

**LOWRY**<sup>®</sup> *dataflow at lighting speed.*

## **RFID-EPC Supply Chain Solutions**

Lowry is a leader in RFID, wireless, bar code and data collection solutions

# **RFID Printer / Encoder Review**

**NDIA RFID 2005 McLean**

**November, 2005**

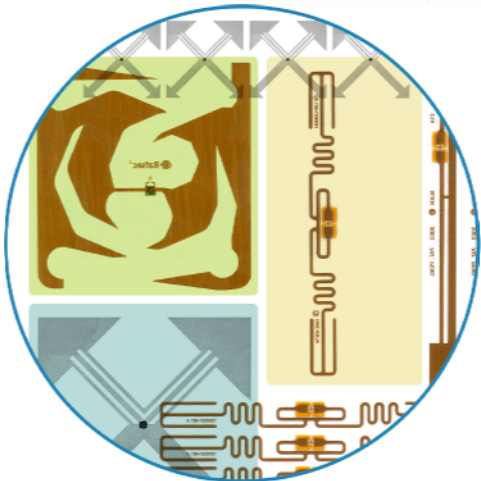
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# Discussion Points

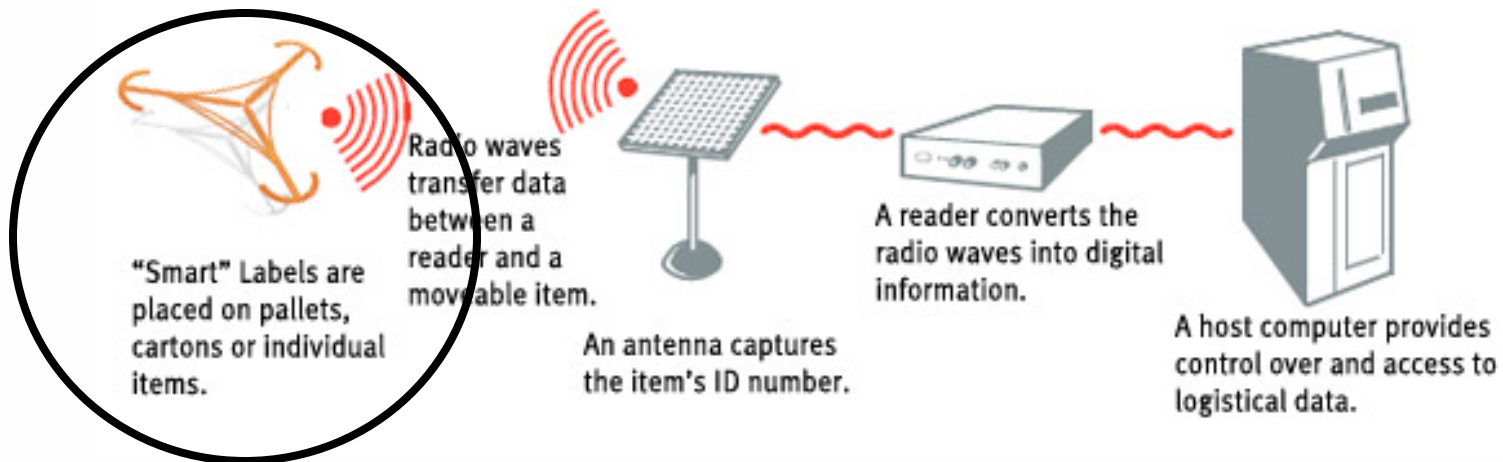
- **Functional RFID System**
- **Marketplace Landscape**
- **Marketplace Leaders**
- **Key Buying Criteria for RFID Printers / Encoders**
- **Success Factors**
- **Q & A**





# A Functional RFID System Includes

- RFID Media For Labels
- RFID Readers
- RF Programmers/Printers (To Program Chip And/Or Print Onto The Label Face)
- Warehouse Management System And Middleware
- Interface To ERP System

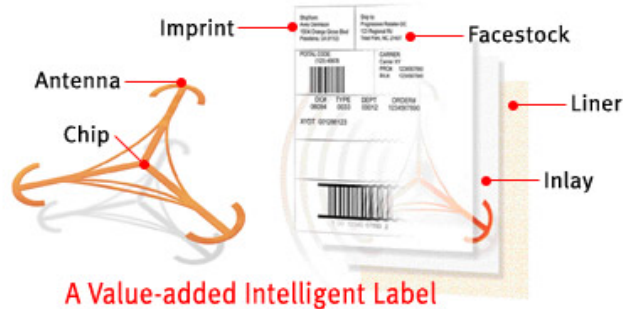


# Printer/Encoder Functions

## 3 Fundamental Functions of a RFID Printer Encoder:

1. Determination Of The Viability (Health) Of The RFID Inlay
2. Encoding (Writing/"Burning") Of The Communicated Numbering Sequence (EPC/Cage Code) To The RFID Inlay/Chip
3. Printing Of The Human Readable Content, Also Communicated By The Printer's Host, To The Pressure Sensitive Thermal Label

RFID Technology



# Marketplace Landscape



Sato  
CL408e RFID /  
CL412e RFID

- Class 1 Focused
- Rugged/Premium Price
- Promised Upgrade to Gen 2
- Solid Market Reputation



Monarch 9855

- Class 1 Focused
- Promised Upgrade to Gen 2
- Solid Market Reputation
- Historically Retail Focused



Intermec PM4i

- ISO Focused (HF + UHF)
- Promised Upgrade to Gen 2
- Solid Market Reputation
- Industrial Focus
- No Current Play in C1/G1



I-Class RFID

- ISO Focused (HF + UHF)
- Promised Upgrade to Gen 2
- Solid Market Reputation
- Industrial Focus + Govt. + Airlines
- No Known Current Play in C1/G1



# Marketplace Leading Solutions



R110Xi & R170Xi

- Industry Powerhouse in Thermal Desktop Printing – 4M+ Installed
- Broad Line of Compatible and Rugged Printing Solutions
- Strong and Established Distribution Network



SmartLine™  
SL5000<sup>e</sup> MP  
SL5000<sup>e</sup> C1

- Established 30 Year Old Printing Solutions Company
- Aggressive and Seemingly Successful Entrance into RFID Compliance Labeling
- Established Family of Distributors, VAR's and Integrators

# Key Buying Criteria

- **Company Reputation**
- **General Specifications**
- **Encode Capabilities**
- **Bad Tag Management**
- **Upgradeability / Flexibility**
- **Software Development**
- **Connectivity/Host Integration**
- **OEM Professional Services**
- **Warranty & Support**
- **Price**

# Key Buying Criteria

## Company Strengths + Commitment to RFID



R110Xi & R170Xi

- 30 Years. 4 Million Printers Sold. 90% F500
- \$663 Million Full Year 2004 up 23.6%
- \$120 Million Full Year Outlook up 31.6%
- Zebra Delivers Innovative And Reliable Bar Code/ Specialty Label Printing Solutions To Businesses And Governments In 90 Countries
- 2<sup>nd</sup> Generation Focus On RFID – 13.56 Mhz Solutions Currently In Line

PRINTRONIX



**RFID**  
(((SMART)))™

SmartLine™  
SL5000<sup>e</sup> MP  
SL5000<sup>e</sup> C1

- \$99 Million Revenue FY2005/9 Mo. (ended 12/30/04)
- \$1.3 Million Net Income FY2005/9 Mo. (ended 12/30/04)
- Worldwide Distribution
- 1<sup>st</sup> Generation Focus on RFID
- Doing Well in RFID Space Based on Pilot Placements



# Key Buying Criteria

## Printer / Encoder Features – General Specifications



R110Xi & R170Xi

- **Based On Proven Xiplus Platform**
  - ⊙ All Metal Construction For 24/7 Operation
  - ⊙ Available In 4-inch And 6-inch Print Width
- **Integrated ThingMagic RFID Reader/Encoder**
  - ⊙ Multi-protocol
  - ⊙ Firmware Upgradeable To “Gen2”
- **Antenna Approximately 1 Inch From Print Line – Maximum Flexibility For Smart Labels**
- **Write/Read/Verify – Ensures 100% Good Smart Labels**
- **Adjustable Power Settings For Read And Write**
- **Programmable Tag Position**
  - ⊙ Allows Transponder Placement Virtually Anywhere On The Label
  - ⊙ Auto-calibrate Function



SmartLine™  
SL5000<sup>e</sup> MP  
SL5000<sup>e</sup> C1

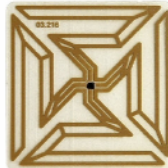
- **Based On SL5000 Thermal Line**
  - ⊙ All Metal Construction For 24/7 Operation
  - ⊙ Available In 4-inch Print Width
- **Integrated AWID RFID UHF Multi-Protocol 915mhz Encoder**
- **Smart Label Encoding Validation And Overstrike Capability**
- **PGL And ZPL™ Programming Languages With RFID Command Sets**
- **Unique Dual-Motor Driven Ribbon System Greatly Reduces The Risk Of Ribbon Wrinkle For Superior Print Quality**
- **Exclusive Snap-in Print Head To Easily Change Print Heads And Change From 203DPI To 300DPI Printing Without Firmware Or Software Changes**
- **Maintains Record Of Bad Tags**

# Key Buying Criteria

## Printer / Encoder Features – Encode Capabilities



R110Xi & R170Xi



- Smart Labels
- Can Encode Virtually Any Transponder Design Using:



- EPC Class 1
- EPC Class 0
- Matrics' 0+
- ISO18000-06b



SmartLine™  
SL5000<sup>e</sup> MP  
SL5000<sup>e</sup> C1

**SL5000e MP** – Provides Multi-Protocol Capabilities To Address Applications That Require Class 0, 0+, 1 Standard

**SL5000e C1** – Provides Capabilities To Address Applications That Require An Optimized Class 1 Standard Solution

The SL5000e MP And SL5000e C1 Support The Following Label Sizes With Various Antenna Designs.

Alien 'Squiggle' Class 1, 96-bit 4" X 2", 4" X 4", 4" X 6", 4" X 8"

Rafsec #432 Class 1, 96-bit 3" X 3"

Matrics 'Dual Dipole' Class 0, 0+ \* 4" X 6", 4" X 8"

\* SL5000e MP Only

# Key Buying Criteria

## Printer / Encoder Features – Bad Tag Management



R110Xi & R170Xi

- **Optimized For Fastest Throughput**
  - Voided Labels Printed At Maximum Speed
  - RFID Mode Eliminates Unnecessary Back-feed
- **Good And Void Label Tracking**
- **Expanded Error Reporting Helps Determine Cause Of Voided Labels**
- **Tag Data Can Be Continuously Displayed**



SmartLine™  
SL5000<sup>e</sup> MP  
SL5000<sup>e</sup> C1

- **Overstrike Bad Tags**
- **Maintains Log Electronically**



# Key Buying Criteria

## Printer / Encoder Features – Upgradeability/Flexibility



R110Xi & R170Xi

powered by  
ThingMagic

- The reader's unique software architecture also allows remote software upgrades for new protocols, including the forthcoming EPC Generation 2.
- *“Moving forward, Zebra’s goal is to ensure that every RFID investment made by our customers delivers long-term benefits and effortless accommodation to the ever-changing standards and technology shifts.”*
- Zebra has indicated that these upgrades are provided at no charge to the integrator and to the end user.

PRINTRONIX



SmartLine™  
SL5000<sup>e</sup> MP  
SL5000<sup>e</sup> C1

- *Printronix recognizes that RFID standards will continue to evolve over the next few years, and protecting your investment in RFID technology today is a key design goal for its products and services. Printronix helps protect your technology investment by including a flexible upgrade path that includes software-upgradeable reader technology.*
- Printronix has also introduced field upgradeable thermal transfer printers with RFID upgrade path.
- Printronix has not revealed costs (if any) or procedures on Gen 2 upgrades

# Key Buying Criteria

## *Printer / Encoder Features – Software Development*



R110Xi & R170Xi

- Enhanced Commands for RFID to ZPL Programming Language



SmartLine™  
SL5000<sup>e</sup> MP  
SL5000<sup>e</sup> C1

- PGL and ZPL Interpreter
- Development Kit Has Sample Applications

# Key Buying Criteria

## Printer / Encoder Features – Connectivity & Host Integration



R110Xi & R170Xi

- XML Communication For Easy Integration To Enterprise Systems.
- Variety Of Connectivity Options
  - Standard Interface
  - Wireless
  - Internal Ethernet



SmartLine™  
SL5000<sup>e</sup> MP  
SL5000<sup>e</sup> C1

- Wireless/Ethernet Option Provides Real-time Data Access And Local Printing Flexibility
- Printronix Printnet® Enterprise, A Web-enabled Remote Network Print Management System That Provides Instantaneous Visibility To Every Network Printer And Allows Users To Simultaneously Configure And Efficiently Manage An Unlimited Number Of Printronix Printers Supports Management Of The Additional Rfid Encoder Capabilities



# Key Buying Criteria

## *Printer / Encoder Features – Warranty Support*



R110Xi & R170Xi

- 1 Year
- Warranty Covers Parts & Labor
- Warranty Service Performed at Zebra Site



SmartLine™  
SL5000<sup>e</sup> MP  
SL5000<sup>e</sup> C1

- 90 Days
- Warranty Covers Parts and On-Site Labor

# Key Buying Criteria

## *Printer / Encoder Features – OEM Professional Services*



R110Xi & R170Xi

- Generally Defined, Customized and Provided by Zebra Authorized RFID Providers



SmartLine™  
SL5000<sup>e</sup> MP  
SL5000<sup>e</sup> C1

- Auto ID Consulting
- Label Compliance/Certification
- SAP/ERP Bar Code Integration
- Legacy Application Migration
- PLC + Automation Interfaces
- Other Services

# Key Buying Criteria

## Printer / Encoder Features - Price



R110Xi & R170Xi

### R110Xi

R12-	203 dpi	\$4,495
R13-	300 dpi	\$4,695

### R170Xi

R72-	203 dpi	\$6,795
R70-	300 dpi	\$6,995



SmartLine™  
SL5000<sup>e</sup> MP  
SL5000<sup>e</sup> C1

- SL5000<sup>e</sup> MP = \$4,995
- SL5000<sup>e</sup> C1 = \$4,695
  - ⦿ 203/300 DPI (operator interchangeable)

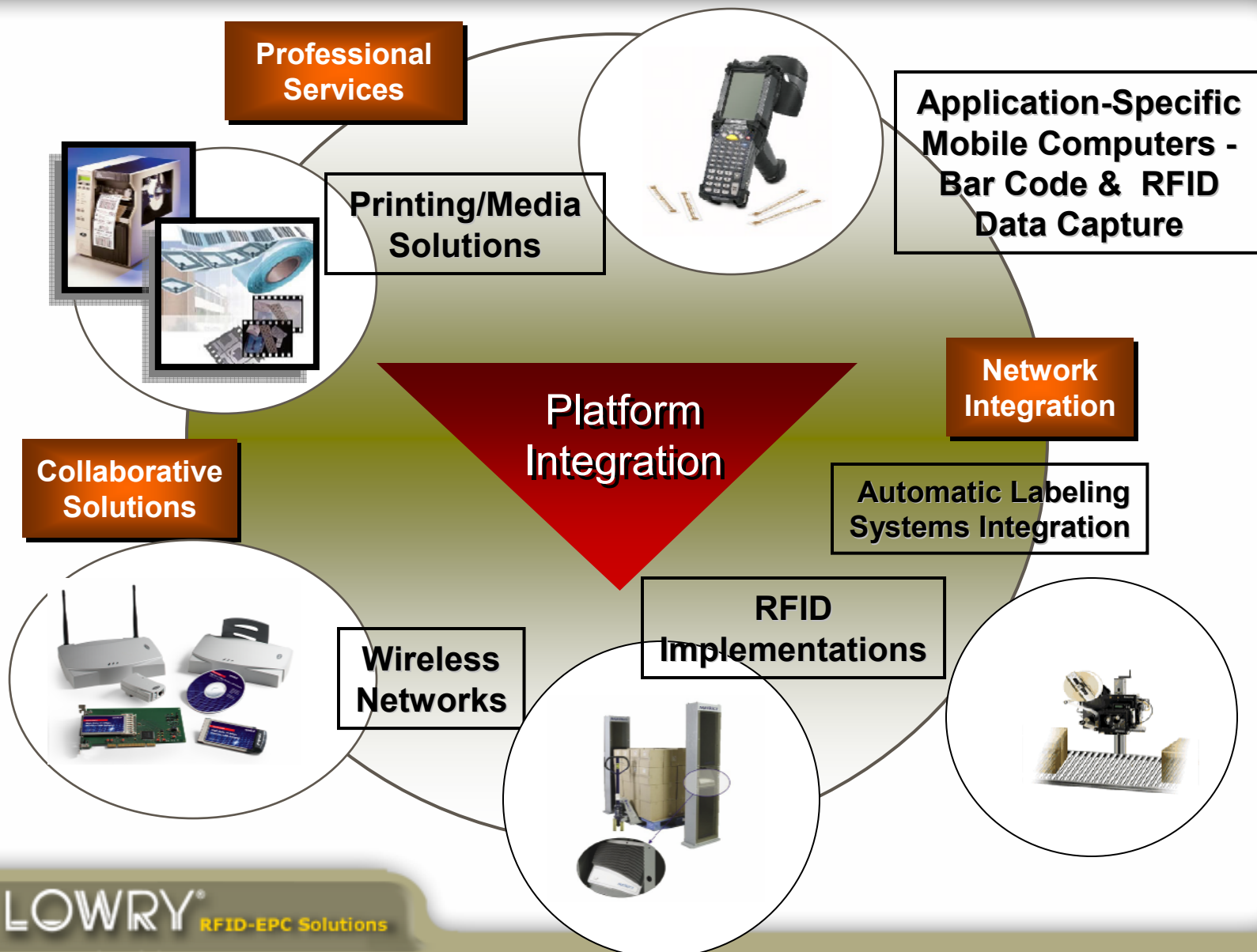


# Tips from the “Pros”

- **RFID Implementations are a Progressive Project**
  - Iterative Approach
  - Incremental Approach
  - Not Overnight
- **Plan – Plan – Plan!**
  - Deliveries Have Long Lead Times
- **If You Have RFID Unfriendly Products?**
  - Test Multiple Tags
  - Test Multiple Sources
  - Experiment With Multiple Tag Placement Options
- **Don’t Load Up**
  - Standards Mean Change
  - Insist on Upgradeable Solutions at Minimum Cost to You!
- **Look for Help**
  - Lot’s of Affordable Help and Solutions Available for Compliance to Mandates

# Lowry Advantage

*Trust Our Experience When It Counts!*



# Questions / Comments

