SALINEE HEALTHCARE SDN. BHD. (SHC) is a Global Enterprise Solutions provider, incorporated in Malaysia. SHC offers innovative products, solutions and services in leading edge technologies in healthcare.

The Board of Directors of the company include clinical specialists, technocrats and advisors having decades of experience in the Information Technology and healthcare fields with exposure to Global markets. The key management team also include professionals with vast experience in the core Technology and Management functions.
Salinee Healthcare SDN. BHD. primarily focuses

1. To provide and improve environment friendly healthcare practice and services.
2. To improve consultation services and enhance the doctor – patient interactions.
3. To enable remote access to patient data and images across geographic boundaries.
4. To facilitate off-site reporting services.
5. To facilitate cost reductions within hospital through more efficient use of radiology resources.
6. To implement a cost effective after hours on-call service.
7. To help healthcare facilities migrate to a digital system and adapt to online reporting.
8. To provide customized solutions on Communicable Disease Monitoring, Emergency Care, Tele-Radiology, Tele-Medicine, Hospital Management System, EMR etc.
Collaborations & Partnerships

- SWAST Innovations
- Dell
- Broadline
- Carestream
- UNITAB Medic
- Growarisan Sun Bhd.
Product Offerings

- **SWAST-Tera**: A Complete Tele-Radiology Product
- **SWAST-PACS**: Local PACS with Workstation
- **SWAST-3DW**: Advanced 3D Reconstruction, Volume Rendering Workstation & Re-Router
- **EMMS**: A Web based Equipment Maintenance Management System
- **Health Track**: Hospital Automation System
- **D-Logix**: Drug Distribution and Management System / Pharmacy Management System
- **Labora**: Laboratory Management System
Projects

SWAST-Care
-- A Complete Digital Radiology Project for FOMEMA and the Ministry of Health, Malaysia connecting 806 X-Ray Facilities in Peninsular Malaysia to screen X-Ray studies and reports of the foreign workers working in Malaysia

Background:
Project: To digitally transmit X-Rays and reports to centralized location.
Model: B2B and B2C
Number of registered foreign workers / Year – 1.5M
Concession Holder (Business Partner) – Unitab Medic Sdn. Bhd. (FOMEMA)

<table>
<thead>
<tr>
<th></th>
<th>TAT</th>
<th>Allocation of GP / X-Rays</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog (Clinics / X-Ray Facilities)</td>
<td>7 - 21 Days</td>
<td>1,746 / 629</td>
<td>56%</td>
</tr>
<tr>
<td>SWAST</td>
<td>2 Days</td>
<td>1392 / 177</td>
<td>44%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2 Days</strong></td>
<td><strong>3,138 / 806</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Projects

- **SWAST-Assist**
  -- A Complete Digital Radiology Project for Growarisan and the Ministry of Health, Malaysia connecting 86 clinics in Sabah, East Malaysia to screen X-Ray studies and reports of the foreign workers working in Malaysia.

**Background:**
Project: To digitally transmit X-Rays and reports to centralized location.
Model: B2B and B2C
Number of registered foreign workers / Year – 200,000
Concession Holder (Business Partner) – Growarisan Sdn. Bhd.

<table>
<thead>
<tr>
<th></th>
<th>TAT</th>
<th>Allocation of GP / X-Rays</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog (Clinics / X-Ray Facilities)</td>
<td>7 - 21 Days</td>
<td>74</td>
<td>86%</td>
</tr>
<tr>
<td>SWAST</td>
<td>2 Days</td>
<td>12</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>86</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
The FOMEMA and Growarisan project also brings in the opportunity to digitize the clinics and X-Ray facilities using CR / DR / Retrofits.

Salinee Healthcare has the major market share with 80 CR installations (Q3-2013 till Q3-2014).

<table>
<thead>
<tr>
<th>REGION</th>
<th>Total Number of X-Ray Facilities</th>
<th>X-Ray Facilities with CR / DR</th>
<th>To be Digitized (By End of 2015)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peninsular Malaysia (14 States)</td>
<td>806</td>
<td>341</td>
<td>465</td>
</tr>
<tr>
<td>East Malaysia (3 States)</td>
<td>86</td>
<td>26</td>
<td>60</td>
</tr>
</tbody>
</table>
Overview of SWAST-Tera

“Radiology has so far seen many software and applications aiding in compression, archive, work flows and transmission. Yet they differ from each other because of portability, operating system, development platform, usability, compatibility and so on. SWAST is built with a motive to bridge all these gaps created by other PACS, Tele-Radiology applications and modalities.

SWAST is an operating system and browser independent Tele-Radiology Suite for both DICOM enabled modalities and analogue modalities with at most user friendly and portable features making it the best choice for a SaaS “Software as a Service” model.

SWAST is not a reinvention but rather a mixture of all good to have features and functions seen in most other radiology applications making it very comprehensive yet secure and user friendly.
Key Differentiators

- Universal & Customizable Work-list
- Vendor Neutral Architecture
- Customizer Viewer and Workstation Module
- Unlimited Freedom on Connections & Usage
- 100% web-based Access & Service
- Robust and Secure
- Highly Scalable Architecture & Cloud Ready
- Total Plug & Play
Key Differentiators

- Zero Installation Viewers & Routers (Uploader)
- Audit Trails & Statistics Summary
- Integrated Billing with Invoicing & Statement preparation
- Multi-Modality & Unlimited Number of Concurrent Connections
- Cross Platform, Mobile and Tablet Compatibility
- Browser Independent
- Template based “One Click Reporting” with Voice & Video Reports
- 2nd Opinion Reporting with Validations
Radiology Workflow

Physician orders image

Exam scheduled and created in RIS

Patient located and transported to exam

Modality located for exam

Technologist assigned exam

Technologist Performs Exam

Transport retrieves patient/wait for results

Stat Image available for specialist review

Tech completes exam, updates order status

Images available for interpretation

Radiologist provides preliminary consult

Radiologist interprets images

Radiologist dictates results

Results transcribed

Results available to physician

Physician treats patient

Patient Arrives

Patient Departs

Salinee Healthcare SDN. BHD.
SWAST Workflow

Patients

Specialists, Consultants & Clinical Experts

Clinical Workflow, Integrations & Other Applications

Medical Devices & Modalities

Clinics, X-Ray Facilities, Hospitals & Other Healthcare Providers

Salinee Healthcare SDN. BHD.
Plug & Play: To Upload

1. Open Browser & enter Server URL. Download & Install ADR

2. Configure Modality Console

3. Select the Patient Studies and Click Upload.

4. ADR Compresses, Encrypts & Securely Uploads the Patient Images to SWAST Server.
Plug & Play: To Download

1. Open Browser & enter Server URL.
2. Choose Patient Study.
3. Click on Monitor Icon to View Patient Images.
4. Diagnose and Report Online using Templates or Upload Scan Report.
S/W Compatibility & Portability

Operating Systems:
- Windows
- MAC OSX
- Linux
- Android
- Java

Browsers:
- Internet Explorer
- Safari
- Mozilla Firefox
- Google Chrome
- Opera
H/W Compatibility & Portability

- Embedded Systems
- Server
- PDA
- Laptop
- Mobile
- PC
- Cloud Networks
Information is revealed to those who have the right, i.e. Confidentiality

Information is consistent and no unauthorized change has occurred, i.e. Integrity

Information is available and usable at all times, i.e. Availability

Information disputes can be resolved, i.e. Non-repudiation
Current Activity

Salinee Healthcare SDN. BHD.
Features

- Very easy to use, intuitive interface
- Multi-monitor awareness
- Image streaming
- Hanging Protocols
- DICOM Query/Retrieve, Send, Import
- Multi frame image support
- Measurements and Annotations
- Imaging Tools
- Measurement calibrations
Features

- Multi-planar Reconstruction (MPR)
- Digital Subtraction Imaging
- Spine Labeling
- Export to BMP, GIF, JPG, PNG, TIF, AVI
- HIPAA Compliance
- Auditing
- Email support
- DICOM Print

- PET/CT Fusion
- Study Anonymization
- CD/DVD/Blu-ray Burning
Health Solution - Offerings

- Drug Distribution and Management System
- Health Track – Hospital Automation System
- Electronic Health Data Resource Centre
- Health Commodities Distribution System
- Health Management & Information System
D – Logix

Drug Logistics Management System

Procurement, Storage, Supply & Issues Management System
DDMS: Drug Distribution and Management System
Client: Tamil Nadu Medical Services Corporation Limited (TNMSC)

- Year of implementation: 1995
- Procurement value: US$ 44 Million
- Total Medical facilities covered: 12,000
- No. of drugs procured: 276*
- Total number of warehouses covered: 23
- Initial savings made in drug budget: 32%

*Essential Drug guidelines of WHO was followed in procurement. Procurement was carried out as per World Bank Guidelines & guidelines as per Government Norms.
Managing Procurement, Distribution and Utilization of Drugs/Medicines, Surgical, Sutures, Hospital Equipments and Diagnostic Services across 13000 Medical Institutions in Tamil Nadu, India.

<table>
<thead>
<tr>
<th>Before</th>
<th>How we helped</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortages</td>
<td>-Providing Flexibility in the Selection of Drugs</td>
<td>-Savings in procurement cost</td>
</tr>
<tr>
<td>Over Stocking</td>
<td>-E-Tendering</td>
<td>-Eliminating the wastage on account of expiry</td>
</tr>
<tr>
<td>Expiry loss</td>
<td>-Automated Bill Processing</td>
<td>-Optimal stocking</td>
</tr>
<tr>
<td>No proper drug quantification</td>
<td>-Vendor Quality rating</td>
<td>-Effective Quality control</td>
</tr>
<tr>
<td>No effective monitoring and evaluation</td>
<td>-Decision Support System</td>
<td>-Centralized Drug Procurement</td>
</tr>
<tr>
<td></td>
<td>-Centralised Inventory Management</td>
<td>-Uniform price for all the Institutions</td>
</tr>
<tr>
<td></td>
<td>-Scientific Requirements Forecasting</td>
<td>-Payment from one Single Source</td>
</tr>
<tr>
<td></td>
<td>-Online integrated system for recording and reporting</td>
<td>-Bulk Purchase</td>
</tr>
<tr>
<td></td>
<td>the information</td>
<td></td>
</tr>
</tbody>
</table>

Salinee Healthcare SDN. BHD.
Modular Overview

- Quantification Forecasting
- Monitoring & Evaluation (MIS)
- Pharmacy Management
- Bar Code System
- Bid Processing
- Bill Processing & Accounting
- Order Processing
- Stock Monitoring
- Supply Monitoring
- Warehouse Management
- Quality Control
- Drug Debit Passbook System

Salinee Healthcare SDN. BHD.
Salient Features

- Identification of Drugs and Medicines
- Scientific Forecasting of Requirements
- Automated Bid Processing
- Automated Order processing
- Inward Stock Inspection and Stock Monitoring
- Automated Quality Control
- Automated Bill Processing
- Warehouse Housing and Distribution
- Stock Status Update
- Data Warehousing and Data Mining
• Item classification as per WHO Guidelines
• Consumption based forecasting to avoid manual requirement gathering
• Rate Contracts to avoid fluctuations in pricings
• Quality Assurance through Common Batch Elimination
• Total Elimination of Drug Expiry
• Issuance based on First Expiry First Out (FEFO)
• Improve overall Monitoring & Evaluation – Help Decision Making
Advantages

• Forecast the requirement needs at various indenting levels

• Holding cost substantially minimized through proper re-ordering

• Ensure uninterrupted supply to the warehouses through established warehouse set up across the state

• Procure quality drugs at low cost through transparent tender processing

• Strengthen the Supply Chain Management activities by automating processes of Procurement, Distribution, Quality Control & Payment.

• Effective monitoring of warehouses spread across the state

• Avoid over & under stocking by ensuring the minimum available pipeline / buffer quantity at each warehouse and eliminate expiry loss.

• Availability of reports instantly after data capture and validation

• Increase in the service levels through Ready availability of drugs.
## Milestones

<table>
<thead>
<tr>
<th>SL No.</th>
<th>Client</th>
<th>Funding Organization</th>
<th>No. of Warehouses</th>
<th>No. of Medical Institutions Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>TNMSC, Govt. of Tamil Nadu, India</td>
<td>Tamil Nadu Govt.</td>
<td>24</td>
<td>12,000</td>
</tr>
<tr>
<td>2.</td>
<td>Govt. of Orissa, India</td>
<td>DFID, British High Commission Project</td>
<td>33</td>
<td>8,000</td>
</tr>
<tr>
<td>3.</td>
<td>UPHSDP, Govt. of Uttar Pradesh, India</td>
<td>World Bank</td>
<td>5</td>
<td>1,200</td>
</tr>
<tr>
<td>4.</td>
<td>KDLWS, Govt. of Karnataka</td>
<td>European Commission</td>
<td>14</td>
<td>6,000</td>
</tr>
<tr>
<td>5.</td>
<td>Health Department, Govt. of Madhya Pradesh,</td>
<td>MPLUN, State Funding</td>
<td>34</td>
<td>5,500</td>
</tr>
<tr>
<td>6.</td>
<td>KMSCL, Govt. of Kerala</td>
<td>State Funding</td>
<td>14</td>
<td>1,500</td>
</tr>
<tr>
<td>7.</td>
<td>Autonomous Medical Supply System, Ministry of Health, East Timor</td>
<td>Crown Agents, UK under World Bank aid</td>
<td>1</td>
<td>1,000</td>
</tr>
</tbody>
</table>
Health-Track
Introduction to Health-Track

Health Track - A Complete Hospital Automation System.

Designed and developed to meet the challenging requirements of sophisticated Health Care Organizations.

Exclusively for today’s complex processing requirements complying with International standard procedures.
Features

- Scalable
- Reliable & Robust
- Optimized Performance
- Enhanced Data Integrity
- GUI Based Interfaces
- Efficient Throughput
- Cost-Effective
ICD-10 - Health Track complies with International Classification of Disease. ICD-10 data repository comprises 2034 Categories and 8926 Sub-Categories incorporated in Health Track.

ICP - Health Track complies with ICP data repository, which includes 708 categories and 4077 Sub-Categories.

SECURITY - S-5 Level Security, one of the security standards defined and developed by the technical experts, to provide a tightly secured application layer security and for complete audit trial.
Architecture

- MAIN SERVER
- BACKUP SERVER
- WEB SERVER
- BACKUP SERVER
- MIDDLE SERVER CONNECTIVITY
- INTERNET BACK BONE
- CLINICAL SERVER
- BACKUP SERVER
- PARA-CLINICAL SERVER
- BACKUP SERVER
- NON-CLINICAL SERVER
- BACKUP SERVER
- ADMIN SERVER
- BACKUP SERVER
EHDRC
(Electronic Health Data Resource Centre)
EHRDC - Objectives

A comprehensive, enterprise wide health data repository and a decision support system with Institution-wise data at the granular level to promote evidence based policy formulation at National, State, District, Directorate & other institutions.

- To function as the repository of data for all tertiary, secondary and primary health care facilities in the country.
- To utilise the data and convert them into information and knowledge to improve the health outcomes in the state through performance and policy evaluation and enhancement.
- Inform policy making with evidence and analysis.
- Strengthen Health Research System.
- Engage private sector in data sharing.
- Facilitate Community participation.
Multiple Manual and Inefficient Information Flow (Transactions)
Consequences

- Poor Quality of Care

2001                      2002

High Medical Errors

- Non-compliance with Government and Professional benchmarks

- Lack of easy citizen Involvement

- Runaway Costs

- Poor quality/timeliness of evidence for management

Salinee Healthcare SDN. BHD.
EHDRC Outputs

- Disease Incidence Monitoring
- Inputs for Disease Control
- Epidemic Response Planning

Decision Support

- Health Profiles
- State Dashboards
- District Dashboards
- Facility Dashboards
- Other Reports

Prevention

Alerts & Notifications

Indicator Dashboards

- Ad-Hoc Reports
- Drill Across
- Drill Through
- Trending
- Analytical Reporting Support

Reports & Publications

Advanced Analytics

Policy Planning

Health Systems Research

Periodic Reports
- Publications
- Research Outputs

Strictly Confidential
Business Needs

- Improve care and reduce healthcare costs
  - Optimize patient outcomes
  - Achieve operational efficiency

- Assure data access
- Avoid medical errors
- Evolve processes
- Achieve system interoperability
- Monitor performance

Data integration for semantic interoperability

EHDRC Services
- Adopt enterprise data model
- Minimize patient record duplication
- Align terminology and data coding systems
- Interface with external systems
- Enforce transaction consistency
- Assure patient confidentiality
Health Network

Integrated Electronic Health Record

Client Registry    Clinical Apps    Patient Summaries

Centralised Repository (EHDRC)

Clinic 1  Clinic 2  Clinic 32
Facility 1  Facility 2  Facility 3  Facility 58

Hospital A  Hospital B
Hospital E

Hospital C  Hospital D  Hospital F

Strictly Confidential
Integrated Delivery Network

Centralized Decision Support

EHDRC
- Messaging Services
- Person Services
- Terminology Management
- Security and Auditing

Data Warehouse

Business Process Data Warehouse
Contact Us

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