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

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  - Jeff Carie
- PM-HTV
- PM-Force Projection

Reviews and Comments

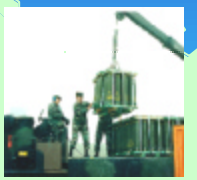
- **GEN Kern**
  - **“You’ve got some good ideas. Now make them happen.” – 30 June**
- **MG Juskowiak**
  - **“I fully support this concept” – 9 May**
- **MG Dail**
  - **“The potential impact is enormous” – 15 May**
- **MG Stevenson**
  - **Enables “Ordnance Corps Transformation: Configured Load Concepts” – 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.







DEPOT

PORT

Truck to Air/Ship

FORT

Air/Sea to Truck to TSV/Air

POD

Unit of Employment

Truck to Truck

FOB

MSS/SRS

Unit of Action

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

4 to 1

Load Handling System

FTTS

Modular Platform

8 to 1

Numerous Materials Handling Equipment

4 to 2

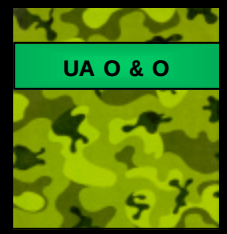
Numerous Delivery Platforms

5 to 1

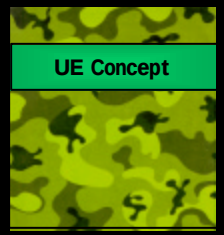
Numerous Interface Devices

… 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

Interfaces with:

- TSV, C-17, C-130, CH-47
- ISO Containers, Modular Platforms, CROP

Vehicle Alignment System

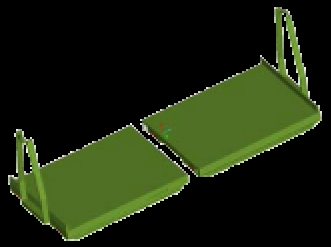
Enables rapid alignment of the FTTS with:

- Modular platforms
- Containers
- USAF K-loaders
- USAF aircraft
- Other trucks

Modular Platform System

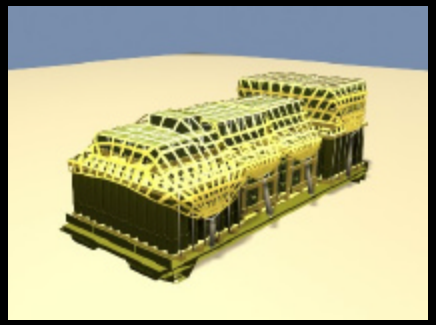
Modular Platform

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



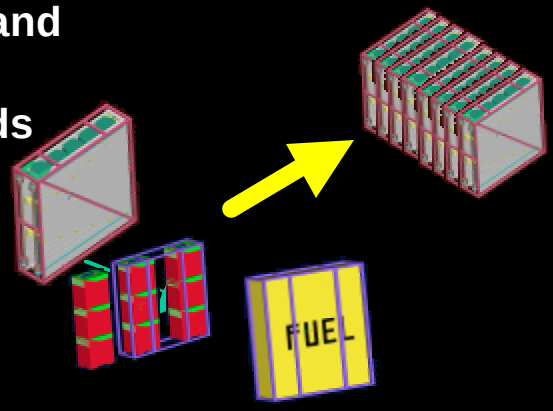
Smart Tiedown

- 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

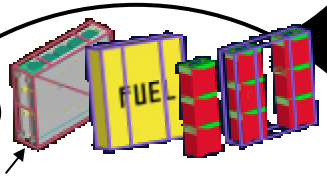


Objective Force Resupply Vision

1

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

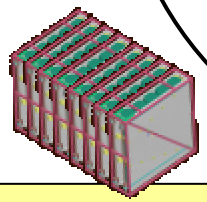
2



Clip

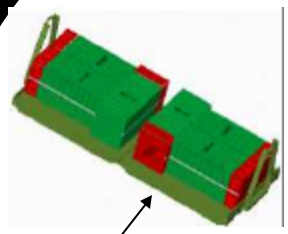
- 5 Round clip of lightweight composite materials
- Module mix is tailorable with 3 munitions: KE, MP-ERM & Smart Cargo
- 1 Clip ~ 35 gal fuel, wate
  food

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

6

FCS Automated Rearm Concept

5

- 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:

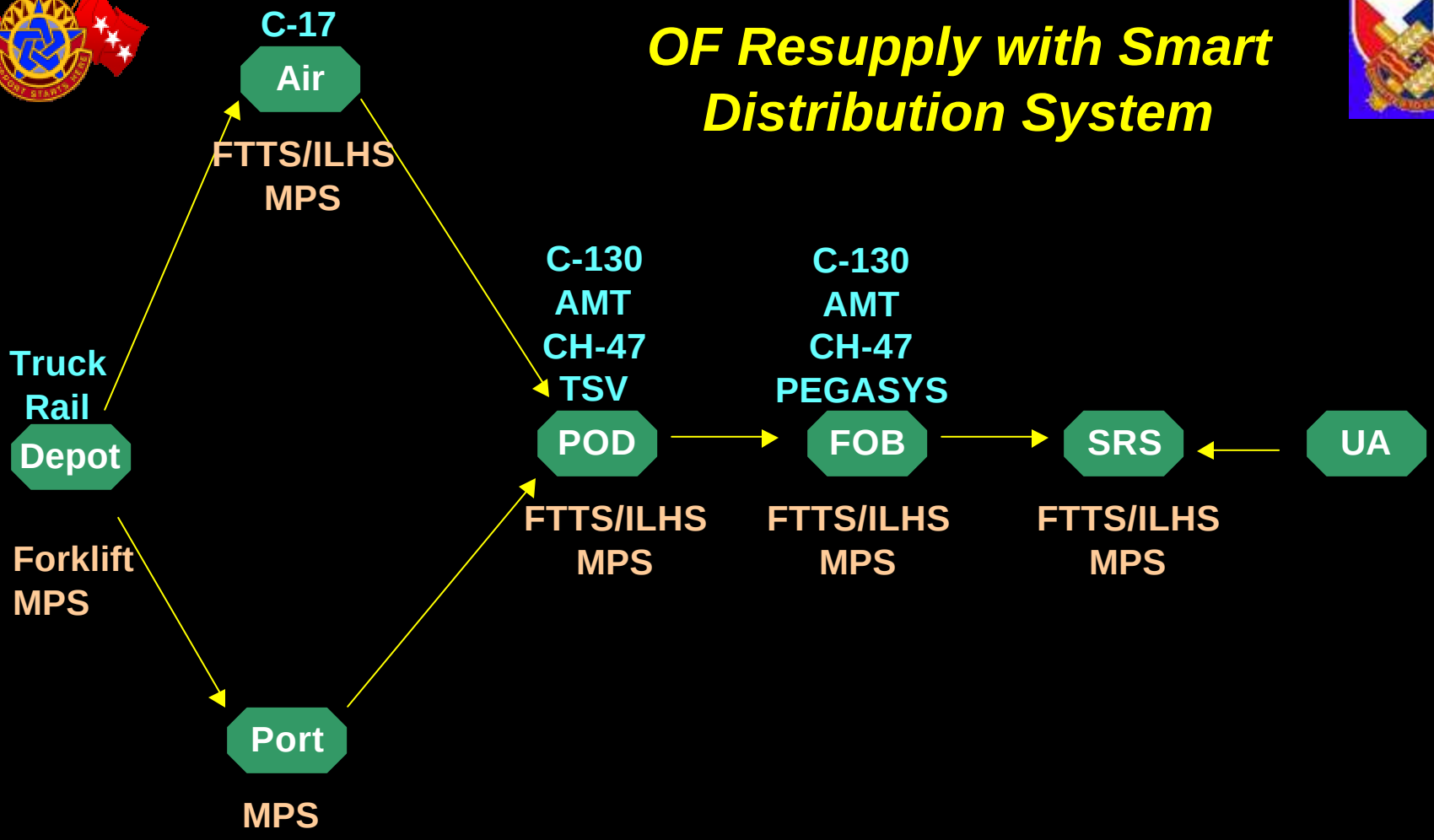
- **Objective Force support concept**
- **SBCT consumption and CSS force structure**
- **3-day pulse of all classes of supply less water and fuel = 360 ST**
- **25% of CROPs require reconfiguration at FOB**
- **No MHE forward of FOB**

OF Resupply without Smart Distribution System

Handling Hours

	APOE	APOD	FOB	SRS	Total
Clock	20.2	7.7	3.9	6.7	38.5
Equipment	48.2	22.7	40.1	200.0	311.0
Personnel	90.5	51.3	40.1	333.0	515.3

OF Resupply with Smart Distribution System



Handling Hours

	APOE	APOD	FOB	SRS	Total
Clock	8.1	6.3	1.1	2.4	17.9
Equipment	22.7	11.0	15.2	48.0	96.8
Personnel	53.0	35.0	15.2	48.0	151.2

Smart benefits

	Baseline	Smart	Change
Clock Hours	38.5	17.9	-54%
Equipment Hours	311.0	96.8	-69%
Personnel Hours	515.3	151.2	-71%
Pallet Positions	120	80	-33%

Dramatic improvements in all areas!

RDTE 6.3 S&T Components

Intelligent Load Handling System

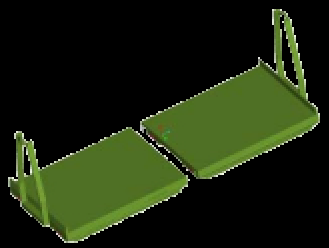
Technology challenges:

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

Modular Platform

Technology challenges:

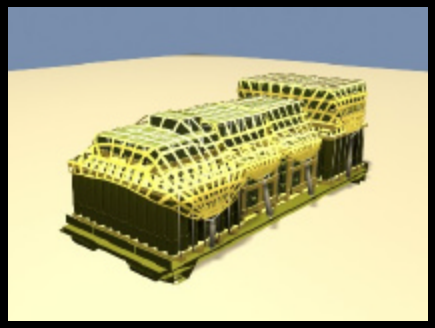
- Lightweight Materials
- New design capabilities
- Structural integrity to provide for modular capability
- Meet design and survivability requirements for air drop



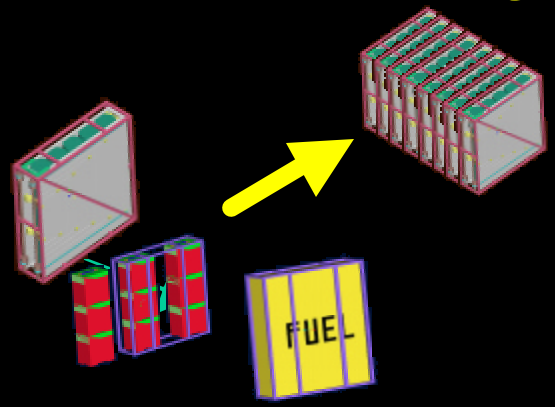
RDTE 6.6 Components

Configured Load Building Software

Smart Tiedown



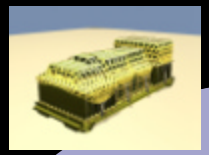
Modular Packaging



Vehicle Alignment System

TECHNOLOGY FOCUS

TACOM-ARDEC

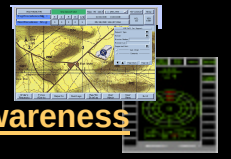


Vehicle Alignment System
Intermodal Flatrack
Intelligent Load Handling System
Smart Tie Down
Pre-Configured Packaging
Robotic Trailer

60% Reduction in Resupply Time

100% in Situational Awareness

TACOM-TARDEC

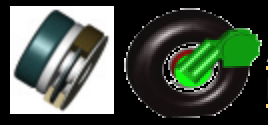


Advanced Crew Station
Integrated C4ISR
Enhanced Situational Awareness

Imbedded Diagnostics/Prognostics
Imbedded Training and Simulation
Automated Maintenance

Zero unscheduled Maint. actions

25% or greater Mobility



Active Suspension
In-hub Motor

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

50% in Fuel efficiency

18% more survivable

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

FCS Leveraged Technologies

GOAL: LEVERAGE FCS TECHNOLOGIES FOR BLOCK 1 FTTS

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 in military logistics!

There's no revolution without SMART DISTRIBUTION!