Defense Logistics Agency

AIT and passive RFID

August 2009

Mark Lieberman

Agenda

- About RFID
- RFID in DoD
- WAWF
- Tagging
- RFID in DLA
- Benefits
- Resources
- Summary
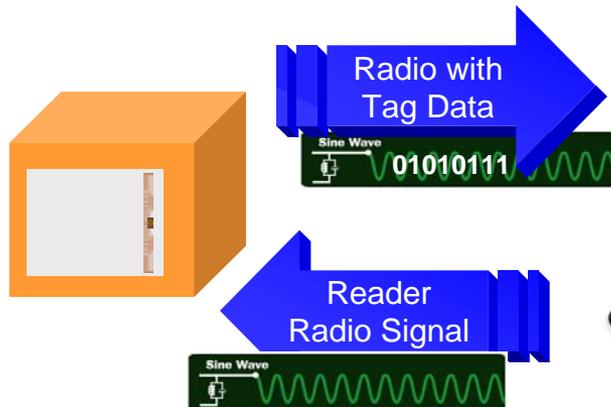
How Does passive Radio Frequency Identification (RFID) Work?

- <u>Tags</u> emit radio signals
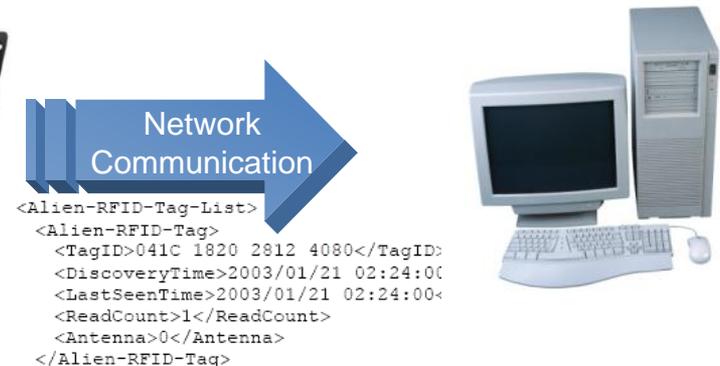
- Devices called <u>Readers</u> pick up the signal

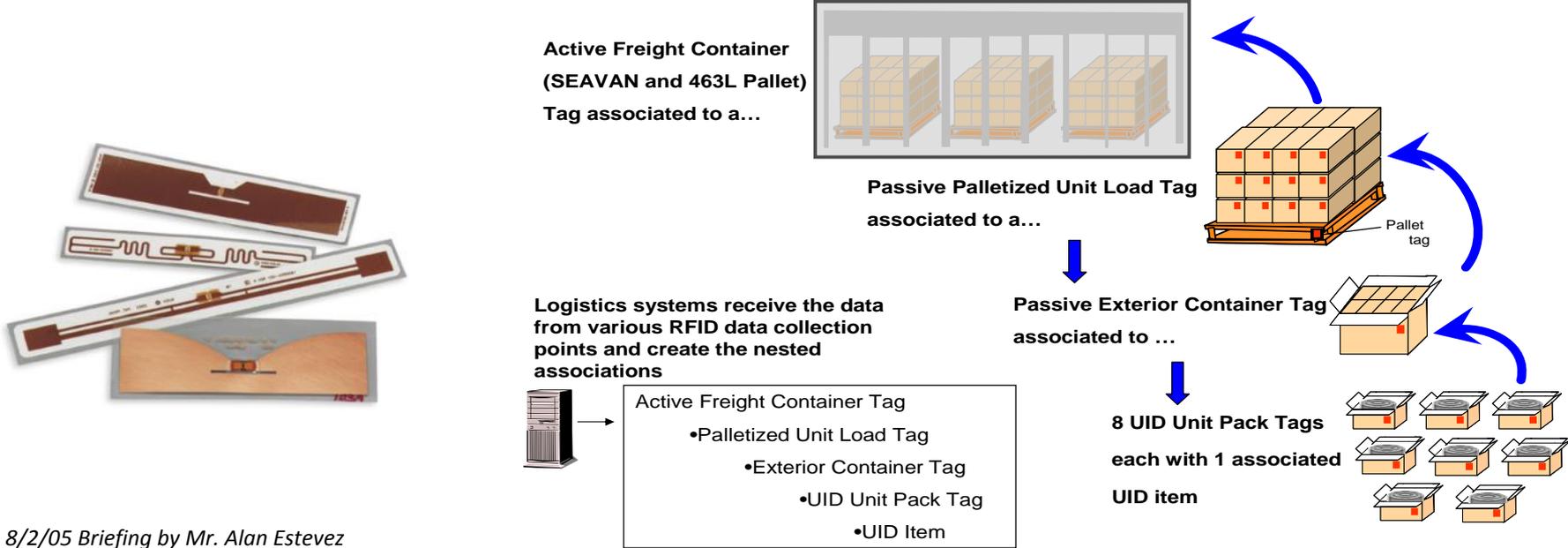***Tagged Asset***   ***Readers***   ***IT Infrastructure***

Radio with
Tag Data

Sine Wave
01010111

Reader
Radio Signal

Sine Wave

Network
Communication

<Alien-RFID-Tag-List>
 <Alien-RFID-Tag>
  <TagID>041C 1820 2812 4080</TagID>
  <DiscoveryTime>2003/01/21 02:24:00
  <LastSeenTime>2003/01/21 02:24:00<
  <ReadCount>1</ReadCount>
  <Antenna>0</Antenna>
 </Alien-RFID-Tag>

How Does DoD Uses RFID

Manufacturers/ Suppliers

Distribution Centers/Depots

POEs/PODs

Transportation/ Supply/ Theater Depots/TDCs

Customers

PASSIVE

ACTIVE

PASSIVE

Active Freight Container (SEAVAN and 463L Pallet) Tag associated to a…

Passive Palletized Unit Load Tag associated to a…

Pallet tag

Passive Exterior Container Tag associated to …

Logistics systems receive the data from various RFID data collection points and create the nested associations

Active Freight Container Tag
•Palletized Unit Load Tag
•Exterior Container Tag
•UID Unit Pack Tag
•UID Item

8 UID Unit Pack Tags each with 1 associated UID item

Source: 8/2/05 Briefing by Mr. Alan Estevez
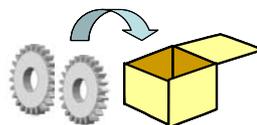*Assistant Deputy Under Secretary of Defense (Supply Chain Integration)*
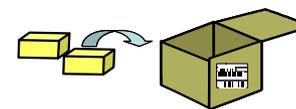
AIT Layers

Layer 0 UID – Product Item

2D Matrix
Linear Bar Code
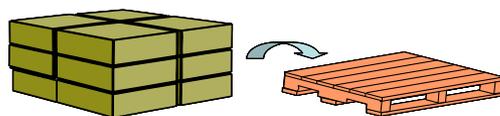
Layer 1 – Package

Passive RFID
2D/Linear Bar Code

Layer 2 – Transport Unit (cartons, boxes)

Passive RFID
2D/Linear Bar Code

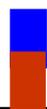**Layer 3 – Unit Load (Warehouse pallet, tri-wall packaging, commercial fiberboard)**

Passive RFID
2D/Linear Bar Code

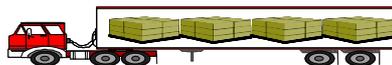**Layer 4 – Freight Container (sea vans, 463L pallets with net)**

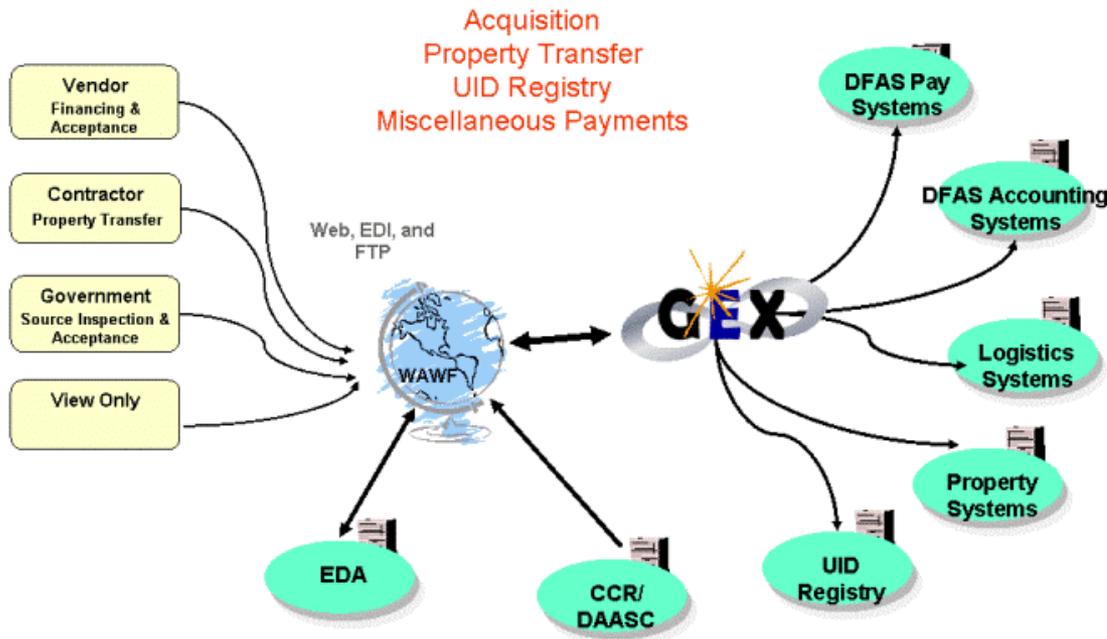Active RFID License Plate 2D/Linear Bar Code

Baseline AIT

Primary
Back Up

Layer 5 – Movement Vehicle (truck, aircraft, ship, train)

Wide Area Work Flow

Wide Area Workflow (WAWF)

Acquisition
Property Transfer
UID Registry
Miscellaneous Payments

- Secure Web-based system for electronic invoicing, receipt and acceptance

- WAWF creates a virtual folder to combine the three documents required to pay a Vendor
  - Contract
  - Invoice
  - Receiving Report.

- Supports paperless acquisition process.

- Public Key Infrastructure (PKI) digital signature security

Streamlines the process from Weeks to Days or Minutes.

When are pRFID tags required?

Passive RFID tags at the case and pallet levels when the following three factors are true:

1. Contract contains passive RFID DFARS clause (DFAR 252.211-7006), specific language requiring RFID tags.

2. Your equipment/commodity falls under the classes of supply required to be tagged as described in the passive RFID DFARS clause.

3. Your equipment/item is being shipped to one of the RFID-enabled/implemented locations listed in the passive DFARS clause or a location specified by the contracting officer in your contract.

The most recent version of the passive RFID DFARS clause is available at http://www.acq.osd.mil/dpap/dars/dfars/html/current/252211.htm#252.211-7006.

Tagging Options

Automated Labeling

- Applicators / RFID encoders can program and apply tags automatically on production lines.

Print and Apply

- Similar to standard printed labels, RFID-enabled printers can print human readable information (barcode, etc) as well as program embedded RFID tags.

Pre-Programmed Labels

- Tags are printed and programmed to comply with DoD
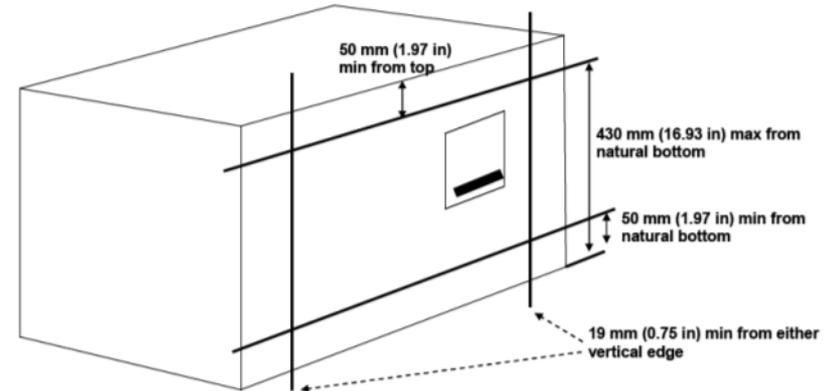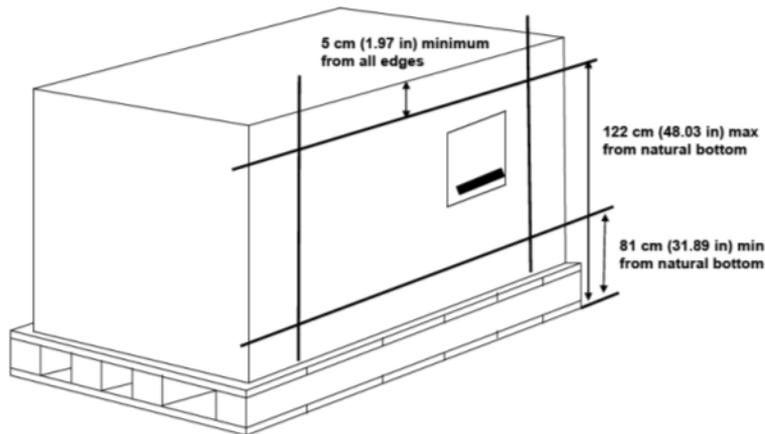
DoD Tag Construct

- Must encode an approved RFID tag data structure

- Suppliers that are EPCglobal subscribers and possess a GS1 company prefix may use any of the EPC Identifiers and encoding instructions described in the EPC™ Tag Data Standards document to encode tags.

- Suppliers who choose to employ the DoD construct will use their previously assigned Commercial and Government Entity (CAGE) code and encode the tags per the rules that follow.

Header			Filter			Gov't Managed Identifier	Serial number
Identified DoD Construct			*identifies the hierarchy represented using the following values:*			*Supplier CAGE Code*	*68+ Billion Unique*
8-bits			4-bits			48-bits	36-bits
Hex	Binary	Desc	Hex	Binary	Desc	ASCII "space" + 5 ASCII characters	(left fill with spaces)
2F	00101111	DoD Construct	0	0000	pallet		
			1	0001	case		
			2	0010	unit pack		

Tag Placement

RFID-enabled Label Placement on Palletized Unit Load

5 cm (1.97 in) minimum from all edges

122 cm (48.03 in) max from natural bottom

81 cm (31.89 in) min from natural bottom

50 mm (1.97 in) min from top

430 mm (16.93 in) max from natural bottom

50 mm (1.97 in) min from natural bottom

19 mm (0.75 in) min from either vertical edge

RFID-enabled Label Placement on Case (Shipping and Exterior Container)

RFID-enabled labels are to be applied to shipping containers or palletized unit loads, in
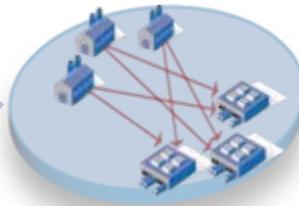
DLA AIT Program

> *Leverage Automatic Identification Technology in our logistics operations to better support the warfighter by reducing cost and improving service.*
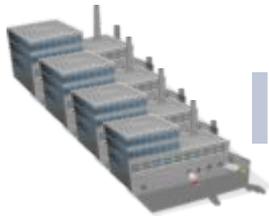
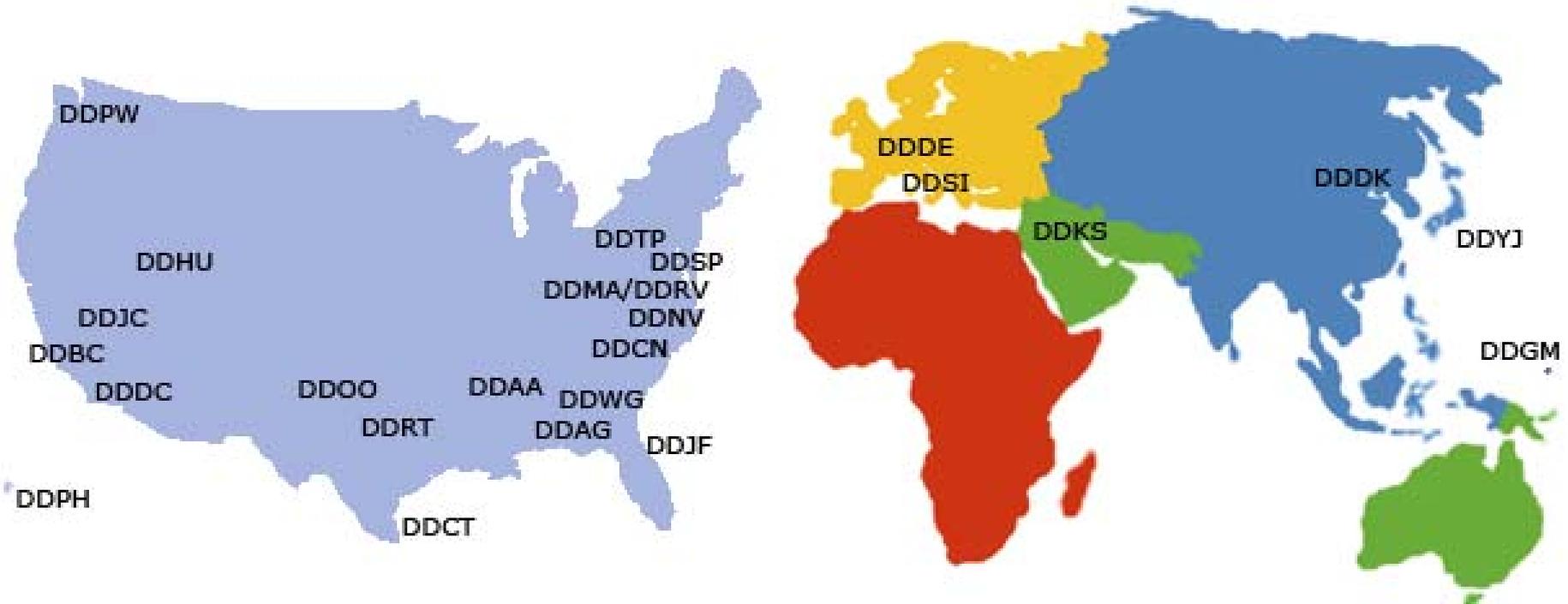**Suppliers:** Leverage Tagging Today   **Distribution:** Improve Operations   **Customer:** Improve Service

Defense Distribution Centers

Distribution Depots receiving tagged RFID cases and pallets today

- CONUS: All Distribution Depots
- OCONUS: DDPH and DDGM

RFID Benefits

Supplier Benefits

- ✓ Improved planning
- ✓ Faster demand responses
- ✓ Reduced Bull Whip Effect
- ✓ Streamlined business processes
- ✓ Improved efficiency in the recall of defective items
- ✓ Increased ability to ensure that product(s) remain stocked on DoD's shelves
- ✓ **Faster receipt of payments for supplied goods**

DoD Benefits

- ✓ Improved inventory management
- ✓ Improved labor productivity
- ✓ Elimination of duplicate orders
- ✓ Replacement of manual procedures
- ✓ Automated receipt and acceptance
- ✓ Improved inventory and shipment visibility and management
- ✓ Reduced shrinkage
- ✓ Enhanced business processes within the DoD
- ✓ Improved asset tracking

Resources

- WAWF   https://wawf.eb.mil/

- WAWF Training   http://www.wawftraining.com/

- DLA WAWF   http://www.dla.mil/j-3/wawf/

- RFID in DoD   http://www.acq.osd.mil/log/rfid/index.htm

- Supplier's Guide   http://www.acq.osd.mil/log/rfid/r_suppliers_guide.html

- epcGlobal   http://www.epcglobalinc.org/standards

- MIL Packaging Standards   http://assist.daps.dla.mil

Summary

- Passive RFID has benefits for DoD and its suppliers

- DoD Policy requires suppliers to tag cases and pallets for certain products into specific destinations

- By improving velocity and reliability, DLA will help make the defense supply chain a more effective weapon for use by the warfighter

Defense Logistics Agency

AIT and passive RFID

August 2009

Mark Lieberman