



# DEFENSE LOGISTICS AGENCY

AMERICA'S COMBAT LOGISTICS SUPPORT AGENCY



## Supply Chain Focused R&D

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**DLA Industry Conference & Exhibition**

**29 June 2011**



# Agenda

- **DLA Logistics R&D Programs**
- **Item Level RFID for Manufacturing**
  - **Customer Driven Uniform Manufacturing (CDUM)**
- **R&D for Reliable Supply Chains**
  - **Weapon System Sustainment**
- **Discussion & Questions**



# Fiscal Year 2011 R&D Portfolio

Subsistence	Clothing & Textiles	Medical	Energy	Const / Equip	Maritime	Land	Aviation
<b>Combat Rations Network</b> \$1.9	<b>Customer Driven Uniform Mfg.</b> \$4.2	<b>Medical Logistics Network</b> \$2.8	<b>Energy Readiness</b> \$2.2	<b>Castings \$2.6</b>			
				<b>Forgings \$1.2</b>			
	<b>Tent Network</b> \$1.0			<b>Weapon System Sustainment \$5.6</b>			
				<b>Microcircuit Emulation \$10.8</b>			
				<b>Battery Network \$1.0</b>			
<b>Supply Chain Enablers</b>							
<b>Supply Chain Management \$3.0</b>							
<b>Strategic Distribution and Reutilization \$3.6</b>							
<b>Defense Logistics Information Research \$2.3</b>							
<b>0708011S - Industrial Preparedness (ManTech)</b>				<b>0603712S - Logistics R&amp;D Tech Demo</b>			
<b>Small Business Innovation Research (\$TBD)</b>							



# Logistics R&D Tech Demo



Distribution and Disposition



Logistics Information



Weapon Systems Sustainment



Energy



Medical



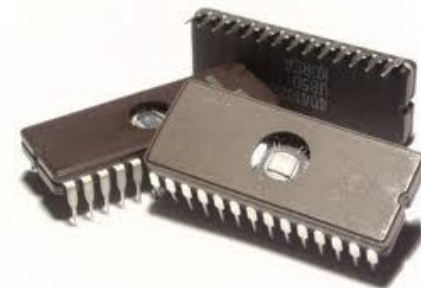
# Industrial Preparedness (ManTech)



Clothing & Individual Equipment



Combat Rations



Microcircuits



Castings



Forgings



Batteries



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# Objectives

- Demonstrate the following improvements throughout the DLA Troop Support Clothing and Textile (C&T) supply chain by applying item level RFID technology:
  - Increased accuracy of Point of Sale Data
  - Increased inventory accuracy
  - Increased asset visibility and traceability
  - Streamline supply chain processes
  - More timely identification of recalled assets
- Work with multiple manufacturers and RFID Solution Providers to address various technology application issues associated with varying industrial base capabilities
- Develop a systematic methodology for technology roll out to other C&T manufacturers
- Improve the delivery of C&T items to the Warfighter



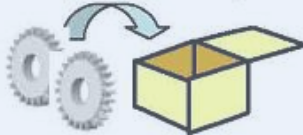
# DoD AIT CONOPS - 2007

## CDUM FOCUS

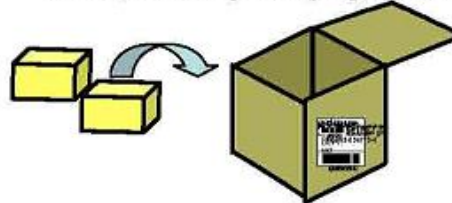
Layer 0—Product Item



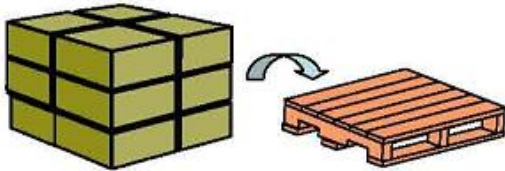
Layer 1—Package



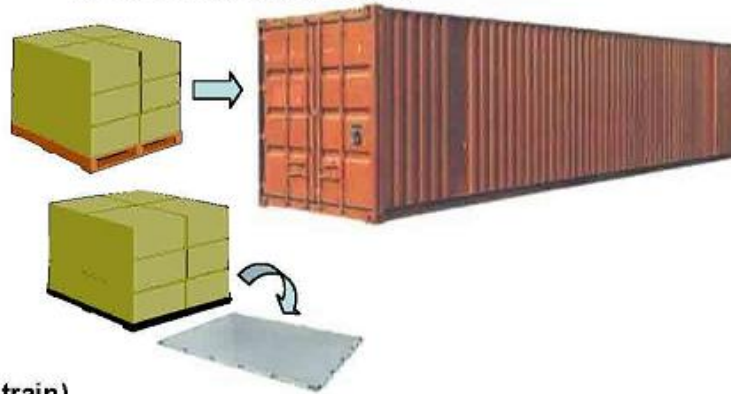
Layer 2—Transport Unit (cartons, boxes, tri-wall packaging, crates, etc.)



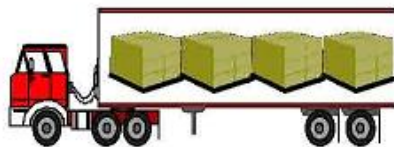
Layer 3—Unit Load (items held together as a single unit)



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



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







# CDUM C&T Supply Chain Demonstration

## Clothing and Textile Manufacturers

## Wholesale

## Service Clothing Issue Points

*ABU Supply Chain*

Cutters & Assemblers

Packagers

3PLs & DSCP C&T

Service Clothing Issue Activities

Warmkraft, Inc

3PL- Travis Industries for the Blind

Lackland AFB Recruit Training Center

*Demo Participants*



## Observed Benefits To DoD

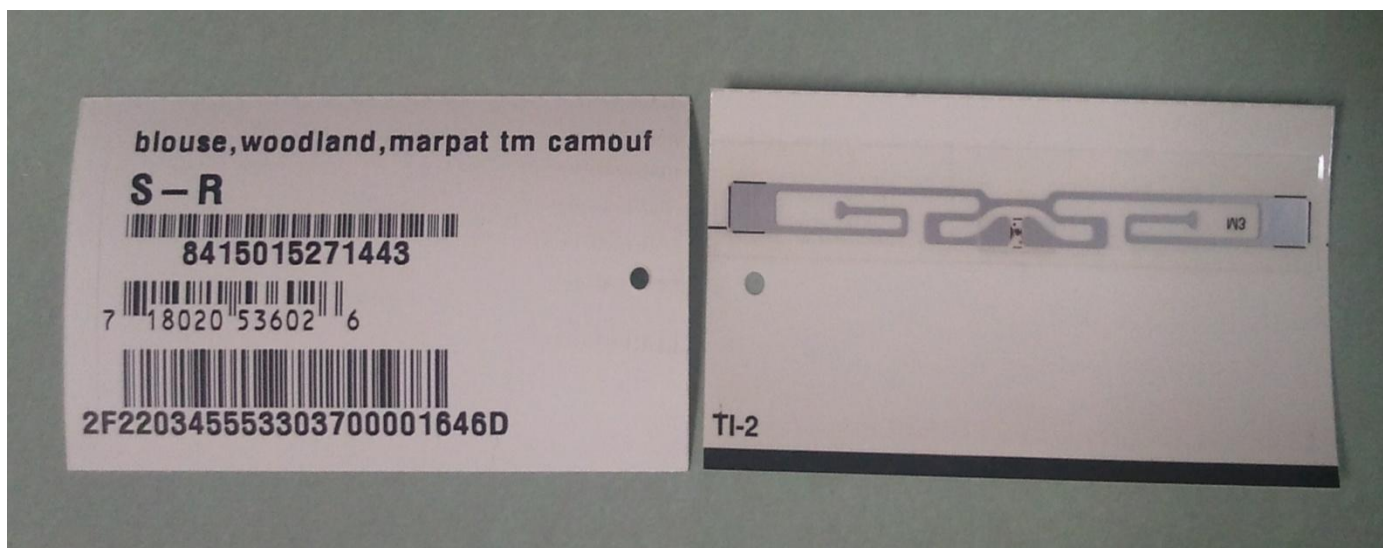
- ▶ Increases inventory Accuracy –
  - ▶ Ave. inventory discrepancy @ non-RFID RTCs = 5.1% vs. 0.2% at LAFB RTC (Q408)
- ▶ Reduces time to issue uniforms to recruits:
  - ▶ From 165 minutes to 45 minutes at LAFB RTC \*\*
- ▶ Reduces time/labor for receiving:
  - ▶ From 4 hours to 30 minutes per day at LAFB RTC\*\*
- ▶ Reduces time/labor to conduct physical inventories:
  - ▶ From 40 days to 8 days a year for the main issue facility at LAFB RTC\*\*

\*\*RTC AIT Enabled Supply Chain BCA – Dec 2009



# Why RFID for Each Item?

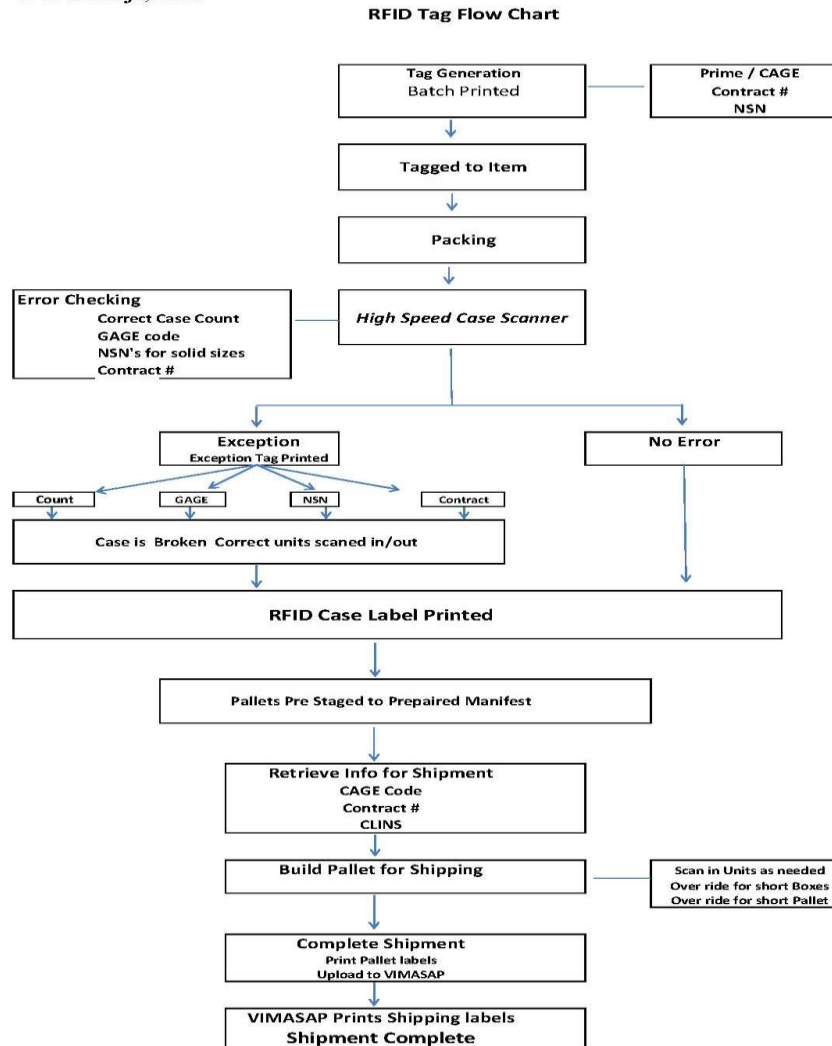
- Production Control at Manufacturing
- Shipping Accuracy from Contractor
- Warehousing and Inventory Control





# RFID Flow Chart

Warmkraft, Inc.





# RFID Flow Chart

**Tag Generation**  
Batch Printing

Prime Contractor  
Contract #  
NSN

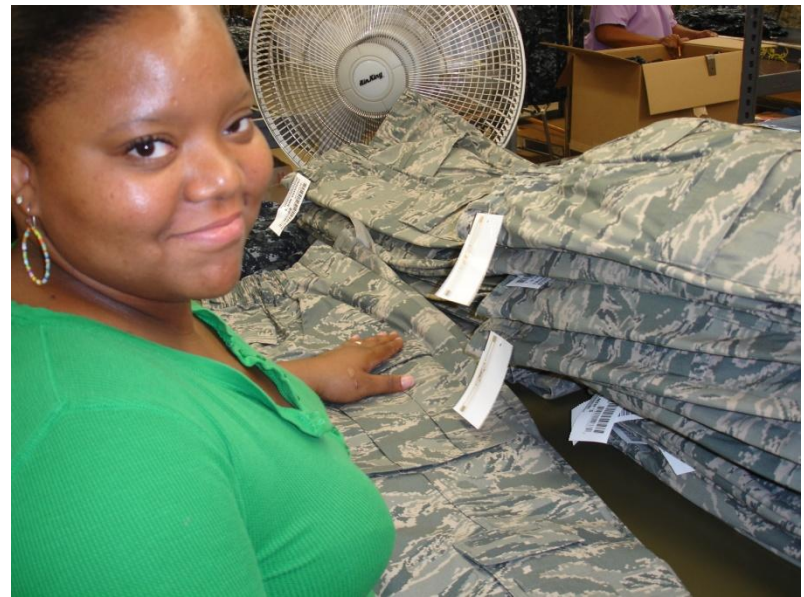




**Tagged to Item**



**Packing**





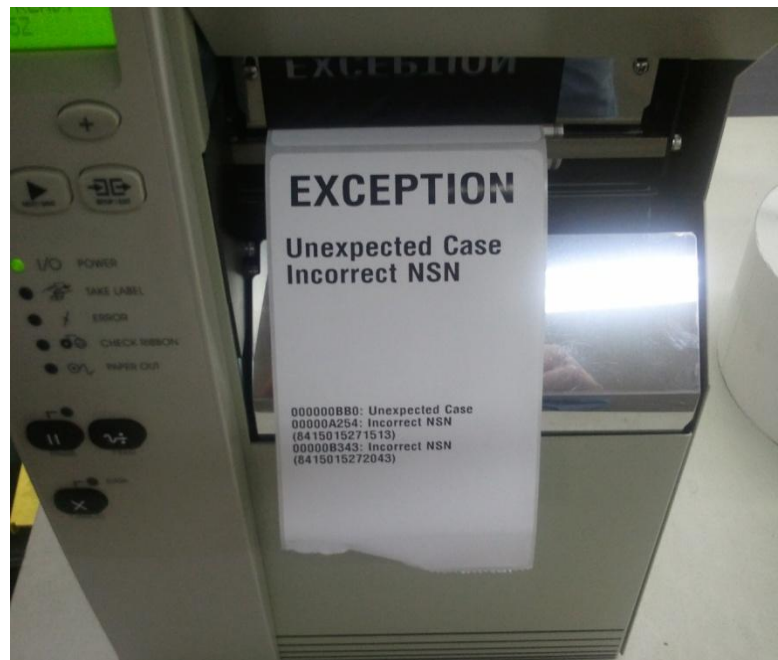
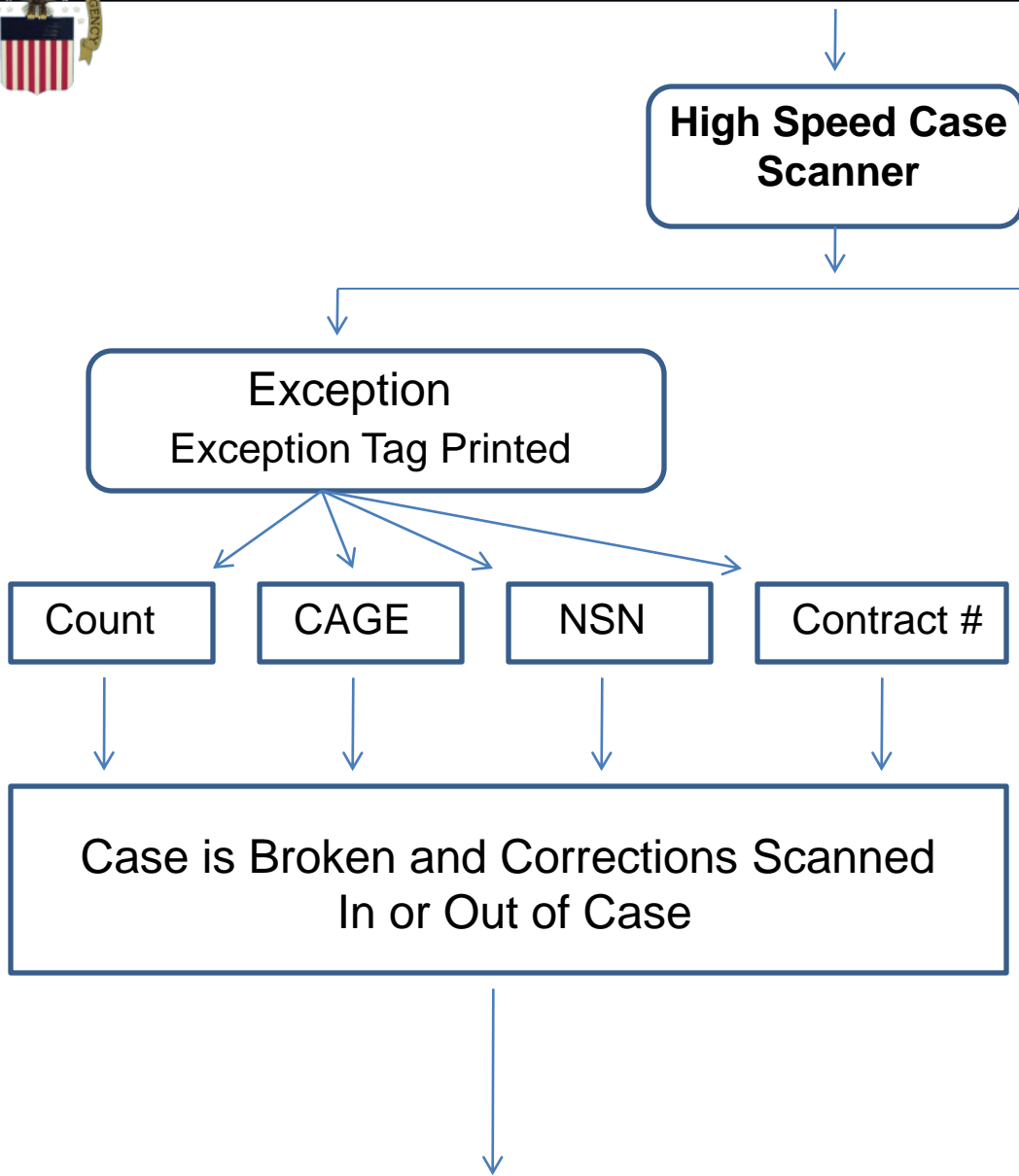
**High Speed Case Scanner**

- Error Checking**
- Correct Case Count
  - CAGE Code
  - NSN
  - Contract #





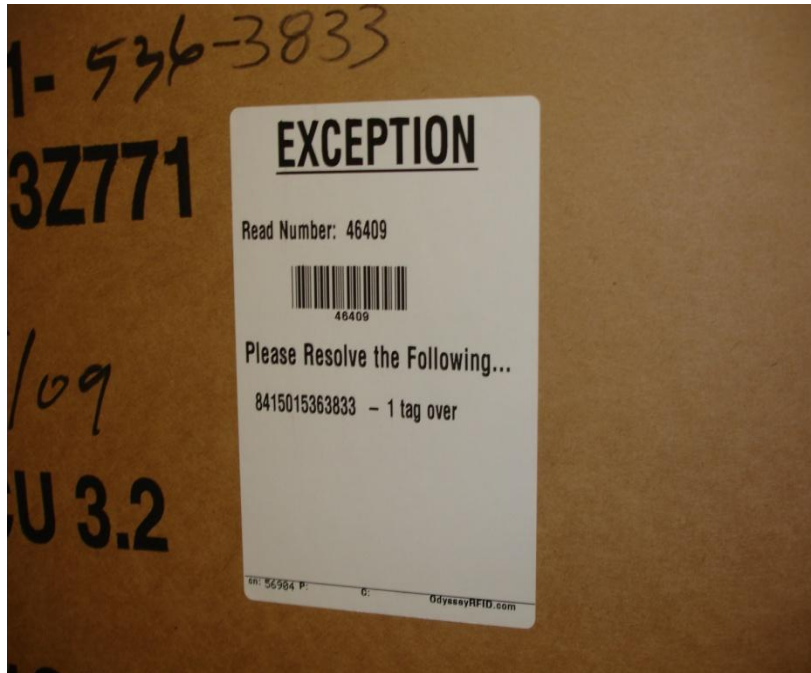






Case is Broken and Corrections Scanned  
In or Out of Case

RFID Case Label is Printed

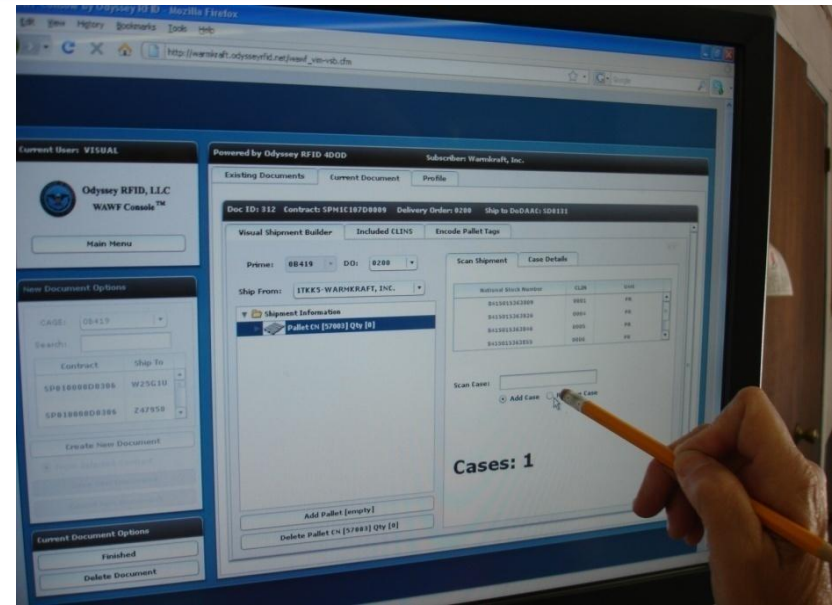




## Pallets Staged to Prepare Manifest

## Retrieve Information for Shipments

- CAGE Code
- Contract #
- CLINS
- DO #





Build Pallet for Shipping

Scan in Units as Needed

- Override for Short Case
- Override for short Pallet

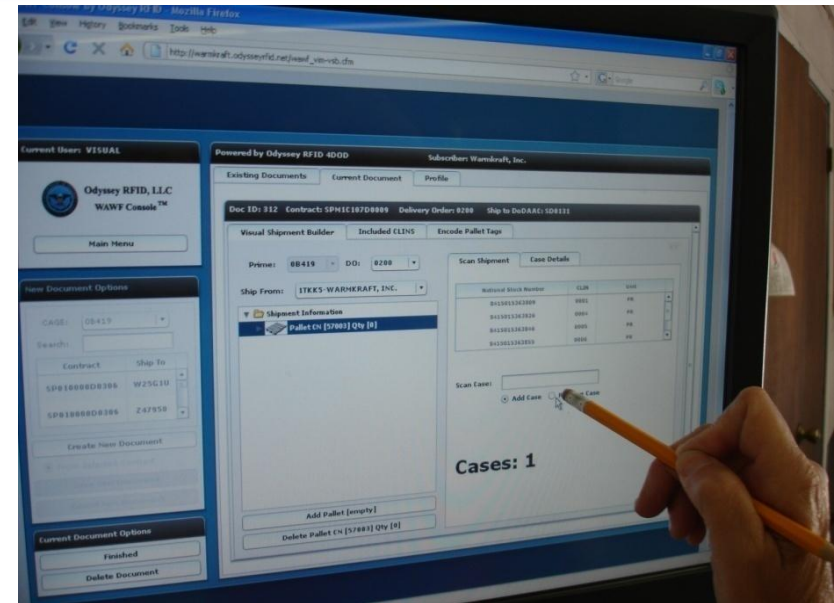




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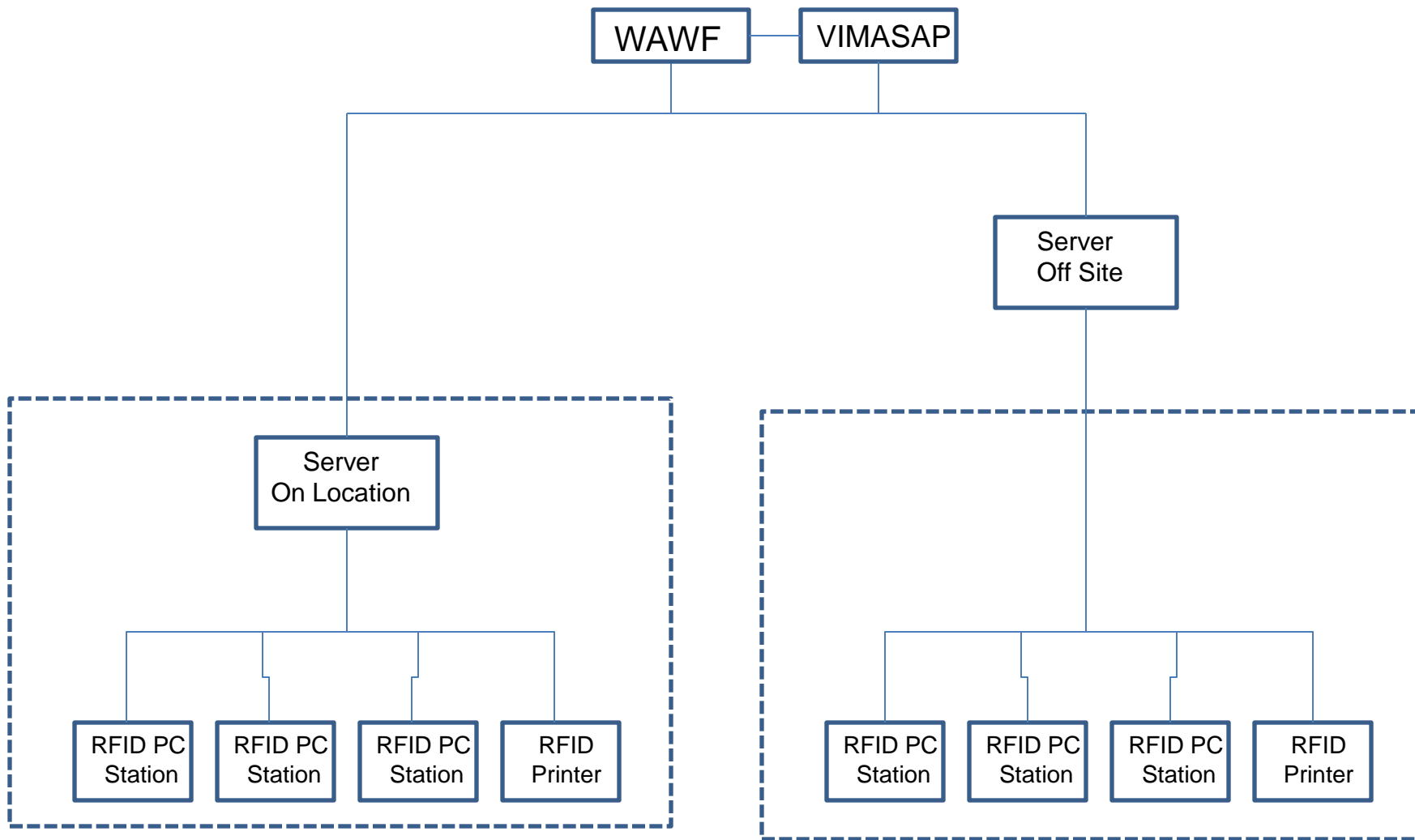
Complete Shipment  
Upload to VIMASAP

VIMASAP prints Shipping Labels  
**SHIPMENT COMPLETE**





# Networking and Computers







**Item Level  
RFID Tag  
exception  
report**

7/20/2010

<b>W/E Date</b>	<b>Tags Used</b>	<b>Voids</b>	<b>Misreads</b>	<b>Tickets Bad from Source</b>	<b>Printer Error</b>	<b>Tag not Read</b>	<b>Duplicate</b>	<b>Total</b>	<b>% Defective</b>
4/10/2010	4,110	9	97	8	70	0	0	184	4.5%
4/17/2010	5,268	34	5	0	8	1	0	48	0.9%
5/8/2010	6,501	27	5	1	7	4	0	44	0.7%
5/15/2010	4,749	30	10	5	3	2	0	50	1.1%
5/22/2010	4,328	18	5	1	2	0	0	26	0.6%
5/29/2010	6,195	18	6	0	0	1	0	25	0.4%
6/12/2010	22,094	92	25	1	2	13	0	133	0.6%
6/26/2010	26,797	149	37	0	15	12	2	215	0.8%
7/3/2010	12,162	38	6	8	2	2	0	56	0.5%
7/10/2010	9,780	21	3	1	1	6	0	32	0.3%
<b>Totals</b>	<b>101,984</b>	<b>436</b>	<b>199</b>	<b>25</b>	<b>110</b>	<b>41</b>	<b>2</b>	<b>725</b>	<b>0.7%</b>



		<b>Warmkraft, Inc. MCCUU</b>			
		Item level RFID cost		2/23/2011	
<b>Equipment Amortization</b>					
	Equipment Cost			\$	33,722.20
	units per week				12,000
	weeks per year				50
	years cost recovery				5
	Total Units for recovery				3,000,000
				<b>Total \$ per units</b>	<b>\$ 0.0112</b>
<b>Tag cost</b>					
	Item Level Tag cost			\$	0.1400
	unusable tags %	1.0%		\$	0.001
	Case tag	\$ 0.140			
	Units per case	30			
	cost per unit case tag			\$	0.0047
	unusable tags %	1.0%		\$	0.0000
	Pallet Tag	\$ 0.140			
	units per pallet	450			
	cost per unit pallet tag			\$	0.0003
	unusable tags %	1.0%		\$	0.0000
				<b>Total Cost</b>	<b>\$ 0.1577</b>
				labor, overhead, margin	10%
				\$	0.0158
				<b>Total Cost per Unit</b>	<b>\$ 0.1734</b>



# Thanks to

Julie Tsao – DLA

Jack Vandenberghe – LMI

James Tran – LMI

Mike O'Connell – Advantech

Doug Deloach – Advantech

Bob Bona - Advantech

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# DLA Supply Chain Challenges

- Supplying large variety of parts for
  - Aviation
  - Land and Maritime
  - Troop Support
- Affordability
- High demand uncertainty
- Parts cost variation from a few cents to more than \$100,000
- Sustainment of aging systems

Innovative R&D solutions needed to make internal DLA business processes more proactive and responsive.



# Weapon System Sustainment Program (WSSP)

- Providing R&D for Reliable Supply Chains
  - Develop and test tools, methods, process changes to improve parts and services delivery to the Warfighter
- Representative WSSP R&D Projects
  - CAGE ‘Hopping’/Bad Actor Identification
  - Counterfeit Prevention
  - DNA Marking for Source Authentication
  - Product Testing and Verification



# Prototypical CAGE Hopper: (Actual Example)

- Created 21 affiliated companies
- Delivered wrong items
- Failed to provide traceability
- Failed to provide parts
- Engaged in 'bid shopping'
- Submitted misrepresentations through the automated procurement system
- Shut down suspect companies and created new companies
- Awarded 1008 contracts with a net value of \$1,722,453
- DoD Canceled 169 contracts
- Debarred Dec 2006





# CAGE 'Hopping'/Bad Actor Identification

- **Problem / Opportunity:**

- CAGE Hopper: Company stops doing business under original CAGE code
- Bad Actor: Company with poor delivery or quality history
- Both often result in bad/non-conforming/no parts delivered to DLA
- Both rob legitimate companies of business opportunities

- **R&D Solution:**

- Identify CAGE Hopper/Bad Actor before contract award
  - Explore use of commercial tools
- Identify (sooner) companies engaging in bad-business practices after contract award
- Test tools, techniques, and process changes in an operational Pilot Program





# Counterfeit Prevention



**Identically Marked - Different Parts**



# Counterfeit Prevention

- **Problem / Opportunity:**
  - Counterfeits expanding to military goods (electronics, etc)
  - DLA needs improved tools, techniques, and procedures
- **R&D Solution:**
  - Define and implement multi-faceted counterfeit threat mitigation strategy
    - Business process improvements
    - Technology insertion
  - Develop deterrence actions
    - Item and quality assurance processes
    - Solicitation and award safeguards
    - Item inspections (e.g. traceability and certification)
    - Proper disposal of counterfeit items



# DNA Marking for Source Authentication



Use proven forensic technology ...



On high risk parts



# DNA Marking for Source Authentication

- **Problem / Opportunity:**

- Growth in the number of counterfeit parts in the DoD supply chains
- DNA marking of parts is promising technology
  - Parts marked during manufacture carry their own validation of who produced the part
  - Used successfully in other industries

- **R&D Solution:**

- Assess potential for implementation, business case, and technical & functional viability
- Conduct pilot with industry to assess feasibility
  - DoD is a small player; industry will have to drive adoption



# Product Testing and Verification

**Multiple DLA Product Test Centers (PTCs)**

**Part of the DLA Product Verification Program (PVP)**





# Product Testing and Verification

- **Problem / Opportunity:**
  - Some products destined for the DLA supply chains do not conform to requirements
  - Improve product testing and verification processes to better detect non-conforming parts before they fail
- **R&D Solution:**
  - Define enterprise sampling and sample size guidelines
  - Design agency-wide laboratory selection criteria and checklist
  - Support DLA actions that implement process improvements



# Summary

## WSSP R&D Desired Outcomes

### **CAGE 'Hopping'/Bad Actor Identification**

- Decrease 'bad actors'
  - ↑ Increase opportunities for reliable suppliers

### **Counterfeit Prevention**

- Decrease suspect material entering DoD supply chains
  - ↑ Increase demand for authentic parts

### **DNA Marking for Source Authentication**

- Deter entry of unreliable suppliers
  - ↑ Increase ability to identify products from reliable suppliers

### **Product Testing and Verification**

- Detect non-conforming / counterfeit parts
  - ↑ Increase availability for conforming products



# Summary

- Weapon System Sustainment Program
- Major component of the DLA Logistics R&D Portfolio
- Impacts all major supply chains
- Focuses on business process improvement
- Levels the playing field by
  - Improving supplier and product authentication
  - Optimizing product testing and verification
  - Preventing fraudulent suppliers





# Point of Contact

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