Digital Writing Solution to enable your Clinical staff concentrate on Patient care

- Works in offline mode with automatic Data synchronization with capabilities
- Includes HWR

PACS

- Comprehensive PACS with next-generation Web technology, utilizes the latest Wavelet compression technology for on-demand compression.
- DICOM 3.0, DICOM 2.0 & Non DICOM – ScanDoc A2D, SonoDoc DICOM, ScopyDoc DICOM

Technical Architecture Of Our Application – Agnostic to any Database & WAS



Analytics Solution

- KPI-Based Reports Generation & Dashboards
- Hot-spot reporting through GIS
- Trend Analysis & Predictive Analytics
- Disease Surveillance
- Data mining Capabilities
- Analytics include Dashboards.

Mobility Solution

- Reports generated by the BI Solution will be made available on mobile devices.
- Alerts and preventive care messages will be generated and made available on mobile handsets
- Clinical physician order entry and EMR available to Clinical staff on their mobile handsets
- Entry of Citizen Health Demographic details by Field Health workers linked to GPS

PACS Solution – Integrated With Our Application

- DICOM 3.0 – Straightforward
 - All new equipment will be DICOM
- DICOM 2.0 – ACR-NEMA converter solution
 - No need to purchase/upgrade equipment for PACS
 - Capital savings till end of life
- Non DICOM – ScanDoc A2D, SonoDoc DICOM, ScopyDoc DICOM
 - No need to purchase/upgrade equipment for PACS
 - Capital savings till end of life
 - Some equipment cannot be DICOM

Digital Writing Solution For Data Capture by Clinical Staff

➤ Designed to capture data and deliver data back



The screenshot shows a software interface with a toolbar at the top containing icons for file operations and zooming. Below the toolbar is a horizontal ruler. The main area is divided into several sections: 'BUSINESS' with sub-sections for 'BUSINESS ASSETS', 'PERSONAL ASSETS', 'LOAN SECURITY', 'BUSINESS DEBT', 'BAD DEBT', and 'PERSONAL DEBT'; 'RECORD KEEPING' with dropdown menus for 'MARKET', 'TEAM', 'CASH FLOW / FORECAST', 'FINANCIAL HEALTH', and 'PRODUCT OR SERVICE'; 'ACTIONS' with 'REFER TO PARTNER' and 'FUNDING APPLICATION' sections; and 'CONFIRMATION' with 'NEXT MEETING' and 'CLIENT CONFIRMATION' fields. A 'Properties' panel on the right shows details for 'Funding Application Data'.



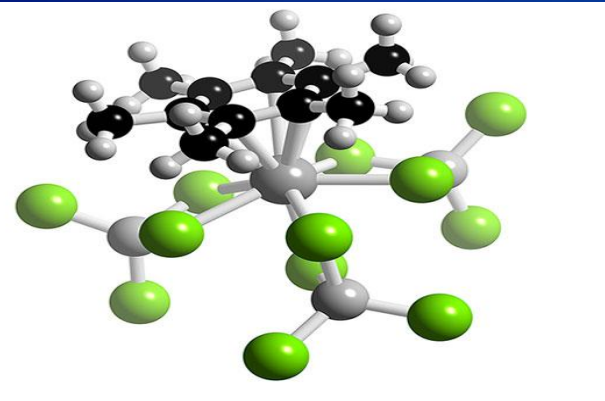
Rugged Tablet – Enables Field Workers & Clinical Staff To Be Productive

- Only Android™ Tablet with Hardware Encryption and Embedded Enterprise-grade Security and Management
- FIPS 140-2 (Level 2) Compliant for Nearly Impenetrable Protection
- MIL-STD-810G, 5ft. Drop and All-weather IP65 Dust and Water-resistant Design
- Daylight-readable Multi Touch + Digitizer
- Dedicated GPS, Wi-Fi, Bluetooth® and 3G/2G integrated sim-card
- MicroSD Card Slot, Micro-USB and Micro HDMI Ports
- 1-year Warranty with Business Class Support

Private Cloud Solution

- No up-front investment to procure the infrastructure
- Selection of the flavor – You can specify what hardware, software, data center location, networking, managed services is required
- Owned and managed by us, you just pay us monthly
- SLA commitment
- Upgrades and Updates are all our outlook, you just need connectivity
- Completely Secure - Private to you

Value Proposition



Application Value Differentiators

- Solution Architecture which is based on CCR, enables person-centric Health Management across chain of Healthcare providers
- Clinical & administrative processes are tightly integrated with ERP work-flows thereby enabling instantaneous update of inventory & financials and thereby plugging revenue leakage.
- Complete track of referrals across the chain
- Convergence of Clinical, Operations & Administrative processes and data.
- Flexibility to deploy in either Centralized/de-centralized/ hybrid architecture.
- Ability to interface with Lab & Bio-Medical equipments which are not only HL7 compliant but also the ones which are ASTM compliant
- Compliant to healthcare coding standards namely ICD-10, LOINC etc.
- Inbuilt Computerized Prescription Order Entry (CPOE) with online prescription facility

Application Value Differentiators

- Ability to support Clinical Decision Support System (CDSS), with alerts for drug –drug interactions etc.
- Compliant with JCI & HIPAA guidelines
- Agnostic to most Web Application Server OEM (SAP WAS, WebLogic, WebSphere, JBOSS, etc.)
- Agnostic to most Database OEM (DB2, Oracle, MS SQL, mySQL etc.)
- Multi-tenant enabled so that it could be hosted on a virtualized and Cloud Infrastructure
- Web based and supports Internet Explorer, Firefox, Chrome etc.
- Solution is modular to allow for flexible implementation options
- Product developed using STRUTS, SPRINGS & Hibernate
- Supports industry-standard protocols, such as HTTP, HTTPS, XML, SOAP, WDSL, FTP, FTPS, Java® Message Service (JMS) , SMTP, SNMP and file polling.

Salient Features - OPD

- **Front Office**

- Quick registration
- Telephonic booking of OPD appointment & generating a temporary appointment ID.
- Configuration of master data possible by end-users with limited knowledge of IT
- Possibility of addressing more than one patient enquiry at a time by opening two screens simultaneously
- Enquiry of status of pending reports by the patient
- Projection of waiting time for patients in a busy OPD
- Tracking of referrals & payouts for the same
- Handling of consultations' package, business promotion packages.
- Handling of on-site & off-site camps.
- Waiting list management for beds
- Post-bill discount
- Business rule driven billing engine

Salient Features - OPD

- **Front Office**
 - Easy to use Graphical Scheduler for appointments etc.
 - Follow-up appointment reminders can be interfaced with “sms” engine
- **Consultation**
 - Automatic generation of OP work-list from Registration desk
 - Easy & quick review of systems based on JCI guidelines
 - Uniformity in disease classification by adopting standards like ICD-10.
 - Possibility to search a drug by category, molecule, banned etc.
 - Disease-wise personalized drug prescription engine
 - Availability of service price information at the point of consultation
 - Stock availability information at pharmacy while prescribing the drugs
 - Alerts for drug allergy
 - Display of patient instructions for pre-test preparation/precautions.
 - Prescription driven ordering of all services & drugs.

Salient Features - OPD

- **Labs**

- Tracking of outsourced sample
- Capturing of Test images
- Decision support for out of range results
- Possibility to order additional tests against existing sample
- Interfacing with Lab equipments possible
- Capturing of different status of tests during sample processing life-cycle
- Adheres to NABL guideline
- Mimic of actual workflow in the Labs

- **Radiology**

- Comprehensive Radiology Information System work-flow
- Interface with PACS
- Hot linking capability to an external Image file management system

Salient Features - IPD

- **Front Office**
 - Advance bed-booking
 - Automatic updating of pricing based on Room category change.
 - Share allocation across multiple TPAs & self split up to item-level
 - Waiting list management for beds
 - Pre-admission during emergencies/outbreak
 - Flexible business rules for Room charges enables automatic billing
 - Business rule driven billing engine
 - Bill is generated based on confirmation of services performed, thereby leading to factual billing.
 - Possibility of system generated Medical, Financial & Final discharge.
 - Automatic work-list generation in House-keeping department from Final Discharge
 - Automatic bed status update i.e. booked, occupied, available etc.

Salient Features - IPD

- **Consultation**
 - Automatic generation of Nursing Work-list using pick-list during consultation
 - View all the previous encounters of the patient in a single click
 - Automatic generation of MAR during drug prescription
 - Internal referral generates automatic work-list
 - Configuration of template according to the consultant need
 - Automatic clinical calculators to calculate CPP, PCV, BMI etc
 - Provision to add the diagnosis and drugs to favorite list

Salient Features - IPD

- **Nursing**
 - Automatic generation of Nurse work-list as ordered by physician
 - Adherence to Nursing protocols as per JCI guidelines
 - Medication charts & Clinical charts i.e. Anti-coagulant chart, Input-output chart etc.
- **OT**
 - Avoidance of revenue leakage by capturing additional consumptions of consumables
 - OT Scheduling automatically results in resource & equipment scheduling
 - Adherence to Operation Theatre protocols as per JCI guidelines
- **Pharmacy**
 - Outsourced Pharmacy handling
 - Possibility to handle Drug issue & return batch-wise.
 - Ability to provide easy access to the drug formulary/catalogue.
 - Ability to select other drug with same generic name in case of stock unavailability.

Salient Features – Operations

- **Hospital Stores (Materials Management)**
 - Ability to support a re order level control system with comprehensive reordering & replenishment facilities at ward level.
 - Ability to maintain associated unit cost and standard cost for all materials to allow the calculation of consumption costs by user.
 - Ability to withdraw quantities supplied to users by priority of expiry date.
 - Ability to maintain record of stocks held in the various locations throughout the hospital even at ward level to arrive at Just –In-Time inventory management system
 - Ability to generate purchase order numbers by the system or manually.
 - Ability to track and provide status of orders in the system from various hospital departments.
 - Ability to track consumption levels as and when consumed for eg. at OT for a package case and automatically book the expense to the patient billing
 - Outsourced Pharmacy handling
 - Possibility to handle Drug issue & return batch-wise.
 - Ability to provide easy access to the drug formulary/catalogue.

Salient Features - Operations

- **Finance & Accounts**

- Automatic posting of accounting entries from each billing document to General Ledger.
- Automatic generation of Bills for presentation to TPAs etc.
- On-line capturing of the finance and costing data from the various business transactions, i.e. Invoice billing, Service/Stock consumption & Goods receipt.
- Inventory movements, Billing documents automatically creates accounting documents in General ledger accounting using chart of accounts (List of accounts).
- Creating a Billing document automatically generates the costing reports subsequent to the cost account postings.

- **Asset Management**

- Capability of Electronic Feed of Assets SMS / Email Alerts - Integration with medical equipment and issue Early Warning Signals.
- Automated reminders / alerts for vendors towards scheduled maintenance activities
- Capability of User Initiated Maintenance Requests like break down etc
- RFID / Barcode Integration Enabled
- Alert during asset scheduling in case the same is in break-down status

Salient Features - Operations

- **Human Capital Management**
 - **Comprehensive Employee Profile (including different functions like skills, languages, expertise, experience, appraisal history, etc.)**
 - **Ability to carry out Employee Work Management**
 - **Induction Management with Joining Checklist / Induction Training**
 - **Training Management,**
 - **Comprehensive Time & Attendance Management System capable of handling rostering and shift management**
 - **Capability of Employee self service through internal portal**

CGSL – Aspire, Innovate, Achieve

Thank You

