US ARMY RDECOM

U.S. Army Research, Development and Engineering Command

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ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER PICATINNY ARSENAL, NJ

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

Future Ammo Logistics Initiatives

11 June 2008

Ammunition Logistics R&D Strategic Plan

OBJECTIVE:

- Develop strategy for ammunition logistics system improvements
- Synchronize current and future US Army ammunition logistics R&D efforts
- Develop organizational relationships between key ammunition logistics system stakeholders
- Leverage and develop joint programs with other Services and Department of Defense programs

AMMOLOG

Multi-agency Six-Sigma IPT

Joint Modular Intermodal Distribution System (JMIDS)
Joint Capabilities Technology Demonstration (JCTD)

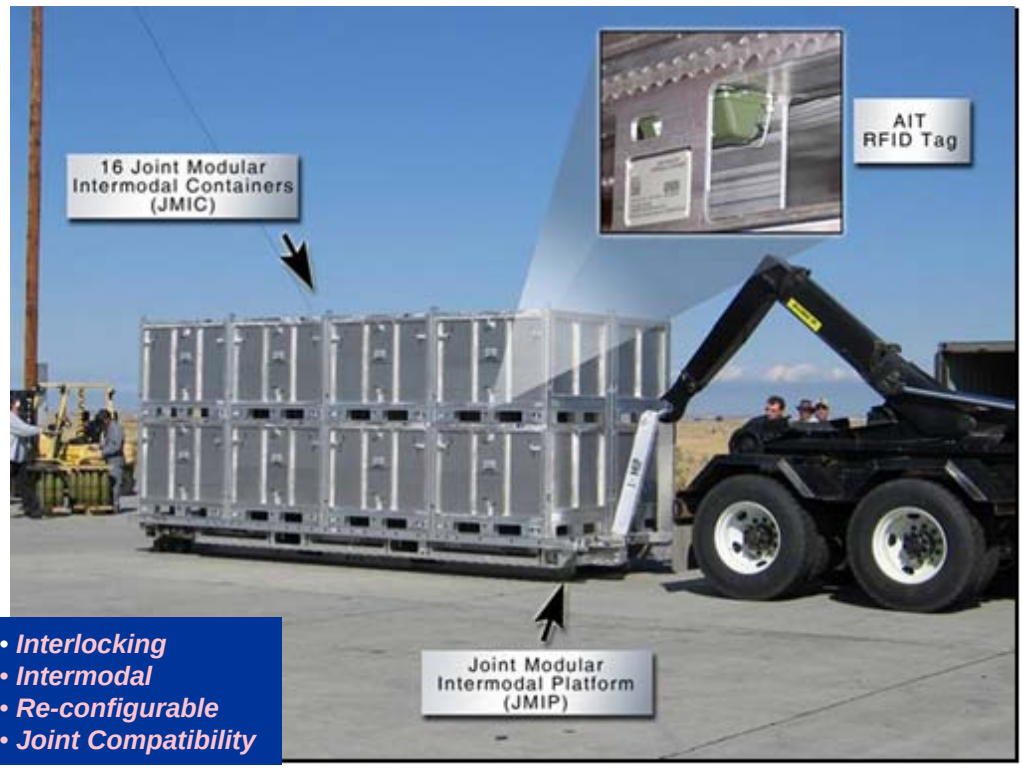
JMIDS - A system of standard sized multimodal modular containers, platforms, and off the shelf information tags

Benefit – JMIDS enables rapid/"seamless" movement of supplies by air, land and sea

Mission: Evaluate JMIDS Military Utility and transition to program of record

Participants

Lead Service: ARMY ARDEC
Partnering Service: US Navy
Sponsoring CoCOM: USTRANSCOM
Technical Manager: ARMY, ARDEC
Operational Manager: TRANSCOM, J5
Deputy Op Manager: USACASCOM
Indep.Test Agency: COMOPTEVFOR
Transition Manager: ARMY, ARDEC
Program of Record: ARMY, PM-FSS
DoD Agencies: DLA
Supporting Services: USMC, USAF
Supporting CoCOMs: JFCOM



- *Interlocking*
- *Intermodal*
- *Re-configurable*
- *Joint Compatibility*

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JMIDS
A System of New Capabilities

JMIP

SPINOFF CAPABILITES

JMIC

AIT

Moveable Tie-down Rings

Collapsible Container Interlocks

Adaptable Aircraft Interlocks

AIT Nesting

Satellite Tracking

RFID Sensor Tags

Manual/Auto Tie-down

STD Size/Configuration

Collapsible

Helo Sling-Lift

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JMIC Capabilities

FEATURES

STACKABLE
INTERLOCKABLE
TOP LIFTABLE

JMIC EQUIPPED
WITH DRAWERS
AND CASTERS

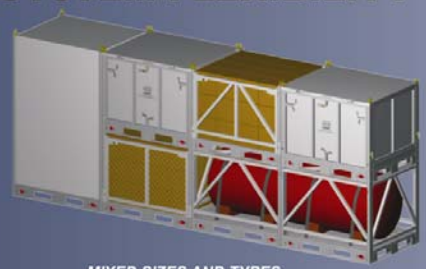
* Integrated tracks for ISO-7166 fittings internal and external
* Collapsible to 1/3 height without tools
* Lockable panels, removable for content access, even while stacked
* Top liftable and interlockable
* AIT - integrated protected location
* 4-way fork truck & pallet jack entry
* Accessories - lock in casters, bins, shelves, and more ...

HANDLING & SHIPPING

LAST TACTICAL MILE
* CARGO ACCESSIBLITY

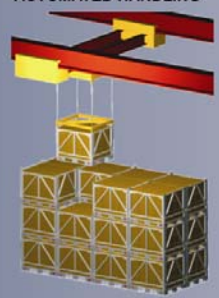
* Rapid Ship Upload without reconfiguration
* APPROVED for vertical and connected ship - ship replenishment
* Compatible with all classes of supply - throughout DOD
* Size optimized for ISO containers - 16 JMICs in a 20' with minimal dunnage
* Eliminates the need for repackaging - Ability to span the COMPLETE logistic cycle to the "LAST TACTICAL MILE"

SYSTEM FLEXIBILITY

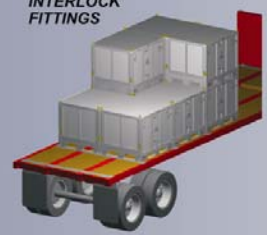


MIXED SIZES AND TYPES

AUTOMATED HANDLING



TRAILER WITH
INTERLOCK
FITTINGS



* Multiple size JMIC capability - double long, double high, ...
* Varied types - including user defined special purpose JMICs
* Stackable and interlockable - varied sizes and types

Future Capabilities:

* Automated Storage & Retrieval Systems
* Trailers, flatracks, and magazine decks, equipped with integrated interlock fittings - eliminating chains, and straps

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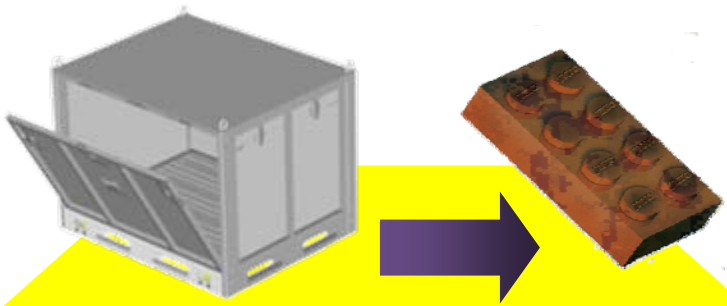
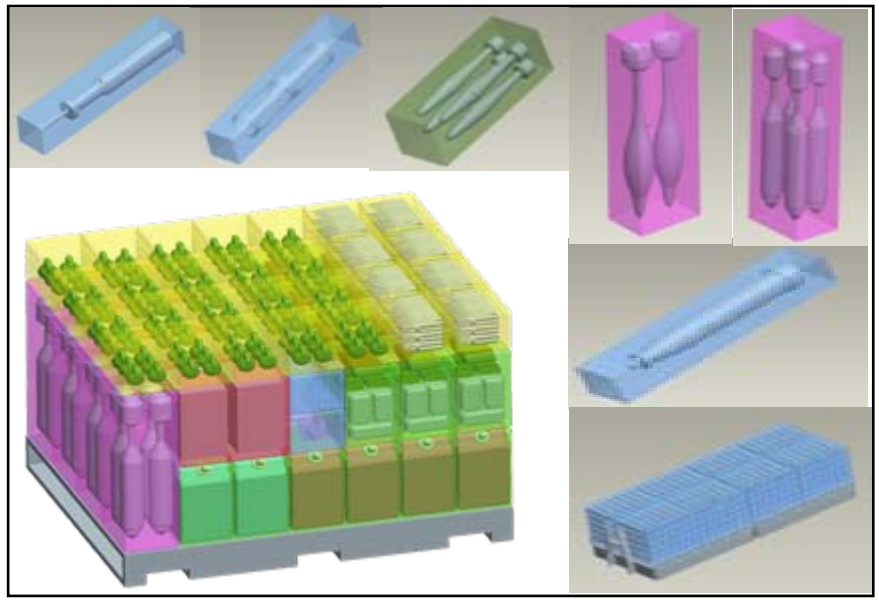
Joint Modular Intermodal Configuration

Current

- Containers are all different sizes
- Requires slow and manpower intensive blocking, bracing and strapping



Future Vision



- Standard size containers
- Six standard sized sub-module containers will accommodate nearly all munitions and other supplies

Bridging the Gap to Future Packaging

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FCS
Large Caliber Ammunition Resupply

Objective: Conduct unmanned resupply of FCS Manned Ground Vehicles: NLOS-C, MCS & NLOS-M

- **JMIC & HEMTT-LHS Compliant**
- **Autonomous Re-supply of main weapon ammo only**
- **Interface with ammo in legacy packaging**

Freedrop Packaging Concept Project (FPCP)

Objective: Conduct Emergency Freedrop resupply from moving helicopters at low altitudes

Goals:

- Inexpensive-$100 per package
- Low altitude drops - 50 to 100 feet
- Hovering or moving 65 to 130 knots
- Easily recovered by 2 Soldiers w/o MHE
- 100% Survivability

Accomplishments:

- Conducted prototype drop tests at Rutgers U & Tobyhanna AAD
- Transition Agreement with PM FSS

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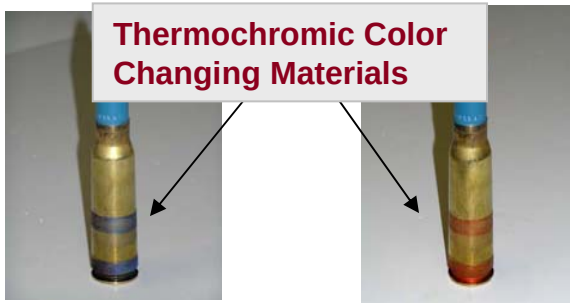
Cooperative effort in support of G-4 - Logistics Innovation Agency

Health Monitoring

Objective: Develop a suite of solutions from low tech low cost to high tech to enhance confidence of munitions readiness throughout it's lifecycle

Thermochromic Color Changing Materials



•Irreversible visual indication of temperature exposure
•Research to tailor the materials for various temperatures and exposure times

Electronic Environmental Sensors

•Electronic sensor device developed by PNNL
•Prognostic Algorithms can be integrated into the device
•RF or hardware interface
•Down loads to ASIS-MHP

•COTS Passive shock sensor
•Range needs to be increased to meet Ammo requirments

Joint Modular Intermodal Distribution System - AIT

•Introduced temperature and humidity enable RFID TAG at the pallet level compatible with ITV server
•Evaluated Satellite communication tags

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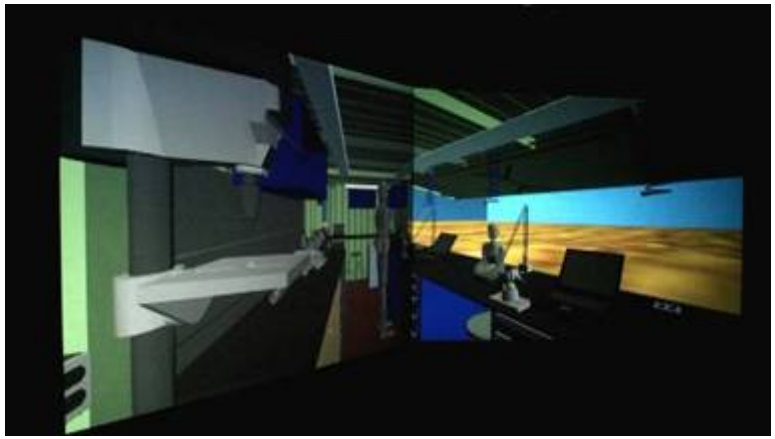
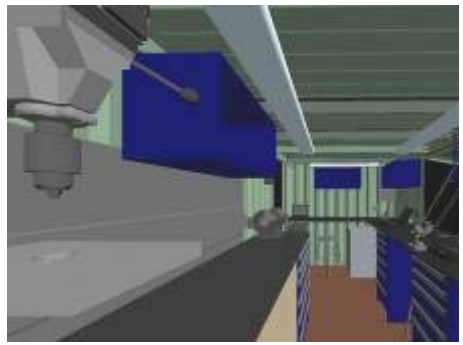
Virtual Engineering Center



ARDEC Collaboration Centers

ARDEC Advanced Visualization Center

- Established at Picatinny & Rock Island
- Helps customers to evaluate design concepts, accelerate project schedules and saves time and money by eliminating costly building of physical models
- Supported PM-SKOT & USMC maintenance system design projects



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Tactical Ammunition Accountability

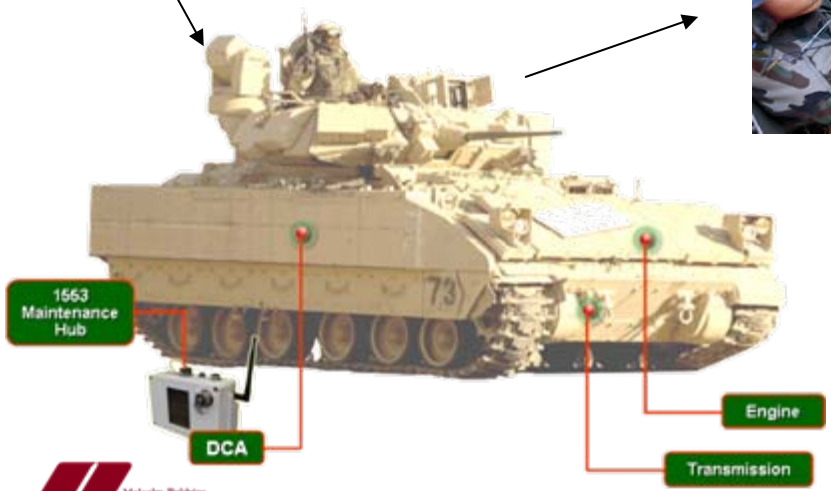
PROBLEM: Ammunition accountability brigade and below lack accuracy & timeliness resulting in suboptimal logistics related actions. Updates are manual, ad hoc and infrequent and therefore not conducive to anticipatory resupply.

Brigade Tactical Op Center
Property Book Unit Supply Enhanced (PBUSE)

Accurate Data = Improved Decision Making & Responsiveness

Ammo Data sent via Vehicle's FBCB2

Round counting sensors and/or modified Fire Control Software capture ammo expenditures



Bradley
Paladin
Abrams

For Health Management System (VHMS) equipped vehicles

National Inventory Control Point
Accountable System

Leveraging:
- ***Benet Labs Barrel Fatigue Sensors***
- ***PM-HBCT VHMS***

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Insensitive Munitions

IM Explosive and Venting Technologies help mitigate thermal threat (Example: Slow Cook-off test result)

Without IM Technologies

With IM Technologies

Recent incidents remind us of the seriousness of explosive safety
We don't need another Doha !!!

Interactive Electronic Technical Manuals

Ammunition Adage

A Soldier can survive in Combat

Forever Without Mail

30 Days Without Food

3 Days Without Water

3 Minutes Without Air

But Not One *Second* Without Ammunition!

Contact Information

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