



# RFID in the supply chain: Opportunities and Lessons

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# Opportunities:

## Can you answer YES to any of these ?

- Interested in knowing who returns product versus who purchased?
- Do you experience Grey-Market Sales?
- Are any of your products pirated?
- Might you be giving credit for Gratis, Comps or Evaluation copies?
- Would you like to:
  - only credit customers at the supplied purchase price?
  - credit correctly when customers return components of a set when supplied a set?
  - Improve your picking accuracy?
  - Validate inbound product and only pay for what you received?

# Wiley's Business Drivers

- Re-importation/Grey Market
- Piracy identification
- Gratis, comp or evaluation returns for full credit
- Purchased from wholesaler returned from retailer to publisher
- Complete set supplied – component returned
- Returns policy enforcement
- WileyPlus™ registration code management
- What is on the Retailers shelf
- Improved business intelligence

# Solution – RFID Tagging

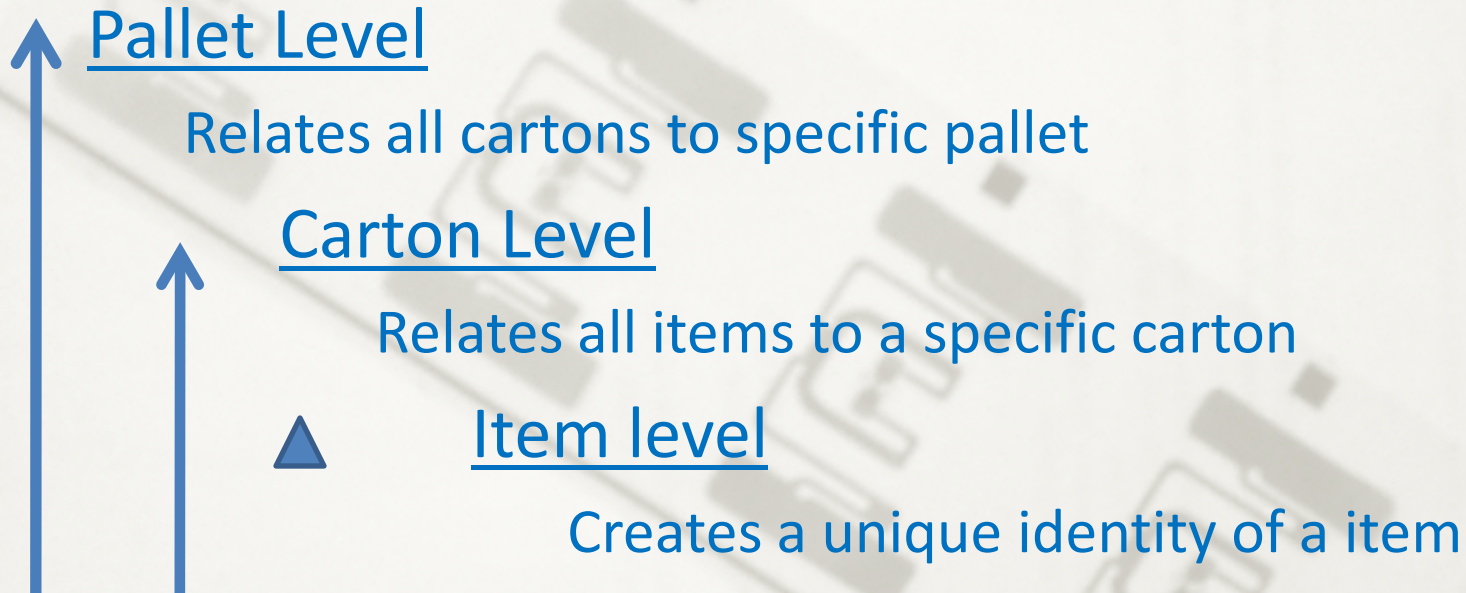
- What is an RFID Tag?
  - Data transmission device (transponder)
  - Can be Active, Semi-Passive, Passive
  - Operates in LF, HF and UHF band spectrums
  - Major chip manufacturers: NXP, MONZA, HIGGS, INPINJ
  - Common data sizes: 64, 96, 240 bits of data
- Most Common Uses:
  - Asset Management/Tracking
  - Closed Loop Internal Proprietary Systems
  - Inventory/Retail Shelf Management
  - Safety/Recalls/Sell By
  - Security/Theft Protection
  - Quality Control
  - Piracy Protection

# Solution – RFID Tagging

- Most Common Users:
  - Department of Defense
  - Transportation
  - Pharmaceuticals
  - Retail
- Most Common Chips:
  - Passive, UHF, 240 bits
- How do they work?
  - Active tags are powered while passive tags receive power via RF
  - Reader sends RF signal, instruction
  - Tag wakes, interprets instruction, sends data as backscatter

# Retail Tag Applications

- How are Tags being used

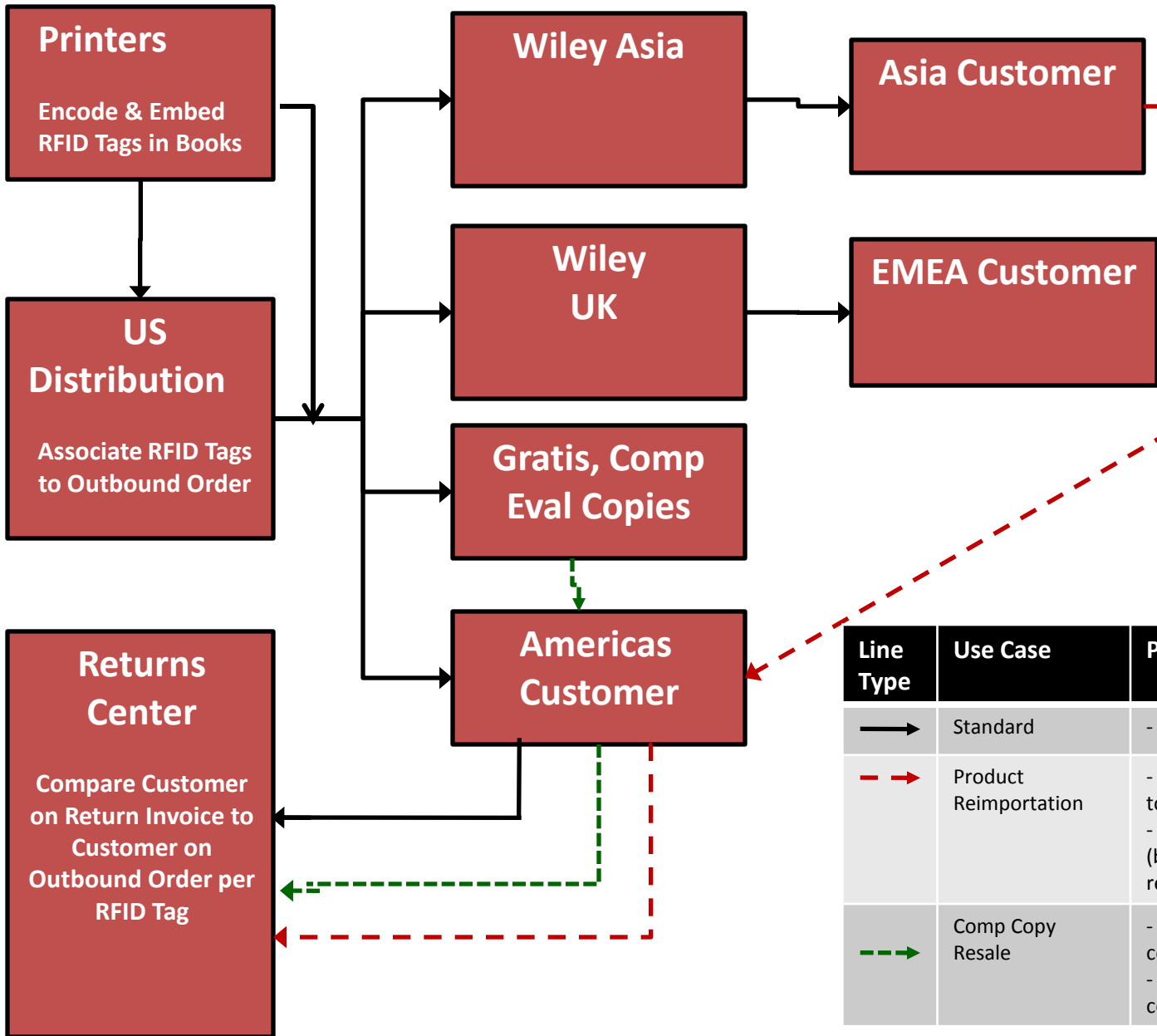


- Wiley Application is at item and carton Level using AD-224 and AD-824 passive tags with TID

# RFID Data Encoding Standards/Contents

- EPCglobal/GS1:
  - EPCglobal is leading the development of industry-driven standards for the Electronic Product Code™ (EPC)
- Electronic Product Code
  - EPC is constructed as a Serialised Global Trade Item Number (*SGTIN*) by combining a GTIN product identifier with a unique serial number
  - Publishing EPC has been slightly modified to include a commissioner code as part of the serial number
  - Still allows for 1.6 billion unique books for an EAN
  - No other data is encoded in the tag

# Wiley High-Level RFID Process Flow



Line Type	Use Case	Potential Business Action
→	Standard	- No action required.
- - - →	Product Reimportation	- Refuse credit for returns not associated to outbound order from same customer. - Stop selling to customers (bookstores/wholesalers) outside U.S. if reimporting product into U.S.
- - - →	Comp Copy Resale	- Refuse credit to bookstores who return comp copies - Contact Professor to whom returned comp was given

# Publishing Printing Support

- U.S. Suppliers:
  - R.R. Donnelly (2 plants)
  - Courier (2 Plants)
  - IPAK
  - Quad (formerly Quebecor) (2 Plants)
  - Hamilton Printing
  - Malloy
- Singapore Suppliers:
  - Markono
  - CraftPrint (summer 2011 installation)

# Publishing System Integrator MobileXe

- Pave Software – Printer and Publisher
  - Print, Apply, Verify & Exchange
  - Multi-publisher & Multi-site
  - EPCglobal Compliant
- Custom hardware:
  - Tunnel Readers
  - Quality assurance tables
  - Packaging equipment
- Custom Software:
  - To suit specific environments

# Supply Chain Drivers

- Improved Receiving
  - Verify quantities via carton tags
- Improved Full Carton Picking
  - Carton picking verification
- Improved Loose Product Picking
  - Carton content inspection
- Faster Returns Processing
- Improved Inventory Accuracy
  - Tracking At Pallet/Carton level

# Lessons Learned

- Define Objectives
  - Create business drivers – Pilot
  - Identify reasonable scope
- Involve Print Suppliers from the start
- Source an Integrator
  - Need specific RFID item level experience
  - Don't be their science project
- Identify your Internal Issues
  - Develop integrated workflow
  - Identify distribution workflow changes
  - Don't underestimate effort!

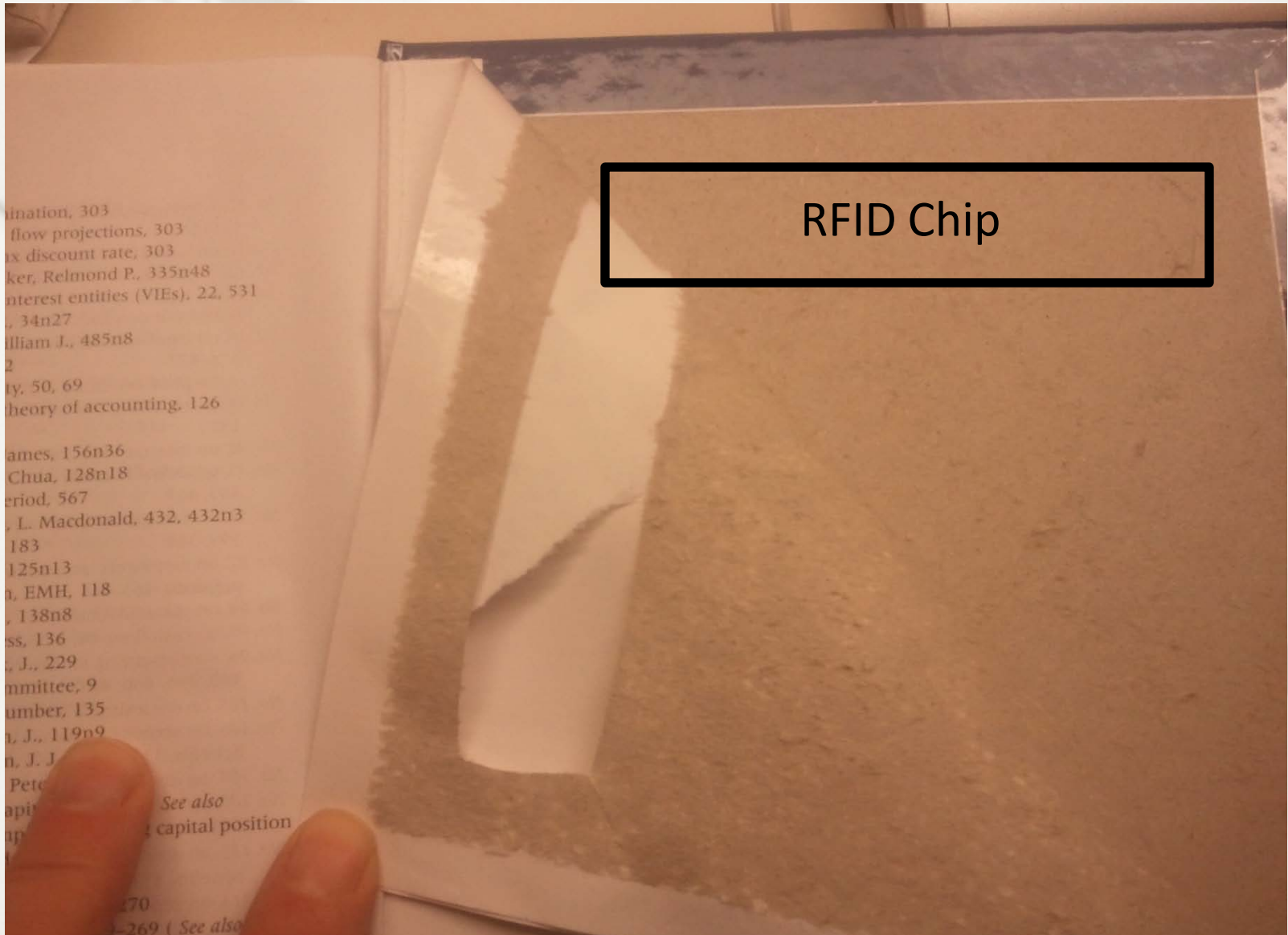
# Lessons Learned

- Use Readily Available Components
  - Use off the shelf RFID tags
  - Use proven RFID hardware
- Use Industry Standards
  - Implement EPC data structures
- Don't Over Engineer
- Test....Test.....then Test again

# Findings

- Market is fully aware of Wiley's program and have been creative in trying to circumvent it
  - Ripping tags off paperbacks
  - Cutting out tags from hardbacks and applying new end sheet
- Piracy
  - Tearing off paperback covers from ISVs and adding hardback covers
- Grey Market
  - May not be where one would expect
- Business policies must be enforced

# Evaluation Copy Returned



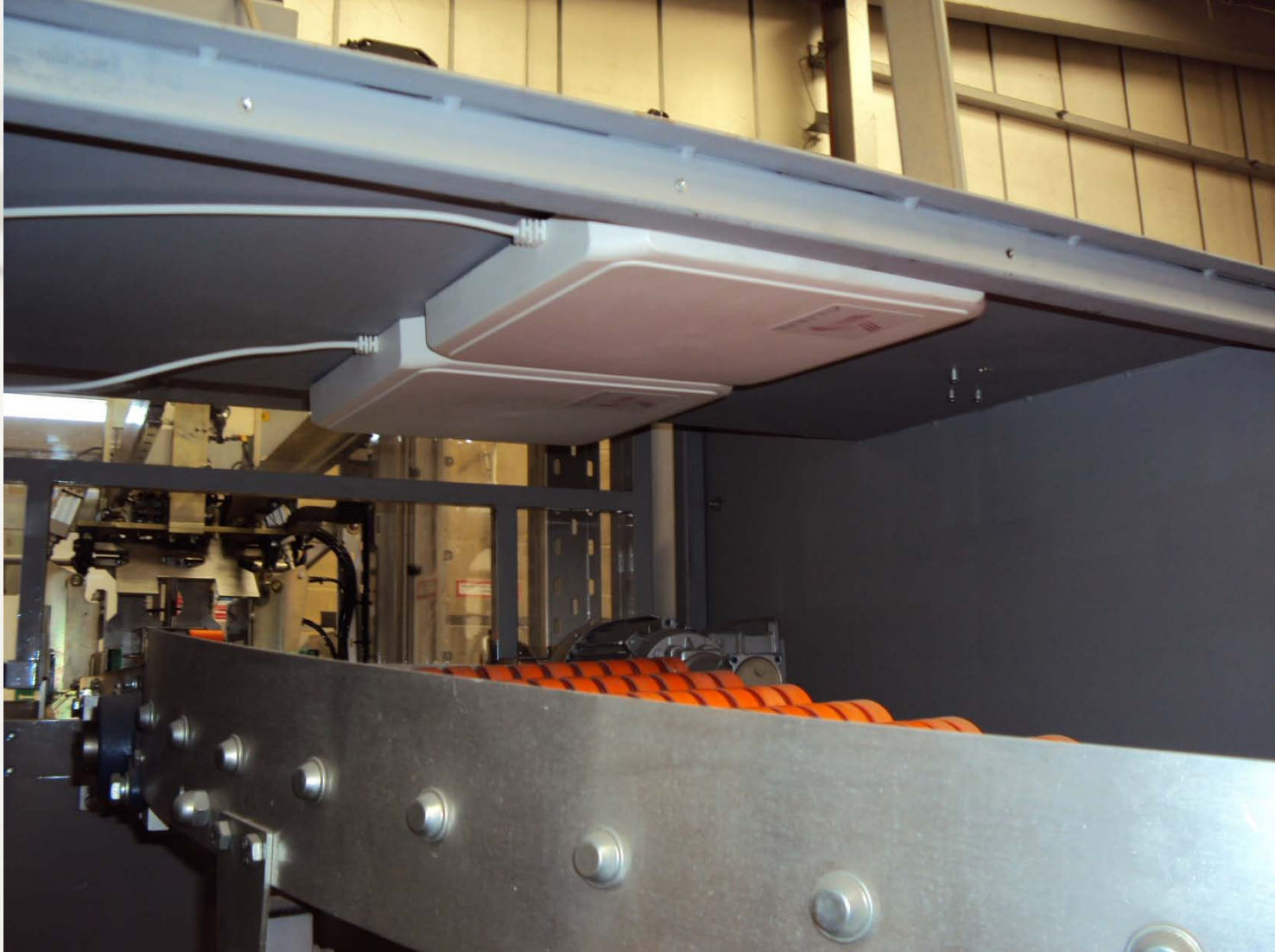
# RFID Tunnel



# Shrink Tunnel



# Singles Packaging Machine



# Quality Control Station



A close-up, grayscale photograph of a computer keyboard. The focus is on the left side, showing the spacebar and the arrow keys. The word "Questions?" is overlaid in a blue, sans-serif font in the center of the image. The background is a blurred, light gray.

Questions?