Best Practices in RFID: Technology and Strategies to Combat Recession

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Impinj, Inc.

- World’s leading technology innovator in developing UHF Gen 2 RFID solutions
- Delivers a wide range of products and solutions comprising high-performance tag chips, readers, reader chips, software, antennas, and services
- Provides unprecedented product performance, integration and cost effectiveness to a global customer base
- Serves numerous vertical markets with applications including inventory management, asset tracking, authentication and serialization
Impinj Powers RFID

Impinj products assure RFID system integrity

Close up of Impinj RFID System

- Impinj is EPCglobal-certified compliant and interoperable for both tag and reader
- Impinj drives open source LLRP library development
- Reader Control and Application Software
- System Monitor
- Other Application Specific Hardware

- Monza™ Tag Chips
- Reader Antennas
- Speedway® Readers
- Indy ® Reader chips
RFID solves business problems uniquely

• RFID is not static
  – Re-writable, readable, memory, and password protection
  – Identification beyond “license plate”

• RFID does not require “line of sight”
  – Content verification after box packed

• RFID reads or writes many tags at once
  – Serialize an item as you manufacture it or in a batch

• RFID provides better data with less overhead
  – Know more without adding labor
  – RFID “physical data” correlated with other data enables better decision making
UHF Gen2 RFID is proven

• Reliable
  – 10,000,000 Oxycontin® bottles RFID tagged
  – Approaching six-sigma read-reliability

• Simple, accurate and automatic
  – 1,000,000 runners RFID tagged and read
  – “Our third-party timing verifier told us it was the most accurate timing method he’d ever seen, and he compared it against the same method used to time the Olympics.”

• Saves you money
  – 1,000 cargo containers RFID tagged
  – “Reduced annual Customs officers’ labor by 6,000 man-hours.”

Oxycontin is a registered trademark of Purdue Pharma, L.P.
Identify Your Problem

• What is your business pain?
  – Inventory control
  – Picking or shipping error rates
  – Asset utilization

• Would more data help?
  – If I just knew this information sooner ….
  – Why can’t I have “FedEx tracking” capability inside my company?
Look Deeper

• Why aren’t current business processes working?
  – Manual process
  – Technology limitations
  – The problem is not in my area of operation

• Where to start?
  – Technology or business process analysis = YES
Applications/ Deployments
Event Timing

• Innovative Impinj RFID products ensure reliable road race timing

• Customer’s challenge
  – Thousands of runners and variable weather conditions
  – Road races require very high read reliability and 100% reader uptime

• ChronoTrack partnered with Impinj to create a solution
  – Monza-based tags
  – Speedway readers
  – Impinj Threshold reader antenna

• ChronoTrack is winning the race!
  – Dominated U.S. race timing in ’08
  – Expanded outside of U.S. in ’09
Inventory Management

• Impinj RFID-enabled cabinets and refrigerators provide better inventory management

• Customer’s challenge
  – Instant point-of-use visibility
  – Automated inventory management
  – Expiration date management
  – Temperature monitoring and control
  – LF technology unreliable and costly

• Terso partnered with Impinj to create solution
  – Monza-based tags
  – Speedway readers

• Terso System is winning major new global accounts with their solution
Impinj RFID products help pharma industry meet regulations and improve brand protection

Customer’s challenge
- Brand protection, recall management
- Diversion & re-importation
- FDA mandates, e-pedigree

Systech partnered with Impinj to create solution
- Monza-based tags
- Speedway readers

Purdue Pharma succeeds with RFID
- Meets regulations, improves business processes
- Speeds-up line while serializing product
- Serialized product enables visibility
- Increases revenue
Logistics Security

• Impinj technology performs flawlessly in the toughest conditions
  – Competitive readers failed during trials because of environmental conditions at Taiwan’s Kaohsiung Harbor

• Yeon partnered with Impinj to create solution
  – Speedway readers

• The Kaohsuing Customs office gets immediate benefits
  – Impinj Speedway readers improved accuracy rates to 97.42 percent at a distance of more than 7 meters
  – Reduced annual customs officers’ labor by 6,000 man-hours
Advancements

• Impinj Autopilot™ feature
  – Makes RFID easier to deploy and more reliable
  – Automatically configures to changes in operating environment

• Extending GPS capabilities with UHF RFID
  – “Connecting” field assets to existing GPS systems

• RFID is touching consumers
  – Coca-Cola fountain machine
  – Marathon events
  – Enhanced driver’s licenses
The “Powered by Impinj” shield is your assurance of RFID integrity
Additional Resources

- Impinj: www.impinj.com
- ChronoTrack: www.chronotrack.com
- Coca-Cola’s Dispensers: www.rfidjournal.com/article/view/4967/1

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Thank you!
Psion Teklogix RFID Solutions

Todd Boone, Director, Corporate Communications
Psion Teklogix and RFID

- Best able to manage the risk of RFID projects (expertise, RFID agnostic, experience, all frequencies)
- Focus on Closed loop markets that revolve around mobility
- Strongest range of RFID enabled mobile handheld computers (LF, HF, UHF passive and active, paddle reader)
- “Ergonomics” approach to RFID as opposed to monolithic (UHF portals only): think of the reading situations and mix both fixed and mobile readers where most appropriate
RFID Strategy

• Work only on Mobile RFID applications
• Utilizing Psion Teklogix core products
• Lead the Multi-frequency approach
  – LF, HF, UHF (active and passive)
• Offer RFID handhelds that include multiple data collection & radio options
  – scanner, imager, WLAN, WWAN, etc.
• Promote use of standardized protocols
Most RFID projects are completed with partners:

Psion Teklogix brings together partners, who are key in the success of our RFID projects

- Software integrators
- VARS
- Middleware providers
- 3PL companies
- Tags and RFID reader vendors
RFID Readers

**HF Reader (13.56 MHz)**

- For WORKABOUT PRO G2
- 2 Versions:
  - Tagsys module - ISO15693
  - ACG module - ISO14443 A, Mifare & ISO14443 B
- Range: 0 to 4 inches
- Typical Applications:
  - Maintenance, Inspection
  - Ticketing, Smart Cards
  - Process Automation
RFID Readers

**HF Ruggedized Paddle Reader (13.56 MHz)**

- For:
  - WORKABOUT PRO G2
  - 7535
  - PC (DB9 + external power supply)
- Range: 0 to 10 inches
- Typical Applications:
  - Plastic crate tracking
  - Returnable container tracking
RFID Readers

**LF Reader (125 / 134.2 kHz)**

- For WORKABOUT PRO G2
- Based on AAITG (ACG) module
- Range: 0 to 4 inches
- Typical Applications:
  - Maintenance, Inspection
  - Reading on metal
  - Animal Tracking
**LF Reader (134.2 kHz)**

- For WORKABOUT PRO G2
- Specifically for animal tracking
- Optional telescopic antenna *
- Range: 0 to 8 inches
- Typical Applications:
  - Animal Tracking
  - Industrial
RFID Readers

**UHF Long Range Reader (915 MHz) - passive**

- For 7535
- Based on AWID Module
- Range: 11+ feet *
- Typical Applications:
  - Supply Chain
  - Logistics (pallets)
  - Container tracking
  - DoD
**UHF-CA3-A1-G2**

- WORKABOUT PRO G2 high-performance UHF passive module (Impinj Based)
- Multi-protocol & multi-frequency to cover all regions
- Impinj-based Indy™ R1000 chip set
- Adjustable RF output power - software programmable from 10 to 500 mW
- FCC, ETSI 302 208, IC and other country approvals obtained
- Future compatibility with BizTalk RFID - Initial BizTalk support: LLRP
UHF-CA3-A1-G2 History

- Developed in collaboration with INTEL & released on same day as INTEL R1000 chipset (CEBIT, Mar ’07)
- CAEN’s objectives:
  - design new range of low cost readers, based on specialized chipset
  - decrease integration complexity, facilitating the availability of OEM RFID readers
- February 26, 2008 – Psion Teklogix announces integration of CAEN A528 UHF module into the WORKABOUT PRO rugged handheld computer
- July 10, 2008 – Impinj acquires Intel’s UHF RFID Reader Chip Operation
Impinj Indy™ Reader Chip

Features and Benefits

• Supports EPCglobal Gen 2 and ISO-18000-6C specifications, regional regulatory requirements and full 840-960 MHz band

• Incorporates UHF Gen 2 standard transmit, receive, demodulation, and baseband functions

• Integrates up to 90% of components in discrete reader design to provide significantly smaller reader designs

• Enables longer battery life for handheld readers
Target Verticals and Applications

- **Automotive**
  - Inventory control, parts management, maintenance and work in process

- **Aerospace**
  - Inventory control, parts management, maintenance

- **Pharma**
  - Drug pedigree, inventory control, work in process

- **Healthcare**
  - Patient tracking, Inventory Control

- **Manufacturing**
  - Inventory Control, work in process

- **Supply chain**
  - Inventory management, container tracking

- **Transportation and logistics**
  - Container tracking, vehicle tracking, product/inventory control

- **Etc.**
Rugged Mobility

- **Wireless connectivity** allows for real-time data access, push-to-talk and wireless telephone use.
- **IP65 sealing and 5’ drop-rating** allow devices to survive use in harsh environments.
- Flexibility to adapt as technology needs change.
- **High capacity batteries**, for full-shift operation.
- **Large screen and keyboard** for a variety of data-input scenarios.
- Integrated barcode scanner or imager for automatic data capture.
RFID Case Study: Athletic Application

Body Temperature of Football Players

Need to monitor a player’s temperature during the game to avoid serious health risks (including death)

Partner: Identec (RFID HW partner), USA

Equipment: WAP + Identec i-Card CF Active UHF beacon reader
RFID Case Study: Event

Belgian Formula 1 Grand Prix

- Efficient and secure management of 130,000 spectators with improved access control & reduced risk of ticket fraud
- Increased spectator satisfaction due to reduced waiting times

Partner: RFIDEA

Equipment: WORKABOUT PRO + HF RFID Reader
Psion Teklogix is a leading global manufacturer of Rugged Handheld and Vehicle-Mounted Computers, with a rich history of mobile innovation.

1980
Teklogix is awarded contract with the US Department of Defense to develop a real-time on-board pick information system.

1984

1998
Psion was the primary developer of the Symbian OS – now owned by Nokia – which today runs 55% of the world’s SmartPhones.

2007
First Rugged Computer Certified On AT&T’s 3G UMTS/HSDPA Network.
• 39 sales & support offices in 23 countries
• Supporting customers in 80 countries worldwide
• Over 1200 employees globally
• Over 180 Product Development professionals with more than 2000 years combined experience
• Publicly traded on the London Stock Exchange (PON.L)
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