The Three Waves of RFID

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Wave 1: Technology Deployment

- Technology Deployment
- Data Analytics
- Business Value
Technology Deployment

- Readers
- Antennae
- Tags
  - Passive, active
  - Gen1, Gen2
  - Tag type, tag placement
- Read rates
- Read points
- The Myths of RFID
RFID Lab

- 7800 sq. ft. lab in Hanna’s Candle Co.
- 4500 sq. ft. lab in Zero Mountain (cold storage facility)
- Replicates RFID in supply chain: dock doors, conveyor, impact doors, forklifts, pallet wrappers, etc.
- Serves as research and teaching facility
- Provides services to the industry (tag type, tag placement, reader/antenna type)
- UA RFID Lab became only 1 of 4 accredited labs in the world on Sept 13, 2005.
RFID Lab

“Supply Chain in a Box”
Lab simulates the complete retail supply chain from supplier’s shipping dock to store shelf
RFID Lab
RFID Lab
RFID Lab

Strategically located in the epicenter of retail RFID activity
Wave 2: Data Analytics
What is on a tag?

(In binary)
0011000001110100000000010111001111110000101001101
1100110101000000000111011100110101100101001100

(In hex)
30740173E14DCD401DCD6518

(In decimal)
SGTIN: 0023800.341813.5000000024

The matching UPC (UCC-14):
3 0023800 41813 3
Read points - Generic DC

Distribution Center

Conveyor Readers

Receiving Door
Readers

Shipping Door
Readers
Read points - Generic Store

- Receiving Door Readers
- Backroom Readers
- Backroom Storage
- Box Crusher Reader
- Sales Floor
- Sales Floor Door Readers
## Read points

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Sample data

Sample RetailLink Data
Data considerations

100% reads to be useful?
Noisy data
How much data will RFID generate?

Filter
Cleanse
Integrate
Interpret
Understand
Action!
Wave 3: Business Value

- Technology Deployment
- Data Analytics
- Business Value
# Insights – Backroom processes

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If the product needed to be on the floor by 10/10/05 for the promotion, store 567 just missed an important window of opportunity – for themselves and for the supplier …

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How can RFID reduce OOS?

Consider the following scenario:

- Shelf is empty
- Associate scans shelf to add to picklist
- System indicates PI on hand = 24 and case pack = 24
- Associate attempts to find it in backroom, but doesn’t (although it is there)
- Associate manually orders the product; adjusts PI on hand to zero
- Shelf is still empty; mini-bullwhip effect created
How can RFID reduce OOS?

Now, consider the scenario with RFID:

- Shelf is nearly empty
- System automatically creates a picklist item based upon availability of product in backroom (EPC reads)
- Associate looks for item in backroom, but can’t find it --- portable/handheld RFID reader assists associate in finding product
- Product is taken to sales floor and shelf is stocked, before product is out of stock
- Shelf is full; PI is accurate; no bullwhip effect created
Does RFID reduce OOS?

Out of stocks study
- 12 pilot stores / 12 control stores
- 29 weeks; scanned OOS every day throughout all store formats (NHM, WMT, SC)

Findings:
- Overall: 16% (relative) improvement
- 63% improvement (pilot v. control)
- Pilot stores (pre-post): 26% improvement
- Pilot stores: tagged reduced at 3x the rate of non-tagged
ROI

Other examples of improvement areas:

- Recalls
- Product rotation
- Electronic proof of delivery
- Targeted use of merchandisers
- From prior example: reduction of unnecessary manual orders = better forecasting/replenishment

Considerations:

- Abbreviated supply chain
- Tag at source vs. slap and ship
- ROI is long term; company goals are short term
The Three Waves of RFID ...
Scientists from the RAND Corporation have created this model to illustrate how a “home computer” could look like in the year 2004. However, the needed technology will not be economically feasible for the average home. Also, the scientists readily admit that the computer will require not yet invented technology to actually work, but 50 years from now scientific progress is expected to solve these problems. With teletype interface and the FORTRAN language, the computer will be easy to use.