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Pramari Introduction

- Founded by experienced IT/Software industry experts
  - Partners Combined 60 years IT/Software Development Experience
  - 30 + years combined experience in developing Enterprise Middleware
  - Formerly worked for BEA Systems, Oracle, IBM, CSC, Informix
- Strong SOA and Enterprise Software background
  - Successfully implemented SOA/Enterprise Integration in banking, healthcare, manufacturing, and government verticals
  - Experience integrating with Enterprise Systems such as ERP (SAP)
- Creator of the Rifidi Platform, # 1 RFID Open Source product
- Company has 5+ years of RFID experience
  - CTO is COMP TIA+ certified subject matter expert and contribute to test creation
  - Part of developing/implementing RFID standards such as ALE and Low Level Reader Protocol (LLRP)

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Pramari Customer Base

- UTC/Pratt and Whitney – Inventory Management – Aerospace Tool Crib – Alien Readers – integration with SAP
- GE Research & Development (Prototype) – Work in Process – Consumer Goods
- Lab Group – Healthcare Supply Chain(Track and Trace) – Lab Tracking – Impinj
- IDLink/EAFit – Access Control – Parking Lot Management - Sirit
- Brazilian Retailer Pilot – Inventory Managment/POS Intergartion – Impinj
- Hotel Chain Pilot – Asset Tracking
- Many more but these are ones Pramari has been directly involved in

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What is Rifidi?

- Rifidi is a complete RFID Application Platform
  - Leading set of Prototype and Testing Tools. On Market since 2006.
  - Open Source RFID Middleware Platform, since October 2009.
  - Addressing full project life cycle, from requirements gathering to deployment
  - Based on Eclipse and OSGI with Lightweight Emphasis
  - Open Source Ideals – Business Ready Purpose

- Rifidi is an open source RFID community
  - Numerous Contributors – Univ. of Arkansas, IDLink, PennState, IBM, FossTrak
  - Corporate and University Usage – IBM, HP, GE, UTC/Pratt and Whitney, PennState, Univ. of Arkansas, Rutgers, many more.
  - Over 36,000 downloads strong, Active Forums

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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.
- Only 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. Already now, Pramari partners are developing **extensible horizontal and vertical solutions** on Rifidi.

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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,Database or RMI ensure a smooth integration into your existing application landscape such as ERP systems (SAP for example)
  - Support of many popular Readers.
  - Additional adaptors for new sensors or readers can be built.

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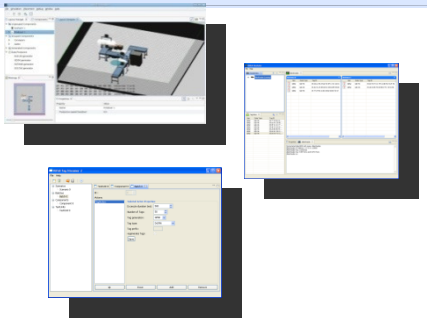
Rifidi Product Suite

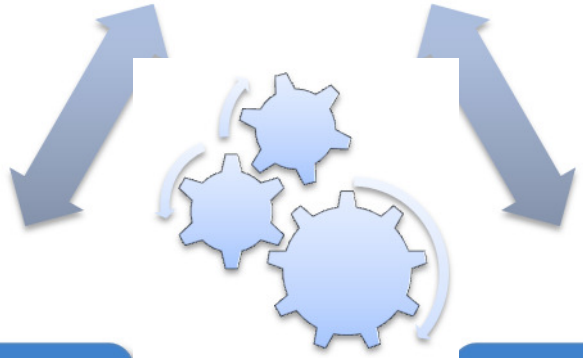


Prototyping

Rifidi Toolkit
Rifidi Prototyper
Rifidi Emulator
Rifidi Tagstreamer

Rifidi Workbench

Rifidi EdgeServer



Development

Production & Operation

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Rifidi Edge Server

- Cutting edge RFID Middleware Platform
  - Lightweight, High Performance Platform based on OSGI and Java
  - Out of the Box support for many popular RFID devices
  - RFID customization of high performance CEP/ESP Engine (Esper) - business rules
  - Standards compliant ALE Engine built on top of Esper and FossTrak TDT
  - WebServer built in
  - Easy integration using RMI, JMS, WebServices, Database, Filesystem
  - Built with module update and hot deploy features

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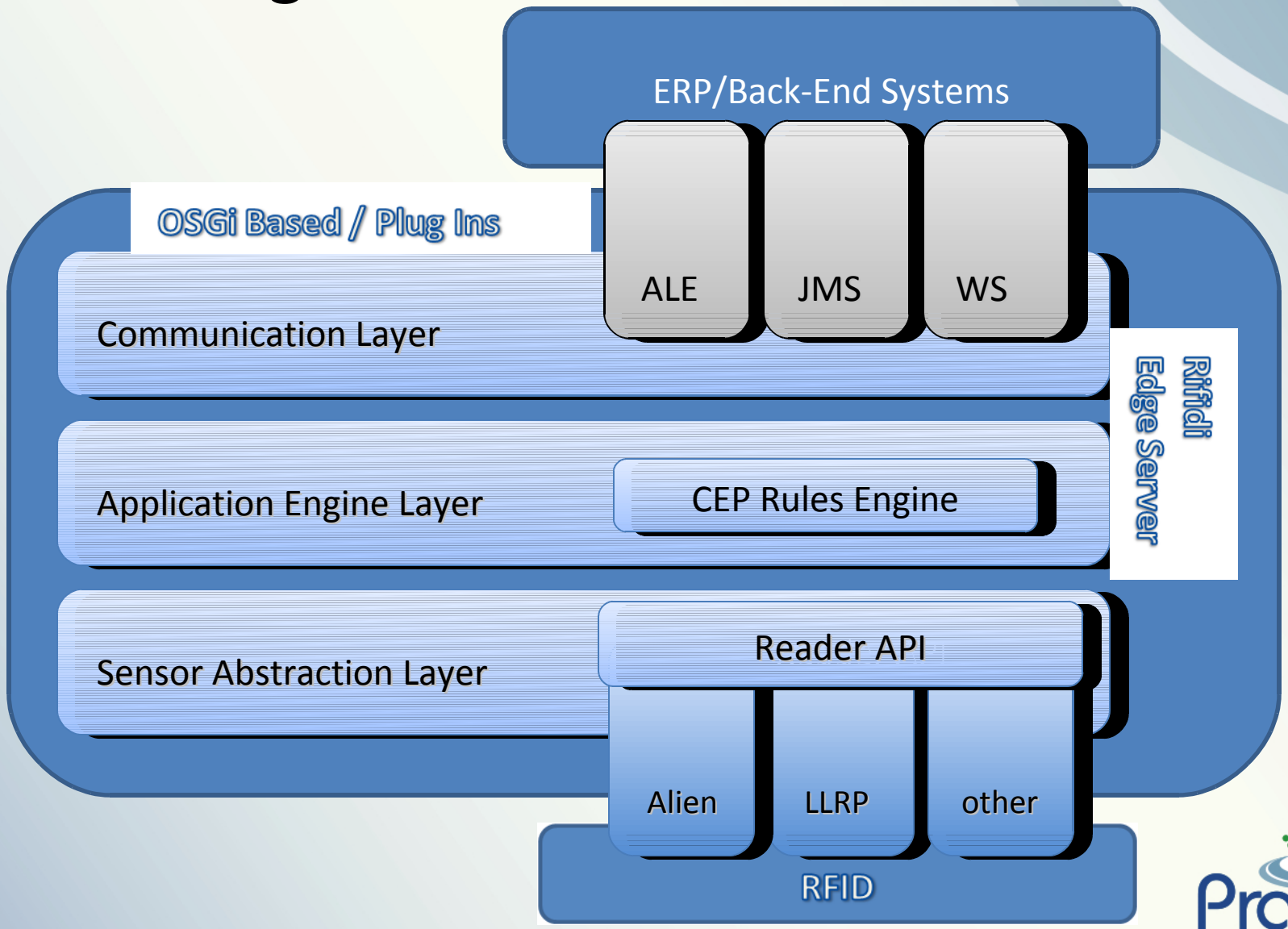
Rifidi Edge Architecture



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Why Event Processing for RFID?

- **RFID Systems are inherently event-driven.**
  - **Es**per 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 without writing custom Java code. Esper uses EQL, a SQL-like language. Instead of pages of Java code, you write a few lines of Esper rules.

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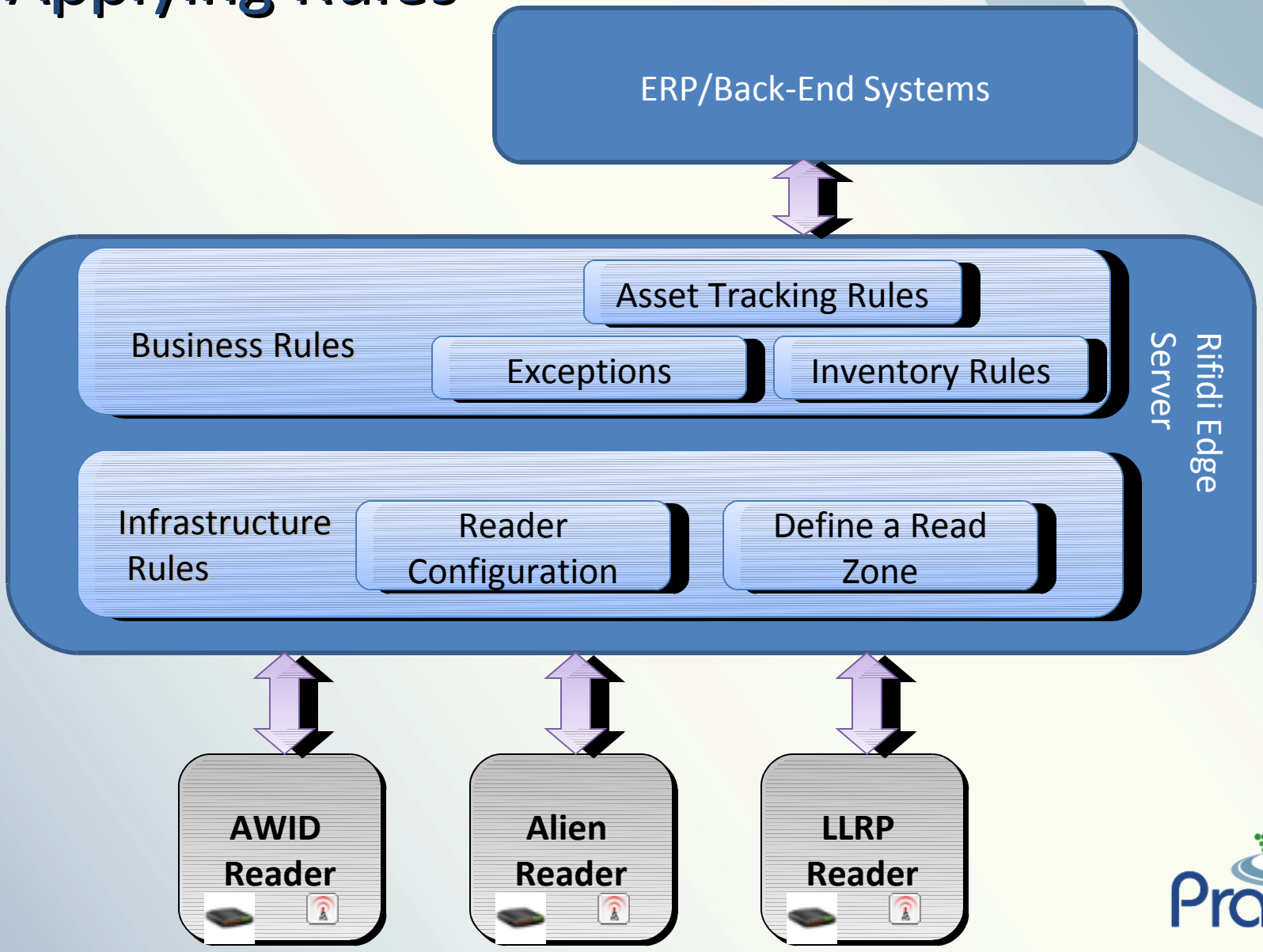
Applying Rules



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Partner Opportunities

- Business Rules addressing horizontal solutions that can be used in many verticals.
- Customization for Vertical Solutions where needed
- Hosted Solutions to reach out to small and mid market

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Appendix: Asset Tracking Hospital

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

Prototyper

File Edit View

100% Edit Mode

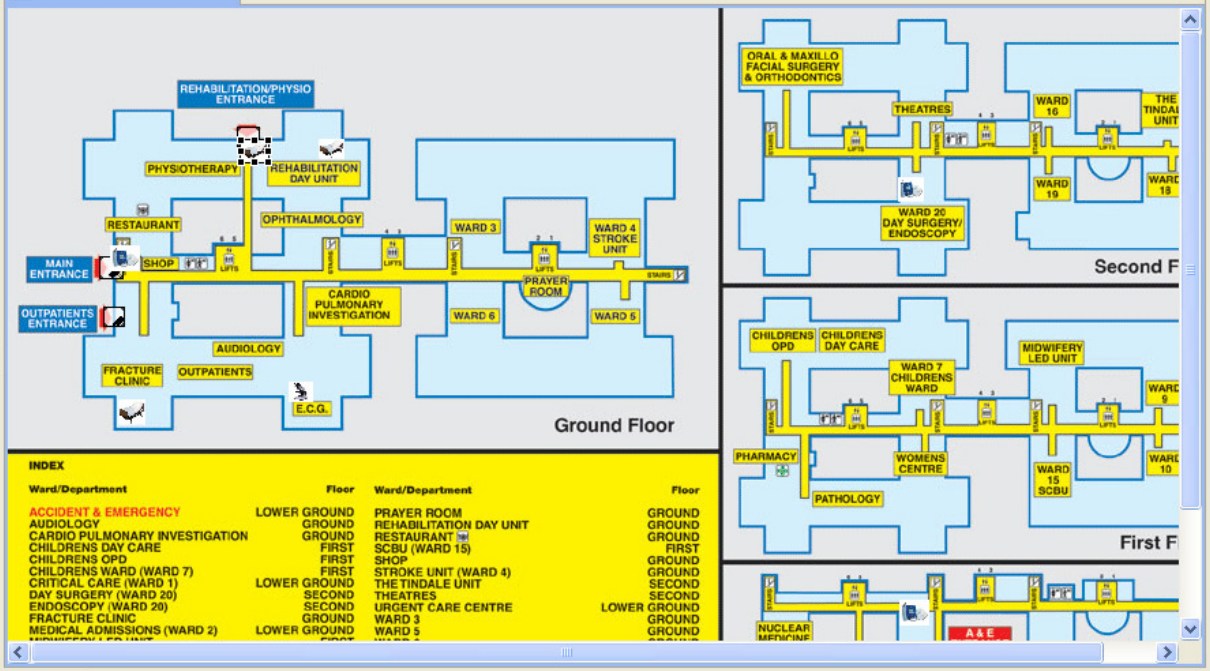
Reader View

AE (running)
Antenna: 0
Type: org.rifidi.emulator.reader.awid.module.AwidReaderI
Properties:
MainEntrance (running)
Antenna: 0
Antenna: 1
Type: org.rifidi.emulator.reader.awid.module.AwidReaderI
Properties:
Rehab (running)
Antenna: 0
Type: org.rifidi.emulator.reader.awid.module.AwidReaderI

Items View

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

*Example Hospital Project



INDEX

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

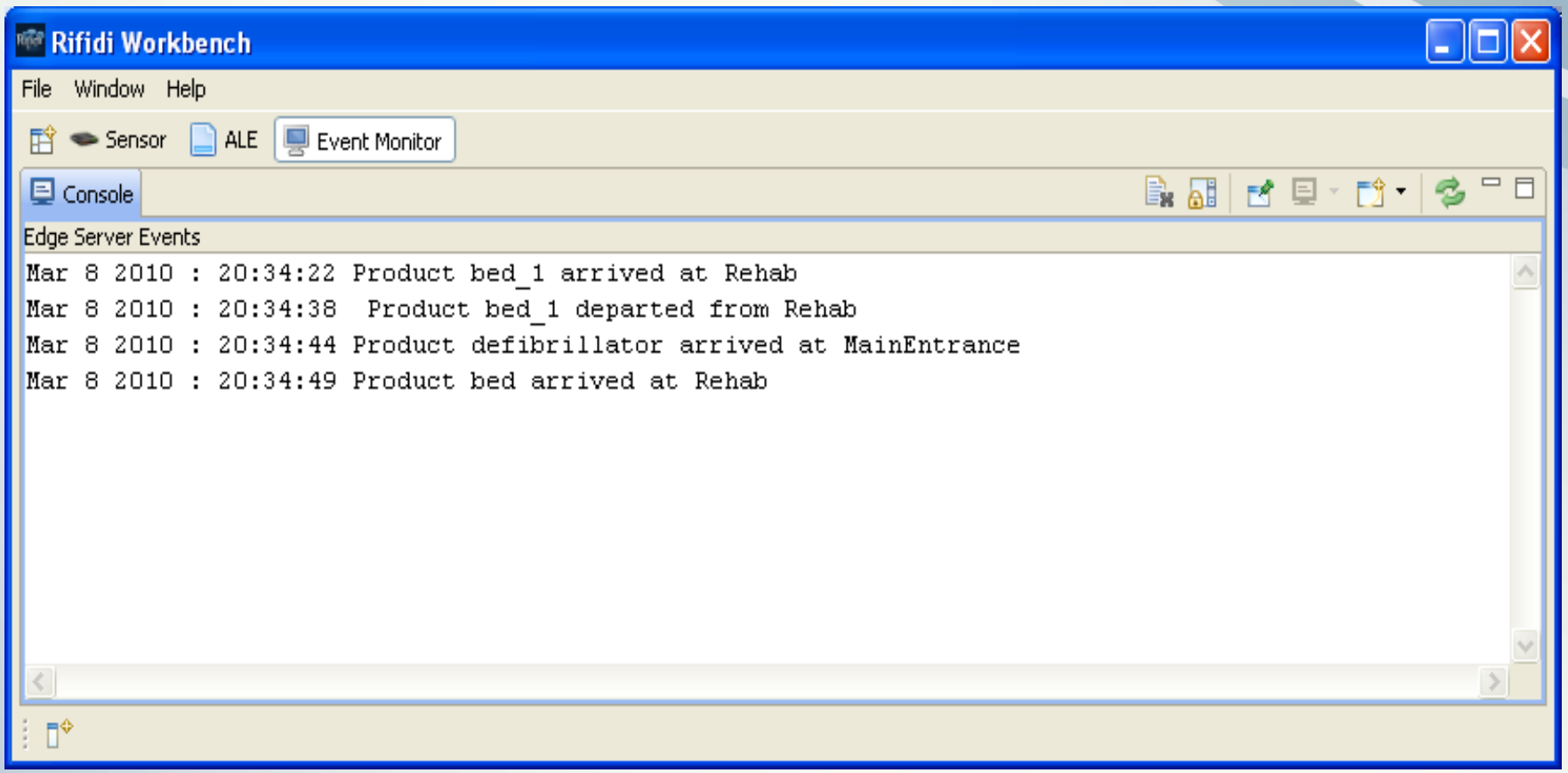
Console

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
```

Appendix: Asset Tracking Hospital (cont.)

- **Screen Shot of Demo for Hospital Solution (Edge Server Monitor View)**



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Q & A

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