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

<table>
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<tr>
<th>Subsistence</th>
<th>Clothing &amp; Textiles</th>
<th>Medical</th>
<th>Energy</th>
<th>Const / Equip</th>
<th>Maritime</th>
<th>Land</th>
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## Supply Chain Enablers
- Supply Chain Management $3.0
- Strategic Distribution and Reutilization $3.6
- Defense Logistics Information Research $2.3

- 0708011S - Industrial Preparedness (ManTech)
- 0603712S - Logistics R&D Tech Demo
- Small Business Innovation Research ($TBD)
Logistics R&D Tech Demo

Distribution and Disposition

Logistics Information

Energy

Medical

Weapon Systems Sustainment
Industrial Preparedness (ManTech)

- Combat Rations
- Microcircuits
- Clothing & Individual Equipment
- Batteries
- Castings
- Forgings
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
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
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**
- Cutters & Assemblers
- Packagers

**Wholesale**
- 3PLs & DSCP C&T

**Service Clothing Issue Points**
- Service Clothing Issue Activities
- Lackland AFB Recruit Training Center

**ABU Supply Chain**
- Warmkraft, Inc

**Demo Participants**
- Travis Industries for the Blind
- For the Blind
- Warmkraft, Inc
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

Warmlkraft, Inc.

RFID Tag Flow Chart

- Tag Generation
  - Batch Printed

- Tagged to Item

- Packing

- Error Checking
  - Correct Case Count
  - GAGE code
  - NSN's for solid sizes
  - Contract #

- High Speed Case Scanner

- No Error

- RFID Case Label Printed

- Pallets Pre Staged to Prepared Manifest

- Retrieve Info for Shipment
  - CAGE Code
  - Contract #
  - CLINS

- Build Pallet for Shipping

- Complete Shipment
  - Print Pallet labels
  - Upload to VIMASAP

- VIMASAP Prints Shipping labels

- Shipment Complete

- Exception Tag Printed

- Case is Broken
  - Correct units scanned in/out
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 #
High Speed Case Scanner

- Exception
  - Exception Tag Printed
    - Count
    - CAGE
    - NSN
    - Contract #

- Case is Broken and Corrections Scanned In or Out of Case
- No Error

Images show a high-speed case scanner printing exception tags.
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
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
Complete Shipment
Upload to VIMASAP

VIMASAP prints Shipping Labels
SHIPMENT COMPLETE
Networking and Computers

- WAWF
- VIMASAP

Server
  - On Location
    - RFID PC Station
    - RFID PC Station
    - RFID PC Station
    - RFID Printer
  - Off Site
    - RFID PC Station
    - RFID PC Station
    - RFID PC Station
    - RFID Printer
## Item Level RFID Tag exception report

<table>
<thead>
<tr>
<th>W/E Date</th>
<th>Tags Used</th>
<th>Voids</th>
<th>Misreads</th>
<th>Tickets Bad from Source</th>
<th>Printer Error</th>
<th>Tag not Read</th>
<th>Duplicate</th>
<th>Total</th>
<th>% Defective</th>
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<td>labor, overhead, margin</td>
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Thanks to

Julie Tsao – DLA
Jack Vandenberghe – LMI
James Tran – LMI
Mike O’Connell – Advantech
Doug Deloach – Advantech
Bob Bona - Advantech

Contact Information:

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(601) 785 - 4476
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
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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