The Value and Benefits of RFID in Healthcare
Agenda

• Introductions
• About IBSA
• RFID Overview
• RFID Impact in Organization
• RFID in Healthcare
• Passive RFID Solutions
• Questions and Conclusion
Introductions

- Mark McKinney, IBSA
- Kyle Stauffer, IBSA
- Stephanie Mitchell, Avery Dennison
- Lou DiDomenico, AISC Mobile
About IBSA

- Custom Business Solutions and Technologies Provider
- Buying Alliance with Purchasing Power
- Preferred Supplier to Premier GPO
RFID Overview
RFID Overview

• Radio Frequency Identification - technology that uses radio waves to identify objects

• Used to track products, people, vehicles, containers, totes, and pallets

• A “contactless” technology that eliminates “line of sight” to track an object

• The next step in product tracking and supply chain evolution
RFID Overview

• RFID Overview
  – Passive vs. Active

• Potential Variables / Criteria Involved

• Testing

• Business Case / Results
Passive vs. Active RFID

- Active – Battery powered memory, radio and circuitry; investment is greater with active than passive.
  - Tag transmits radio signal ⇒ longer read ranges (>300 feet)
- Passive - Powered by radio signal, no need for battery.
  - Tag reflects radio signal to send information
RFID Overview

- **Reader**
- **RF Module**
- **Host Antenna**
- **Tag/Antenna**
- **Host Server/Software**
- **Printer/encoder**
RFID Overview

**Printers/Encoders**
- Expand product line portables, HF & AD applicators
- Partner for unique solutions

**IC (RFID Chips)**

**Inlays (Antenna)**
- Expand AD inlay focus
- Supplement with other unique inlays

**Tags**

**Readers**
- Heavily partner with Impinj, Motorola
- Evaluate alternative HH devices

**Software**
- Expand geographic capacity as market requires
- Supplement hard tags and active systems through partners

**Integration Services**
- Partner with VUE, Xterprise, Microsoft/Cactus Commerce for optimal retail solution
- Partner SLS, Xterprise, CDO for supply chain

**Areas AD Current Ownership**
**Areas AD Ownership/Partnership**
**Areas AD Enduring Partnership**

- Partner with Impinj, EM, NXP
- Partner Tyco, Creative systems, NBGID, Xterprise for integration services/grow internal PSD SI
- Deepen partnership with key consultancy IBM, AT&T, Verisign, BT-AutoID, U of Ark.
RFID Overview – Variables/Criteria

- Item content
- Environment for use
- Reading precision
- Location in facility
  - Usage near metals or liquids
- Data rate
- Reading range required
- Duration of usage

312 Known Variables
RFID Overview – Variables/Criteria

- Tag Type and Size
- Inlay / Antenna Configuration
- Reader / Scanner Choice
- Portal Choice
- Software Integration
- Frequency
- Label Placement
RFID Overview – Testing

Testing – extensive
- Inlay/transponder test vs.
- Reader/portal test vs.
- Read performance rates vs.
- Read ranges vs.
- Application/item/environment
RFID Overview – Testing

Compare Class 1 to Gen 2 Inlays
Measured at 72" indoor range
Used Alien Gateway Reader and Linear Antenna

Class 1 Group
- Super Squiggle
- Lepton Squiggle
- 64 bit Squiggle
- Alien M Inlay
- Rafsec Inlay
- Avery Strip
- Space

Gen 2 Group
- Alien Gen 2
- TI Gen 2
- Imping G2 Prop
- Avery G2 Strip

Range Estimate
- 5 meters
- 2.5 meters

Attenuation, dB
RFID Overview - Testing

Transponder Comparison

- Alien 64 Bit
- Squiggle
- Squiggle 2
- "M"
- Rafsec
- Avery Strip
- TI G2
- Impinj G2
- Avery Runway G2
- Alien G2

db at a distance of 36”

Fresh Mint
• Does your provider offer a complimentary onsite diagnostic of your organization’s unique processes?
• Does your provider recommend an off-the-shelf, cookie-cutter approach?
• With RFID, one size does NOT fit all.
Business Case / Results

• Onsite Diagnostic
  – Identification, Documentation, Quantification, ROI

• CAD Floorplan Engineering / IT Configuration

• Lab Testing
  – Accuracy of Read Rates
  – Tag size selection
  – Inlay configuration selection
  – Active versus Passive Criteria
  – Reader / scanner selection
  – Portal selection
  – Software recommendation
Business Case / Results

- Reduce Process Steps
- Optimize Labor Resources
- Improve Accuracy
- Enhance Data Collection
- Eliminate Supply Waste
- Reduce Carrying Costs
- Eliminate Shrink/Loss
Business Case / Results

• Understand Your Goals
• Understand Your Key Needs and Objectives
• Conduct a Thorough Analysis of Facility (incl. time study)
• Map Key Processes
• Develop Recommendations
• Develop Solutions to Fit YOUR Needs
Business Case Results – Review Processes

• Asset Tracking
  • Hospital
    • Equipment Delivery Process (Central Dist.)
    • Equipment Pickup Process (Soiled Utility Rooms)
    • Personal Protection Equip. (Iso. Carts)
### Shrink Rate / Carrying Costs

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Example</th>
<th>Actual</th>
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</thead>
<tbody>
<tr>
<td><strong>Exercise I</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Inventory</td>
<td>$1,000,000</td>
<td>$1,108,608.50</td>
</tr>
<tr>
<td>x Shrink Rate</td>
<td>6%</td>
<td>6%</td>
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<tr>
<td>Total Shrink</td>
<td>$60,000</td>
<td>$66,516.51</td>
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<tr>
<td><strong>Exercise II</strong></td>
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<tr>
<td>Total Inventory</td>
<td>$1,000,000</td>
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<tr>
<td>Reduction Rate</td>
<td>15%</td>
<td>15%</td>
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<tr>
<td>Net Inventory</td>
<td>$150,000</td>
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<tr>
<td>Carry Cost per Month</td>
<td>15%</td>
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<tr>
<td>Monthly Carrying Cost</td>
<td>$22,500</td>
<td>$24,943.69</td>
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<tr>
<td>Total Months</td>
<td>12</td>
<td>12</td>
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<tr>
<td>Total Annual Carrying Cost</td>
<td>$270,000</td>
<td>$299,324.28</td>
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</table>
# Investment Summary – Total

<table>
<thead>
<tr>
<th>Current Process</th>
<th>Savings</th>
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<tbody>
<tr>
<td>Asset Tracking – Equip. Delivery</td>
<td>$36,729</td>
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<tr>
<td>Asset Tracking – Soiled Equip. PU</td>
<td>$73,460</td>
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<tr>
<td>PPE – Isolation Carts - Delivery</td>
<td>$3,889</td>
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<tr>
<td>PPE – Isolation Carts – Pick-up</td>
<td>$54,015</td>
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<tr>
<td>Shrink/Carrying Costs</td>
<td>$365,841</td>
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<tr>
<td>Cycle Counts/Inventory</td>
<td>$$$$</td>
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<tr>
<td><strong>Total Savings</strong></td>
<td><strong>$533,934</strong></td>
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<tr>
<td><strong>3 Year Savings</strong></td>
<td><strong>$1,601,802</strong></td>
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</table>
**Investment Summary - Total**

<table>
<thead>
<tr>
<th>Recommended Investment</th>
<th>Cost</th>
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<tbody>
<tr>
<td>RFID Printer / Encoder</td>
<td>$</td>
</tr>
<tr>
<td>(X) RFID Scanners</td>
<td>$</td>
</tr>
<tr>
<td>(X) Drop Zone RFID Readers</td>
<td>$</td>
</tr>
<tr>
<td>Programming &amp; Install Visits*</td>
<td>$</td>
</tr>
<tr>
<td>(X) RFID/Bar Code Labels</td>
<td>$</td>
</tr>
</tbody>
</table>

**Investment**: $\_

**Months Return**: 2.7

*Note: recommendations for proposal are preliminary and may be adjusted based on conference between Avery Dennison’s IT/system integration team and client’s IT team. Service and support not included in proposal but will be provided upon request. Travel and expenses for onsite installation will be billed as actual.*
<table>
<thead>
<tr>
<th>STEP</th>
<th>TIME FRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validate Assumption</td>
<td>All 30 Days</td>
</tr>
<tr>
<td>Set</td>
<td></td>
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<tr>
<td>Create Specifications</td>
<td>All 60 Days</td>
</tr>
<tr>
<td>Issue Test PO</td>
<td>Organization 30 Days</td>
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<tr>
<td>Issue Test Date</td>
<td>All 2 Weeks</td>
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<tr>
<td>Roll Out</td>
<td>All 90 Days</td>
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<tr>
<td>Enjoy Benefits</td>
<td>Organization On Going</td>
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</tbody>
</table>
RFID Impact in Organization

- Purchasing
- Nursing
- Supply Chain / Materials Management
- Bio-medical Engineering
- Surgical Suite
- Billing
- Accounting
- Patient
RFID in Healthcare

- Mobile Asset Tracking
- Inventory Management
- Improved Patient Charging
  - Carrying costs reduced
  - Loss/shrink reduced
  - Improved inventory turns
  - Captured patient billables
  - Improved patient safety (accurate inventory, clean, maintenance, etc.)
RFID in Healthcare – Common Items Tracked

- **Patient, Visitor, Employee Tracking**
  - Baby / Dementia Patient Monitoring
- **Mobile Asset Tracking/Location Tracking**
  - IV, SCD, feeding and other pumps/compressors
  - Equipment (aspirators, monitors, etc.)
  - Wheelchairs, beds, gurneys
  - Central Supply, Floor Level, Soiled Utility, Clean Room, etc.
  - “911” runs
- **Inventory Management / Control (Streamline volumes)**
  - Cycle counts (Central and Floor Level Supply Rooms)
  - Carrying costs / Inventory turns
  - Par levels, Min/Max levels
  - Stocking/restocking process
  - “911” runs
- **Improved Patient Charging ($$ lost due to improper charging)**
  - Room level (Surgical Suite, etc.)
  - Patient level
RFID in Healthcare – Common Items Tracked
RFID in Healthcare – Common Items Tracked

• Used – Accurate Patient Charging
• Unused –
  – Return to Inventory
  – Return to Vendor
  – Rebate for Accounting
• Staff Efficiency –
  – Eliminate additional task focus to nursing staff as to which “piggyback” label was pulled from item list and added to patient charge chart
  – focus on task at hand – taking care of the patient
Baby/Patient Monitoring with RFID

Lou DiDomenico
• XTAG electronic tagging solutions offer proven technology and reliability with minimal maintenance. They offer you, your patients and their loved ones security and peace of mind.
Xtag Mother and Baby Tagging Solutions

• Intelligent protection for mothers, babies and young children in at-risk areas
  – XTAG helps prevent abductions in environments such as baby and infant wards, nurseries and crèches.
• XTAG helps prevent patient wandering in environments such as nursing homes, care homes and day centers.
How does XTAG work?

- The XTAG device comprises two small, light, discreet, comfortable and very comforting components: the tag and a soft-fit strap material supplied on rolls and simply cut to length.
What is the solution?

• XTAG is an effective and discreet way of keeping dementia patients secure while they are hospitalized and helps the hospital to discharge its duty of care towards patients under its supervision.

• It has been successfully installed in a number of hospitals and institutions and has been proven to help hospital staff to monitor and safeguard dementia patients
How does the XTAG Medical Tagging prevent patient wandering?

• Whenever a potentially dangerous situation occurs, an alarm is triggered. These situations include:
  • a signal not being received from a tag contrary to a pre-set time interval
  • a tag strap being cut, removed or tampered with
  • a tag wearer being detected in an unauthorized location
  • the tag battery being low on power
  • any attempt to “tailgate” (this is the term for an attempted abduction by closely following or joining an authorized person through a monitored exit)
  • An exit through a protected doorway without authorization
How Does XTAG Work?

• The XTAG device comprises two small, light, discreet, comfortable and very comforting components. The tag itself contains a micro-controller and battery, weighs less than 3 grams, has a completely smooth shape, and is water resistant and hypoallergenic. The other component is a soft-fit strap material supplied on rolls and simply cut to length. This fits snugly and softly around the patient’s ankle or wrist (or any person at risk).

• The tag emits a long range Radio Frequency Identification (RFID) signal every 1.4 seconds, providing an effective electronic tagging system.

• Tags with XTAG Readers are also deployed at key exits and locations throughout the safe area, relaying tag signals to the host PC.
Q & A Session
Conclusion

If you are looking for the most comprehensive solutions for your facility’s needs, let IBSA be your consultative guide to eliminating non-value added activities within your organization.
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