Using RFID for Collections Management and Visitor Interaction

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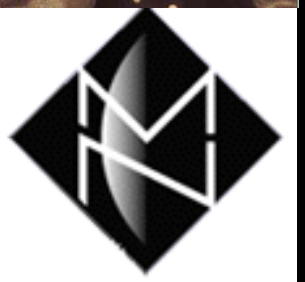
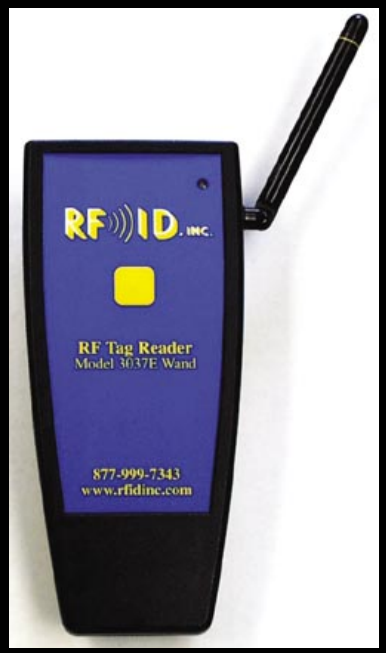
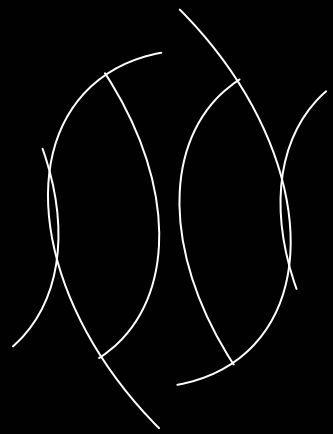
RFID 101

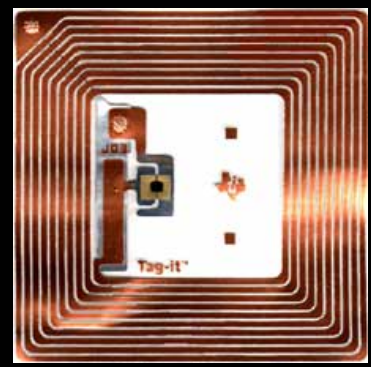


How RFID Works

- Readers (interrogators) and tags (transponders)







Some Tech Stuff

- RFID operates over three primary frequencies
  - Low frequency (125/134 KHz)
  - Mid frequency (13.56 MHz)
  - Ultra High frequency

    (850 to 950 MHz and 2.4 to 2.5 GHz)

Some More Tech Stuff

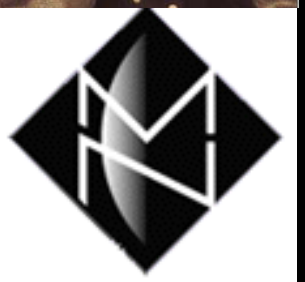
- Active tags
  - Battery powered
  - Higher frequencies
  - Longer read range
- Passive tags
  - Use radio wave for power
  - Lower to mid-frequencies
  - Shorter read range
  - Less expensive

One Last Tech Stuff Slide

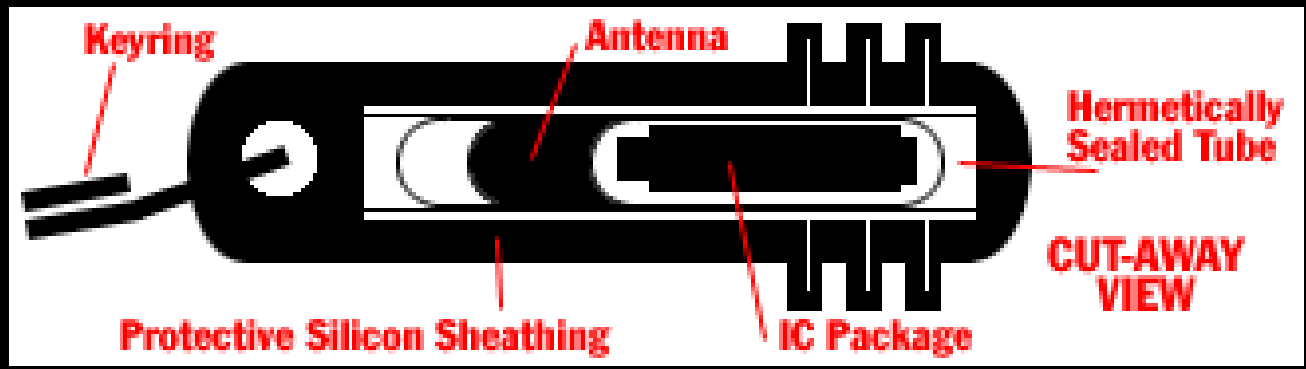
- Read-only tags
- Read-Write/WORM tags
- Electronic Product Code (EPC)

01 • 0000A89 • 00016F • 000169DCO

Header	Object Class	EPC Manager	Serial Number
8 bits	24 bits	28 bits	36 bits



EZ-Pass and Speedpass

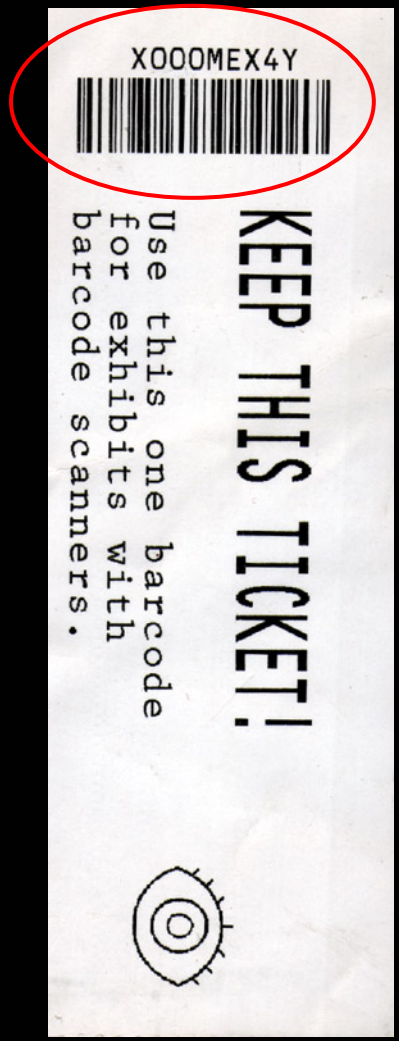


Case Study: The Tech Museum

As a cutting edge museum showcasing technology, what is is the next “hot” technology that The Tech is using?

RFID!

Case Study: The Tech Museum



So 90's!

The Future!

Case Study: The Tech Museum

- Deployed read-only “TechTags”
  - Initiates exhibit/experience
  - 16 character alpha-numeric code
  - Mid frequency passive tag (13.56 MHz)
  - 4” read range
  - $0.75 unit cost ($0.50 Phillips tag/$0.25 bracelet)
  - $500 reader cost (Feig)

Case Study: The Tech Museum

- Benefits
  - Wearable identification
  - Extend Museum experience to home
    - See your jellyfish develop/glow
    - Online activities
  - Traffic patterns/flow
  - Potential tie to ticketing/membership
  - Potential intelligent experience-based visitor interaction

Case Study: LEGOLAND

How many man-hours are spent each year finding 1,600 lost children? What technology can help minimize this cost?

RFID!

(over Wi-Fi)

Case Study: LEGOLAND

- RFID deployment issues
  - Number of readers
  - Read range
  - Logistics
    - Do children know they're lost?
    - Do children know whom to ask?
    - Can adults find the right staff to ask?
  - Outdoor deployment

Case Study: LEGOLAND

- Solution
  - Integrate RFID with a location enabled Wi-Fi network
  - Use battery powered RFID tags in a small form factor with wristband for children
  - Parents provide cell phone number to attendant
  - Parents receive a map with 10m x 10m grid with XY coordinates

Case Study: LEGOLAND

- When a child becomes lost
  - Using the cell phone, the parent sends a text message to the park HQ.
  - Cross referencing the RFID tag to the cell phone, the system replies with a text message indicating the coordinates of the lost child
  - No human intervention; no lost staff time

Case Study: LEGOLAND

- Other benefits
  - Rentals provide revenue stream
  - Tags offer sponsorship opportunities
  - Tags are rechargeable and last 3 years
  - Can track children's visitation patterns
  - System utilizes standard 802.11b Wi-Fi
  - Builds infrastructure for other visitor interaction opportunities