

Radio Frequency Identification (RFID)



Radio Frequency Identification to Enable the Supply Chain

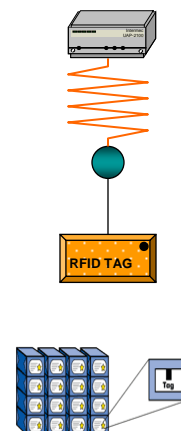
GovLink Conference

October 19, 2005



What is RFID?

- RFID technology is a means of identifying a unique object or a person using a radio frequency transmission
- RFID tags can be programmed to receive, store and transmit information such as serial numbers, place of assembly or personal information such as healthcare records.





RFID Technology and Tag Basics

RFID Systems have three main components:

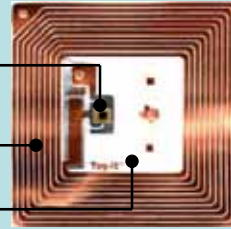
- The RFID **tag** with its own data, functions and physical characteristics
- The **reader** (fixed or portable) and **antennae** with their own functions and physical characteristics
- The **host** with its own hardware, functions and pre-defined tasks

Tags have three components (see diagram) and come in three types:

- Active tags
- Passive tags
- Semi-passive tags

RFID tags are made up of three parts:

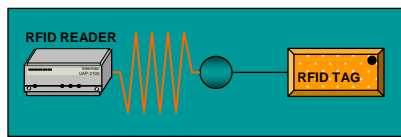
- 1) **Chip:** holds information about the physical object to which the tag is attached.
- 2) **Antenna:** transmits information to a reader (e.g., handheld, warehouse portal, store shelf) using radio waves.
- 3) **Packaging:** encases the chip and antenna so that tag can be attached to physical object.



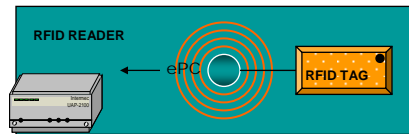
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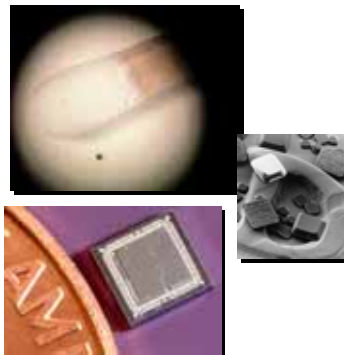
Passive RFID: Reading Tags



The reader/antenna calls out with a radio wave looking for a tag embedded on an object.



The tag sends back its RFID tag ID.



Putting RFID chips in perspective

Unlike barcode technology, no line of sight is required because readers and tags communicate via radio frequency.

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The RFID Vision

Implement knowledge-enabled logistics through fully automated visibility and management of assets in support of the warfighter



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The Benefits of RFID for DoD

RFID allows:

- ◆ No line-of-site/hands-free data capture
- ◆ Reduction in human intervention

Resulting in Improved:

- ◆ In-transit and asset visibility
- ◆ Timeliness and accuracy of shipping, receiving, and transportation
- ◆ Flexibility and confidence in the DoD Supply Chain

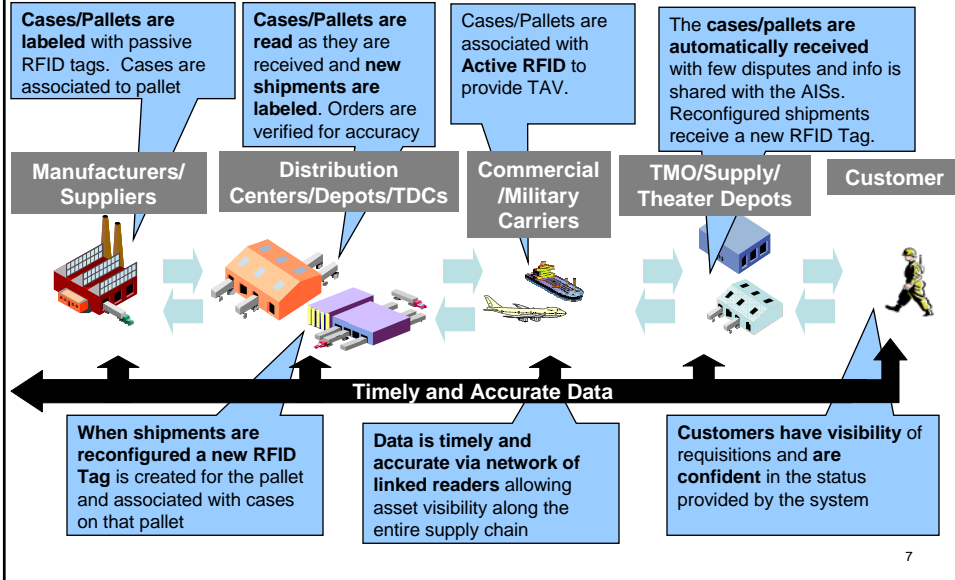
AND ultimately improved support to the warfighter



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An Enabler to the Integrated DoD Supply Chain



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RFID Scope/Standards

Active RFID – freight containers, air pallets, large engine containers

- SAVI 433 Mhz readers
- SAVI tags
- DoD tag data formats
- Suppliers rarely obligated to apply tags



Passive RFID – case & pallet (all items), item packaging (UID items)

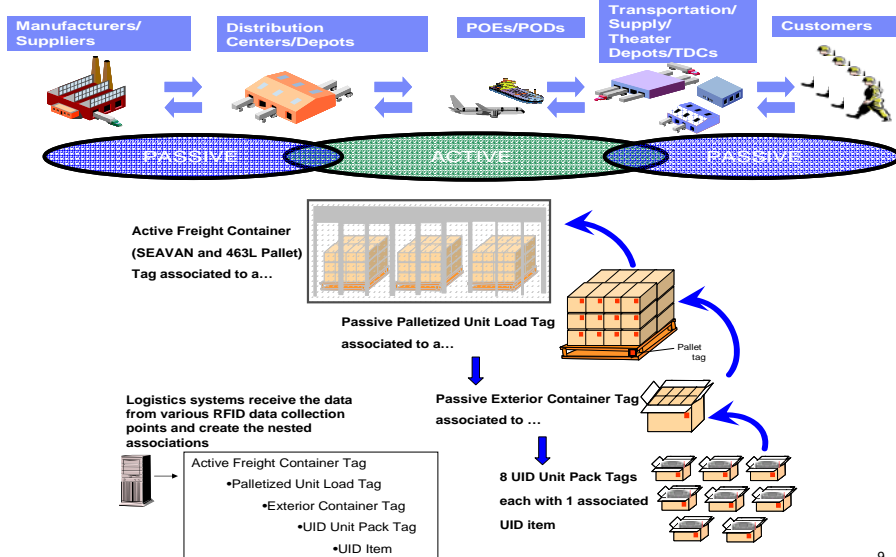
- EPC std UHF readers
- EPC Class 0 & 1 std tags
 - Migration to EPC UHF Generation 2 std
- EPC and DoD tag data formats
- Suppliers will be contractually obligated to apply tags



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Active RFID, Passive EPC RFID, and UID Items in the DoD Supply Chain



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Where we are...Active RFID



- ◆ Institutionalizing Active RFID
 - Doctrine – Update regulations, doctrine, on RFID use
 - Data – Ensuring that the accurate data is “burned” on tags
 - Training – Incorporate this in classroom training and development handbooks for field use
 - Return/Reuse – Improve return/reuse of active tags
- ◆ System Integration
 - Regional Server Web Sites Provide “Near Real Time” Visibility of Movements at/through Nodal Sites
 - Incorporate the capture and use within DoD systems

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Where we... Passive EPC RFID



- ◆ DoD issued policy July 30, 2004
- ◆ Current status (focus on supplier inbound compliance)
 - DFARS rule effective on November 14, 2005
 - Two key depots for implementation are operational
 - RFID data requirements have been incorporated into Wide Area Workflow (WAWF)
 - Volunteer RFID tagged shipments are being processed
- ◆ Status internal to DoD
 - Remaining distribution centers by Jan 2006
 - Key USTRANSCOM aerial ports in 2006
 - Implement initial RFID related data architecture
 - Incorporate passive RFID capabilities to the last tactical mile

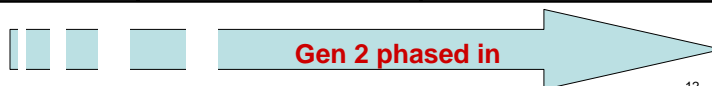


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Passive RFID Implementation Plan for DoD Suppliers

2005	2006	2007
Classes of Supply: <ul style="list-style-type: none"> ▪ II, VI, IX, I (PORs/MREs) Level of Tagging: <ul style="list-style-type: none"> ▪ Shipping Containers ▪ Palletized Unit Loads ▪ Exterior Containers Ship to locations: <ul style="list-style-type: none"> ▪ San Joaquin, CA ▪ Susquehanna, PA 	Classes of Supply: <ul style="list-style-type: none"> ▪ Additional Classes; III (P), IV, VIII (Medical/Surgical) Level of Tagging: <ul style="list-style-type: none"> ▪ Shipping Containers ▪ Palletized Unit Loads ▪ Exterior Containers Ship to locations: <ul style="list-style-type: none"> ▪ Strategic CONUS DLA Depots ▪ TRANSCOM Facilities ▪ Service Maintenance Facilities (decision pending) 	Classes of Supply: <ul style="list-style-type: none"> ▪ All Classes that will be tagged Level of Tagging: <ul style="list-style-type: none"> ▪ Shipping Containers ▪ Palletized Unit Loads ▪ Exterior Containers ▪ UID Item Unit Pack Ship to locations: <ul style="list-style-type: none"> ▪ All locations that will be instrumented



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Contractual Requirement

- Two Major Requirements for Suppliers
 - Passive Tagging at the case and pallet level in accordance with the Implementation Plan
 - Advance Ship Notice (ASN)

- Specific Requirements:
 - Data encoded on tag must be unique
 - Passive tag is readable at time of shipment in accordance with MIL-STD 129P requirements
 - Passive tag is affixed at the appropriate location on the specified level of packaging in accordance with MIL-STD 129P requirements
 - Contractor shall use tag constructs in accordance with the details located at: <http://www.dodrfid.org/tagdata.htm>
 - Contractor shall electronically submit advance ship notices in accordance with procedures at <http://www.dodrfid.org/asn.htm>

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Key Operational Passive RFID Sites

- ◆ Distribution Centers at Susquehanna PA and San Joaquin CA
- ◆ Fleet and Industrial Supply Center Ocean Terminal in Norfolk VA
- ◆ 2nd Force Service Support Group at Camp Lejeune NC
- ◆ In progress....shipments between operating units in Iraq



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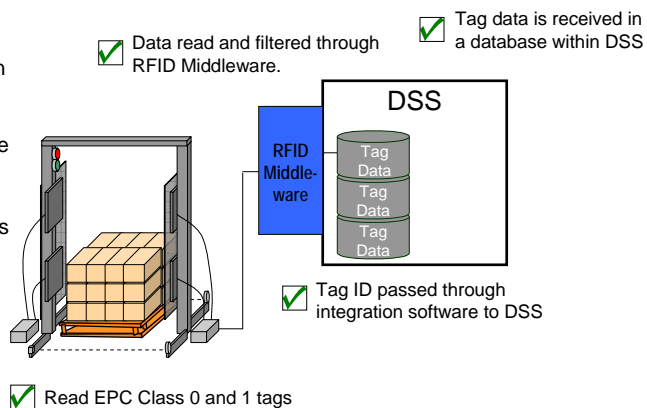
Year in Review.....

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Ready the Facilities for Implementation

- ◆ Outfitted Defense Distribution Center San Joaquin, CA (DDJC) and Defense Distribution Center Susquehanna, PA (DDSP) with passive RFID infrastructure (Jan 2005)
- ◆ Have begun process for instrumenting remaining CONUS DLA distribution centers (14) (Jan 2006)
- ◆ TRANSCOM has committed to instrumenting three major aerial ports (Jan 2006)



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Establish Contractual Requirement

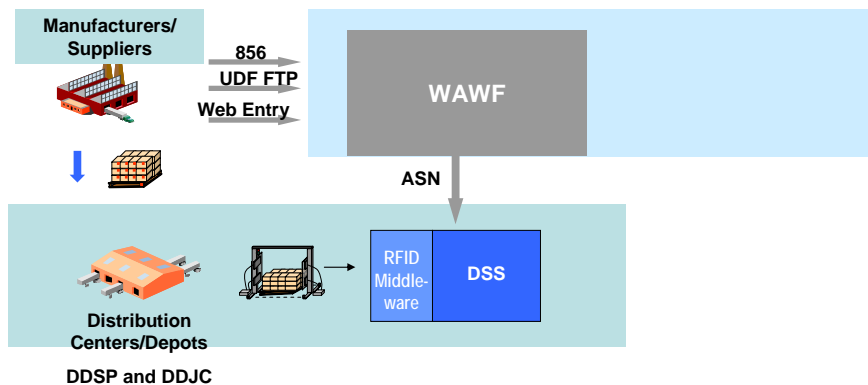
- ◆ Published proposed rule in Federal Register (Apr 2005)
- ◆ Public comment period ended (Jun 2005)
- ◆ Comments review/answered and appropriate documents updated (Aug 2005)
- ◆ Final Rule published (Sep 2005)
- ◆ Final Rule effective (Nov 14, 2005)

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Develop RFID Data Flow Architecture

- ◆ A Joint Team (DAASC, DLMSO, DLA, TRANSCOM, ADUSD SCI) have developed an architecture for the transfer of RFID data throughout the existing enterprise systems.
- ◆ Variable length transaction records have been defined to allow for RFID information to be sent in standard ANSI X12 formats as part of the DLMS migration.



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Train the Suppliers

- ◆ ADUSD SCI established a formal agreement with the Procurement Technical Assistance Centers (PTAC) to provide RFID training/outreach to the DoD supplier community.
- ◆ ADUSD SCI developed “Train-the-Trainer” material and presented this information in one day workshops with 14 regional workshops
- ◆ PTACs will now develop and deliver RFID assistance via a variety of methods

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Coordinate on Standards



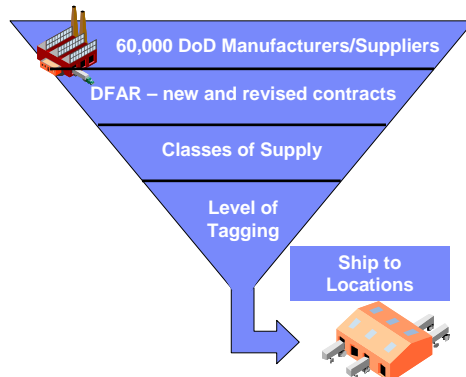
- ◆ DoD has worked closely with EPCglobal over the past year
 - DoD serves as a liaison to the Board of Directors
 - Representation on the Software Action Group
- ◆ EPCglobal ratified the DoD Tag Construct as part of the Tag Data Standard v. 1.2.7
- ◆ DoD will continue to work with EPCglobal through the recently established Aerospace & Defense working group

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Develop Future DFAR Requirements

- ◆ Began developing DFAR clause for 2006 implementation plan
- ◆ Targeted commodities being considered are:
 - Class III – Packaged Petroleum
 - Class IV – Construction/Barrier Equipment
 - Class VIII – Medical/Surgical Equipment (not Pharmaceuticals)



January 1, 2006

Classes of Supply:

- Class III, Class IV, Class VIII (partial)

Level of Tagging:

- Shipping Containers, Palletized Unit Loads, Exterior Containers

Ship to locations:

- Strategic CONUS DLA Depots, TRANSCOM Facilities & Service Maintenance Facilities

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Coordinate RFID use across the Federal Government

- ◆ Established the Intra-Governmental working group on passive RFID
 - Representatives from a variety of federal agencies
 - Goal is for federal agencies to share their plans for use of RFID in order for there to be synergy across the various agencies
 - Four subcommittees:
 - Policy
 - Applications
 - Security
 - Privacy

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Additional Internal Accomplishments

- ◆ Completed an initial Business Case Analysis (BCA) which shows a positive ROI for the use of passive RFID within DoD
- ◆ Military Services and DoD Agencies provided initial drafts of their RFID implementation plans. Final plans will be complete in late September 2005.
- ◆ “Lessons Learned” report is being written that compiles key findings from initial implementations that were completed in 2004-2005.
- ◆ USMC is beginning to use passive RFID in CENTCOM for asset tracking in “last tactical mile.”

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Way Ahead



- ◆ Implement DFAR Rule in contracts
- ◆ Continue to provide education and outreach to the acquisition community (external and internal)
- ◆ Continue working with the Services and Agencies on the DoD internal rollout for passive RFID
- ◆ Perform safety certification testing (HERO) for passive RFID
- ◆ Receive and ship tagged materiel
- ◆ Determine Gen 2 implementation timeline

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DoD's RFID Policy Website

- ◆ For information that can assist you with DoD's RFID policy visit: <http://www.dodrfid.org>
 - DoD RFID Policy
 - DoD RFID Supplier Implementation Plan (Passive)
 - DoD Suppliers' Passive RFID Information Guide
 - MIL-STD 129(Change 3) (Updated with RFID changes)
 - Wide Area Workflow (WAWF) & Advance Shipment Notice information
 - Frequently Asked Questions (FAQs)
 - Lessons Learned
 - Schedule of RFID Events where DoD RFID personnel will be speaking
- ◆ You can ask the team any RFID-related question through the following email address: info@dodrfid.org

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QUESTIONS???

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