RFID Networks

Frontline Expo

Peter Winer
Big Chief Partners, Inc
September 13, 2004
Today:

**RFID Networks**

Tomorrow:

**RFID Middleware and Web Services**

2:45 PM

Theater on the floor

Panelists from

BEA, TIBCO, Sun, webMethods
About Big Chief Partners

- Strategic consulting and technology development company
- Focused on RFID infrastructure since early 2001
- Clients include vendors, investors and RFID users
- Publishers of quarterly newsletter
October: Spotlights on RFID End Users

- Proctor and Gamble
- Home Depot
- ExxonMobil
- Marine Terminal Corporation
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RFID Infrastructure

- Raw information collected by Readers
- ROI delivered by Applications
RFID Infrastructure: The Two Panels

Yesterday

Readers → Network → Middleware

Today

RFID Infrastructure

Applications
RFID Networks
Panelists

Anurag Mendhekar, CEO, Blue Vector Systems

Prasad Putta, CEO, Oat Systems

Bryan Tracey, Chief Architect, GlobeRanger

Ken Traub, CTO, ConnecTerra
In the past two years, many companies have staked claims in the RFID infrastructure space. These include pure-play startups focusing exclusively on RFID and opportunistic companies moving in from adjacent areas.
Pure Play Companies

- Focus on distributed networks connecting heterogeneous RFID readers and other collection devices
- Collect, correct, filter, aggregate large volumes of information
- Deliver upstream to middleware, applications and business processes
Opportunistic Companies

• Established Middleware and Enterprise Application Integration (EAI) companies viewing RFID as a future engine of growth
• Focused on server-based middleware
• Enhance, transform and translate
• Apply business rules, provide message broker
• Portal solutions, development tools
Today’s Panelists

- Pure play RFID companies focusing on networks
- At least one claims to also be in the middleware space
- They offer different approaches to providing network infrastructure solutions for RFID
Frontline Solutions
09/13/04

Bryan D. Tracey
Chief Architect
GlobeRanger Corporation
Edgeware within the Enterprise Architecture

Bridging the gap between the Enterprise the Real World
**Edgeware Overview**

EdgeWare is scalable and distributable software that manages devices, networks, data and processes to enable continual information flow, alerts, decision support and real-time response.

### Devices
- Configuration
- Tuning
- Firmware upgrades & version control
- Integration of barcode and sensor-based hardware
- Wireless devices

### Network
- Network health monitoring
- Alarms and alerts
- Connectivity management
- Network services gateway and management

### Data
- Smoothing and Filtering
- Log tag events
- Distributed processing
- Extend and apply business logic
- Transforms data into actionable knowledge
- Integration w/ enterprise systems

### Process
- Execute business rules locally
- Exceptions management
- Workflow Extension
- Instant visibility & notification

### Utilities & Tools
- Software Development Kit
- Visual Workflow Design & Deploy
- Emulation Capabilities
- Pre-Built Components
- Enterprise Integration
First wholesaler in North America to install EPC RFID system to track Class 2 controlled drugs

► Initial Scope within Distribution Center “Vault”
  • Item level tracking of all drugs received into vault
  • Item level record of all drugs shipped from vault

► Advantages
  • Items identified and serialized from EPC tag
  • Simplified shipping
  • Electronic pedigree
  • Supply chain visibility

► Next Steps
  • Tagging bulk items for pharmacy to track the pedigree to the retail outlet
  • Finish tagging 20,000 items
  • Look for ways to use RFID to replace barcode processes
Thanks!

Bryan D. Tracey
btracey@globeranger.com
OAT Overview

History/Origins
- Developed original Savant and ONS standard
- Reference implementation for Savant 1.0
- Powered the MIT Auto-ID Center field trials in 2001

OAT is the world’s most widely deployed RFID solution
- More than 30 customers
  - Including 4 of top 8 Wal-Mart suppliers doing pre-mandate pilots.
    - HP, Gillette, K-C, J &J

Unparalleled RFID/EPC expertise
- 3 years of hands-on implementations for our customers
- Prof. Sanjay Sarma (Founder/Chairman of MIT Auto-ID center) joins management team

Industry Focus
- Retail, CPG, Hi-Tech,
Why the Market is Choosing OAT

RFID Experts
- **Focus**: 100% RFID
- **Setting the Industry Standard**
  - Auto-ID Center field trial
  - Scale: >100 readers/site
  - Breadth: Visibility across 10 supply chain nodes
  - Scope: Standard platform across 1000s of stores
- **Team**
  - World-class RFID expertise
  - Sanjay Sarma, CTO

Complete Solution
- **Product and Services**
  - Middleware
  - Workflows
  - Deployment expertise
- **Standards leadership**
- **Speed to market**
- **Edge ↔ Enterprise**

RFID Platform Standard
- **CPG**
  - 4 of Wal-Mart 8
- **Retail**
  - 2 of 4 mandates
- **More than 30 customers**
- **Why?**
  - Proven
  - Foundation
  - Pathfinder community
  - Best Practices
  - Lowest impact to existing environment
The OAT Product Family

- **OAT EPC-I S Enterprise**
  - Enterprise EPC System of Record

- **OAT EPC-I S Edge Server**
  - Edge EPC Workflows & EPC Middleware
OAT EPC-IS Edge Server

- EPC-driven workflows
- 3-D EPC data store
- Historical track & trace

Location
Time
Object
Logical Associations

EPC Workflows

- EPC Commissioning
- Tag Commissioning
- Pallet Building
- Pallet Verification
- Shipping
- Receiving

OAT EPC-IS Edge Server

- Event Management
  - Physical filters
  - Location filters
  - Noise filters

- Device Management
  - RF interference mgmt
  - Monitoring

Mgmt
Mgmt
OAT is the Foundation of an RFID Infrastructure

Diagram:
- ERP (e.g., SAP R/3)
- WMS (e.g., Provia, Red Prairie)
- OAT Enterprise Platform
- OAT Edge Platform
- EDI Translator (e.g., Gentran)
- EAI Hub (e.g., webMethods)
- ERP / WMS
- Shipment Receipts (e.g., EDI ANSI X.12 861)
- Goods Movement Data
- Retailer Extranet
- Firewall

Data Exchange Service (DES)
SOAP (JMS, HTTP)
Four Challenges

• Meet immediate requirements, but lay foundation for new EPC-driven business processes
• Protect investment as RFID technology evolves
• Ramp up to huge scale
• Integrate with legacy systems
Architectural Approaches

Application-centric

- RFID data hard-wired to today’s apps
- No insulation of app from infrastructure

Infrastructure-centric

- Exchange with trading partners
- Object Name Service (ONS)

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ConnecTerra RFTagAware 1.1

- Application Level Events (ALE) interface – new EPCglobal standard
- SQL-like access to real-time RFID data, both push & pull
- Applications share data without prior coordination
- Insulation from changing infrastructure
- Monitoring & Management

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ConnecTerra Products

- **ConnecTerra Products**
  - *RFTagAware 1.1*
    - High-performance RFID middleware
    - 1\textsuperscript{st} commercial implementation of EPCglobal ALE spec
  - *RFTagAware Compliance Jump Start 1.0*
    - Low-cost, simple to deploy, local workflow software application for companies meeting tagging mandates

- **ConnecTerra/Partner Products**
  - *HKSystems Tag@Ship Appliance*
    - Integrated solution combining core components of RFTagAware and Compliance JumpStart with material handling hardware and all peripherals
    - Single point of contact for sales, installation, and support.
Summary

• Clean separation of infrastructure and application business logic
  – *Infrastructure shared by new apps & old*
  – *Protect app investment from changing technology*

• Address scale by pushing processing to edge (but not application code)

• Modular architecture & standard interfaces
  – *Supports legacy applications, and migration path to new apps*

• ConnecTerra software: best-in-class embodiment of these principles
Blue Vector Systems

Efficiently RFID-Enable your supply chain
If you’re RFID enabling your supply chain

- Keep costs down
  - Get up and running as quickly as possible
  - Starting Small and smoothly migrate to larger footprints and complex implementations

- Plan for the future
  - Growth in footprint
  - Growth in number of business processes Rfid-enabled
  - Insulation from technology changes
  - Insulation from disruptions

- Maximize your ROI
  - Leveraging existing IT investments
  - Enabling newer efficiencies
You need RFID infrastructure that is ...

• Cost-effective
  – Easy to deploy, expand and maintain
  – Start small and smoothly migrate to larger and more complex foot prints

• Reconfigurable
  – To shield you from changes in technology and business process

• Easy to plug into
  – To leverage existing IT investments
  – Enable new processes easily
Blue Vector’s Infrastructure

• Satisfies these needs because
  – Network Appliance Based Model
    • Simple building blocks provide ease of deployment: Quick, Inexpensive, Expandable
  – Reconfigurable
    • NetAspect Distributed RFID Computing Engine
  – Creates a 2-way information flow layer
    • Allows rapid integration into existing Applications
      – All the standard interfaces XML/HTTP etc
      – SQL query interface for App-to-RFID communication
      – Extensible to support legacy IT systems
    • Enables RFID-enabled structures to participate in multiple business processes
Typical Uses

- Small footprint applications
  - Quick setup and deployment
    - Small Retail-Compliance type implementations
  - Experimental Testbeds
    - As you’re experimenting with enabling different business processes
- Medium footprint applications
  - Quick setup and deployment
  - Rapidly evolving RFID-enabled business processes
- Large footprint applications
  - Many thousands of end-points
  - Diversity in the business-process RFID-enabled at different end-points
Questions

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