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*
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?
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.
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
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 5 meters

- **Active Tags:**
  - Battery Powered. Can be read 100 feet away
  - More reliable reading

- **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
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
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!