



Transcends



Transcends Introduction

- Transcends - Evolved from Pramari
- Founded by experienced IT industry experts
 - Formerly worked for BEA Systems, CSC, Informix
- Strong SOA and Enterprise Software background
 - Successfully implemented SOA in banking, healthcare, and government verticals
- Creator of the Rifidi Platform, # 1 RFID Open Source product
- 7+ years of RFID experience

What is Rifidi?

- Rifidi is a complete RFID Application Platform
 - Leading set of Prototyping and Testing Tools. On Market since 2006.
 - RFID Middleware Platform, since October 2009.
 - Addressing full project life cycle, from requirements gathering to production deployment
 - Based on Eclipse and OSGI with Lightweight Emphasis
- Rifidi is an open source RFID community
 - Numerous Contributors – Univ. of Arkansas, PennState, IBM, FossTrak
 - Corporate and University Usage, for example
 - IBM, HP, GE, United Technologies, numerous Laboratories and Hospitals
 - Rutgers, Univ. of Arkansas, PennState, and many more.
 - Over 45,000 downloads strong, Active Forums


Competitive Advantage

- Rifidi Platform is the only software product that provides **full software development life cycle tools** for taking a RFID concept to prototype and into a production solution.
- Open Source RFID platform, providing **easy access** to software, technical community with no cost forums, documentation, and know how
- Rifidi leverages other open standards such as Complex Event Processing using Esper as a rules engine and OSGI as the foundation for a **lightweight middleware platform**.
- Due to platform approach Rifidi is very agile and able to evolve business processes as the market grows and matures, providing opportunities for horizontal and vertical solutions. Pramari partners are developing **extensible horizontal and vertical solutions** on Rifidi.

Will you benefit from Rifidi Edge Server?

- Rifidi can handle high volume of data that need to be filtered
 - Rifidi Edge can play the traffic cop, directing data and filtering so you route only data you really need
 - High performance event streaming CEP engine ensures high throughput
- Quick development of customized business rules
 - The underlying rules engine enables Rifidi developers to develop simple functionality in hours or even minutes. Many rules are not longer than a few lines of code.
 - Rules are written in EQL, a SQL like language used by the CEP Open Source product Esper
- Easy Integration of RFID data reads into your standard application or backend system
 - Standard integration technologies like JMS, WebServices, or RMI ensure a smooth integration into your existing application landscape.
 - Support of many popular Readers.
 - Additional adaptors for new sensors or readers can be built.

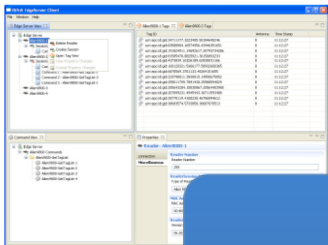
Rifidi Product Suite



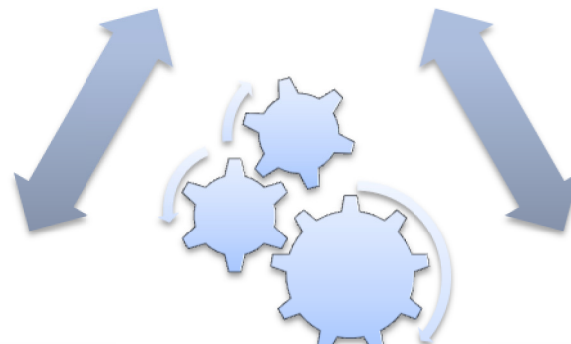
Prototyping

Rifidi Toolkit
Rifidi Prototyper
Rifidi Emulator
Rifidi Tagstreamer

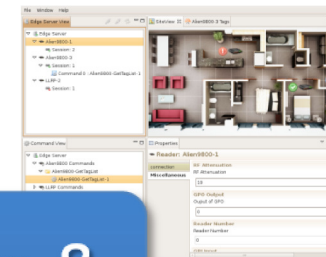
Rifidi Workbench



Development



Rifidi EdgeServer



Production & Operation

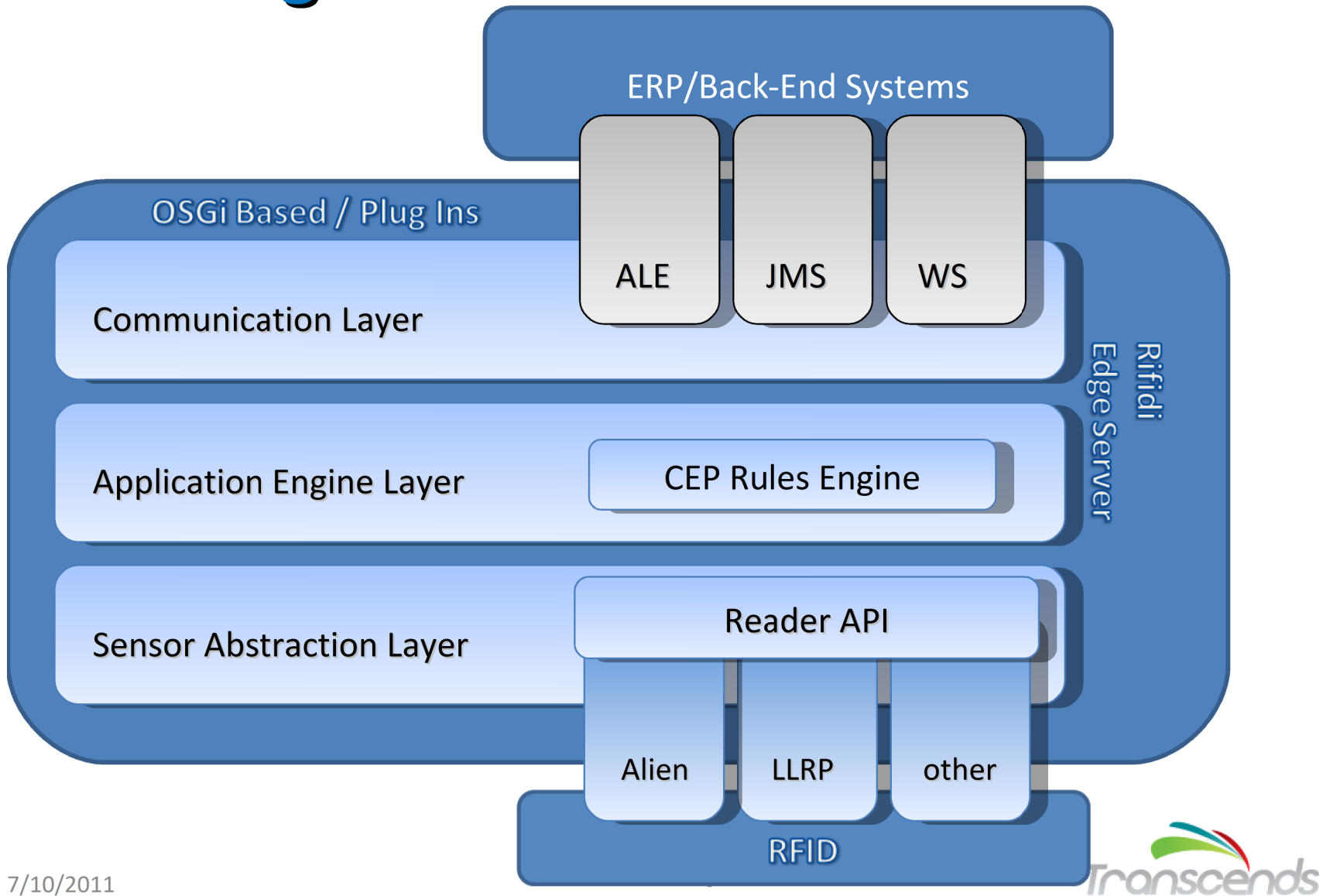
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Rifidi Edge Server

- **Cutting edge RFID Middleware Platform**
 - Lightweight, High Performance Platform based on OSGI and Java
 - RFID customization of high performance CEP/ESP Engine (Esper)
 - Standards compliant ALE Engine built on top of Esper and FossTrak TDT
 - Combine ALE and CEP modules to create dynamic RFID applications
 - WebServer built in
 - Easy integration using RMI, JMS, WebServices
 - Built with module update and hot deploy features

Rifidi Edge Architecture

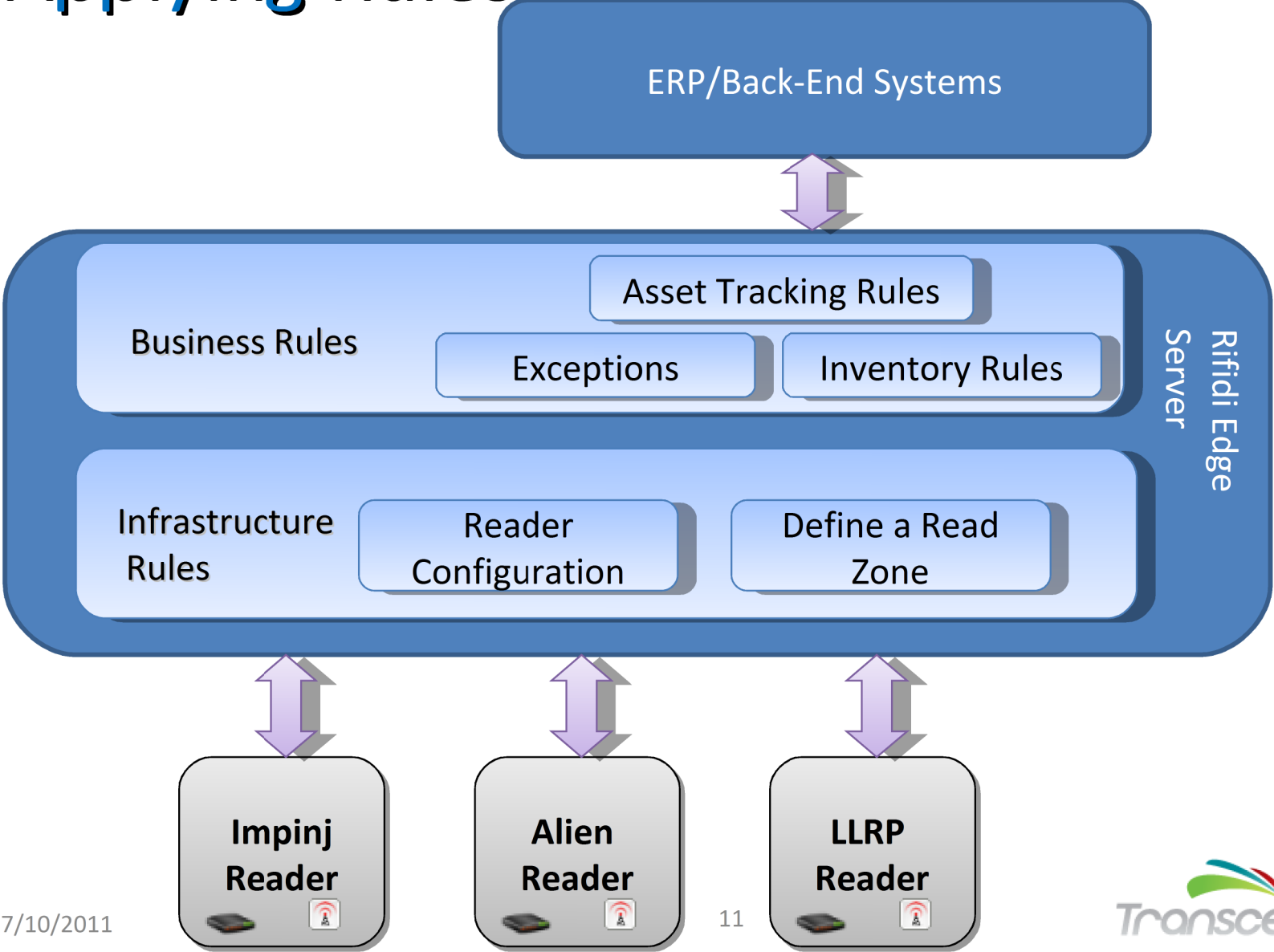


Why Event Processing for RFID?

- **RFID Systems are inherently event-driven.**
 - Esper is an event-processing engine, allowing to filter and process RFID events in memory and in real-time.
 - Esper provides event correlation, for easy detection of business events from low-level RFID events.
 - Esper provides time-based queries, making it easy to detect for example if an item has been in a zone for too long.
- **Simplifying Development**

Using Esper allows to develop powerful RFID applications logic with less custom Java code. Esper uses EQL, a SQL-like language.

Applying Rules



Partner Opportunities

- Business Rules addressing horizontal solutions that can be used in many verticals.
- Customization for Vertical Solutions where needed
- Implement RFID solution for custom devices
- Hosted Solutions to reach out to small and mid market
- Open Source community:
 - Participate in development efforts
 - Gain technical experience with technologies like OSGi, CEP, RFID

Partner Examples

Rifidi is used as platform for:

- Argo Wireless' SourceTag™
- Pratt & Whitney's Tool Crib Tracking
- Ambient ID's LabTrack™
- Tracking linen for hotels
- Tracking air plane safety equipment
- Access control for parking garages
- Securing access to drugs
- and many more

LabTrack Solution

Business Problem: Diagnostic Lab Specimen Tracking.

Vial-level specimen tracking system to accurately track specimens point to point throughout the entire life-cycle of a specimen.

Benefits:

- to help control laboratory costs
- to reduce errors and risk
- to ensure patient safety

LabTrack Solution (cont.)

Implementation: Medical custom devices that allow to

- Associate barcode with RFID Gen2 tags built into vials
- Group vials into bags
- Receive bags with vials
- Communicate with a central server to log business events

Components:

- Rifidi Edge Server with Tomcat Web Server, workflow implementation and touch screen UI
- Impinj readers
- Atom processor in custom box
- Connectivity to central server with reporting features

→ Medical device as a black box with easy to use UI

LabTrack Solution (cont.)

- Screen Shot of LabTrack™ (Main Menu)



LabTrack - Association

- Screen Shot of LabTrack™ (Association Menu)

The screenshot shows a software interface for 'Association'. At the top left is the 'AMBIENT ID' logo. The title 'Association' is centered in a grey button. To the right is a blue 'BACK' button with a left arrow icon. Below the title, the date and time 'February 7, 2011 1:14 PM' are displayed. The main area contains an orange panel with two input fields: 'BARCODE:' and 'RFID:'. To the right of these fields is a large green square. Below the orange panel is a wide blue button labeled 'MANUAL BARCODE ENTRY'. At the bottom left is a circular help icon with a question mark. At the bottom right is a grey button labeled '0 / 0'. The 'Transcends' logo is in the bottom right corner.

LabTrack - Grouping

- Screen Shot of LabTrack™ (Grouping Menu)

The screenshot shows the LabTrack Grouping Menu interface. At the top left is the 'AMBIENT ID' logo. The main title 'Grouping' is centered in a dark grey button. To the right is a 'BACK' button with a left arrow icon. Below the title, the date and time 'February 7, 2011 12:04 PM' are displayed. The main content area is divided into two orange panels. The left panel contains four input fields: '# OF ITEMS:' with the value '48', 'TEMPERATURE:' with 'Refridgerated', 'SHIPMENT TIME:' with '12:00 P.M.', and 'DESTINATION:' with 'Seattle Referral'. The right panel, titled 'Items', contains a numeric keypad with buttons for digits 1-9, 0, 'del', and 'ret'. At the bottom, there is a help icon (question mark in a circle), a 'GROUP' button, a 'CANCEL' button, and a '0 / 0' indicator.

AMBIENT ID

Grouping

BACK ↵

February 7, 2011
12:04 PM

OF ITEMS: 48

TEMPERATURE: Refridgerated

SHIPMENT TIME: 12:00 P.M.

DESTINATION: Seattle Referral

Items

1 2 3

4 5 6

7 8 9

del 0 ret

? GROUP CANCEL 0 / 0

LabTrack - Receiving

- Screen Shot of LabTrack™ (Receiving Menu)

The screenshot displays the LabTrack Receiving Menu interface. At the top left is the 'AMBIENT ID' logo. The main title 'Receiving' is centered at the top. To the right, there is a 'BACK' button with a left-pointing arrow and a timestamp: 'September 3, 2010 8:00 AM'. The interface is divided into three main sections: 1. An 'ERROR' section with an orange background, containing three error messages, each with an envelope icon: 'Error Group - Actual 45, Expected 46', 'Error Group - Actual 32, Expected 33', and 'Error Group - Actual 12, Expected 13'. A blue circular button with an upward arrow is on the right side of this section. 2. A 'SUCCESS' section with an orange background, containing one success message with a checkmark icon: 'Successful Group Received - Bag ID:0101010101010'. 3. An 'Arrived & Pending Reconciliation' section with an orange background, featuring three buttons for 'Ambient', 'Refrigerated', and 'Frozen', each showing '0/0'. A '33 / 48' indicator is on the right. A blue circular help icon with a question mark is located in the bottom left corner.

Asset Tracking - Hospital

- Screen Shot of Demo for Hospital Solution (Prototyper View)

The screenshot displays the Prototyper software interface for a hospital asset tracking demo. The main window shows a detailed floor plan of a hospital building, divided into Ground Floor, First Floor, and Second Floor. Various departments and rooms are labeled, including the Main Entrance, Outpatients Entrance, Restaurant, Physiotherapy, Rehabilitation Day Unit, Ophthalmology, Cardiology, and several wards. Assets are represented by small icons on the map, and their movement is tracked.

Reader View Panel (Left):

- AE (running)
 - Antenna: 0
 - Type: org.rifidi.emulator.reader.awid.module.AwidReader1
 - Properties:
- MainEntrance (running)
 - Antenna: 0
 - Type: org.rifidi.emulator.reader.awid.module.AwidReader1
 - Properties:
- Rehab (running)
 - Antenna: 0
 - Type: org.rifidi.emulator.reader.awid.module.AwidReader1
 - Properties:

Items View Panel (Bottom Left):

- ambulance
- bed
 - bed (ID:35 E5 3C 46 0D C3 4F CC 48 34 67 6D)
 - bed_1 (ID:35 39 30 D4 85 13 E4 33 32 82 18 52)
 - bed_2 (ID:35 2E 91 27 81 F2 3B AA F9 EC 9D 0B)
 - bed_3 (ID:35 2D 4E 86 31 F5 07 23 62 D1 10 A6)
- defibrillator
 - defibrillator (ID:35 38 11 C5 09 F8 B9 7E C5 5D 40 CA)
 - defibrillator_1 (ID:35 1A 80 3A 30 B3 45 0D 72 C1 F6 1A)
 - defibrillator_2 (ID:35 3F 60 A2 3D 7F 39 88 54 BB 63 C6)
- incubator
 - incubator (ID:35 AE D6 77 5C C3 5D F5 DE 43 5D 8C)
- microscope
- nurse
- patient
- wheelchair
- x-ray machine

INDEX Table (Bottom Center):

Ward/Department	Floor	Ward/Department	Floor
ACCIDENT & EMERGENCY	LOWER GROUND	PRAYER ROOM	GROUND
AUDIOLOGY	GROUND	REHABILITATION DAY UNIT	GROUND
CARDIO PULMONARY INVESTIGATION	GROUND	RESTAURANT	GROUND
CHILDRENS DAY CARE	FIRST	SCBU (WARD 15)	FIRST
CHILDRENS OPD	FIRST	SHOP	GROUND
CHILDRENS WARD (WARD 7)	FIRST	STROKE UNIT (WARD 4)	GROUND
CRITICAL CARE (WARD 1)	LOWER GROUND	THE TINDALE UNIT	SECOND
DAY SURGERY (WARD 20)	SECOND	THEATRES	SECOND
ENDOSCOPY (WARD 20)	SECOND	URGENT CARE CENTRE	LOWER GROUND
FRACTURE CLINIC	GROUND	WARD 3	GROUND
MEDICAL ADMISSIONS (WARD 2)	LOWER GROUND	WARD 5	GROUND

Console (Bottom Right):

```

Collisions
Item: bed_1 arrived at Hotspot: Rehab ant: 0
Item: bed_1 departed from Hotspot: Rehab ant: 0
Item: defibrillator arrived at Hotspot: MainEntrance ant: 0
Item: bed arrived at Hotspot: Rehab ant: 0
    
```

Retail Store Asset Management

Asset Management Components:

- Inventory Control Manager
- Event Monitoring
- Analytics and Reporting

Benefits:

- Real-time visibility into inventory levels on shelves by SKU
- Uncovering Shopper behavior patterns
- Clerk alerts for additional sales opportunities
- Advanced security

Retail Store Asset Monitoring

- Screen Shot of Retail Event Monitor

message_type	message_category	message_desc	timestamp	tag_id	sku	location
ALERT	SECURITY	Item moved from shelfSHELF_INK_1 And Not POS and to Portal:PORTAL_EXIT_1	2011-06-30 18:27:28.0	um.epc.ta...	21112	PORTAL_EXIT_1
NOTIFICATION	SECURITY	Item moved from shelfSHELF_INK_1 to POS:POS_FRONT_1 and to Portal:PORTAL_EXIT_1	2011-06-30 18:27:22.0	um.epc.ta...	21111	PORTAL_EXIT_1
ALERT	STOCKOUT	Inventory staus has changed to STOCKOUT for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:0	2011-06-30 18:27:17.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	MOVEMENT	More than two items removed from SHELF_INK_1 in 30 seconds	2011-06-30 18:27:17.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	STOCKOUT	Inventory staus has changed to STOCKOUT for SKU: 21112 at LOCATION:SHELF_INK_1 Inventory Threshold = 4 Inventory Actual:0	2011-06-30 18:27:13.0	um.epc.ta...	21112	SHELF_INK_1
ALERT	MOVEMENT	More than two items removed from SHELF_INK_1 in 30 seconds	2011-06-30 18:27:12.0	um.epc.ta...	21112	SHELF_INK_1
ALERT	SECURITY	Item moved from shelfSHELF_INK_1 And Not POS and to Portal:PORTAL_EXIT_1	2011-06-30 18:27:05.0	um.epc.ta...	11112	PORTAL_EXIT_1
ALERT	MOVEMENT	More than two items removed from SHELF_INK_1 in 30 seconds	2011-06-30 18:26:58.0	um.epc.ta...	11112	SHELF_INK_1
ALERT	SECURITY	Item moved from shelfSHELF_INK_1 And Not POS and to Portal:PORTAL_EXIT_1	2011-06-30 18:26:49.0	um.epc.ta...	21111	PORTAL_EXIT_1
ALERT	MOVEMENT	More than two items removed from SHELF_INK_1 in 30 seconds	2011-06-30 18:26:48.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	SECURITY	Item moved from shelfSHELF_INK_1 And Not POS and to Portal:PORTAL_EXIT_1	2011-06-30 18:26:41.0	um.epc.ta...	21111	PORTAL_EXIT_1
ALERT	REPLENISHMENT	Inventory staus has changed to REPLENISH for SKU 21112 at LOCATION SHELF_INK_1 Inventory Threshold = 4 Inventory Actual:1	2011-06-30 18:26:34.0	um.epc.ta...	21112	SHELF_INK_1
NOTIFICATION	AVAILABLE	Inventory staus has changed to AVAILABLE for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:1	2011-06-30 18:26:25.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	STOCKOUT	Inventory staus has changed to STOCKOUT for SKU: 21112 at LOCATION:SHELF_INK_1 Inventory Threshold = 4 Inventory Actual:0	2011-06-30 18:18:37.0	um.epc.ta...	21112	SHELF_INK_1
ALERT	MOVEMENT	More than two items removed from SHELF_INK_1 in 30 seconds	2011-06-30 18:18:37.0	um.epc.ta...	21112	SHELF_INK_1
NOTIFICATION	SECURITY	Item moved from shelfSHELF_INK_1 to POS:POS_FRONT_1 and to Portal:PORTAL_EXIT_1	2011-06-30 18:18:28.0	um.epc.ta...	11112	PORTAL_EXIT_1
ALERT	MOVEMENT	More than two items removed from SHELF_INK_1 in 30 seconds	2011-06-30 18:18:17.0	um.epc.ta...	11112	SHELF_INK_1
ALERT	STOCKOUT	Inventory staus has changed to STOCKOUT for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:0	2011-06-30 18:18:03.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	REPLENISHMENT	Inventory staus has changed to REPLENISH for SKU 21112 at LOCATION SHELF_INK_1 Inventory Threshold = 4 Inventory Actual:1	2011-06-30 18:17:54.0	um.epc.ta...	21112	SHELF_INK_1
NOTIFICATION	AVAILABLE	Inventory staus has changed to AVAILABLE for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:1	2011-06-30 18:17:23.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	STOCKOUT	Inventory staus has changed to STOCKOUT for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:0	2011-06-29 13:42:46.0	um.epc.ta...	21111	SHELF_INK_1
NOTIFICATION	AVAILABLE	Inventory staus has changed to AVAILABLE for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:1	2011-06-29 13:42:09.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	STOCKOUT	Inventory staus has changed to STOCKOUT for SKU: 11112 at LOCATION:SHELF_HD_1 Inventory Threshold = 3 Inventory Actual:0	2011-06-28 22:20:44.0	um.epc.ta...	11112	SHELF_HD_1
ALERT	STOCKOUT	Inventory staus has changed to STOCKOUT for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:0	2011-06-28 22:20:43.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	MOVEMENT	More than two items removed from SHELF_INK_1 in 30 seconds	2011-06-28 21:24:25.0	um.epc.ta...	21111	SHELF_INK_1
NOTIFICATION	SECURITY	Item moved from shelfSHELF_INK_1 to POS:POS_FRONT_1 and to Portal:PORTAL_EXIT_1	2011-06-28 21:24:02.0	um.epc.ta...	21111	PORTAL_EXIT_1
NOTIFICATION	AVAILABLE	Inventory staus has changed to AVAILABLE for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:1	2011-06-28 21:23:20.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	STOCKOUT	Inventory staus has changed to STOCKOUT for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:0	2011-06-28 21:22:55.0	um.epc.ta...	21111	SHELF_INK_1
NOTIFICATION	AVAILABLE	Inventory staus has changed to AVAILABLE for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:1	2011-06-28 21:22:12.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	REPLENISHMENT	Inventory staus has changed to REPLENISH for SKU 11112 at LOCATION SHELF_HD_1 Inventory Threshold = 3 Inventory Actual:1	2011-06-28 21:22:08.0	um.epc.ta...	11112	SHELF_HD_1
ALERT	STOCKOUT	Inventory staus has changed to STOCKOUT for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:0	2011-06-28 21:21:30.0	um.epc.ta...	21111	SHELF_INK_1
NOTIFICATION	AVAILABLE	Inventory staus has changed to AVAILABLE for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:1	2011-06-28 21:20:55.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	STOCKOUT	Inventory staus has changed to STOCKOUT for SKU: 11112 at LOCATION:SHELF_HD_1 Inventory Threshold = 3 Inventory Actual:0	2011-06-27 21:05:31.0	um.epc.ta...	11112	SHELF_HD_1
ALERT	MOVEMENT	More than two items removed from SHELF_HD_1 in 30 seconds	2011-06-27 21:05:31.0	um.epc.ta...	11112	SHELF_HD_1
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ALERT	MOVEMENT	More than two items removed from SHELF_INK_1 in 30 seconds	2011-06-27 21:05:23.0	um.epc.ta...	11112	SHELF_INK_1
NOTIFICATION	SECURITY	Item moved from shelfSHELF_INK_1 to POS:POS_FRONT_1 and to Portal:PORTAL_EXIT_1	2011-06-27 21:05:10.0	um.epc.ta...	21111	PORTAL_EXIT_1
ALERT	STOCKOUT	Inventory staus has changed to STOCKOUT for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:0	2011-06-27 21:04:57.0	um.epc.ta...	21111	SHELF_INK_1
NOTIFICATION	AVAILABLE	Inventory staus has changed to AVAILABLE for SKU: 21111 at LOCATION:SHELF_INK_1 Inventory Threshold = 1 Inventory Actual:1	2011-06-27 21:04:46.0	um.epc.ta...	21111	SHELF_INK_1
ALERT	REPLENISHMENT	Inventory staus has changed to REPLENISH for SKU: 11112 at LOCATION:SHELF_HD_1 Inventory Threshold = 3 Inventory Actual:2	2011-06-27 16:12:25.0	um.epc.ta...	11112	SHELF_HD_1

Q & A