HCL Solution: Smart WIP Inventory Tracking

Current Challenges

- Poor visibility into location, quantity and status of the WIP Inventory
- WIP location is frequently moved and can not be tracked using conventional MES
  - WIP Inventory on hold is not properly tagged in MES
  - Rapid WIP Buildup as Equipment downtime Vs WIP buildup analysis is not done online

Solution Features

- Provides RFID based WIP movement, location reference and Ambient conditions
- Provides easy configuration and can be plugged into conventional MES as a separate module
- Leverage latest IoT Technologies and available in. NET and J2EE versions
- Ability to link WIP Inventory with Production order, equipment and shifts

Benefits

- Improved Geolocation based WIP tracking
- Real-time alerts on Inventory buildup, locations anomalies and shelf-life expiry
- Reduction in WIP (smart management of Inventory buildup) and ability to operate lean
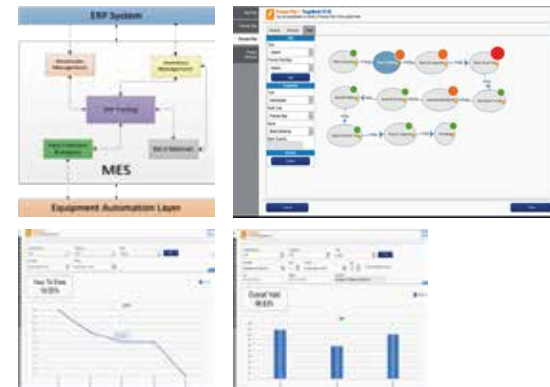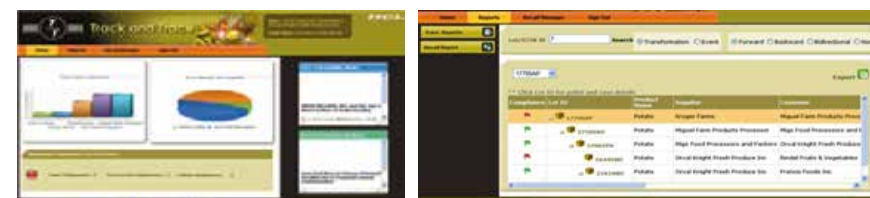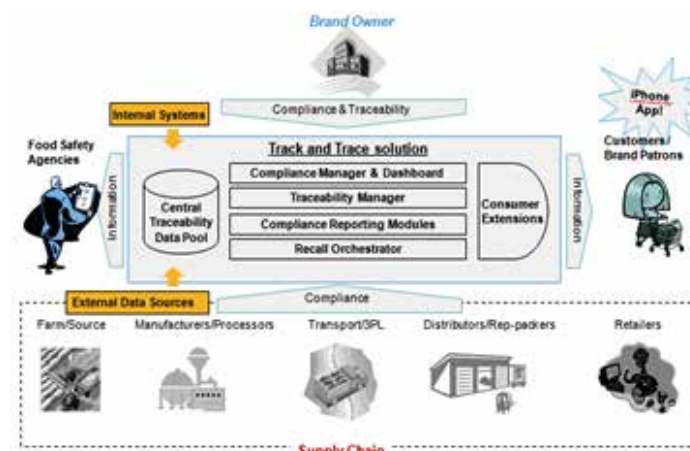

HCL Solution: Smart Track & Trace Through Product Value Chain

Solution Features

- Ability to traverse the product genealogy without going into multiple systems
- Common data platform for disconnected legacy and cots systems
- Quick identification of faulty subassemblies
- Minimize chances of recalls by identifying "compliance gaps" in the supply chain
- Implement complete traceability both backwards and forwards in a Supply Chain including manufacturing systems
- Minimize the impact of recalls - if they do happen by initiating a rapid recall process
- Portal integration for supplier collaboration
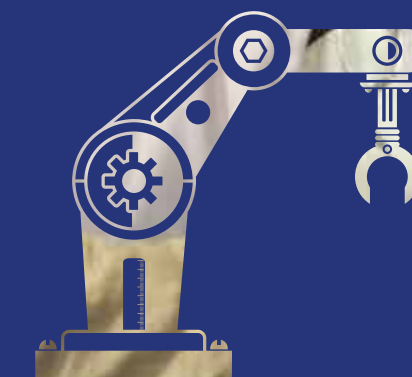- Both web based and Mobile front-end

Benefits

- Supply chain wide compliance
- Lesser preparation time for Inspections
- Minimize chances of recalls
- Implement bi-directional traceability
- Rapid reaction to recalls thereby reducing impact

Hello, I'm from HCL's Engineering and R&D Services. We enable technology led organizations to go to market with innovative products and solutions. We partner with our customers in building world class products and creating associated solution delivery ecosystems to help bring market leadership. We develop engineering products, solutions and platforms across Aerospace and Defense, Automotive, Consumer Electronics, Software, Online, Industrial Manufacturing, Medical Devices, Networking and Telecom, Office Automation, Semiconductor and Servers & Storage for our customers.

For more details contact: ers.info@hcl.com
Follow us on twitter: http://twitter.com/hclers and
our blog http://www.hcltech.com/blogs/engineering-and-rd-services
Visit our website: http://www.hcltech.com/engineering-services/

HCL

EXPERIENCE SMART
Products | Manufacturing | Services
Beyond PLM - Digital Innovation across *Product Ecosystems*

Digital Manufacturing

Vision

Industrie 4.0

- Smart Clouds
  - ✓ scalability
  - ✓ lower IT cost
  - ✓ mobility
  - ✓ reduced complexity

- Wireless Intelligence
  - ✓ mobile maintenance
  - ✓ operator empowerment

- Distributed Manufacturing
  - ✓ cost efficiency
  - ✓ local manufacturing

- Collaborative IT Solutions
  - ✓ Fosters Innovation
  - ✓ Reduced time-to-market
  - ✓ Improved productivity
  - ✓ Minimal capital expenditure
  - ✓ Efficient training mechanisms

- Integrated Enterprise Ecosystem
  - ERP
  - PLM
  - MES

An integrated approach to Digital Manufacturing from Planning, Design, Testing, Supply Chain and Manufacturing using a Digital Thread and based on industry standards

Product Planning > Product Design > Testing > Sourcing > Production > Sell & Service

Digital Manufacturing Practice Snapshot

People
250+ strong team:
- Dedicated team of **industry, solution experts** and **consultants** with in depth knowledge on industry best practices and processes
- Team **spread across the globe**: leverage local presence
- Focused Lateral hiring with industry and domain expertise
- High investment in training & solution development

Assets & Infrastructure
- **Engineering Infrastructure Lab -** A platform for Product conceptualization and development
- **Dedicated Testing Lab -** For software quality testing

Alliances
SAP   OSIsoft   SIEMENS   APRISO.
ORACLE   Rockwell Automation   GE   PTC

Verticalized Offerings
- Verticalized offerings with both **Integrated and point solutions** spanning discrete and process industries

Hi-Tech OEM | Semi Conductor | Automotive | A&D | Medical Devices | Storage | Solar
Electronics | Industrial | Metals & Mining | Pharma | CPG | Energy/Utilities | Oil & Gas

Solutions
- **Plant in a Box -** A unique MES implementation methodology
- **Proactive Plant monitoring -** An EMI solution for Plant metrics monitoring
- **iSEAD -** Energy Efficiency Framework
- **PATWare -** Enablement Framework in Pharmaceutical Manufacturing process
- **Track & Trace -** Generalized traceability solution for ensuring compliance

HCL Solution: Smart Production Monitoring

Current Challenges
- Multiple smaller manufacturing facilities
- Different MES, plant automation and shop floor systems along with legacy systems
- Limited visibility into Production Process
- Cross Plant Production comparisons are not available
- KPIs are not calculated in real-time (delayed calculations at the end of shift / week / month)

Solution Features
- SPM solution homogeneously integrate multiple data sources such as ERP, plant MES, data historians, LIMS etc.
- PPM provides role based dashboards for multiple roles on a common platform (e.g. CEO, Plant Manager, Plant Supervisor)
- Calculates KPIs in real-time and in standard way for multiple plants

Benefits
- Real time alerts and actionable intelligence as raw data (both sensor machine data) is converted into meaningful information
- Common Cross plant comparison enable potential production, inventory or quality problems
- Facilitates faster root cause analysis
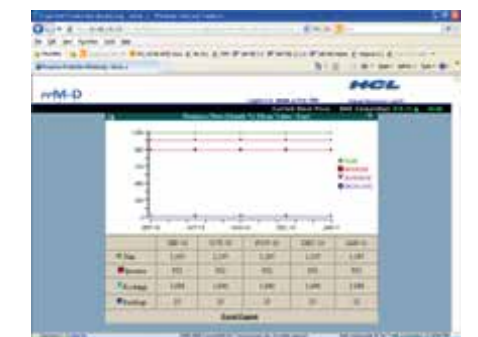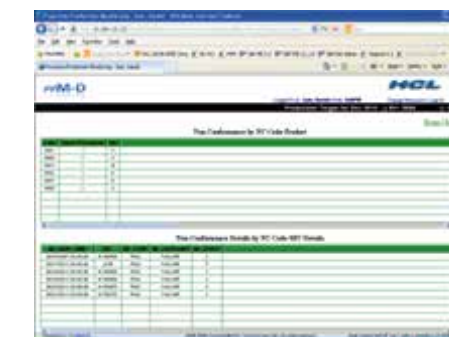
HCL Solution: Smart Maintenance Analytics
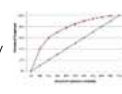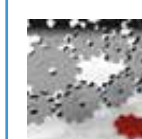
Business Problems	Analytical Resolution	Business Benefits
Are there indications that a major component failure is likely to occur in the immediate future?	Classification model to Predict Major Component Failures • Sensor Data • Alarm Data • Repair History	Product health score used to predict impending failures
How do low level failures cumulatively affect the life span of components?	Regression models to Predict Component Life Based on Specific Machine History • Repair History • Events	Understand impacts of individual low level failures, estimate component life
What kinds of failures are likely to occur together	Association Models to Identify Failures that Occur Together • Warranty Data • Repair History	Identify components that have a high probability of experiencing similar failures