Sun Microsystems
FCC RFID Workshop

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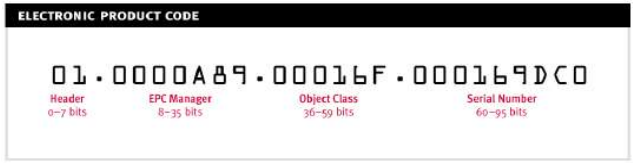
Sun Microsystems & RFID

- What is Sun doing in RFID?
  - Sun's systems approach to RFID includes:
    - Software – Sun Java System RFID Software
    - Hardware – Middleware platform
    - Systems Architecture
    - Services and Test Centers
    - Best-of-Breed Partnerships
    - Word-class support

Whats Driving RFID Today

- New Technology
  - Smaller & Better Chips
- New Standards
  - Auto-ID Center/EPC Global
  - The Internet
- New Economics
  - New Manufacturing Processes
- Industry Mandates
  - Wal-Mart, US DoD etc.



Smaller, Cheaper & Better RFID Tags are driving new applications

Industry Usage of RFID

Consumer Product Manufacturers

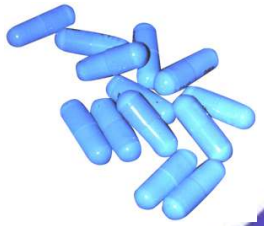
Retail

Aerospace

Defense

Pharmaceutical

Livestock



1 Trillion!

RFID Users have many Questions

- RF Basics: Tags, Readers, RF physics, Regulations ?
- Standards: What Technologies should I use?
- Scalability: How do I start small and then go big?
- Reliability: Will it work in an enterprise setting?
- Manageability: How do I manage the infrastructure?
- Security: What are my security considerations?
- Business: What will this cost? How long to ROI?
- Partners: Who should my trusted partners be?

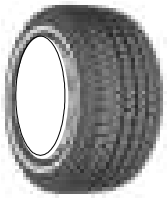
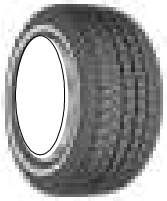
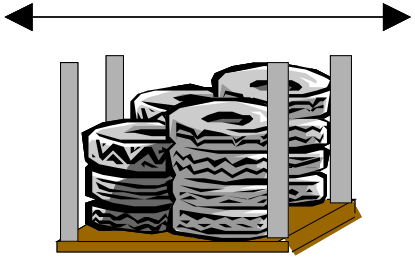
Real World RFID Requirements Roll Cages

Metal wire frame cage on wheels for moving inventory between Distribution Center and Stores.

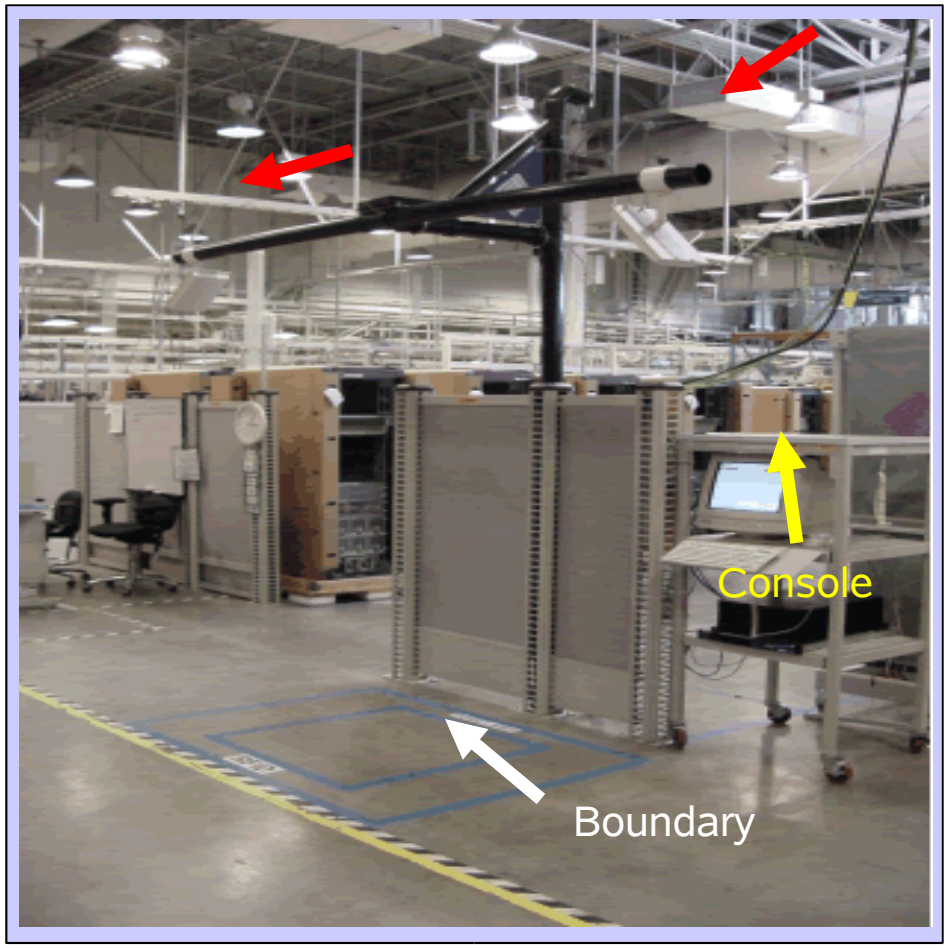
Two single dipole ruggedized tags attached to each rollcage

Real World RFID Requirements Luggage Tag and Reader

Real World RFID Requirements Tire Orientation

1	2	3	4	5	6	7	8
Conveyor	Rolling through a threshold	Rolling through a threshold	Pallet (arranged) through a threshold	Pallet (arranged) through a threshold	Pallet (arranged)	Stacked on horizontal racks	Stacked stovepiped on floor
							
Overhead mounted reader	Dock door reader - sides	Dock door reader - header	Dock door reader - sides	Dock door reader - header	Handheld reader	Handheld reader	Handheld reader
500 feet per minute	500 feet per minute	500 feet per minute	500 feet per minute	500 feet per minute	Static	Static	Static

Real World RFID Requirements "Project Sun Beam"

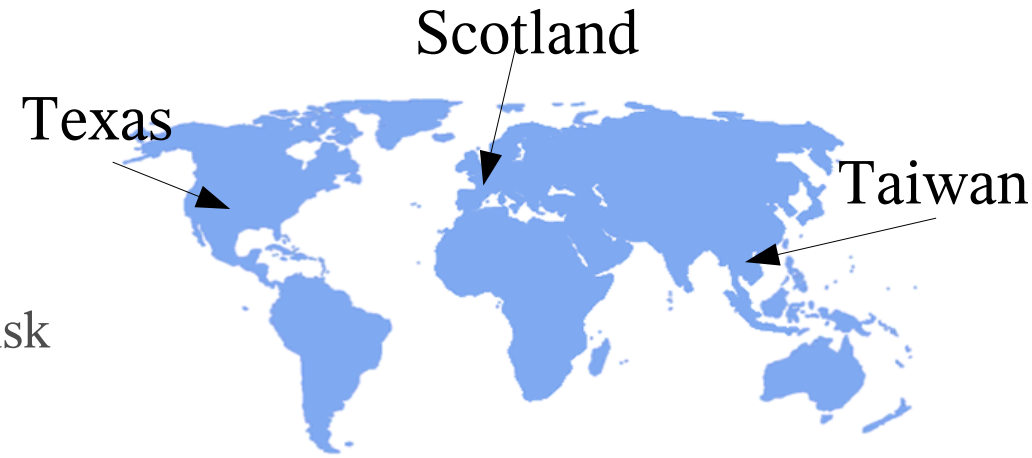


Antennae

What is an RFID Test Center?

Test Center Environment

- 17,000 Sq. Ft Warehouse
- Dock Doors for Receiving and Shipping
- High Speed (600ft/min) Conveyor System
- Pallet Conveyor and Forklift
- Multi Reader and Tag testing
- Fully Operational



Benefits to RFID Users

- Understand RF Issues
- Off premise testing, lower risk
- Real-world simulations
- “One stop” technology shop

Observations

- RFID Tagging (UHF) more of an art than a science – passive tag technology temperamental under current power, duty cycle requirements
- Adoption of UHF technology in Europe has lagged the US, primarily due to restrictions and incompatibilities
- International Standarization of frequency, power settings, duty cycle, etc. would drive down costs and lead to mass adoption

Thank You!

Questions?

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