

RFID Solutions Overview

American Bar Code & RFID *2/16/10*

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Radio Frequency Identification

- A technology that identifies objects using low-power radio frequency technology.

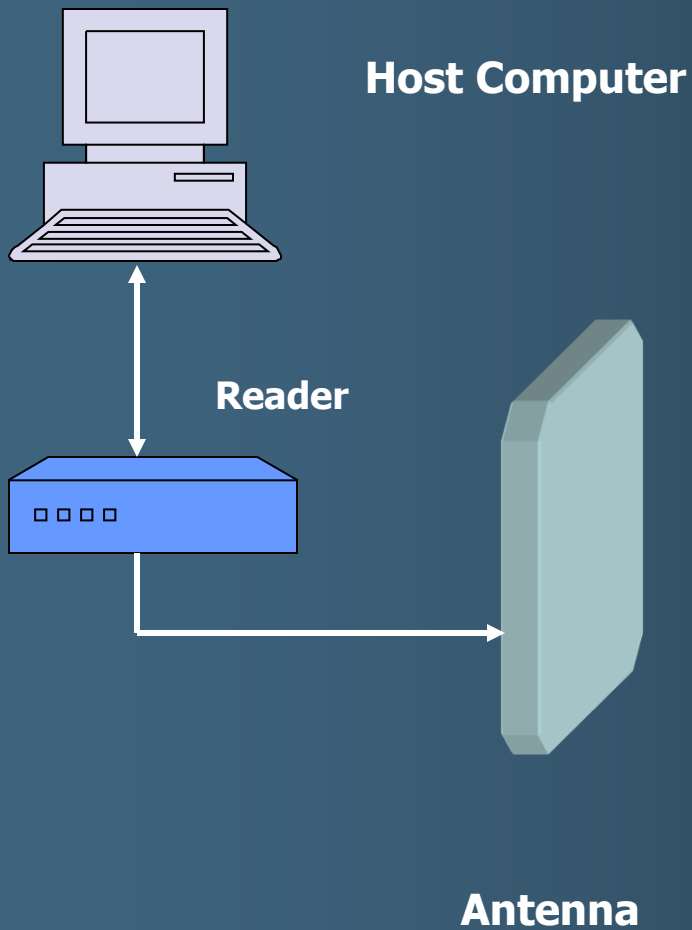
RFID provides a wireless extension of the network to physical objects.

- *“The internet of things”*

Two Major Classifications

- Active – battery powered tags
- Passive – tags powered by the reader

How It Works



Radio command signal issued from reader
Modified signal containing data returned



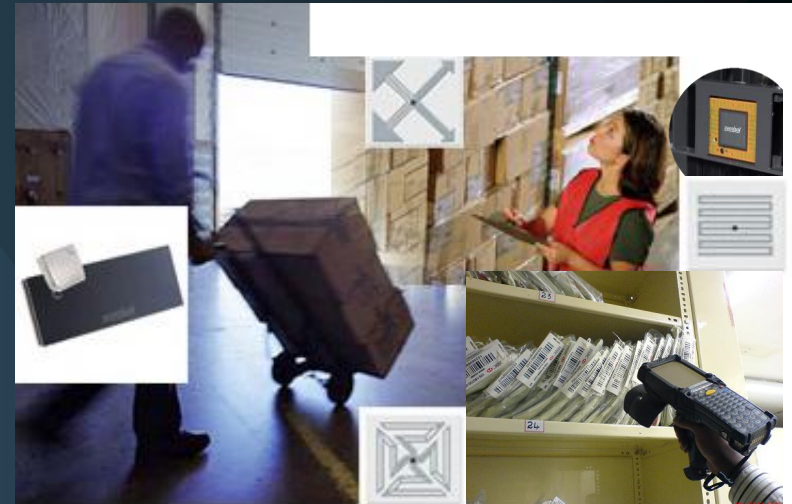
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RFID: Why Is Everyone Excited About It?

- **Capabilities**

- › No Line of Sight
- › Reads 100's of Items Simultaneously
- › Read & Read/Write
- › “Automated” Reading



- **Benefits**

- › Increased accuracy and visibility
- › Improved security
- › Reduced man power
- › Operational efficiencies

Using RFID tags can save time and be more accurate than bar codes.

When To Use Bar Codes



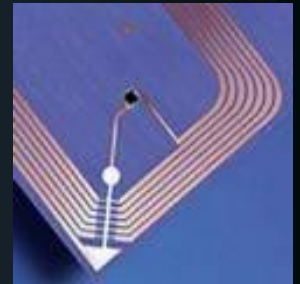
- **When needing to read specific items**
 - › Ex. - Piece picking
- **When high volume reads are not required**
- **When a clear line of sight can be assured**
 - › Ex. – Conveyors
- **When material issues (water, metal) prohibit RFID**
- **When the item cost prohibits RFID**

Consider the grocery check out line





- When needing to read multiple items
- When a clear line of site is not available
- When human interaction would slow the process
- When data security is required
 - › Ex. – Anti-counterfeit
- When you may need to change or append the data



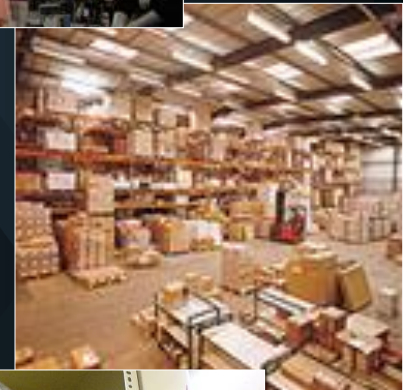
Key – Think of bar code applications where bar codes don't work well



RFID Provides Visibility To Your...



- Products
- Fixed and Mobile Assets
- Vehicles
- Tools and Materials
- People
- Documents
- Raw Materials
- Etc.



Because visibility leads to better decisions

Why Is This Important?



- Employee theft costs U.S. businesses an average of \$30B annually ¹
- A typical retailer is Out Of Stock on about 30% of their skus at any one time ²
- According to Cap Gemini, 10 to 20 percent annual shrinkage is common with mobile assets ⁴
- Gartner reported a single lost laptop can cost an organization more than \$6,000 in hardware, software, and labor required to restore lost data ⁵
- Losses of trolleys, totes etc at typical Postal Enterprises are ~ 15% ⁵
- The average hospital 'over spares' by ~ 30% ³
- Published data for Gov agencies says 1% to 4% of assets are lost annually, losses at typical enterprises are significantly higher ²

(1) RFID Reached Its Tipping Point – And No One Noticed, John Fontanella, AMR, 2008

(2) National Retail Federation, 2007

(3) Canadian Institute for Health Information, 2007

(4) Un-locking The Value In Your Business, Cap Gemini, 2005

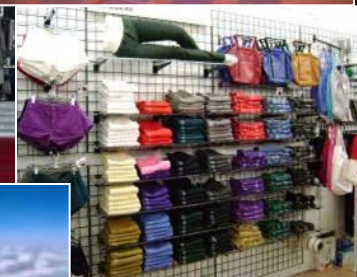
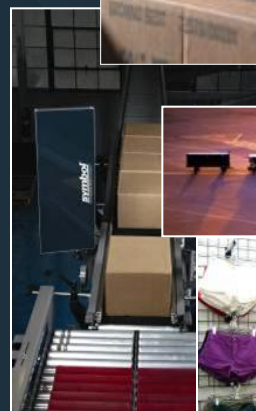
(5) The Loss of Secure Assets, Gartner 2006

(6) Automating Postal Processes, Unisys, 2005

Numerous Uses – Multiple Industries



- Retail
- Supply Chain
- Manufacturing
- Government
- Aviation
- Energy / Utilities
- Data Centers
- Transportation
- Pharmaceutical
- Produce
- Etc.



RFID is past the pilot stage

Key RFID Applications



APPLICATION	RETAIL	SUPPLY CHAIN	MANUF.	FOOD	TRANS	ENERGY	GOV'T	DATA CENTER
Item Level Inventory Visibility	✓		✓					✓
Supply Chain Management	✓	✓	✓	✓			✓	
Asset Tracking	✓		✓			✓	✓	✓
Vehicle Management	✓	✓			✓		✓	
Process Automation		✓	✓		✓	✓		
Asset Security/Traceability	✓	✓		✓		✓	✓	✓
WIP / Parts Tracking			✓			✓		
Baggage/Cargo Handling		✓	✓		✓		✓	

The Deployment Leader Across Industries



Only A Sample & Only Public



Retail

- American Apparel
- Falabella
- Jones Apparel Group
- Kimberly-Clark
- Liverpool
- New Balance
- Staples
- Walgreens
- Wills Lifestyle
- Cost Plus

Supply Chain



- Dairy Farmers of America
- Exel
- H & M Bay Inc.
- IGPS
- KPN
- Lexar
- Megatrux Inc.
- Raytheon
- Van Ness
- YCH
- Yodabashi
- Kraft
- Kimberly Clark
- Sony

Government



- Defense Logistics Agency
- FEMA
- State of Texas
- Howard County
- US District Courts
- Spanish Postal
- Montreal Transit
- SPAWAR
- US Citizenship & Immigration
- City of New York
- Alameda County
- City of Hoboken
- US Army

Aviation / Baggage Tracking



- Boeing
- British Airports Authority
- Hong Kong International Airport
- Lufthansa
- McCarran International Airport
- Virgin

Energy/ Utilities



- Aker Yards
- Duferco
- Qatar Gas
- Sempra Energy
- Tejas Tubular
- Vale Inco
- National Oil Well

Data Centers



- Bank of America
- Wells Fargo
- VISA
- Hexaware
- Lloyds of London
- Go Daddy

Transportation



- Canadian Rail
- TNT
- Daimler Trucks
- Ford
- Aker Yards
- UPS
- Siemens AG
- Crown

Produce



- Dole
- Kraft
- Hawaii Dept. of Agriculture
- Ingersoll Rand
- Kroger
- Levinoff-Colbex

Manufacturing



- Continental AG
- Dow Corning
- Endwave
- Handleman Company
- Mitsubishi Electric
- Volkswagen

Real World Uses





BUSINESS ISSUE

- Improve inventory accuracy & duration
 - Only qty 1 of each size/style/color on floor due to space limitations
- Low floor inventory leading to numerous item out-of-stocks
- Improve sales and sales statistical monitoring



SOLUTION

- Motorola fixed RFID readers at sales floor entryways & POS
- Handheld RFID readers for sales floor cycle counting and backroom inventory

Retail



BENEFITS

- 99% inventory accuracy
- 2 -7% increase in sales
- Reduced labor costs
- ROI < 6 months

- **160 Store Chain**
- **40,000 Items Tagged in First of 18 NYC Stores**

BUSINESS ISSUE

- Improve tracking of energy meter assets (automate process)
 - Eliminate inefficient paper-based tracking process
 - Improve asset reporting
- Increase revenues with more accurate billing – eliminate occurrences of lost meters & unbilled revenue



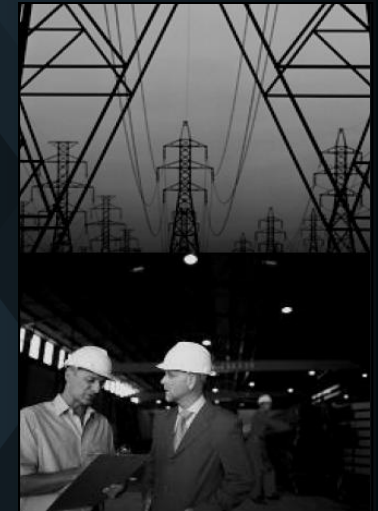
Utilities

SOLUTION

- Motorola fixed and handheld readers set up at Sempra's central warehouse
- RFID portal readers scan pallets from suppliers as they enter the warehouse
- 42 district warehouses used Motorola RFID handheld readers to accurately control, route and aggregate multiple meter deliveries and installations

BENEFITS

- ROI within 30 months & continued savings of \$1.5M annually
- Increased inventory accuracy
- Increased revenues due to improved billings from previously lost meters





BUSINESS ISSUE

- Improve asset management – Provide efficient, precise way to track and manage plastic pallets across global supply chains
- Improve service – Provide accurate customer invoicing and reduce asset loss



SOLUTION

- All pallets tagged with RFID tags
- Mobile RFID readers in user warehouses and DCs where tagged pallets are read and data is sent to central server in iGPS's data center
- Xterprise software solution takes data from servers, updates orders and manages inventory on the central server

Supply Chain

BENEFITS

- Efficient asset tracking – iGPS can track its assets anywhere in real time
- Asset loss prevention – RFID tracking enables pallet accountability at all times
- Improved top line – RFID solution allows accurate customer invoicing
- Improved customer service – customers benefit from reduced asset loss from improved tracking



BUSINESS ISSUE

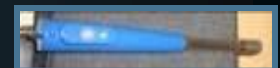
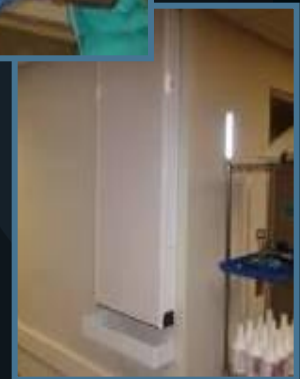
- Operating Room (OR) Suite was losing expensive surgical instruments and probes during the cleaning and preparation processes
- Instruments discarded in waste bags or laundry bags as rooms are cleaned
- Need to stop surgical instruments and probes as they leave the OR through the decontamination (decon) area



Healthcare

SOLUTION

- All surgical instruments and probes are tagged with RFID tags
- Motorola XR Series Readers are installed and reading tags in the decon area
- Software notifies staff when a tagged surgical instrument has entered the decon area portal



BENEFITS

- Loss prevention of expensive surgical instrument and probes
- Increased asset utilization
- \$35,000 to \$50,000 saved with each occurrence that prevented equipment from becoming lost or discarded

BUSINESS ISSUE

- County granted rights to control access to federal park lands
- Needed a way to limit and monitor access over large area
- No way to accurately control fees

Government

SOLUTION

- Mobile kiosks dispensed RFID windshield tags
- Readers at check points monitor valid tags
- Access gates opened on valid tag read



BENEFITS

- All entry and exit is controlled and recorded
- Improper tag IDs can be quickly prohibited
- Reduced manpower requirements



BUSINESS ISSUE

- Improve customer service to increase usage of transit system
- Improve operational efficiency of bus arrival and departure system
- Reduce labor costs with real-time bus location/status data

Transit

SOLUTION

- Motorola Cargo Tags affixed to 380 buses
- Motorola XR Series readers capture tag data upon bus enter/exit of terminals
- Motorola AP-5131 Wireless Access Points and CB3000 Wireless Bridge Adaptors used to read bus tags
- Large, digital screens display bus information to customers with real-time info

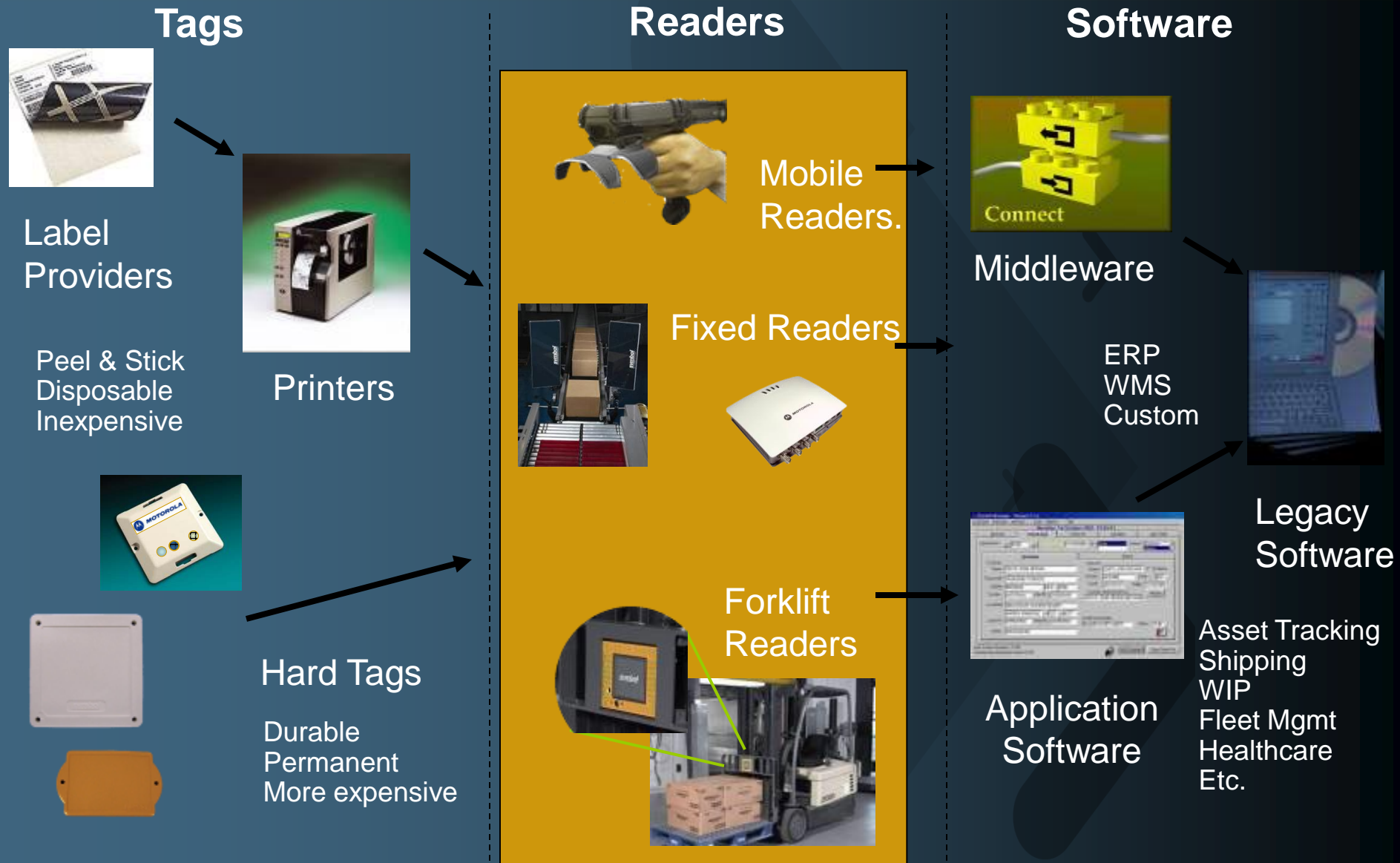
BENEFITS

- Improved customer service at bus terminals increasing customer ridership
- Enhanced operational efficiencies: Real-time tracking of bus locations at all times
- Reduced labor costs: Terminal managers have direct access to bus location for decision-making



A "Typical" RFID System

Motorola Products



A "Typical" RFID System



Tags

Readers

Software



Label Providers

Peel & Stick
Disposable
Inexpensive



Printers



Hard Tags

Durable
Permanent
More expensive



Mobile Readers

Fixed Readers



Forklift Readers



Connect
Middleware

ERP
WMS
Custom



Legacy Software



Application Software

Asset Tracking
Shipping
WIP
Fleet Mgmt
Healthcare
Etc.

American Bar Code & RFID Provides:

Site/Process Analysis

System Design

Tag Testing & Selection

H/W & S/W Integration

Installation Services



**10 Things You Need
To Know About RFID
Before You Start**

#1 - It's All About The Application



- **Don't look at RFID as a “cool technology”**
 - › RFID offers unique capabilities (no line of sight, multiple reads, etc.) that allow it to input data more effectively and timely, but...
 - › It still must solve your business problem
 - › It still must have a positive ROI
- **Buy Solutions. Not Technology**
 - › Don't get caught up in speeds and feeds
 - › *Read Distance, Read Speeds, Db Gain, Etc.*
 - › Look for complete solutions that solve your business problems
 - › *Asset Management, Work In Process, Yard Management, Etc.*

#2 – Understand Your Problem



- **Can you clearly define your problem?**
 - › Ex. “We are losing \$1 million in parts each year because workers don’t record them as consumed.”
- **What do you need to tag?**
 - › Do you need every item, or just the container?
- **How much will RFID improve your process?**
 - › How long does it take you now?
 - › How accurate is your current process?
- **What defines success?**
 - › Is reading 98% good enough compared to today?

#3 – Understand The Technology



You Don't Need To Be An Expert, but...

- **Be aware of RFID's capabilities and limitations**
 - › Read Field
 - › Metals & Liquids
 - › Speed vs. Data
- **Realize there are different “flavors”**
 - › Don't confuse the capabilities of one with another
- **The importance of standards**
 - › EPC Class 1 Gen 2 / ISO 16000 C
- **Talk with other users**

#4 – Know How You Will Tag Your Stuff



- Will one tag fit all?
 - › How many different asset types do you have?
- Do you need a permanent tag?
 - › How long will you need to read it?
- How will you tag existing items?
- How will you tag new items?
 - › Can your supplier do this for you?
- How far will you need to read?

#5 – Understand Your Read Requirements



- Are your items fixed or mobile?
 - › When/How do you want to read them
- Where do you need to read?
 - › How much “granularity” do you need?
 - › Choke points or continuous?
- What read distance do you need?
- Where don't you want to read?
- Do you need to know directionality?
- What needs to happen upon a good read?

#6 Understand Your Software Requirements



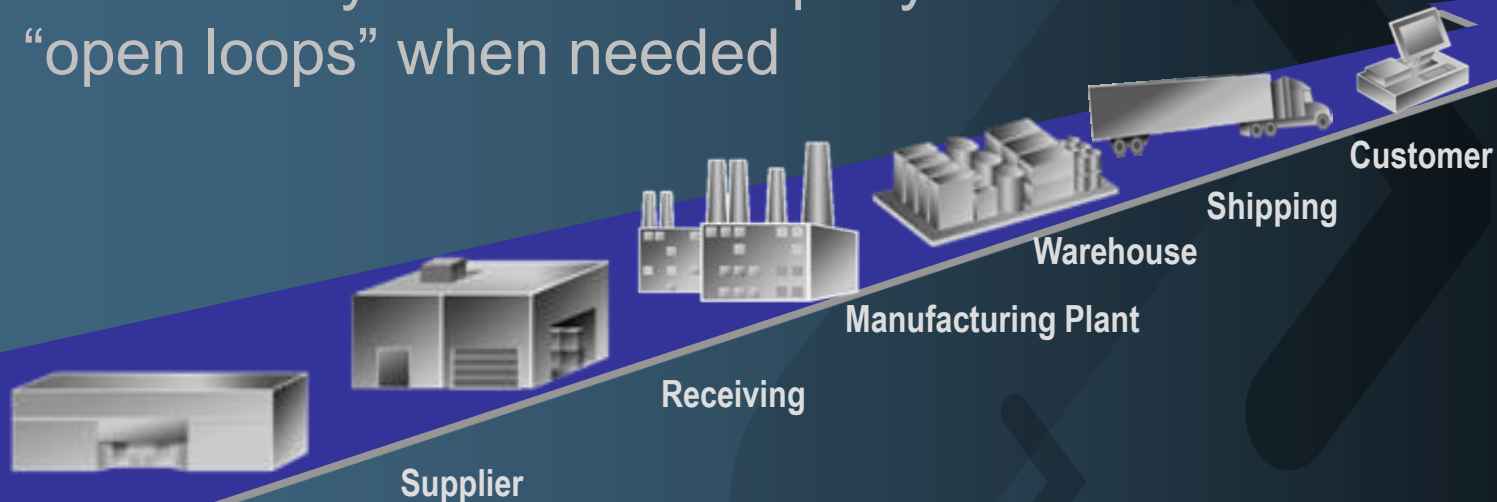
- Is your current system able to receive streams of RFID data?
 - › Tag number, location, date / time, status
- Should you use an ancillary system?
- What information do you need?
- What should it interface to?
- How will you handle system management?
- Do you need something custom or off the shelf?

#7 – Design For The Future



- RFID systems will grow throughout your enterprise

- › Make sure your system can scale
- › Make sure your application can accommodate growth throughout your organization.
- › Think about what data you might need in the future.
- › Make sure your “closed loop” system can interface with “open loops” when needed



#8 Can You / Should You Do This Alone?



- Complexity of the project
- Your in house knowledge of the technology
- Asses what you might be able to do
 - › Tag testing
 - › Software integration
 - › Project management
- Can you afford to “learn as you go?”

#9 – Select Your Integrator Carefully



- How experienced are they?
 - › # of successful RFID installs
 - › References
- What services will they provide?
 - › Process evaluation, system design, site survey, tag testing, software integration, system installation, etc.
- How stable are their hardware & tag partners?
 - › Names you trust?
 - › Fiscally and technically strong
 - › What support will they provide?
- How flexible are they?

#10 – Develop Your Plan



- Create clear vision of desired solution
- Determine how big you should start
- Set up performance measurements
- Engage all shareholders
 - › *IT, operations, etc.*
- Implement in a controlled environment
- Review performance compared to current process
- Determine ROI
- Expand



1. RFID is helping companies today solve real business problems.
2. The ROI on RFID is often less than 1 year
3. Careful planning and knowledge of how to improve your processes leads to the best implementations

Questions?

- Thank You!



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