

Root Beer Game – in Progress

Root Beer Game Completion Schedule

- Practice session (completed in class) – *February 4*
- Complete Round 1 – *February 11*
- Team decision (via e-mail to professor) on Round 2 change – *by February 18*
- Game reset and ready to start Round 2 – *February 20*
(see blog post)
- Complete Round 2 and Submit deliverables – *by March 10*



What's
the
plan?

Root Beer Game: Round 2 Options

Each Team Can make 1 of the following changes for Round 2

- A. Point of Sale (POS) information available to all Roles (not just retailer)
- B. Shipping Delay reduced to 1 week from 2
- C. Information Delay (Order) reduced to 1 week from 2



What's
the
plan?

Root Beer Game: Deliverables

One submission per group

1. Complete the performance spreadsheet of your group (link in blog)
2. Short write-up: How you played the beer game. What strategies you employed and how they changed when you played the beer game the second time compared to the first.
e.g.
 - What was your strategy in the game for placing orders placing and holding inventory? How did this strategy change for Round 2?
 - How was the communication and cooperation between various players in the group? How did it change from Round 1 to 2?
 - What lessons from the beer game would you give to supply chain managers?



What's
the
plan?

Root Beer Game: Note

- The demand pattern may change between the different rounds.
- The intent of playing multiple rounds is to demonstrate how manipulating certain aspects of the game can influence the performance of the supply chain.



What's
the
plan?

RFID-Radio Frequency Identification

Overview

- Components of RFID
- Applications of RFID
- Challenges in RFID
- Security and Privacy concerns regarding RFID

Components of RFID

Tags

- Attached to items that RFID is intended to track
- Consists of
 - Electronic Integrated Circuit
 - Miniature Antenna
 - Substrate

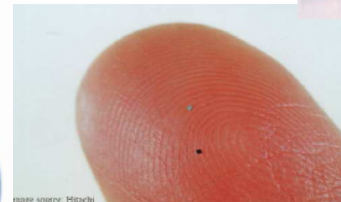
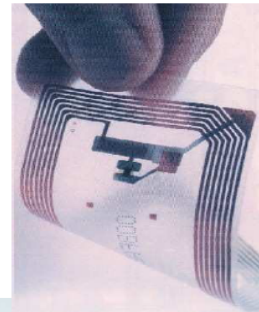
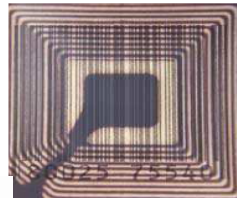
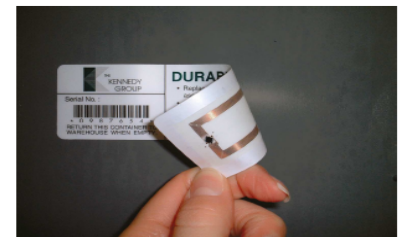


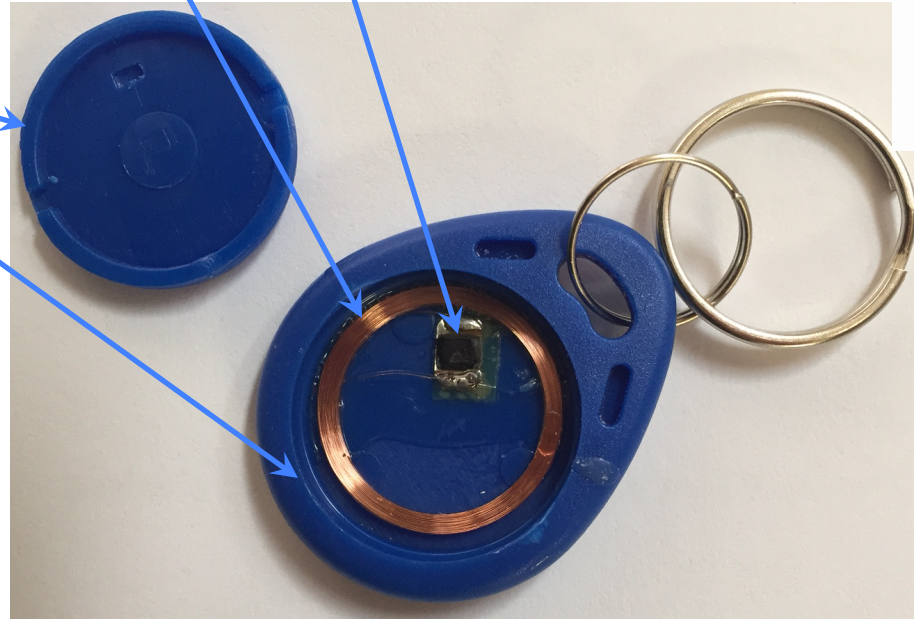
image source: Hitachi



Components of RFID

Tags

- Identifying # (can be internal)
- Electronic Integrated Circuit
- Miniature Antenna
- Substrate



RFID Tag Types

- **Passive Tags:**

- Powered by incoming RF. Smaller, cheaper, long-life
- Approximate range 5meters



Passive

- **Active Tags:**

- Battery Powered. Can be read 100 feet away
- More reliable reading



Active

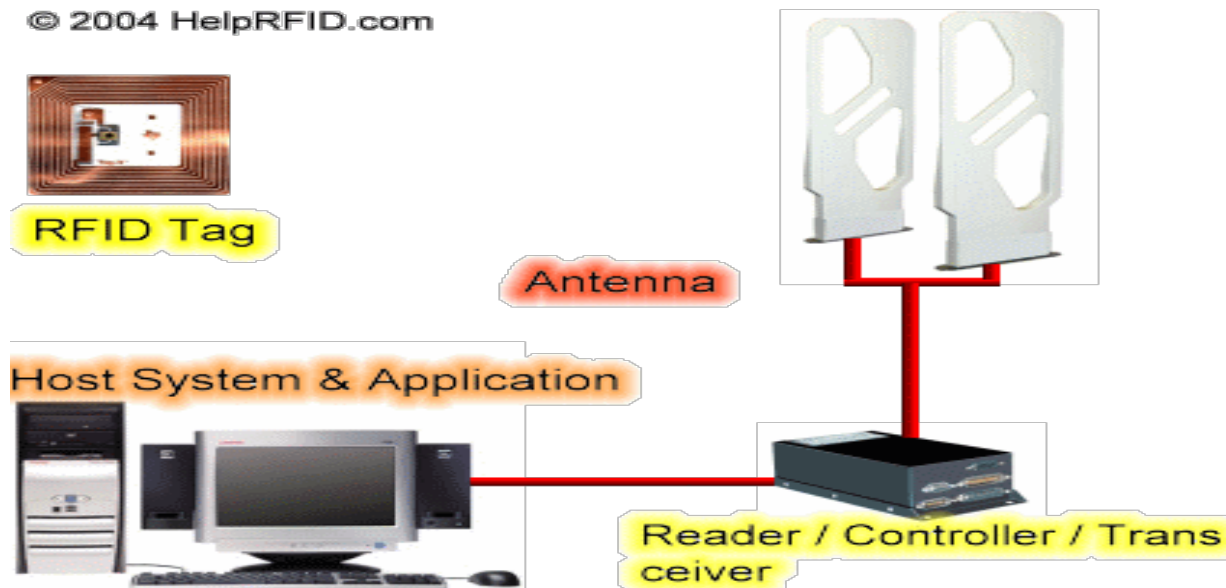
- **Semi Active Tags:**

- Transmit using 'Backscatter' of readers RF power
- Battery for Logic
- Range like passive. Reliability like Active

Components of RFID (Contd)

- **Scanner and Readers** - Creates electromagnetic signals which are transmitted to the RFID tags through antenna
- **Antenna** - Transmits and receives Electromagnetic signals between Tag and Reader
- **Host** - Computer system that communicates with the RFID reader

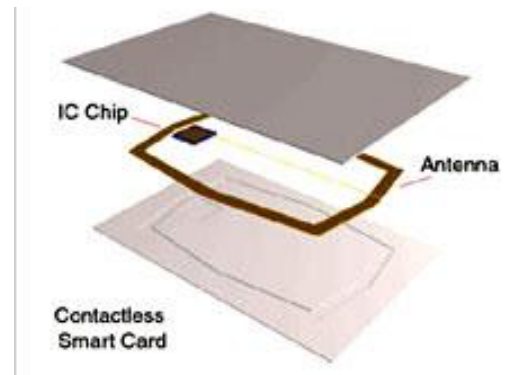
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RFID: Applications



- Pioneered by British during World War II to identify aircraft
- In 1960 the US Government started using RFIDs on nuclear and hazardous materials
- Garage door openers use RFID
- Automatic Toll Collection
- Sensor + RFID can be used to monitor products inside sealed shipping containers
- Access Control, Equipment Tracking



RFID: Applications (Contd)

- Warranty Information on RFID tags
- Smart medical cabinets remind patients to take medications and call doctors if missed
- Retail loss prevention
- No need to unload grocery carts for checkout

RFID in Supply Chain Management



Check out the video on use of RFID in Inventory Management.

<http://www.youtube.com/watch?v=4Zj7txoDxbE&NR=1>

RFID-Supply Chain Management

Benefits

- Innovate ways to identify, locate and monitor goods as they travel through supply chain of many industries.
- Increased accuracy of orders
- Reduce inventory handling cost
 - Improve Inventory handling
- Fewer misplaced items(in warehouse)
- Reduce losses from theft

RFID in **WAL★MART**[®]

- Wal-Mart uses the ‘slap and ship’ level
 - Advantages to **WAL★MART**[®]
 - Improved Inventory Control
 - Better control over Overage, Shortage and Damage claims management
 - Improved order accuracy
 - Improved forecasting
 - Lower overall inventory level
 - Improved sales
 - Improvement in customer service level
 - Esp. with internet shopping
- from store inventory 



Store of Future with RFID?

- Shopping in the future made easier by RFID!

<http://www.youtube.com/watch?v=zBz3aoikLpU&feature=related>

- Is this realistic
 - Technically?
 - Customer Acceptance?
 - Business Value?



Animal Tracking Using RFID

- **External Tag Placement**

- Can be attached to the collar
- Can be directly attached to animal's body

- **Advantages:**

- Less tagging trauma to animal
- Greater ease in maintainability
- Lower Initial Cost

- **Disadvantages:**

- Increased possibility of tag damage or loss
- Varying environmental operating conditions



Animal Tracking Using RFID (Contd)

- **Internal Tag Placement**

- Insertion of tag within animal carcass

- **Advantages:**

- Increased protection from damage
- More stable operating environment

- **Disadvantages:**

- Increased trauma to animal
- Increased initial cost
- More expensive maintenance



Ref: Implants in humans, horses, fishes, animals

- Animal ID Standards ISO 11784 and 11785 use RFID

Credit Device RFID Applications

- Known as ‘Contactless Payment Systems’
- RFID circuitry embedded on back of the card
- **Advantage:**
 - No dependence on magnetic stripe to complete transaction.
- **Disadvantages:**
 - Lesser security
 - Easier to spend



Secure Document RFID Application

- **E-Passport RFID Chip**

- Contains RFID chip / contactless smartcard
- Chips stores digitally signed Information like Photo, name, age, expiry and issue date

- **Advantages:**

- Difficult to forge

- **Disadvantages:**

- Unauthorized access to passport without owner's knowledge
- Eavesdropping on communication between reader and passport.



RFID Applications in Libraries

- **Advantages**

- Rapid and simplified patron charging
- High speed Inventory
- No strain on librarians
- Reduction of material cost and handling

- **Disadvantages**

- High Cost
- Privacy Concern

LibBest Library RFID Management System



RFID- Some Challenges

- Reduce Tag Prices (5 Cent Initiative)
- IT Infrastructure
- Data Volumes of New Scale
 - Online Handling of Huge Amounts of Streaming Data
 - Storage, Network Bandwidth & Systems
 - How to find useful information
- Integration
 - DB' s, Data Warehouses and Enterprise Applications
 - Business Processes (systems, policies, physical facilities, etc.)
- Global Standards
 - Frequency of Tags & Readers
 - USA, Europe and Japan use Different Frequencies



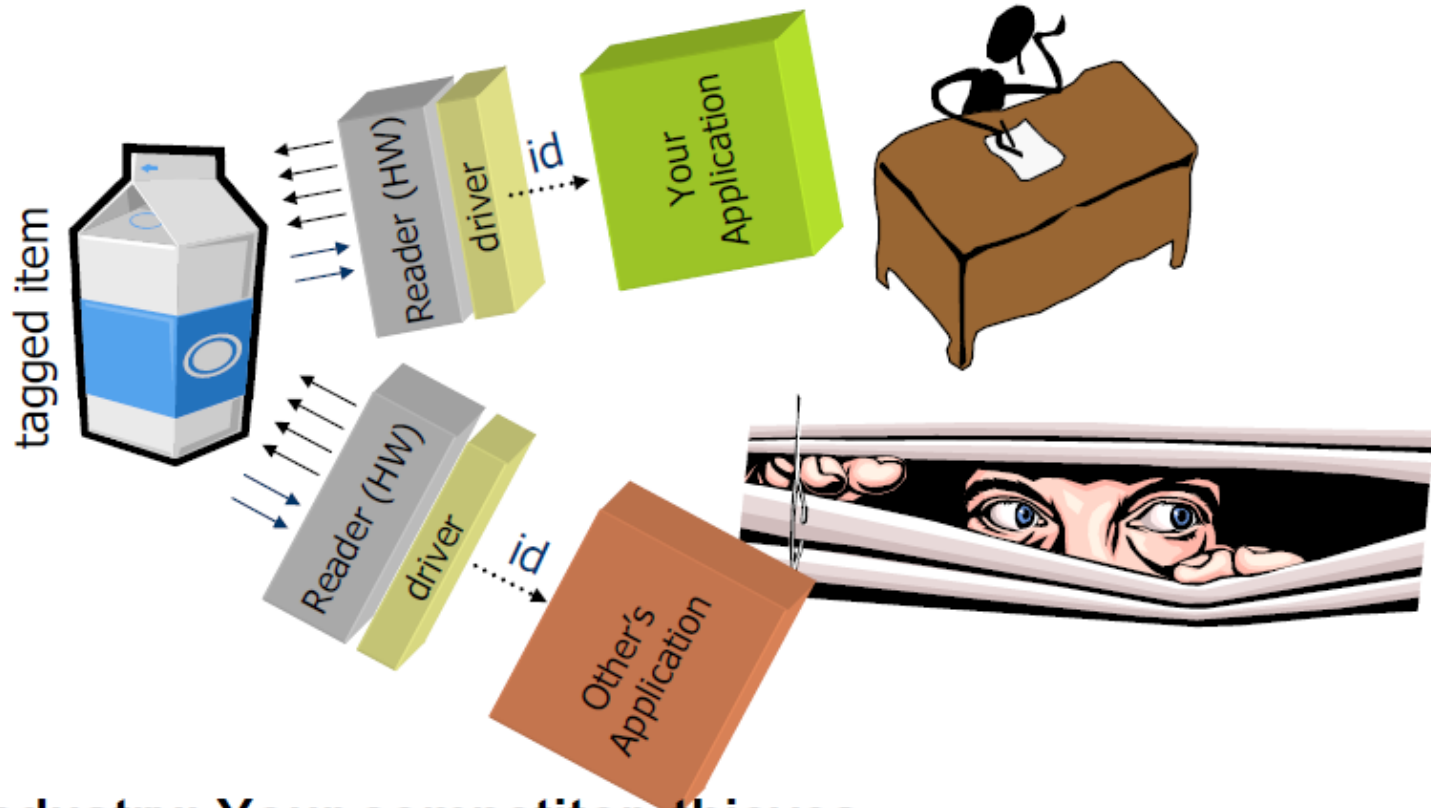
RFID – Privacy Concerns

From Consumer's Perspective:

- They are not well informed
- Unclear reason for its usage
- Companies usually have low credibility
 - They could have something to hide
- Laws do not really protect people against misuse
- Secure technology?
- Enough experiments?



RFID-Security Concerns



Industry: Your competitor, thieves, ...

End Consumer: companies trying to profile you, thieves

Thank You!

