HCLT RFID Services

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HCLT RFID Services

HCL Technologies is a leading IT services company, providing a broad range of services to customers worldwide. The company delivers these services to technology companies and other large and medium-sized organizations through its 16 software development centers and a global marketing network comprising of 26 offices in 14 countries

HCLT has a long experience in providing various solutions in RFID. The development team consists of core RFID technology experts supported by business domain experts from various domains (Retail, Pharma, Automotive, etc.). HCLT offers services covering a wide spectrum of RFID deployment including business consulting, system conceptualization, RF equipment selection and installation, software development and implementation, system integration and maintenance. A RFID test lab provides RFID solution testing capabilities to customers.   We adopt to **EPCglobal** standards

EPCglobal   http://www.epcglobalinc.org/

RFID System Life cycle services

Business Process Analysis

The key services covered are:
- □ *Value Chain Analysis*
- □ *Process Inventory*
- □ *Evaluation of Alternatives & RFID Impact Analysis on relevant processes*
- □ *ROI Analysis*

System Conceptualization

We support our clients evaluate their business needs objectively for maximum gains from their IT systems. The requirements are analyzed for each line of business and synthesized into an overall IT strategy. The services covered are as follows:

- □ *System Scope Definition*
- □ *Evaluation of Alternative systems*
- □ *Requirement Analysis & Architecture definition*
- □ *Program Plan & team formation*

Selection of RF components

This involves detailed requirement analysis and selection of appropriate hardware based on the requirement and environment conditions. The services covered are:

- Selection of components
- Requirement Analysis
- Vendor evaluation

System Development (Piloting)

We engineer custom IT systems that meet user requirements using the latest technology and system architecture designs. Beyond design and development we help our clients in implementing the system and training the end users. Our post implementation support includes maintenance of the system for business related changes. We follow industry standard language UML for system design. Usage of automated tools for testing coupled with our quality assurance processes ensures high quality.

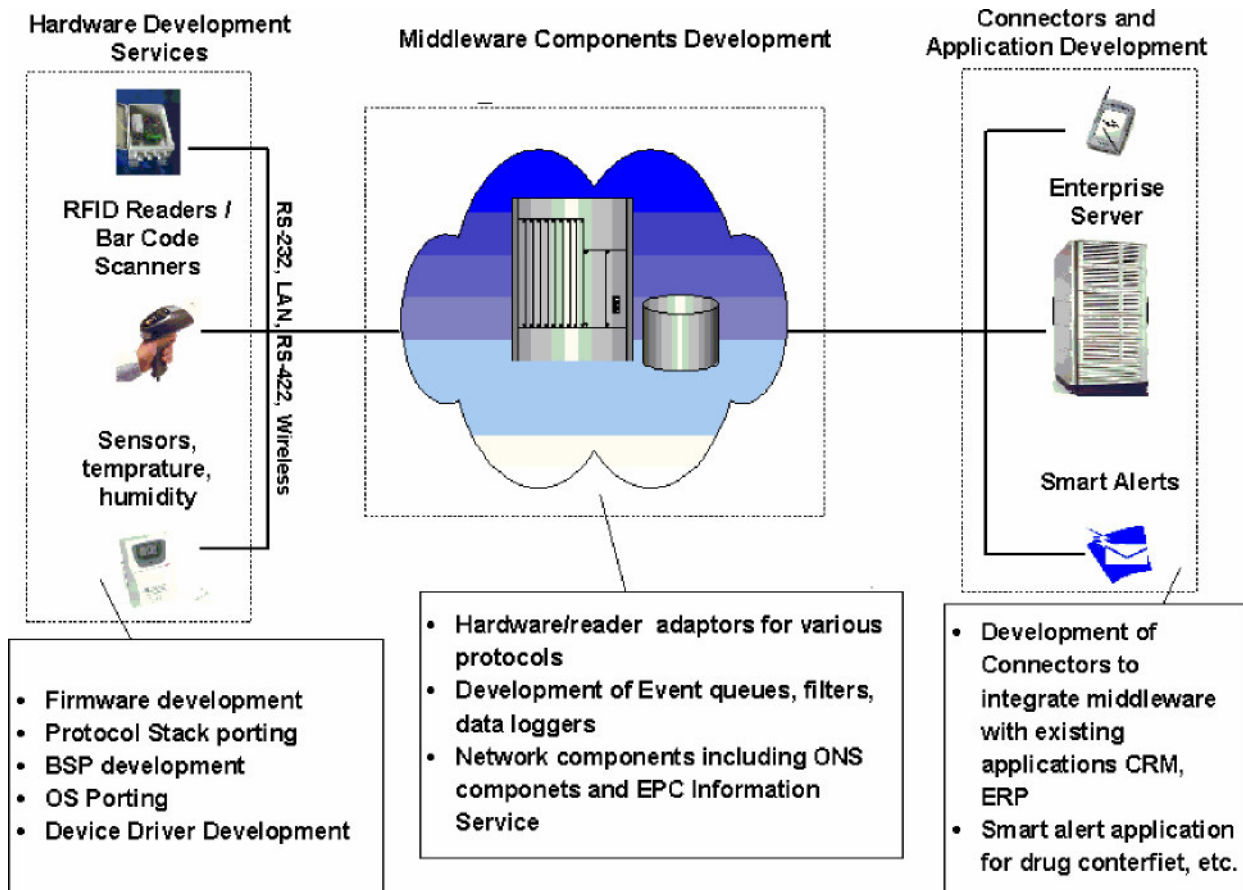## System Integration, Testing & Rollout

The key services include:

- Integration of components
- Development of "Connectors" for integrating the middleware with existing application.
- Testing & bug fixing

System Support & Maintenance

The complex and disparate application portfolios coupled with the high maintenance cost and scarce application skills are deterrents to focusing on core business needs. The services include application enhancements, bug fixing and application support.

HCLT Application Expertise in RFID

RFIDService Offerings

Hardware Development Services
- RFID Readers / Bar Code Scanners
- Sensors, temprature, humidity

RS-232, LAN, RS-422, Wireless

Middleware Components Development

Connectors and Application Development
- Enterprise Server
- Smart Alerts

- Firmware development
- Protocol Stack porting
- BSP development
- OS Porting
- Device Driver Development

- Hardware/reader adaptors for various protocols
- Development of Event queues, filters, data loggers
- Network components including ONS componets and EPC Information Service

- Development of Connectors to integrate middleware with existing applications CRM, ERP
- Smart alert application for drug conterfiet, etc.

Hardware Development Services

HCL Technologies has developed embedded systems competencies in hardware initialization; porting and device drivers; diagnostics; board design and MMI. We have the ability to develop optimized codes to meet resource constraints through the tested methodologies of integrated engineering. The core services offered in RFID hardware are:

- Protocol Stack Porting
- BSP Development
- OS Porting
- Device Driver Development

HCLT has a state-or-art RFID lab for solution simulation and testing services. The lab has capabilities to:

- Testing variety of RFID Readers and tags suited for intended solution.
- Evaluating best tagging methods
- Identification response on liquids, metals, etc.
- Simulation of real life environment for noise, vibration etc.

Middleware Components Development

- HCLT has experience of using various readers, antenna and tags. We have developed a Generic Reader Interface (GRI) layer which support interaction with RFID readers from leading vendors. Support for any new reader command protocol can be included in GRI in short span of time.
- Developed major middle-ware components including filters, event queues, security manager, configuration manager, log manager.
- Knowledge and experience of using Auto-ID "Savant" middle-ware and EPC Network components.

Connectors and Application Development
- Development of connectors to integrate middleware with existing ERP, SAP, WMS applications.

Partnerships with RFID hardware vendors
- Establish partnerships and system integration alliances with leading RFID vendors.

HCLT Domain Expertise in RFID

Retail

HCLT offers expertise in information technology solutions to help solve the retailer's business problems. The services include end-to-end solutions to achieve desired business objectives in a cost effective manner. HCLT is a member of Association for Retail Technology Standards (ARTS) and National Retail Federation (NRF) in USA.

HCLT has proven expertise and competency in Applications Engineering and Advanced Technology. HCLT has developed a prototype solution for RFID based Warehouse Management. RFID services offered in this domain include SCM, Warehouse Management, Self-checkout, Inventory management.

The applications management offerings have helped our customers reduce the total cost of ownership for maintenance, enhancement and support of existing legacy systems. HCLT has a wealth of applications engineering expertise, which has helped deliver software package implementation and support, and applications development tailored to meet our customers' requirements.

Some of our valued clients globally include NCR, Germany; Dairy Farm Group, China; Pricer AB in Sweden; EXE Technologies, USA; NEC, Japan; and EJS, Iceland.

Transportation & Automotive

HCL Technologies has provided IT services to cargo carriers, shipping, rental car, chartered flights and government road management organizations. Our areas of expertise spans web enabled reservation systems, GIS based road management systems, and traffic management solutions. Our effort has been directed at supporting government and private agencies around the world in innovative use of technology.

Some of the RFID based solution includes automated vehicle access for Toll plazas, Asset tracking and Fleet management systems,
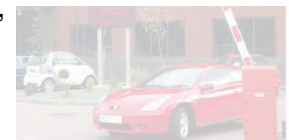
Pharma

HCLTs Pharmaceuticals Practice is a maturation of over 10 years of experience encompassing Drug Discovery, Clinical Trials, Manufacturing, Marketing, Sales and Regulatory functions of Drug and Medical Device Manufacturers.

Our investments have strong focus on regulatory compliance prescribed by FDAs CFR, CEC, ISO, HIPAA and meeting technology paradigms surrounding HL7, DI-COM amongst others. HCLT continues to invest in providing tested solutions in thought leadership arenas like Pharmacogenomics, RFID based Drug counterfeit solutions, Medical device and diagnostic, contract manufacturing and Hospital Information Systems.
HCLT has provided its services to customers like the U.S. Department of Health and Human Services (DHHS), ECRI, Digital Wellbeing Ltd, etc.

RFID based Drug Counterfeit Solution

RFID can provide a solution that can effectively solve the counterfeiting issues plaguing pharmaceutical industry in almost every country. The technologies currently being used like barcodes, hologram or logo printing is easily duplicated and requires manual handling to detect counterfeiting.

Legitimate drug manufacturers overseas would tag their products and customs agencies and distribution companies would be able to scan the tags and check a database to verify the origin of the shipment. The database can be accessed using secure network as per EPCglobal specifications.
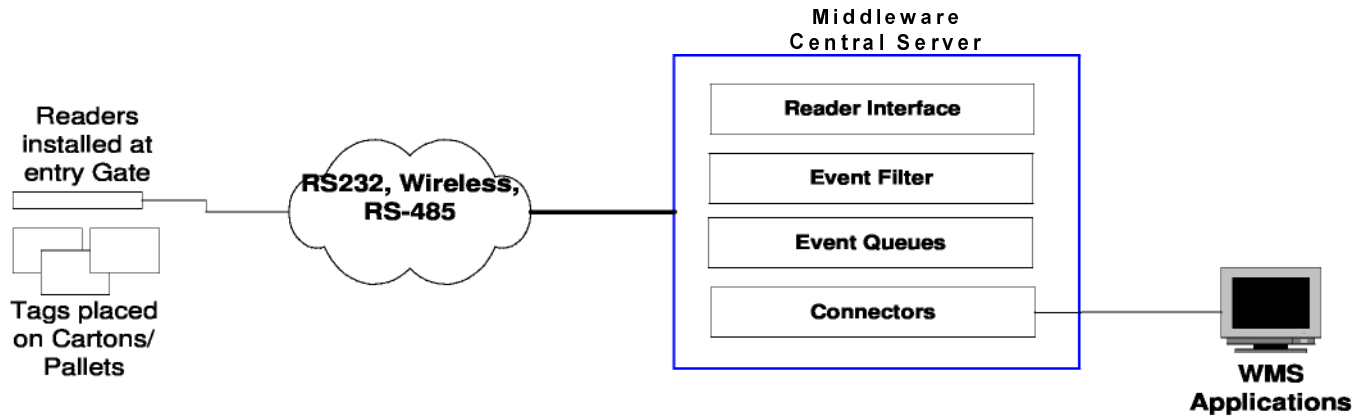
HCLT RFID Case Studies

RFI D based Warehouse Management System

The prototype is an RFID based warehousing solution, which provides automatic inventory updating and shelf-location facilities.

In the RFID based warehousing solution, RFID tags shall be put on the goods (carton/pallet level) as they reach the warehouse. The items then enter the warehouse storage area, where the readers installed at the door shall verify them against the purchase order. At the same time, the tags detail through the readers is updated to warehouse inventory.

The system user can query the system stock at any point of time. User can query the stock information based on different criterion like purchase order number, item no, shelf location. Scheduled (Weekly/ Monthly or user defined) stock count can be done using handheld RFID reader. Reader reads the RFID tags of items. This information will be used to find the physical count of the items. Any discrepancy with the system stock will be reported.

M i d d l e w a r e
C e n t r a l S e r v e r

Readers
installed at
entry Gate

Tags placed
on Cartons/
Pallets

**RS232, Wireless,
RS-485**

Reader Interface

Event Filter

Event Queues

Connectors

**WMS
Applications**

Library Management System (elms)

eLMS is a RFID-Enabled library management system. The solution integrates a traditional library management system with RFID technology and provides the following values:

- Lesser time and labor cost while issuing and returning books
- Convenient and faster misplaced books tracing
- Drastic reduction in time for regular stock taking exercise.
- Robust theft prevention and detection.

Tags/Labels

Different types of tags used are:

- These low cost paper-thin RFID labels are put on each and every item (books, CDs, magazine, journals, etc). These are passive read/write tags that store the unique id of particular item. The tags can be placed between the book covers to avoid their mishandling and secrecy.
- Patrons / Members are assigned credit card size plastic cards containing their unique identification details. Members can use these cards to interact directly with the system using self-check out capabilities.

Vehicle Access Control System

HCL Technologies Access control system is based on RFID and image processing technology. It is ideal for high security areas like restricted access location, parliament, etc. The Access control system consists of following components.

Tags and Readers

- Wall mounted 2.45GHz reader with range of approx. 6 meters is installed at the entry of the building. The reader contains a radio frequency transmitter/receiver, antenna, reader logic board, and data storage circuitry. The reader integrates with existing access control and security systems using RS-232, RS-422, or Wiegand interfaces.

- An active R/W Windshield AutoTag, is installed on each authorized vehicle. Only the vehicle registration number is fed into the tag. The registration number acts as an index into the database for other information like vehicle owner, car model and color etc.

Chip less Technologies

We are also investigating chip less **GigaTag**[TM] technologies for RFID, owned by Inkode Corp., which is a highly efficient solution in areas where extremely low cost throw-away systems are required. Other than known RFID technologies, the tags do not require any IC or intelligent device included which makes it available for many applications, which could not have been considered so far.

The basics of the technology could be found at www.gigatag.com.
This is a technology initially developed by the Rensselaer Polytechnic Institute in the USA.