IBM Real-Time Asset Locator
Enhancing Enterprise Asset Management

[Customer presentation]
Industry leaders can benefit from new sensor data when combined with IBM's asset management, event processing & business process management capabilities.

Sensor Solutions can be a key enabler for a Smarter Planet.
Building a smarter planet ...

**Matiq:** Employs RFID tags to trace meat and poultry from the farm to store shelves to ensure safety and freshness and provide more transparency to consumers.

**Implanet:** Innovatively delivers surgical implants to its hospital customers more quickly and efficiently, and meets European Union regulations regarding traceability.

**Metro:** Using RFID technology throughout its entire supply chain to help them get the merchandise the customers want on the shelves when they want them.

**Airbus:** In a strategic move, RFID is being utilized to automate the tracking of aircraft segments while improving supply chain visibility and reducing costs.

**Teva USA:** Improved product visibility and authenticity to ensure a safe and secure pharmaceutical supply chain. Enhanced operational efficiency by reducing manual processes.

**DHL:** Developed and implemented a real-time monitoring system using RFID and sensing technology to monitor temperature sensitive shipments while in transit.

.....over 500 sensor engagements and growing!!
**Issue:** Lack of asset visibility impacts productivity and costs

**Excess Expense & Capital Expenditure**
- Over-procurement of mobile assets
- High levels of safety stock
- Excessive charges for rental equipment

**Asset damage and loss**
- Lost, misplaced equipment
- Damaged equipment
- Accountability

**Operational Efficiency**
- Staff spend valuable time searching for equipment to do their job
- Productivity is impacted by asset misallocation
- Audit, validation and compliance procedures are time-consuming and error prone

**Asset Utilisation**
- Sub-optimal utilisation rate
- Inability to even set reasonable targets
Issues in Hospitals

- Hospitals misplace or lose 10-20% of an estimated $750 million of their valuable medical equipment annually, wasting staff and patient time and incurring costly replacement charges.” (Frost & Sullivan)
- Hospitals can’t find 15% - 20% of the device they own (Arthur Gasch, Medical Strategy Planning)
- Assets are retired if they cannot be found twice in a row for Maintenance (Client)
- “We bought back one of our infusion pumps from of the web. One of our techs picked it from the trunk of a car at the local mall” (Client)
- “Equipment moving from patient to patient without decontamination has become a significant issue in infection control”
- “We’re supposed to reach a 95% PM rate for JC compliance.... and we need to stop everything to search floor by floor, until we reach 95.”
Key Trends (or Best Practices) in Industrial

- **Flexible Manufacturing – Asset re-configuration**
  - Shift away from dedicated lines to flexible manufacturing (isolators, movable assets, etc)
  - Location technology enables tracking of assets and line configurations in real time

- **Location tracking for shared assets**
  - Real-time location of high value or critical assets and tooling
  - Ensures critical tooling and assets are installed in the right equipment

- **Condition monitoring**
  - Report condition of assets in real-time—clean/dirty, in use, needs maintenance
  - Track time and environmental conditions to assess asset status
  - Use of predictive analytics to enable out of cycle maintenance, avoid down time
IBM Real-Time Asset Locator V7.1

Problem
- Inability to locate assets
- Higher than necessary asset levels
- Lost productivity & operational down time
- Uncertainty about asset maintenance / calibration

Solution
- Automated real-time location tracking
- Condition monitoring & automated status updates
- Integration with EAM

Business Value
- Increased productivity
- Reduced asset levels
- Increased auditability
- Reduced asset loss

Industry specific applications:
- Asset Tracking & Optimisation
- Personnel Safety

Maximo Asset Management
Real-Time Location Services
Sensors
Controllers
Actuators
Sensor Events
IBM Real-Time Asset Locator (RTAL)

*How does it work?*

Sensor-tagged assets send location information → RTAL processes location events & interfaces to Maximo Asset Manager → Enabling new business use cases and workflows

**Reader**

Placed in the area that needs to be monitored

**Tags**

Placed on the asset

x,y,z location information

**IBM Real-Time Asset Locator (RTAL)**

- Location monitoring
- History management
- Zone management
- Complex event processing – alerts
- Web UI

**Maximo Asset Manager**

**Enhanced Value for Maximo**

- Location & condition (temperature, clean/dirty, vibration, zone) enabled asset management
- EAM integration for PM, repair, inventory mgmt.
- Location and related business events trigger workflow
- Real-time location visualization
- Analytics provide KPIs and visibility related to inventory, utilisation and exceptions
RTAL is Sensor Subsystem Agnostic

Different sensor sub-systems support different use cases

- **Ultra-Wide Band**
  Zebra Enterprise Solutions, UbiSense

- **Ultra-Sonic RTLS**
  Sonitor – Indoor Only

- **Phased Array Passive Sys.**
  Mojix

- **Infra-Red RTLS**
  Centrak

- **802.11 Wireless RTLS**
  Zebra Enterprise Solutions, Cisco, Ekahau, AwarePoint

- **GPS and ISO 24730, 433Mhz Wireless**
  Zebra Enterprise Solutions, SPOT, RFcode

- **Standard Passive Systems**
  Intermec, Alien, Motorola, Omni-ID, Impinj,
  Zebra Enterprise Solutions,

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**Location Precision**

Kiosk – Gate – Zone – Room – Sub-Room – Meters – Sub Meter

**Sampling Rate**

- When Object Moves Past Sensor
  - Hours
  - Minutes
  - Seconds
  - Sub-Second
End-to-End Solution Stack
Integrating IBM Sensor Solutions with Tivoli Maximo
Real-Time Asset Locator can help deliver these use cases and more!

<table>
<thead>
<tr>
<th><strong>Use Cases – Problems to Solve</strong></th>
<th><strong>Solution – Enhance Maximo with Deep Asset Knowledge</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Automated Asset Location:</strong></td>
<td>Technician initiates a system search to locate assets in question. Once PM is completed and the assets are ready to be put back into service, technician completes the PM and the new location information goes to Maximo Asset Management and a workflow automatically closes the open PM request ticket and makes the assets available for use.</td>
</tr>
<tr>
<td>I need to perform preventive maintenance or calibration, where are my assets? Are they in compliance?</td>
<td></td>
</tr>
<tr>
<td><strong>Asset “Needs Maintenance” Zone:</strong></td>
<td>The system captures this location as a significant event and sends the request to Maximo Asset Management indicating that the asset state is “Needs Maintenance”. Maximo Asset Management sees this state change and generates a work request for the device.</td>
</tr>
<tr>
<td>I just moved an asset into maintenance, what do I do now?</td>
<td></td>
</tr>
<tr>
<td><strong>Loss Prevention:</strong></td>
<td>The system captures an asset move into an unsecure area and sends an event to Maximo Asset Management indicating that the asset state is now in an unsecured location. Maximo Asset Management sees this state change and generates a work request for security to address the situation.</td>
</tr>
<tr>
<td>An asset moves outside the perimeter of a security perimeter, what do I do? Who moved it?</td>
<td></td>
</tr>
<tr>
<td><strong>Par Level Not Met - insufficient resources</strong></td>
<td>The system tracks the number of items in a zone and if assets or parts fall below a set threshold, a sensor event is created which opens a Maximo ticket to adjust asset balances.</td>
</tr>
<tr>
<td>What assets do I have, how many? Are they sufficient?</td>
<td></td>
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Real-Time Location Services can answer these questions and more!

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<td><strong>OSHA Confined space/ Restricted Location:</strong></td>
<td>Technician needs to perform a work order in a Confined space/ Restricted Location. As the technician enters the designated zone, sensors detect if safety equipment is not present, generating a work order or updating Maximo.</td>
</tr>
<tr>
<td>Does the Technician have the required equipment to enter Confined space/ Restricted Location?</td>
<td></td>
</tr>
<tr>
<td><strong>Asset utilisation Report:</strong></td>
<td>Maximo Asset Management captures information from Real-Time Asset Locator and generates a report showing the total time the asset was in service in each work zone or area base on location.</td>
</tr>
<tr>
<td>What is the utilisation of my assets? Who is using them? When? Are they licensed?</td>
<td></td>
</tr>
<tr>
<td><strong>Asset Location History Report:</strong></td>
<td>Maximo Asset Management captures information from Real-Time Asset Locator and generates a report showing the history of where an asset was in the sensor map over a variable time interval.</td>
</tr>
<tr>
<td>Where are my assets? Where have they moved to/from? When?</td>
<td></td>
</tr>
<tr>
<td><strong>Asset Malfunction:</strong></td>
<td>Operator presses a button on an asset to indicate PM is required for the device. This sends an event to Maximo Asset Management to automatically generate a work request for preventive maintenance.</td>
</tr>
<tr>
<td>What is the status and configuration of my asset?</td>
<td></td>
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RTAL in Healthcare

1. Asset Tracking
   • Clinical equipment
   • Wheelchairs
   • Beds, Stretchers
   • Medical assets
   • IT assets

2. Staff Tracking
   • Process/workflow
   • Scheduling patient transports
   • Staff safety / alarms

3. Patient Tracking
   • Patient flow
   • Wanderers
   • Long-term care, elderly care
   • Control pandemics
   • Manage disasters

Benefits
- 10-20% reduction in assets needed
- 5-10% Staff productivity improvement
RTAL in Industrial

1. Critical Resource Mgmt
   • Asset Auto-ID & Tracking
   • Mobile Asset Utilisation
   • Contract Equipment Mgmt
   • Tool Crib Mgmt & Control
   • Re-usable Container Mgmt
   • Condition Based Monitoring

2. Personnel Location and Safety
   • Missing Safety Equipment
   • Process/workflow Tracking
   • Man Down
   • Fall Detection

3. Work-In-Process
   • Auto-Maintenance Response
   • Permit to Work / Lockdown
   • JIT Resource Synchronization
   • WIP Location & Track
   • Yard Mgmt

Benefits:
• 30% reduction in lost assets
• 25% increase in asset utilisation
• 20% improvement staff productivity
St. Michael’s Medical Center RTLS for Asset Tracking

- 357-bed research and teaching hospital in Newark, NJ area.
- Director of Bio-Med and CIO decision makers
- RTLS to improve hospital operations
  - Provide accurate asset location for 2K assets
  - Comply with PM requirements
  - Improve asset availability for better patient care
  - Reduce rental equipment
  - In-source work due to improved productivity
- Why IBM
  - Room level accuracy
  - Capability to alerts automate business events
  - Roadmap to track patients/staff
- Next Steps
  - Track more assets (Beds, Wheelchairs)
  - Track ED patients
Jia Tian Hua Healthcare improves patient safety, staff efficiency and customer experience with sensor solutions

**Background:**
This platform will allow the group of hospitals that include Da Gang Hospital, located in Da Gang, near Tianjin, China, to greatly improve its safety, efficiency and patient experience. The initial purchase order covers a Starter Kit for 1st batch of 5 hospitals; customer is planning to install the solution in 50 hospitals in 2010.

**Solution:**
The objective is to sensor enable a series of hospital management applications, such as patient tracking and care, drug tracking and dispensation, asset tracking, on top of IBM’s software platform and Foxconn’s, a business partner’s hardware and applications.

**Benefits:**
- Increased staff efficiency – reduce search time for mobile assets
- Improved asset utilisation since assets can easily be located by staff
- Improve patient safety by verifying that the correct drugs and doses are administered to patients
- Better customer experience through staff workflow optimisation
Personnel Visibility: POSCO

**Project Objectives**
- Monitor workers on specific floors
- Generate notifications/alerts in accidental man-down situations
- 3-D visibility accuracy

**Business Benefits**
- Increase visibility of employees in the factory
- Alleviate the security and safety concerns of employees in the factory
- Enhance the POSCO brand image through the u-factory concept

**Smarter Insights**
- Solution provides ability to detect unsafe conditions and accidents
- Energy consumption can be reduced by automatically shutting off lights when employees leave areas
- Share critical data during incidents with emergency staff to shorten response times.
Manufacturing Visibility: Honda

Project Objectives
- Improve operative performance in work-in-process manufacturing.
- Increase efficient usage of operational resources.

Business Benefits
- Accurate final product configuration as built.
- Tracking of each item assembled and parameters contained in final products.
- Visibility of actual requirements on production lines.
- Real-time inventory of each manufacturing activity completed.

Smarter Insights
- The advantages of sensor-based implementations are greater automation, increased information visibility, and improved data access, accuracy and analysis.
- A systems approach to the work-in-process management problem can have an ROI of within one year.
Business Visibility: Airbus

Two Key Projects
- Transport logistics – RFID Asset Tracking
- Warehouse logistics – Supply Chain optimisation

Business Benefits
- Visibility to operational events
- Event-driven triggers signal anomalous issues
- Exception management and action
- Metrics track business performance

“Improving visibility is a pre-requisite to improve the ‘Way of Working’ & to deliver business savings”

– Carlo Nizam, Head of Value Chain Visibility & RFID, Airbus
Asian Electric Company
Smarter asset management with real-time asset tracking

The Need:
This Electric Corporation’s IT infrastructure contained several hundred thousand separate hardware assets, many of which were light and easy to move (computers, monitors, cables, printers, etc). The company needed to adopt a solution that could increase the efficiency of its asset management processes, plus satisfy licensing compliance and reduce costs. Recognizing an opportunity for potential business growth and expansion into new territories, the company began looking for a world-class IT services provider that could help it pursue a solution for both itself and its potential customers

The Solution:
The client engaged IBM Global Services - Application Services, to provide in-depth business consulting for the asset management and IT optimisation project. Omni-ID provided the RFID tags implemented by the client. IBM Software Services for WebSphere provided and implemented Middleware and intelligent software to the asset management system. once the solution was up and running, IBM joined with the company to begin marketing a turnkey offering based on this engagement.

What Makes it Smarter:
- Provides intelligent, real-time broad scanning and automated management of assets
- Enables the optimisation of asset allocation, and improves security management
- The company has been able to parlay this engagement into a new, viable revenue stream, leveraging the quality of IBM software to drive sales

Solution components:
- IBM Global Services – Application Services
- IBM WebSphere
- IBM Maximo Asset Management
- IBM Cognos 8 BI, IBM DB2 for Windows
Liquefied Petroleum Corporation (LPC)

(*HPCL*)

Enables smarter bottling operations and tracking of LPG cylinders

**The Need:**

In the client’s country, illegal diversion of Liquefied Petroleum Gas (LPG) cylinders meant for domestic consumers to commercial establishments is a major problem for LPG producers like LPC. LPC’s goals were twofold – achieving greater efficiency in the supply-chain of its LPG business and ensuring that illegal diversion is prevented. Achievement of these goals would have a direct, positive impact on the company’s bottom line.

**The Solution:**

IBM proposed and is implementing, in two phases, a comprehensive and integrated RFID-enabled solution for tracking cylinders. In the first phase, cylinders are tracked when they pass through various work stations in the Bottling Plant. In the second phase, the cylinder tracking application will be extended to distributors and customers to identify the end user and track the delivery of the cylinders. IBM’s solution for LPC is implemented by IBM Global Services.

**What Makes it Smarter:**

- RFID helps track the consumption levels at each distributor, identifying unusual consumption patterns and short turnaround times indicating diversion
- A custom dashboard will allow LPC to gain business insights from sensor data
- Comprehensive solution provides smart automation of bottling operation, inventory and warehouse management and cylinder maintenance management
Business Visibility: U.S. Army CoBRA Fleet Solutions’

**Project Objectives**
- Sustain operationally ready weapons system
- Ensure diagnostic and prognostic information is readily available

**Business Benefits**
- Engineering access to mechanical and performance data
- Transition from diagnostic to prognostic maintenance analysis.
- Improved vehicle availability and readiness

**Smarter Insights**
- Demand continues to grow for solutions for real time fleet diagnostics and prognostics.
- Premises central site can provide expanded business visibility for fleet solutions by processing & integrating events with multiple environments including Maximo for dynamic asset management.
Understanding the ROI

**Finance**
- How much of your expense and capital budget is due to loss of mobile assets?
- Can you account for all your assets and inventory?
- Do you know what your asset utilisation is and are you satisfied with your utilisation rate?
- Do you have excess assets on hand to compensate for staff inability to find them?
- How much are you paying for additional rental/lease equipment or rental overcharges due to not being able to find them?

**Operations**
- How much time does your staff spend looking for assets to do their daily job?
- What amount of preventative maintenance (PM) time is allocated to finding assets?
- What % of your equipment can pass calibration, PM or other regulatory audits?
- How is equipment located for PMs, warranty work and equipment recalls?
- Can staff satisfaction be improved if they can find mobile assets?
IBM’s Unique Value Proposition

- **Leading Industry Expertise**
  - Combine the world’s leading asset management software with the leading RFID Enterprise Platform Vendor*

- **Deep Experience in Sensor Applications**
  - Over 500 sensor based engagements

- **Proven, Low Risk Approach**
  - Integrated and tested sensor and asset management software from a single vendor
  - Support for multiple sensor solutions (Ultrasound, RFID, WiMax, etc.) for a broad range of use cases and investment protection
  - Closest thing to a “one stop shop” in the market
Real Time Location Services – Summary

- Use of sensor technology (active tags/receivers) to track location of tagged items

- Real Time Location Services utilises sensors, network, & software to:
  - Improve visibility to operational and business processes
  - Provide visibility to critical resources and inventory
  - Identify areas for asset, inventory and workflow optimisation
Getting Started/Next Steps

- Schedule a visit or arrange a remote demonstration through the Austin SEL or La Gaude Center of Excellence
- Strategy Workshop - Identify and size potential business benefits
  - Where can RTLS solution help you?
- Technology Assessment Workshop - Technology Assessment/Solution Design/RTLS Deployment Strategy

=> Solution Approach
  - Implementation Roadmap
  - Costs/Benefits/ROI
Real Time Location Services

Questions?