



Pulse2011



IBM Real-Time Asset Locator

Enhancing Enterprise Asset Management
with Mobile Asset Management

Presenter's Name: Johan Koopman

Title: Sales Specialist

Presenter's Name: Graham Crooks

Title: Solution Architect

Agenda

- Real-Time Asset Locator Overview - Johan
- Architecture and Demonstration - Graham
- Q&A



Your area of Interest: Mobile Asset Management !

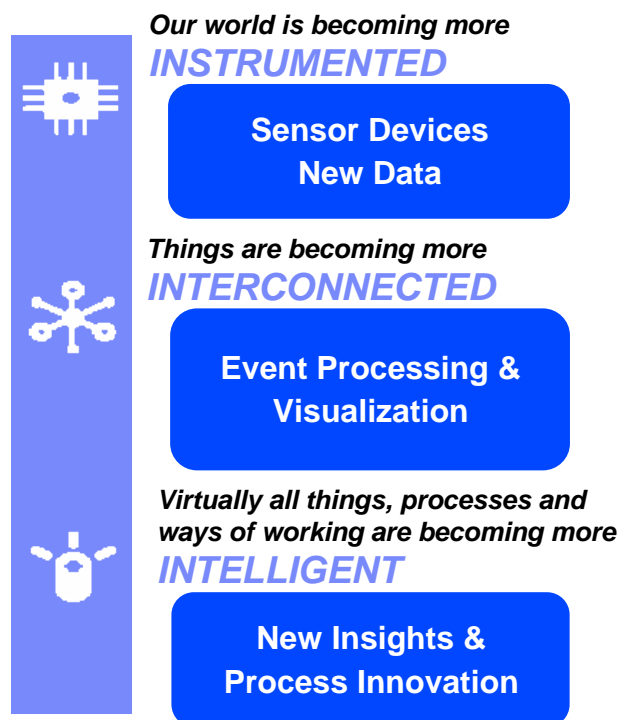
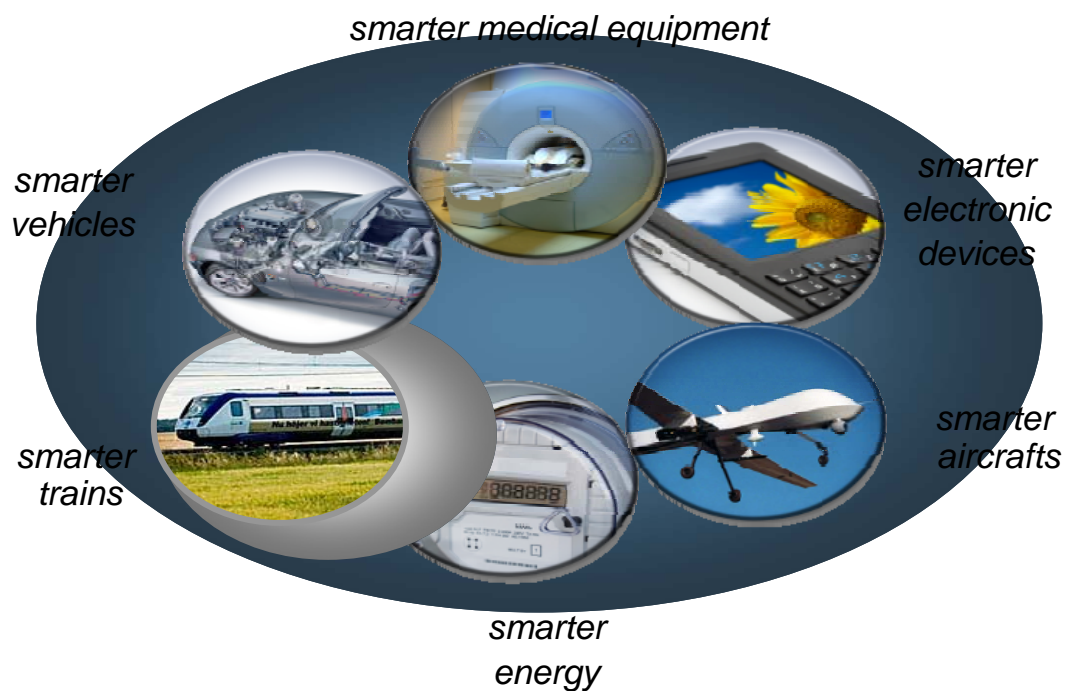


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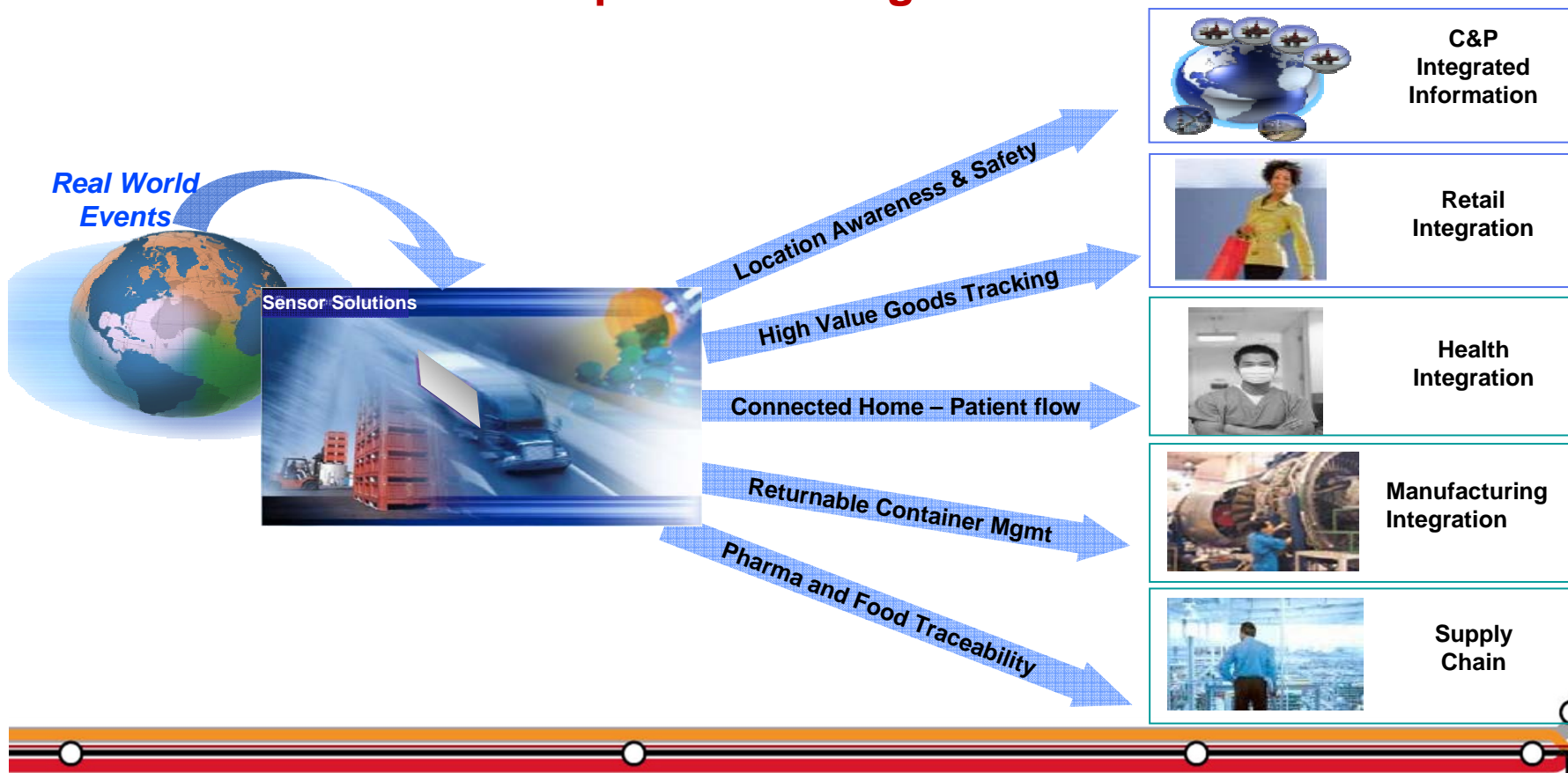
IBM Smarter Planet Strategy Products are getting smarter



New products, Smarter Products, are driving significant *change*



Sensor Solution: onramps for existing & new Solutions



Real-Time Asset Locator – Summary

- Use of sensor technology (active/passive tags and receivers) to track location and status of tagged items
- Real-time location services utilizing sensors and software to
 - *Improve visibility to operational and business processes*
 - *Provide visibility to critical resources and inventory*
 - *Identify areas for asset, inventory and workflow optimization*
- Fully integrated with Maximo and TAMIT for comprehensive asset lifecycle management



Issue: Lack of asset visibility impacts productivity & costs

- Excess Expense & Capital Expenditure
- Operational Efficiency
- Asset damage and loss
- Asset Utilization



Example: Issues in Hospitals

- Losing and Misplacing Medical Equipment
- Searching for Equipment
- Maintenance Management
- Audits and compliancy



Asset Optimization = Maximo + Real-Time Sensor Data

- Combining new sensor data with asset management
- Real-time location and status information improve asset visibility
- Increase availability and controlling asset inventory levels and reducing operational expenses and capital costs



Real-time asset location: Can you quickly locate equipment to do your daily tasks?



Real-time asset status: Can you quickly detect and respond to malfunctioning equipment?



Asset Utilization: Do you know how your assets are being used?



Mobile asset management: Do you have the right balance of equipment across work cells or sites?



RTAL Cross-industry Applications: Aerospace & Defense, Oil & Gas, Automotive, Manufacturing, Transportation

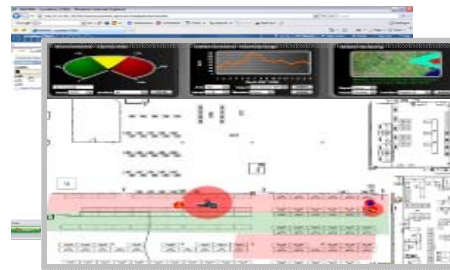
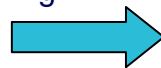
1. Critical Resource Mgmt

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



2. Personnel Location and Safety

- Missing Safety Equipment
- Process/workflow Tracking
- Man Down
- Fall Detection



3. Work-In-Process

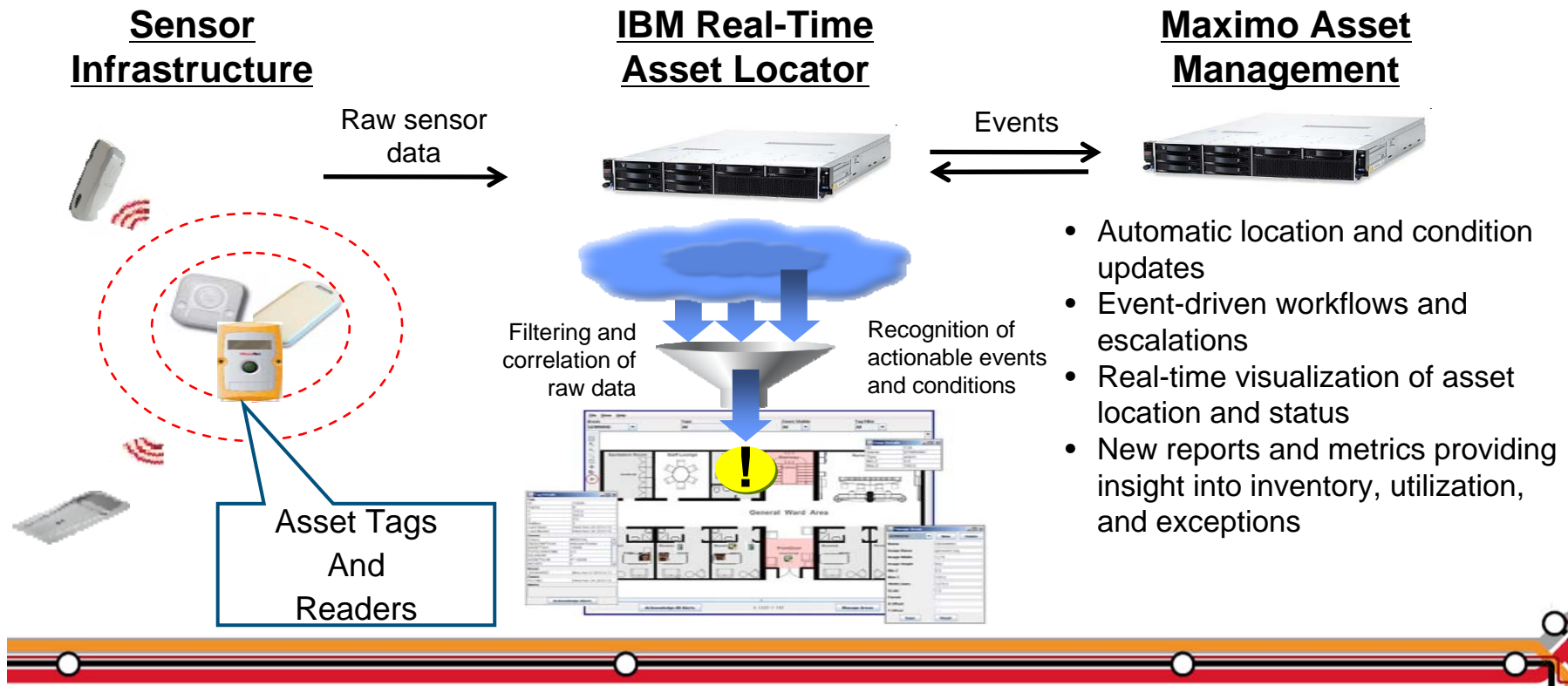
- Auto-Maintenance Response
- Permit to Work / Lockdown
- JIT Resource Synchronization
- WIP Location & Track
- Yard Mgmt

Benefits:

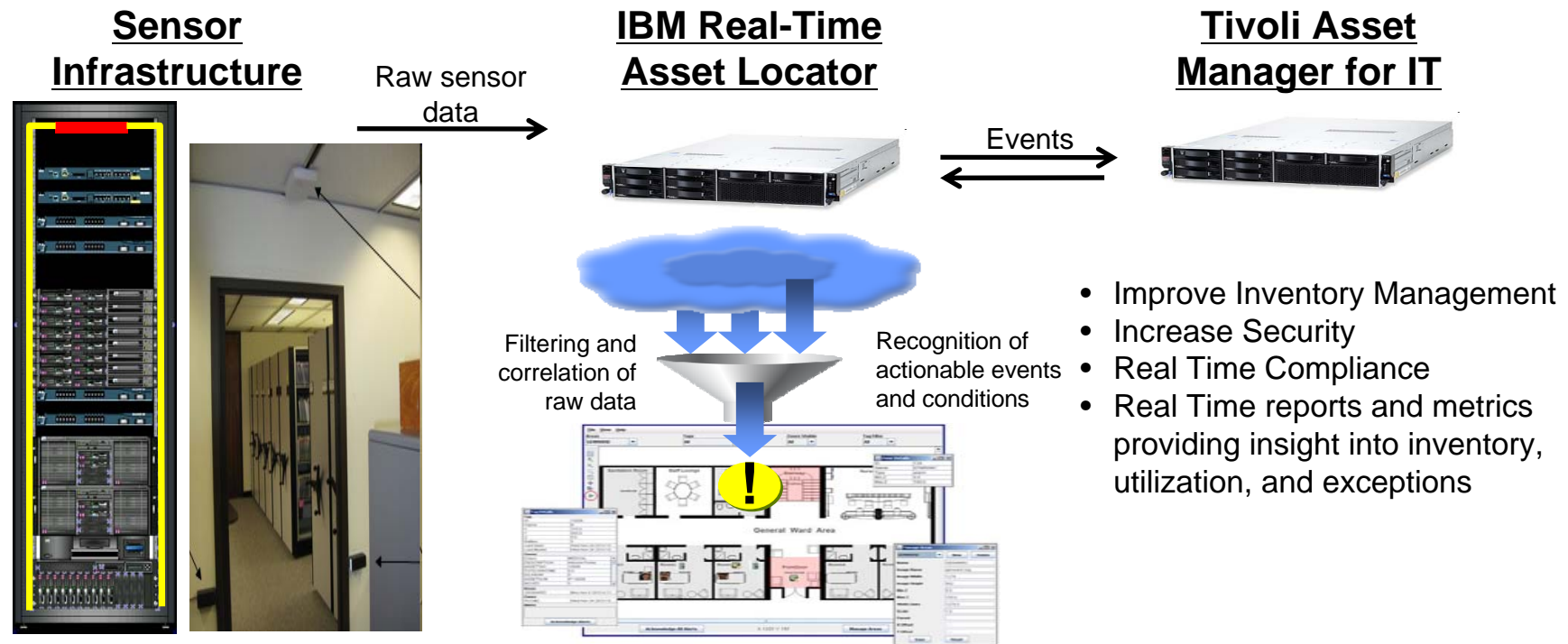
- 30% reduction in lost assets
- 25% increase in asset utilization
- 20% improvement staff productivity



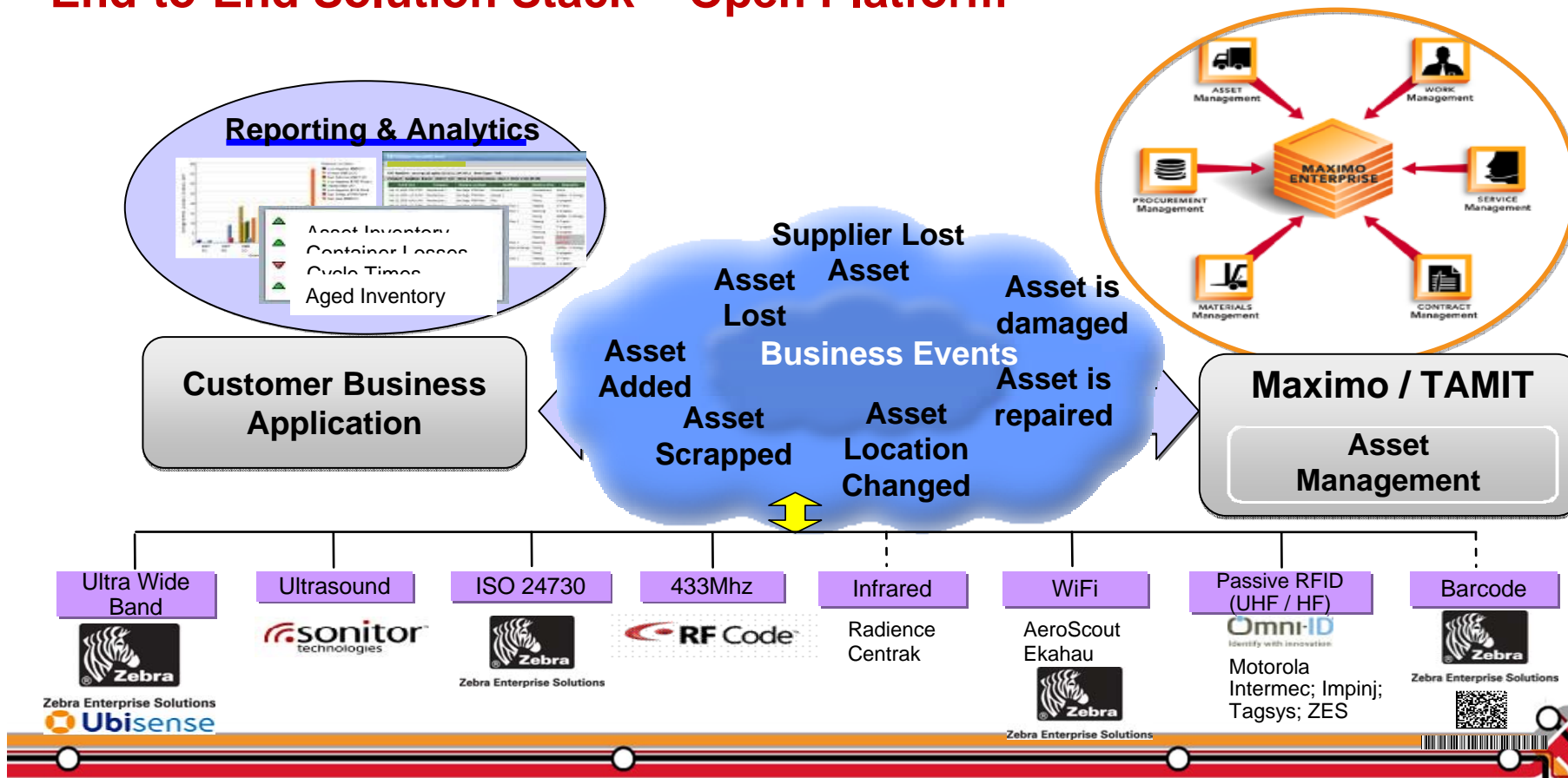
IBM Real-Time Asset Locator enables enterprise asset management with real-time data



Data Center: Improve Service Management with RTAL and Tivoli Asset Manager for IT



End-to-End Solution Stack - Open Platform



Academisch Ziekenhuis Maastricht

- 715 Beds Academic Medical Hospital
- Engineering Department exists of 50 employees.
- Responsible for the maintenance and management of medical equipment and laboratory instruments: totaling about 15,000 Clinical assets.
- Complete Lifecycle Management in Maximo Asset Management
- RTLS to improve hospital operations
 - Tracking Patients (summer 2011)
- IBM Solution provides
 - Room level accuracy
 - Ability to automate business events
 - Flexible Architecture based on Open Standards
 - Connectors to AZM ERP (SAP) besides Maximo
- Next Steps
 - Tracking Mobile Assets / Equipment
 - Roadmap: Tracking Staff



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

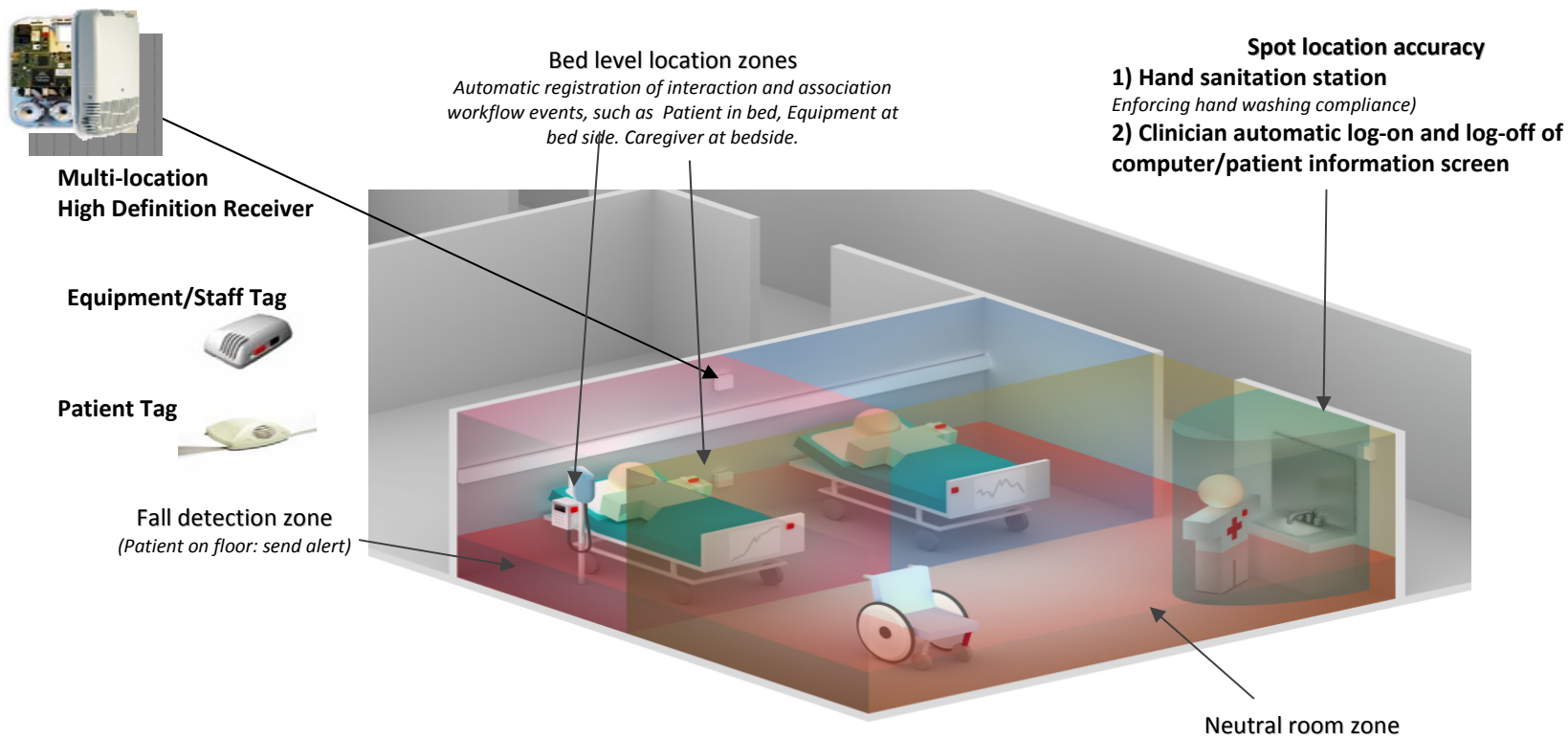
- Solution provides ability to detect unsafe conditions and accidents
- Energy consumption can be reduced by automatically shutting off lights when employees leave areas
- Share critical data during incidents with emergency staff to shorten response times.



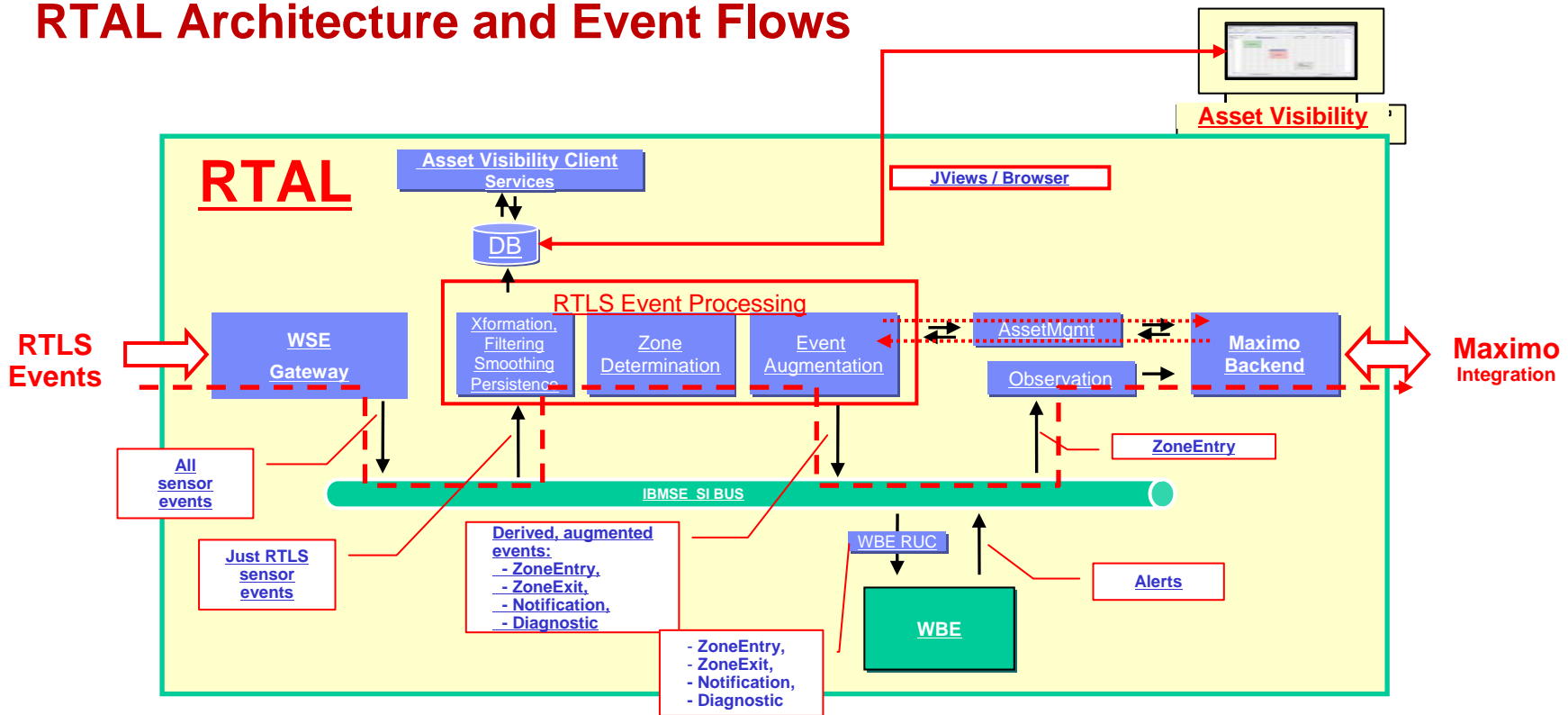
IBM Real-Time Asset Locator (RTAL) Technical Overview

Graham Crooks
gcrooks@au.ibm.com
Solutions Architect
IDR - SWG Industry Solutions

RTLS Location Zones example



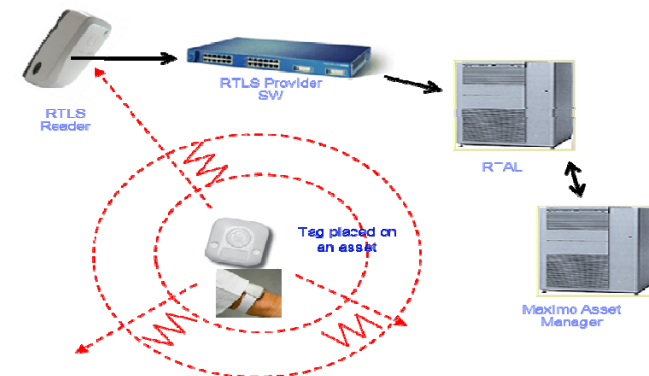
RTAL Architecture and Event Flows



RTAL Concepts: Assets, Tags, and Tracking

- Assets to be tracked by RTAL have “active tags” affixed to them provided by the RTLS system provider
- Tagged asset provisioning -- the definition of assets and their associated tags -- is performed solely in Maximo.
 - Set via Maximo “**ASSETTAG**” asset property (now visible in admin UI’s in RTAL)
- RTAL updates an asset’s LOCATION field in Maximo using the “**ASSETNUM**” and “**SITEID**” as keys (both of which were retrieved from Maximo when indexing the asset by its tag id)
- An active tag “blinks” periodically to signal its presence, both...
 - ...at a defined interval (e.g., every 5 minutes)
 - ...when a tag “exciter” is near
- When a tag blink is detected, the RTLS system generates a WSE location event containing the tag’s id and location
- RTAL processes the location event, identifying the asset and updating Maximo with location information when appropriate
- RTLS providers may support call buttons on the active tags. These buttons can be used as a signal so that a user can trigger an activity or business process.
- Solutions developed within Maximo can monitor that change in state and execute the appropriate business action or workflow.

RTLS
Events



RTAL Asset Visualization Client (AVC)

... uses ILOG jViews browser technology,



Asset Visibility

Select Area

Create Zones

Tagged Asset

Asset Details
(right-click on Asset)

Zones

Zone Details
(right-click on zone)

Manage Areas

The screenshot displays the RTAL Asset Visualization Client (AVC) interface. The main window features a grid with several zones: a green zone labeled 'myPrivacy', a red zone labeled 'myAlarm' with 'Outer Barrier for...' and 'Inner Barrier for...' labels, and a grey zone labeled 'myShadow'. The interface includes a menu bar (File, View, Help), a toolbar on the left, and a status bar at the bottom with 'Acknowledge All Alerts' and 'Manage Areas' buttons. A 'Tags' dropdown menu is set to '<Unregistered Tags>', 'Zones Visible' is set to 'All', and 'Tag Filter' is set to 'All'. A 'Manage Areas' dialog box is open on the right, showing fields for Name, Image Name, Image Width, Image Height, Min Z, Max Z, Width Units, Scale, Parent, X Offset, and Y Offset. A 'Tag Details' window is open at the bottom left, displaying asset information for tag ID 123456788.

Tag	Value
ID	123456788
Signal	B
X	195.3
Y	195.3
Z	0.0
Battery	0
Last Seen	Thu Aug 19 2010 12:0...
Last Moved	Thu Aug 19 2010 12:0...

Owner	Value
Class	IT
VENDOR	DATACHIP
DESCRIPTION	Standard Laptop Co...
ASSETTAG	123456788
TOTDOWNTIME	0.0
ISLINEAR	0
ASSETNUM	7300
MOVED	0
HIERARCHYPATH	4300000014321000...
CLASSIC	OPERATING

Areas	Value
Matrix	Wed Aug 18 2010 11:...

Zones	Value
myAlarm	Thu Aug 19 2010 12:0...

Alerts	Value
--------	-------

Zone Details	Value
ID	3
Name	myShadow
Type	shadow
Min Z	0.0
Max Z	10.0

Manage Areas	Value
Matrix	Matrix
Name	Matrix
Image Name	matrix.svg
Image Width	602
Image Height	450
Min Z	0.0
Max Z	100.0
Width Units	602.0
Scale	1.0
Parent	
X Offset	0.0
Y Offset	0.0

Location Event:

Asset w/ tag 1700001 was detected at (100,200,5) by device E5, and has low battery and call button press.

```

<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
- <ns1:sensor_events ns1:version="7.0" xsi:schemaLocation="resources/ibm/WSE_7_0.xsd"
  xmlns:ns1="http://www.ibm.com/xmlns/prod/websphere/sensorevents/wse70"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <ns1:event_id ns1:type="String">7df20038-73b1-4ca5-9a59-4425d2d8a8ad</ns1:event_id>
  <ns1:event_time ns1:type="DateTime">2010-07-21T23:18:46.390-04:00</ns1:event_time>
  <ns1:event_type ns1:type="String">report/asset/observation/location</ns1:event_type>
  <ns1:originating_event_id ns1:type="String" />
  <ns1:priority ns1:type="Integer">50</ns1:priority>
- <ns1:sensor_event>
- <ns1:condition>
  <ns1:battery_status ns1:type="String">1</ns1:battery_status>
  <ns1:buttons_pressed ns1:type="String">2</ns1:buttons_pressed>
</ns1:condition>
  <ns1:event_id ns1:type="String">e1a74847-6b96-4046-a49f-2be28db8b211</ns1:event_id>
  <ns1:event_time ns1:type="DateTime">2010-07-21T23:18:46.390-04:00</ns1:event_time>
  <ns1:event_type ns1:type="String">report/asset/observation/location</ns1:event_type>
- <ns1:location>
  <ns1:dimensionality ns1:type="Integer">3</ns1:dimensionality>
  <ns1:reliability ns1:type="Integer">0</ns1:reliability>
  <ns1:x ns1:type="Real">100.0</ns1:x>
  <ns1:y ns1:type="Real">200.0</ns1:y>
  <ns1:z ns1:type="Real">5.0</ns1:z>
</ns1:location>
  <ns1:source_id ns1:type="String">E5</ns1:source_id>
- <ns1:subject>
  <ns1:epc_tag_uri ns1:type="String">urn:epc:id:zebra:RTLS24730.17100001</ns1:epc_tag_uri>
  <ns1:id ns1:type="String">17100001</ns1:id>
</ns1:subject>
</ns1:sensor_event>
  <ns1:source_id ns1:type="String">E5</ns1:source_id>
</ns1:sensor_events>

```

Condition:
- low battery (1)
- call button pressed (2)

Location:
- coordinates (100, 200, 5)

Source:
- controller E5

Subject:
- TagID 17100001



RTAL Business Event Processing: Rules and Alerts



WebSphere Sensor Events Administrative Console

- Serial Number Configuration
- Company Prefix Index Translation
- Reporting
 - Event Reporting
- Rules and Alerts
 - Location Based Rule Definition

- Duration of Stay in Zone
- Man Down Detection
- Maximum Items per Zone Threshold
- Zone Access Restriction
- Zone Exit Restriction

No Rules defined.

WebSphere Business Events: Event Flow

- Interaction Sets
 - business rules
 - check if in zone too long
 - check if item unresponsive
 - check if more than maximum items in zone
 - check if zone access allowed
 - check if zone exit allowed
 - other decisions
 - check if item moved
 - check if zoneID present
 - signal add to zone
 - signal remove from zone
 - signal zone change
 - Filters
 - business rules
 - has moved more than max unre
 - item non responsive
 - maximum items in zone exceeded
 - zone access restricted
 - zone exit restricted
 - zone has changed
 - zone has not changed
 - zoneID present
 - new folder
 - in zone too long
 - Named Constants
 - Touchpoints
 - Intermediate Objects
 - Sources

You can also define new, custom rule types and alert actions using WBE.

These are the types of location-based rules that come pre-defined...

- Alert Actions
- Display Alert
 - Log Alert
 - Publish to Output Channel

...and these are the pre-defined types of alert actions that can be taken in those rules.

- check if in zone too long** Related by **syn_zoneIDpresent**
 - In response to **syn_zoneIDpresent** from rts:TagEvents When
 - Where **in zone too long** and **zone has not changed**
 - Then **itemInZoneTooLongAlert** on rts:TagEvents
- check if item unresponsive** Related by **Item.tagID**
 - In response to **locationEvent** from rts:TagEvents When **After (Rules.maxDownTime_days)**
 - Where **item non responsive**
 - Then **itemUnresponsiveAlert** on rts:TagEvents
- check if more than maximum items in zone** Related by **Location.locationID**
 - In response to **syn_addToZone** from rts:TagEvents When
 - Where **maximum items in zone exceeded**
 - Then **maxItemsInZoneViolatedAlert** on rts:TagEvents
- check if zone access allowed** Related by **Item.tagID**
 - In response to **syn_zoneIDpresent** from rts:TagEvents When
 - Where **zone access restricted**
 - Then **zoneAccessViolatedAlert** on rts:TagEvents
- check if zone exit allowed** Related by **Item.tagID**
 - In response to **syn_zoneChange** from rts:TagEvents When
 - Where **zone exit restricted**
 - Then **zoneExitViolatedAlert** on rts:TagEvents



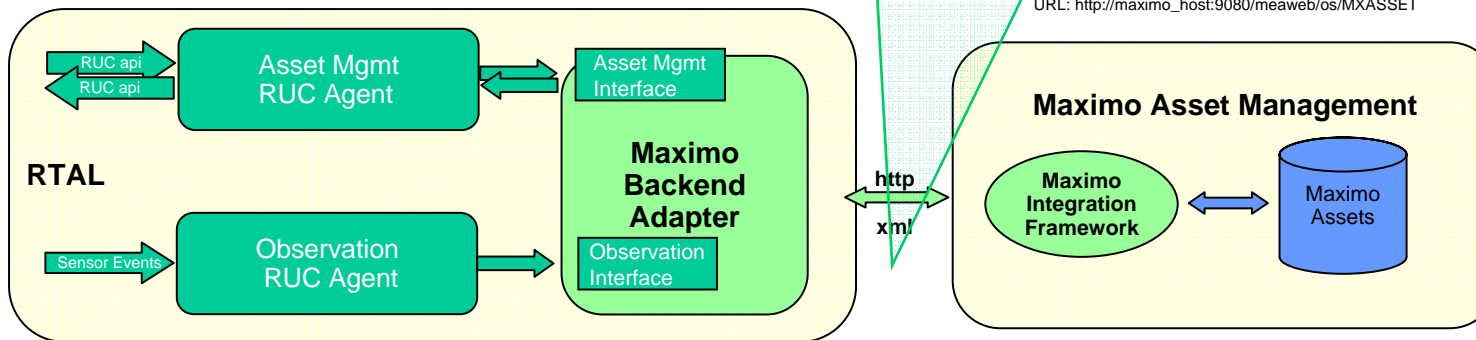
RTAL - Maximo Integration

- **RTAL Maximo Backend Adapter** both pulls data from and pushes updates to Maximo
- Uses the Maximo **MXASSET** Object Structure and **MXASSETInterface** Enterprise Service of the Maximo Integration Framework
- via **http** and **XML**
- WSE-Maximo event field update mappings specified in WAS Environment Resource Provider entry properties (using WAS Console)

```

...
<SyncMXASSET xmlns="http://www.ibm.com/maximo">
  <MXASSETSet>
    <ASSET action='AddChange'>
      <ASSETNUM>TS-7</ASSETNUM>
      <SITEID>BEDFORD</SITEID>
      <STATUS >Operating</STATUS>
      <LOCATION>AIR103</LOCATION>
    </ASSET>
  </MXASSETSet>
</SyncMXASSET>
    
```

- MXASSETInterface Enterprise Service with Queue
Mode: Asynchronous
URL: http://maximo_host:9080/meaweb/es/EXTSYS1/MXASSETInterface
- MXASSET Object Structure Service
Mode: Synchronous
URL: http://maximo_host:9080/meaweb/os/MXASSET



Maximo Asset Location Field Updates



The screenshot displays the Maximo Assets application interface. On the left, a table lists assets with columns for Asset ID, Description, Location, and Parent. Asset 7500 is highlighted.

Asset	Description	Location	Parent
7500	Standard Laptop Computer	HWSTOCK	
7400	Standard Laptop Computer	HWSTOCK	
7300	Standard Laptop Computer		
7200	Standard Laptop Computer		
7100	Standard Laptop Computer		

The detailed view for asset 7500 shows the following fields:

- Asset: 7500
- Status: OPERATING
- Site: BEDFORD
- Type: IT
- Location: HWSTOCK
- Bin: D600
- Rotating Item: Standard Laptop Computer

A red callout box points to the 'Location' field in the details view, containing the text: "RTAL automatically updates an asset's Location field value in real-time."



Demo



We love to track our valuable assets



Next Steps

- Review The Video from the Experts:
<http://www-01.ibm.com/software/au/tivoli/maximo/videos/popup.html>
- Request a white paper in the Evaluation Form
- Start small with a Pilot.
- We are here all day

