Software Solutions

Maximo Real-Time Asset Locator (RTAL)

Asset Optimization Solutions

Mark Morneault **morn@us.ibm.com**

IBM

Asset Optimization
Maximo + Real Time Location + Traceability

IBM's Asset Optimization offerings are a strategic and comprehensive approach to address asset optimization market requirements by combining sensory and location technologies with asset and inventory management, operational research skills, business process management and business intelligence.

Real-time Asset Location: Do you have the right equipment in the right place at the right time?

Parts: Collect serialized parts and installation variable data to minimize recalls

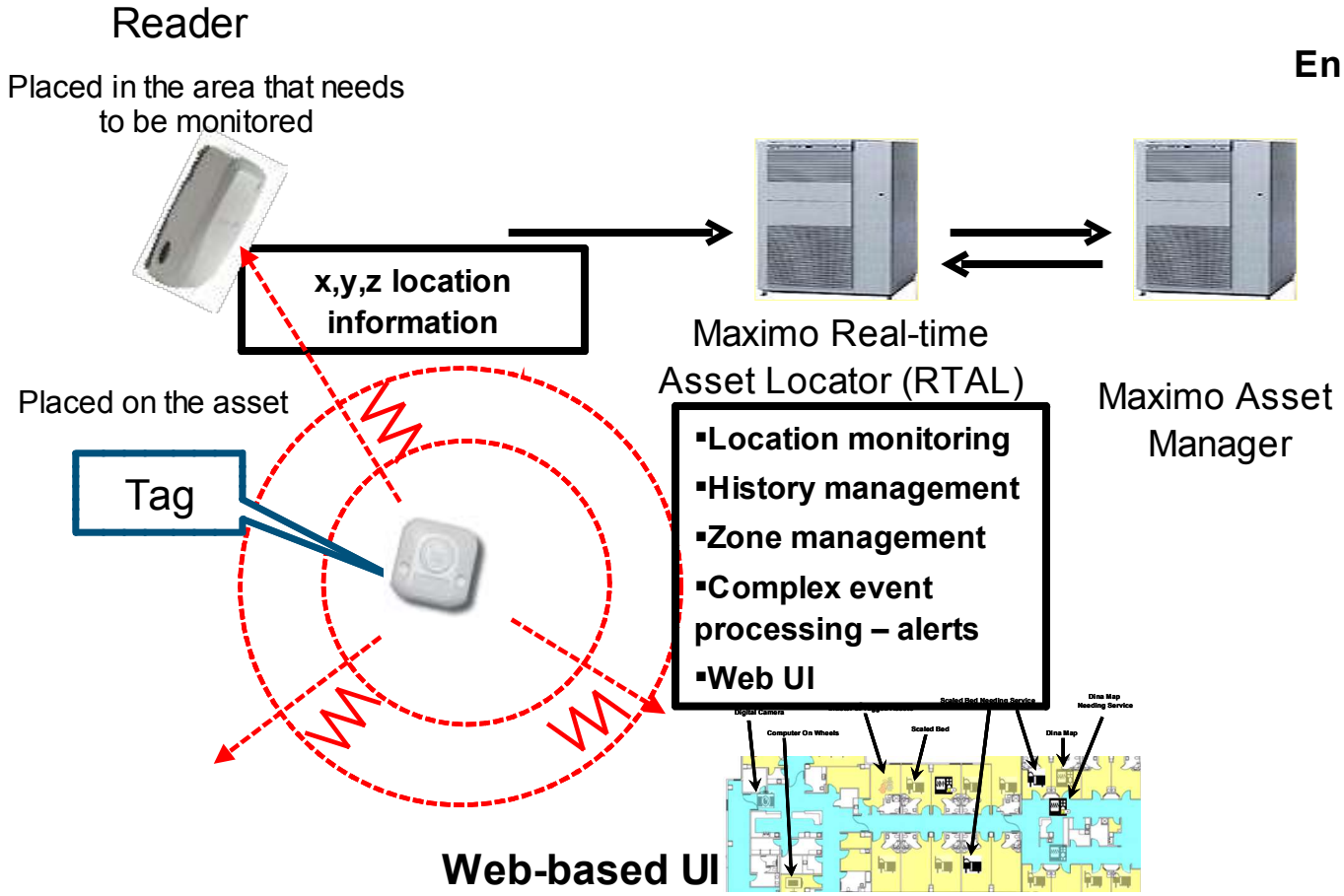
Movable Asset Management Do you know where your mobile healthcare equipment is?

Returnable Containers: Do my suppliers have enough containers to meet my production needs?

Adding Real Time Location, plus Track and Trace data to Maximo for *NEW SOLUTIONS FOR YOU TO SELL*

First Offering: Maximo Real Time Asset Locator:
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***



Enhanced Value for Maximo

- Location & condition (temp.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, utilization and exceptions

First Offering: Maximo Real Time Asset Locator

Problem	*Mobile asset visibility impacts productivity and cost control*	
	Excess Expense & CapEx	*Inflated levels of inventory, excess equipment, and over-procurement*
	Asset Loss	*Typical organizations misplace or lose 10-20% of assets*
	Operational Inefficiency	*Staff can spend 20-30% of time searching for assets*
Solution Capability / Benefit	*Managing critical resources (people and equipment) through real-time visibility*	
	Automated, Real-Time Asset Location	Improve asset utilization, and employee productivity, by providing the location of resources
	EAM integration for inventory management, procurement, and repair	Prevent asset shortages, improve audit & compliance capabilities
	Analytics increase visibility & utilization	Minimize downtime by optimizing preventative maintenance and repair
	Real-Time Visibility	Monitor the state, condition, and utilization of assets to improve asset usage
Target Audience	*COOs CFO, Operation. VP of Mfg, Logistics (inbound and outbound), Quality Managers*	*Healthcare, Industrial Operations (Oil & Gas, C&P, E&U), Manufacturing (Aerospace & Defense), Transportation, Data Center / IT Assets*
IBM Value	***Assets:*** *Sensor Event Software, Traceability Server, Cognos, Maximo and SPSS* ***Intellectual Capital:*** *Experience and knowledge captured from numerous t RTLS, rack and trace implementations from around the world.* ***Scale & Breadth:*** *Scalable from simple asset location and tracking to full EAM. Sensor system agnostic!* ***(SAP & Oracle can not do this.)*** ***IBM Services****: End to End implementation services*	
Proof Points	*Jia Tian Hua – Asset Tracking and management* *Airbus – Tool tracking and management* *Posco – Employee safety* *AK Steel – Critical resource management*	
Sales Enablement		

End-to-End Solution Stack

Integrating IBM Sensor Solutions with Tivoli Maximo

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

Real Time Asset Locator & Returnable Asset Management

Shared Business Events

- Asset Lost
- Supplier Lost Asset
- Asset is damaged
- Asset Added
- Asset Scrapped
- Asset is repaired
- Asset Location Changed

IBM Maximo

Enterprise Asset Management

Zigbee	Ultra Wide Band	Ultrasound	Infrared	WiFi	Barcode	Passive RFID
Helicom Zebra WhereNet	Ubisense	sonitor technologies	Radience Centrak RF Code	AeroScout Ekahau .		Omni-ID Identify with innovation

Maximo Real-Time Asset Locator can answer these questions and more!

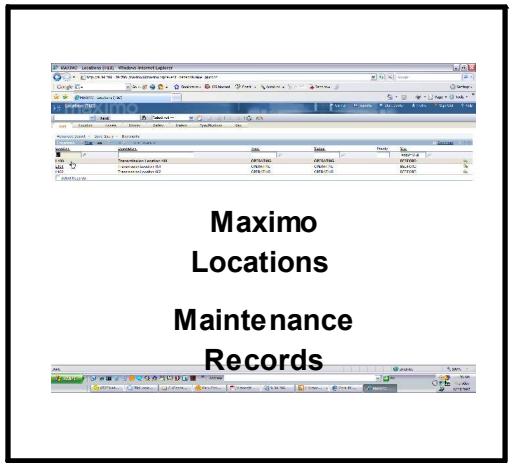
Use Cases – Problems to Solve	Solution – Enhance Maximo with Deep Asset Knowledge
Automated Asset Location: I need to perform preventive maintenance or recall isolation, where are my assets? Are they in compliance?	Technician triggers a Maximo Real-time Asset Locator event to find the current location of the asset/assets in question. Once PM is completed and the assets are ready be to put back into service, Technician completes the PM and the new location information goes to Maximo EAM and a work flow automatically closes the open PM request ticket and makes the assets available for use.
Asset "Needs Maintenance" Zone: I just moved an asset into maintenance, what do I do now?	Maximo Real-time Asset Locator captures this location as a significant event and sends the request to Maximo EAM indicating the asset state is now Needs Maintenance. Maximo EAM sees this state change and generates a work request for the device.
Loss Prevention: An asset moves outside the perimeter of a security perimeter, what do I do? Who moved it?	Maximo Real-time Asset Locator captures this move as a significant event and sends the request to Maximo EAM indicating the asset state is now in an unsecured location. Maximo EAM sees this state change and generates a work request for security to address the situation.
Par Level Not Met - insufficient resources What assets do I have, how many? Are they sufficient?	RTAL 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.
Open/Close Work Request via button push: Technician needs to mark an asset in or out of service. What is it's configuration?	Operator depresses a button on the sensor tag to mark an item out of service or in service generating a work order or updating Maximo asset status.
Asset Utilization Report: What is the utilization of my assets? Who is using them? When? Are they licensed?	Maximo captures information from sensor event software and generates a report showing the total time the asset was in service in each work zone or area base on location.
Asset Location History Report: Where are my assets? Where have they moved to/ from? When?	A canned report, ideally from Maximo, though possibly from RTAL, showing the history of where an asset was in the sensor map over a variable time interval.
Asset Malfunction: What is the status and configuration of my asset?	Operator triggers Maximo Real-time Asset Locator to indicate a PM is required for the device. This would send data from Maximo Real-time Asset Locator to Maximo EAM to automatically generate a work request for preventive maintenance.

RTAL Example: Healthcare

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

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

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



Benefits

- **-10-20% reduction in assets needed**
- **5-10% Staff productivity improvement**

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 hospital 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 utilization 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 optimization

RTAL Example: Industrial Manufacturing

1. Critical Resource Mgmt

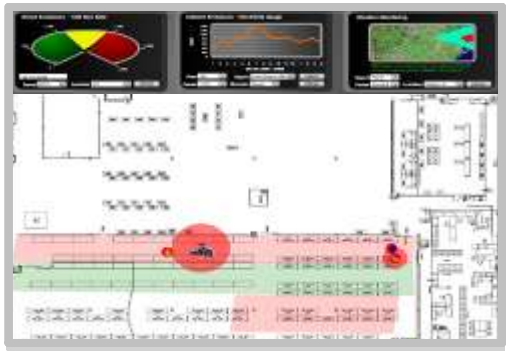
- Asset Auto-ID & Tracking
- Mobile Asset Utilization
- Contract Equipment Mgmt
- Tool Crib Mgmt & Control
- Re-usable Container Mgmt
- Condition Based Monitoring

3. Work-In-Process

- Auto-Maintenance Response
- Permit to Work / Lockdown
- JIT Resource Synchronization
- WIP Location & Track
- Yard Mgmt

2. Personnel Safety

- Missing Safety Equipment
- Safety Incident Playback
- Collision Detection & Avoidance
- Visitor Escort Breach
- Man Down
- Fall Detection



Benefits

- 30% reduction in lost assets

- 25% increase in asset utilization

- 20% improvement Staff productivity

Use case characteristics can impact the technology selection

Many factors influence the choice of technology to address a given use case.

- Asset Value
- Asset Proxy Value (physical or informational contents)
- Number of assets
- Asset Mobility
- User Mobility
- Closed loop vs. open loop movement
- Accuracy of location insight required
- Frequency of sampling required
- Physical topology of location, ingress/egress control
- Size of area to be monitored
- RF environmental characteristics (amount/ movement of metal infrastructure, other RF systems, etc
- Lifecycle management issues such as battery replacement

Tradeoffs have to be reconciled to get the best fit and cost for a given scenario.

RFID Technologies address different use cases

Wide variety of technology capabilities and process requirements

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UHF RFID (Passive)	HF RFID (Passive)	Low UHF (Active)	Microwave WIFI (Active)	Microwave UWB (Active)
866-928MHz •Read Range to 10M •Fast Data Rates •Poor Perf. w/ Metal •Zone based choke Pt •Sensitive to RF Interference & liquids •Logistics & Retail •Packaged goods	**13.56MHz** •Read Range to 1M •Fast Data Rates •Good Perf. w/ Metal •Zone based choke Pt •Sensitive to RF Interference •Pallets/Containers •Mfg parts, supplies, liquids, laptops	**433MHz** •Read Range to 100M •Medium Data Rates •Good Perf. w/ Metal •Zone based presence •Sensitive to RF Interference •Inmate Yard tracking •Car lot/Yard Tracking •Data center tracking	**2.4Ghz** •Read Range 180 ft indoor, 600ft outdoor •Can use existing WiFi network. May be limited to in-doors. •Reliable accuracy 2-3M •Sensitive to RF interf. •RTLS medical asset & patient tracking	**>3Ghz** •Read Range 600ft w/ 1W tag, 100 ft w/ 30mw •Excellent Indoor, out-door, & dense metallic environments •Reliable Accuracy < 1M •RTLS for high value assets & critical resources - personnel

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Deployment Environments

Structured Operations

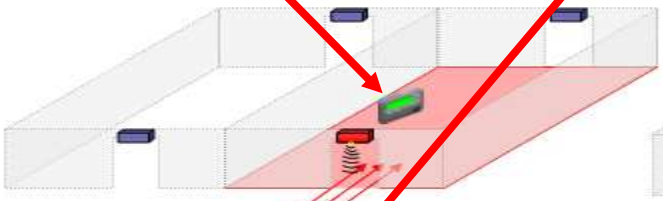
Hybrid Operations

Unstructured Operations

General RFID Technology Comparison

UHF RFID (Passive)	HF RFID (Passive)
866-928MHz •Read Range to 10M •Fast Data Rates •Poor Perf. w/ Metal •Zone based choke Pt •Sensitive to RF Interference & liquids •Logistics & Retail •Packaged goods	**13.56MHz** •Read Range to 1M •Fast Data Rates •Good Perf. w/ Metal •Zone based choke Pt •Sensitive to RF Interference •Pallets/Containers •Mfg parts, supplies, liquids, laptops

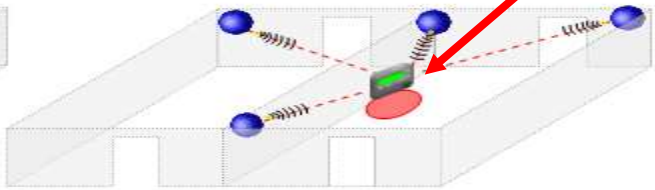
Low UHF (Active)	Microwave WIFI (Active)	Microwave UWB (Active)
433MHz •Read Range to 100M •Medium Data Rates •Good Perf. w/ Metal •Zone based presence •Sensitive to RF Interference •Inmate Yard tracking •Car lot/Yard Tracking •Data center tracking	**2.4Ghz** •Read Range 180 ft indoor, 600ft outdoor •Can use existing WiFi network. May be limited to in-doors. •Reliable accuracy 2-3M •Sensitive to RF interf. •RTLS medical asset & patient tracking	**>3Ghz** •Read Range 600ft w/ 1W tag, 100 ft w/ 30mw •Excellent Indoor, out-door, & dense metallic environments •Reliable Accuracy < 1M •RTLS for high value assets & critical resources - personnel



Zone (Chokepoint)

Zone (Presence)

Proximity (Kiosk)



Location (Coordinate)

RTAL is Sensor Subsystem Agnostic "Simultaneously"

Different Sensor Sub-Systems Support Different Use Cases

Supports: UWB (Ubisense), Active (RFCode), USID (Sonitor),

Implementations with: AeroScout, Mojix, MSSI,

- others as production supported adapters based on customer deals
- Wide range of Passive Adapters – ready4 program

(Wavetrend, Imping, Motorola, Reva, etc.)

Passive RFID Tags

Ultra-Wide Band
Zebra - MSSI, UbiSense

Ultra-Sonic RTLS
Sonitor – Indoor Only

Phased Array Passive Sys.
Mojix

Infra-Red RTLS
Centrak

802.11 Wireless RTLS
Cisco, Ekahau, AwarePoint

Active Tags

GPS and ISO 24730, 433Mhz Wireless
SPOT, Zebra – WhereNet, RFcode

Standard Passive Systems
Intermec, Alien, Motorola, Omni-ID, Impinj

Location Precision: Kiosk – Gate – Zone – Room – Sub-Room – Meters – Sub Meter

When Object Moves Past Sensor | Hours | Minutes | Seconds | Sub-Second

Tag Data Sampling Rate

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

*Source ABI research 2009

Why Should You Care?

- **Increase your Pipe** with Enhanced Customer Value
  - A single supplier offering from device/resource level to full EAM
  - Fast, identifiable payback based on labor savings and improved asset utilization
  - Enters new market spaces to solve real, easily identifiable business problems
- **Differentiation from your competitors**
  - The only single-source integrated offering
  - SAP and Oracle CANNOT do this
- $$$ **Double your Deal Size** $$$:
  - A typical RTAL software sale is comparable to the Maximo software sale

Specific Maximo RTAL Qualifying Questions

- **COO / CFO / GM**
  - How much of your expense and capital budget is due to shrinkage of mobile assets ?
  - Can you account for all your assets and inventory ?
  - What is the cost of asset shrinkage each year?
  - Do you know or have a means of determining the cost?
  - Are you able to track asset utilization by class of equipment?
  - Are you satisfied with your asset utilization level?
  - Do you carry excess assets / inventory to compensate for staff inability to find them ?
  - How quickly are you able to identify rental equipment that is no longer needed to reduce expense?

- **Engineering**
  - How much time does your staff spend looking for assets ?
  - What amount of preventative maintenance (PM) time is allocated to finding assets ?
  - Could you benefit from getting asset configurations in real time?
  - Would you like to know what critical tooling and parts are running on what line?
  - Can you improve operational efficiencies if you can find asset locations in real time ?
  - Do you know where all your high value assets are at any time?
  - When/how would you determine if any went missing?
  - Are all your high value assets e.g. cranes, portable compressors, utilized to there fullest, and scheduled effectively with the personnel that require them?
  - Do you have a real-time means of viewing where these assets are and if they are gainfully employed?
  - Do you know where all the high cost rental equipment is being used in the plant, on a real-time basis?

Contact Info

Tivoli	Industry Solutions Software
Don Busiek Strategy and Product Management dbusiek@us.ibm.com 978 899 2651	Mark Morneault Strategy and Product Management morn@us.ibm.com 512-658-6020
Dan Matlis Product Manager, Health Care dmatlis@us.ibm.com 267-352-4801	Mike Kloke Software Solutions Architecture mkloke@ca.ibm.com 905 413 3065
Toni Hodge and Steve Lee Maximo Sales Enablement thodge@us.ibm.com 540-729-6186 (Toni) stevelee@us.ibm.com 970-344-4550	Kevin Duffy Sales Support kduffy@us.ibm.com 410-571-7105