Smart Distribution

A System of Systems
For The
Objective Force

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Purpose

**FTTS Industry Day** briefing on the collaborative efforts to develop an Objective Force

*Smart Distribution System*
The Smart Team

- **CASCOM**
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  - Cris Myers, DCD-QM
  - MAJ Greg Graves, DCD-CSS
  - MAJ Vic Evaro, DCD-OD
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  - Jon Quinn, ISD

- **TRADOC CDE**
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- **TACOM-ARDEC**
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  - Doug Chesnulovitch
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  - Bob Rossi
  - Al Santucci

- **TACOM-TARDEC**
  - Jeff Carie

- **PM-HTV**

- **PM-Force Projection**
Reviews and Comments

• GEN Kern
  – “You’ve got some good ideas. Now make them happen.” – 30 June

• MG Juskowiak
  – “I fully support this concept” – 9 May

• MG Dail
  – “The potential impact is enormous” – 15 May

• MG Stevenson
  – Enables “Ordnance Corps Transformation: Configured Load Concepts” – 6 June

• Mr. Edwards
  – “An excellent concept” – 6 May
Problem Statement

Objective Force operations require a logistics system with timely, rapid and pulsed delivery of supplies. Incompatibilities between transportation modes, Materials Handling Equipment (MHE) & cargo platforms in the current system will force the inefficient re-handling of supplies by soldiers and a variety of equipment at each logistics node.

The pipeline is too slow and the Army’s logistics footprint is too large!
Technology to transform the current cumbersome, seamed, and inefficient distribution system to...

Numerous Truck Variants

Load Handling System

FTTS

Modular Platform

Numerous Materials Handling Equipment

Numerous Delivery Platforms

Numerous Interface Devices

... a seamless intermodal Smart Distribution System
Documented Need in Objective Force

- **Unit of Action O&O, Draft, v.98, Jun 02**
  - Configured loads capable of either ground or aerial delivery
  - Intermodal platforms and ground transport capabilities

- **Objective Force UE Concept, Draft, 12 Apr 02**
  - Flexible multi-modal sustainment
  - Refined procedures for accelerated throughput
  - Strategic base configured to support deployed forces with configured loads to tactical (unit of action) level

- **TRADOC Pam 525-66, Draft, 17 Jun 02**
  - Innovative, multi-modal distribution concepts
  - Revolutionary means of transporting and sustaining people and materiel to leverage new ground and aerial concepts for delivery
  - Enable quick cross leveling of supplies between platforms and units in contact and on the move
  - Leverage pre-configured packaging and platform-embedded materiel handling and lift for rapid, accurate and agile resupply that minimizes demand on soldiers
Smart Distribution System Video
Intelligent Load Handling System

Articulated Load Handling Arm

Robotic handling system to:
- Load modular containers and platforms on FTTS
- Configure modular packaged loads on platforms

Leap forward - Integrate backward

Configured Load Building Software

- Software application interfaces with GCSS-Army supply module
- Enables battlespace reconfiguration of all classes of supply for optimal delivery within the UA
Future Tactical Truck System (FTTS)

Virtual Prototyping
- Virtual prototype engineering design solutions (cab design, integrated C4ISR, Smart Distribution components)
- Provide inputs to operational analyses

Vehicle Alignment System
Enables rapid alignment of the FTTS with:
- Modular platforms
- Containers
- USAF K-loaders
- USAF aircraft
- Other trucks

Interfaces with:
- TSV, C-17, C-130, CH-47
- ISO Containers, Modular Platforms, CROP
Modular Platform

- Reconfigurable to meet user needs
- Intermodal platform: Air/Land/Sea/Airdrop/Slingload
- Lightweight material design
- Allows multiple deliveries with one vehicle

Smart Tiedown

- Load conforming tie-down system
- Enable rapid securing of configured loads

Modular Packaging

- Compatible w/Modular Platform
- Interlocking concept for storage and transport of all classes of supply
- Reconfigurable to meet user needs
- Automation friendly
- Automatic identification technology
- Airdrop capability
Objective Force Resupply Vision

1. Family of 3 munition types
   - Wt: 60-70 lbs
   - Length: 900 mm

2. Clip
   - 5 Round clip of lightweight composite materials
   - Module mix is tailorable with 3 munitions: KE, MP-ERM & Smart Cargo
   - 1 Clip ~ 35 gal fuel, water, or food

3. Resupply Module
   - 1 Resupply Module for each FCS:
   - 8 Ammo Clips “snap” together to form a Resupply Module (40 rounds)
     - 5 KE rounds
     - 35 Round mix of MP & Smart Cargo
     - Alternate: 30 round mix plus fuel, water, or food

4. Modular Platform
   - 6 FCS Resupply modules per Modular Platform
   - Modular load compatible with future Load Handling Systems on FTTS and C130

5. FCS Automated Rearm Concept
   - FTTS drops Resupply Modules on Modular Platform or single module at rearm site
   - Natick RDEC Guided Parafoils provide precision stand-off resupply

Rapid and Responsive Resupply
FCS Multi-Role Armament and Ammunition System (MRAAS) Rearm Concepts
Warfighter payoffs

• **Lethality** - increased *combat power* through reduced resupply time - 60% quicker SRS

• **Agility** - able to respond to changing unit needs to maintain *battle rhythm* - 70% quicker reconfigure

• **Deployability** - reduction in MHE reduces *deployment footprint* by 100 tons/brigade or 6 C-130J lifts
Smart analysis

Analysis based on:

- Objective Force support concept
- SBCT consumption and CSS force structure
- 3-day pulse of all classes of supply less water and fuel = 360 ST
- 25% of CROPs require reconfiguration at FOB
- No MHE forward of FOB
OF Resupply without Smart Distribution System

Handling Hours

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<tr>
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<th>APOD</th>
<th>FOB</th>
<th>SRS</th>
<th>Total</th>
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<td>40.1</td>
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<td>51.3</td>
<td>40.1</td>
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### Smart benefits

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<th>Baseline</th>
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<th>Change</th>
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<td>38.5</td>
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<tr>
<td>Equipment Hours</td>
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<tr>
<td>Personnel Hours</td>
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<td>Pallet Positions</td>
<td>120</td>
<td>80</td>
<td>-33%</td>
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Dramatic improvements in all areas!
Intelligent Load Handling System

Technology challenges:
- Rugged, vehicle mounted, lightweight materials handling capability
- Precision placement capacity
- High payload capability
- Lightweight to meet vehicle deployment restrictions

Modular Platform

Technology challenges:
- Lightweight Materials
- New design capabilities
- Structural integrity to provide for modular capability
- Meet design and survivability requirements for air drop
RDTE 6.6 Components

Configured Load Building Software

Smart Tiedown

Modular Packaging

Vehicle Alignment System
TECHNOLOGY FOCUS

TACOM-ARDEC

100% in Situational Awareness

Vehicle Alignment System
Intermodal Flatrack
Intelligent Load Handling System
Smart Tie Down
Pre-Configured Packaging
Robotic Trailer

25% or greater Mobility

60% Reduction in Resupply Time

18% more survivable

GOAL: LEVERAGE FCS TECHNOLOGIES FOR BLOCK 1 FTTS

TACOM-TARDEC

Advanced Crew Station
Integrated C4ISR
Enhanced Situational Awareness

Imbedded Diagnostics/Prognostics
Imbedded Training and Simulation
Automated Maintenance

Active Suspension
In-hub Motor

On-board Power Generation
Hybrid Electric Drive
Advanced Propulsion
Clean Diesel Engines

Zero unscheduled Maint. actions

50% in Fuel efficiency

Modular Armor
Objective Crew Served Weapon
Transparent Armor
NBC Overpressure
Mine Blast protection

FCS Leveraged Technologies
Summary

**Smart Distribution** is a *System of Systems* addressing the supply and sustainment needs of the Objective Force on the future battlefield. Smart Distribution is enabling technology which breaks down traditional stovepipes-

...to deliver multiple classes of supply

...in mission configured loads

...across a noncontiguous battlefield

...with minimal material handling

Smart Distribution – A Revolution in Logistic Distribution
Revolution

There's no revolution without smart distribution!

in military logistics!