

**USTRANSCOM**  
**Operational and Technology Challenges Brief**  
 to  
**Science & Engineering Technology Conference/DOD Tech Expo**  
 Mr. Lou Bernstein





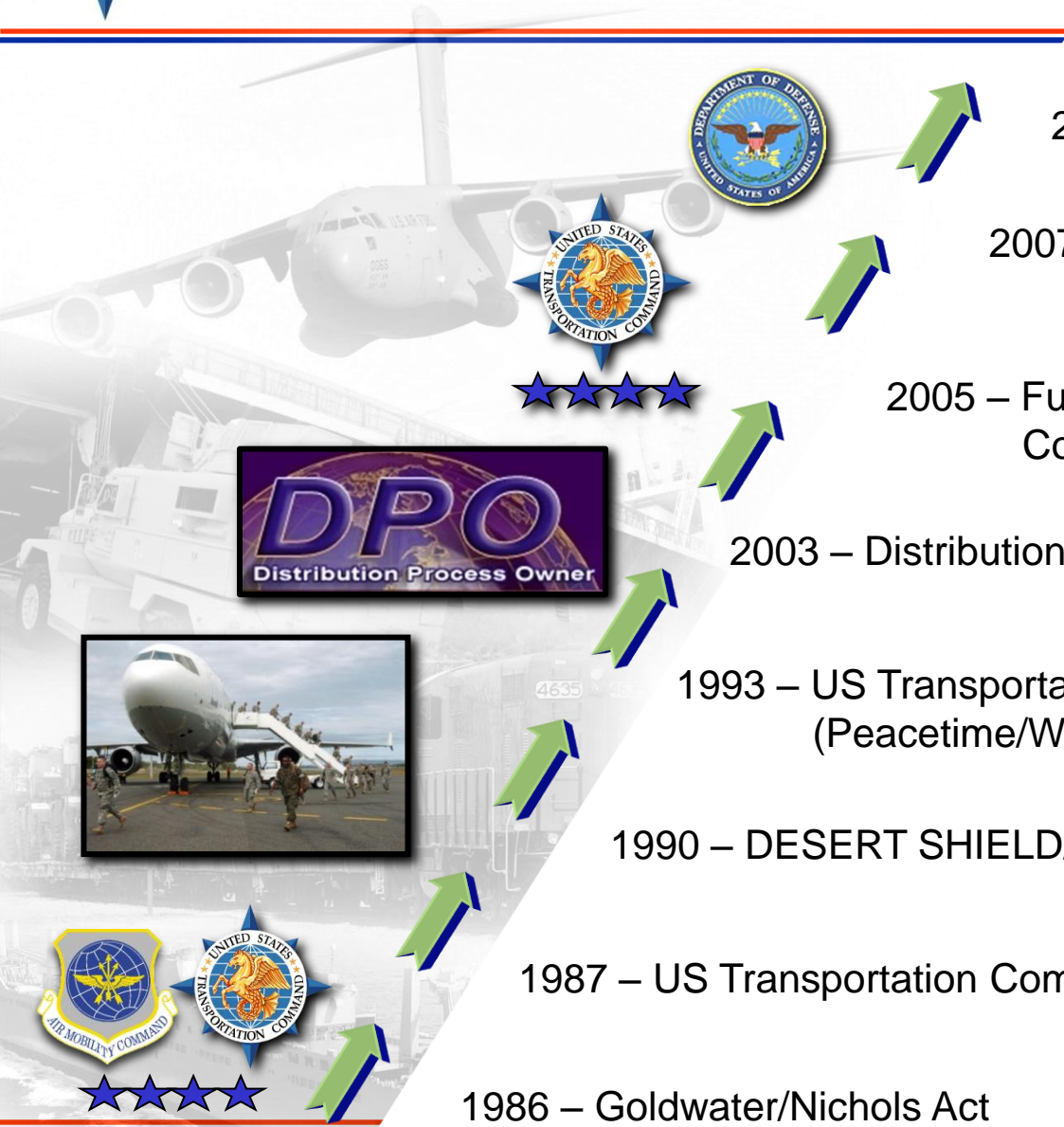
# Purpose



- **Role/Mission**
- **Logistics Transformation Imperative**
- **Top Operational/Technology Challenges**
- **RDT&E Program Overview/Project Highlights**



# USTRANSCOM Transformation



2011– Global Distribution Synchronizer

2007 – DPO lead for DOD Supply Chain RFID/AIT implementation

2005 – Full Time US Transportation Command Commander

2003 – Distribution Process Owner Established

1993 – US Transportation Command Charter (Peacetime/Wartime Strategic Mobility)

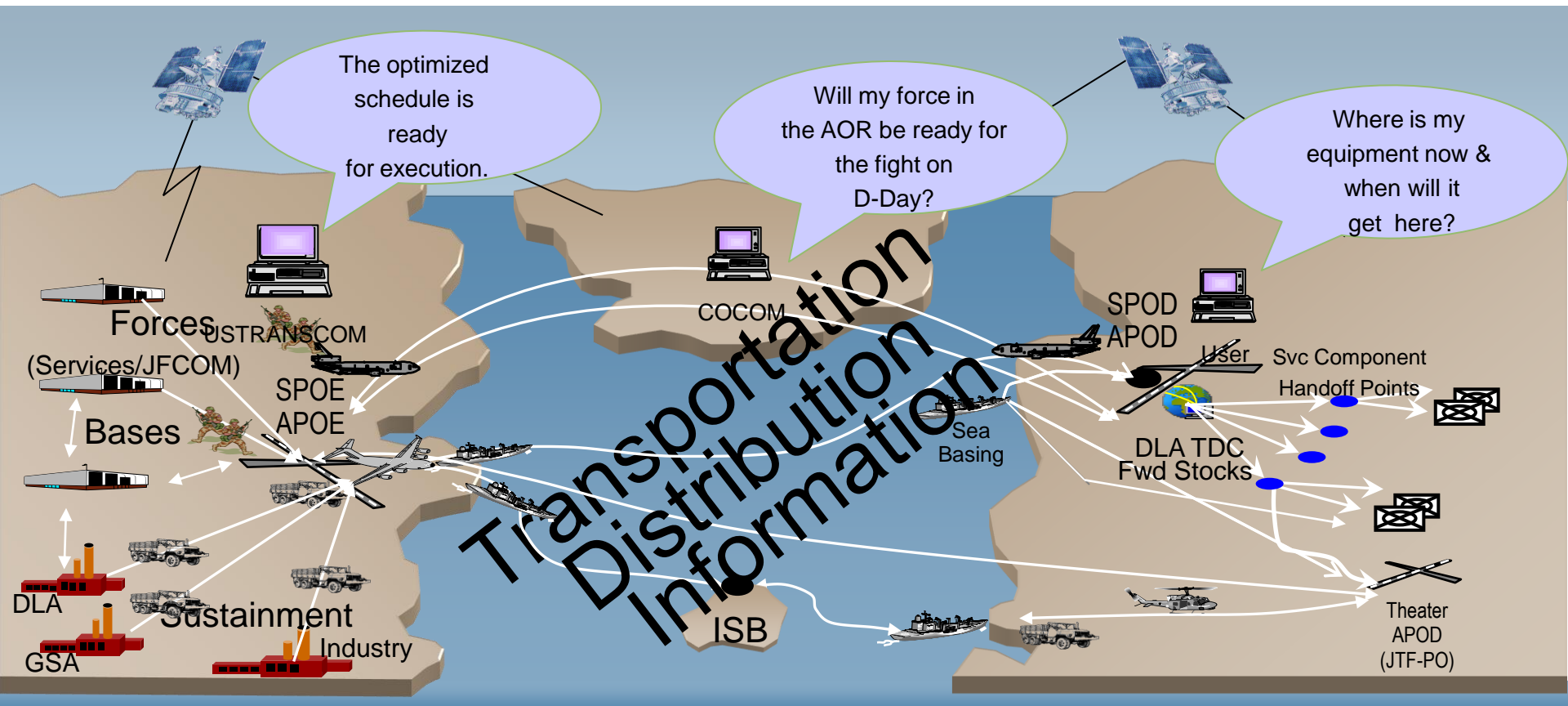
1990 – DESERT SHIELD/STORM

1987 – US Transportation Command Established

1986 – Goldwater/Nichols Act



# USTRANSCOM's End-to-End Mission



**Leveraging S&T to Transform Logistics Support to the Warfighter and Ensure the Development of Affordable Solutions**



# Operating in a Global Environment...



## Challenges

### Combatant Commander Plans...

- Rely on Austere Infrastructure
- Demand Rapid Force Projection
- Require Early Diplomatic Coordination
- Incorporate Civil-Military Support
- Pose Force Protection Threat

Roads/Rail

Ports

No Fuel

Runways

Diplomatic Clearances

No MHE/CHE

Limited Nav aids

Poor Construction

Access!!

High Threat

*...that places a premium on Collaboration*



# DOD's Logistics Strategic Vision



- **DOD Logistics Goals**

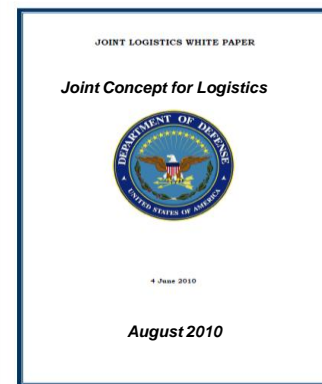
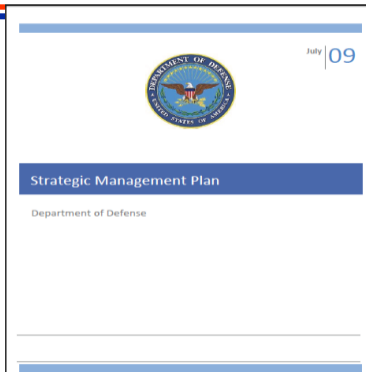
- *Effective logistics support to current ops*
- Effective management of contractors on the battlefield
- Integrate life cycle management principles
- *Integrate supply chain to point of consumption*

- ***Deliver integrated joint logistics capabilities***

- ***Network/Optimize the Joint Logistics Enterprise***

- ***Ensure Rapid, Precise Response***

*Note: USTRANSCOM RDT&E program affects italicized areas*





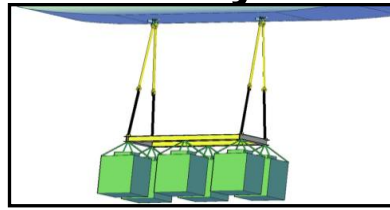
# Top Operational/Technical Challenges



## Improve Point of Need Delivery



High Speed Container Delivery

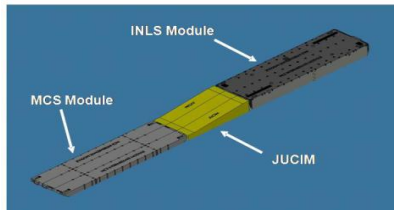


Helicopter Sling Load - JPADS

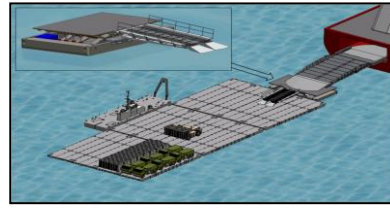


JPADS-Guidance/Navigation/Control

## Ability to Sustain from the Joint Seabase



Joint Universal Causeway Interface Module

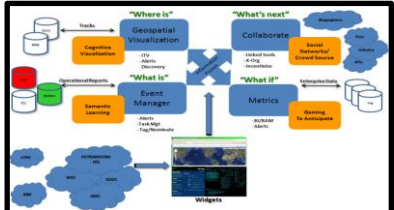


Com'l Roll-on/Roll-off Interface Platform

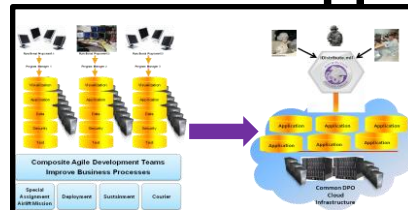


Sea Base Enablers

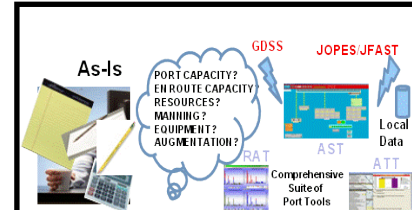
## Command & Control/Decision Support



Situational Awareness & Collaboration



Computing Environment



AT21/Decision Support

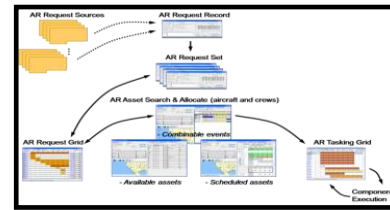
## Operate in Any Environment/Energy Conservation



Unmanned Air Systems/Hybrid



Cyberspace/Security



Support Planning for Aerial Refueling

See USTCH60-2 for complete list

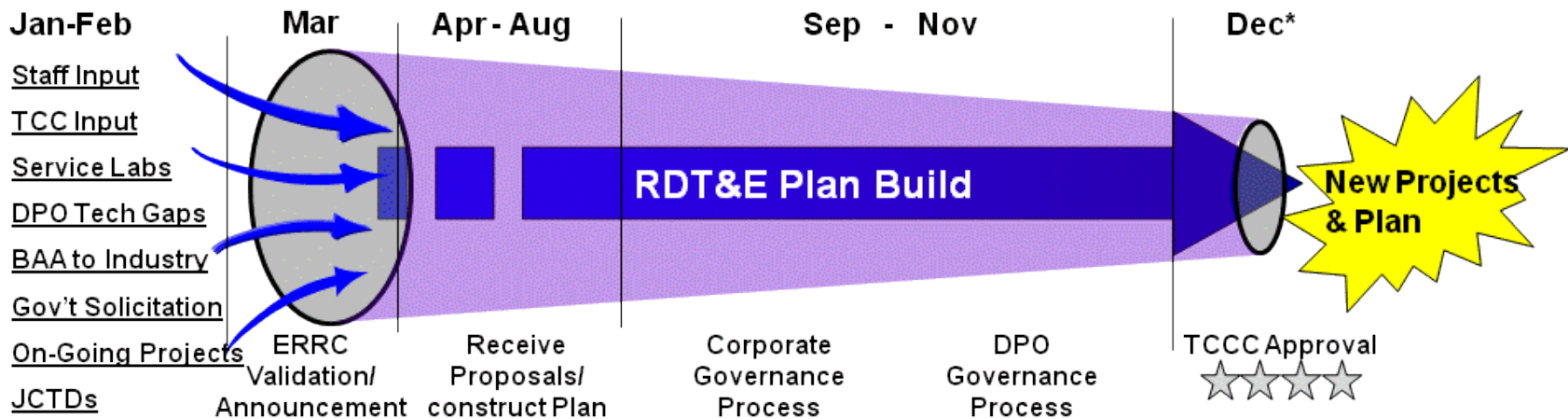
[www.transcom.mil/rdte](http://www.transcom.mil/rdte)



# Program Summary



	FY12	FY13	FY14	FY15	FY16	FY17
<b>Current Top Line</b>	<b>\$43M</b>	<b>\$34.2M</b>	<b>\$38M</b>	<b>\$38.3M</b>	<b>\$39.2M</b>	<b>\$43.1M</b>



\*OSD RDT&E budget exhibit submissions drives timeline

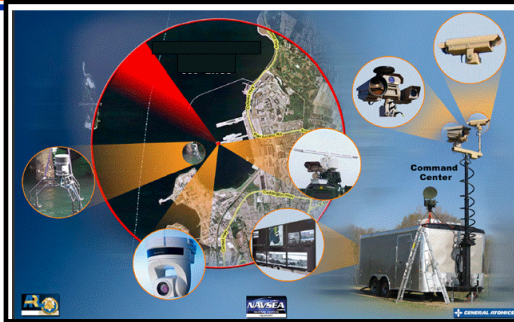
**Leveraged over \$285M in Service/OSD/Defense Agency RDT&E contributions (FY06-11) – 7:1 ROI**



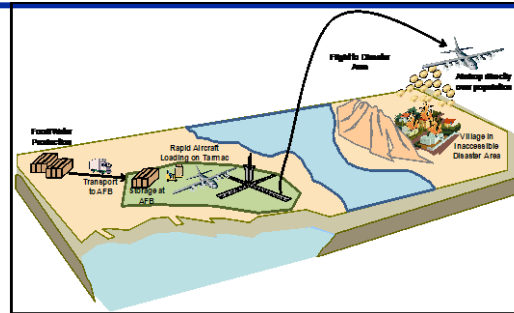




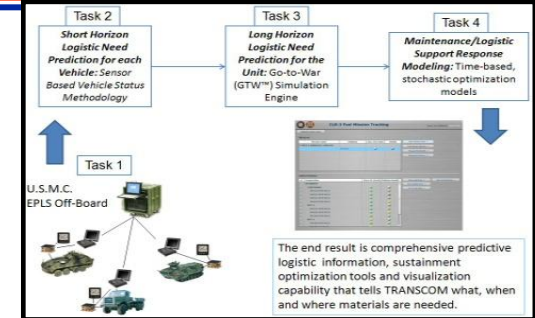
# Future Focus Areas



Force Protection/Security



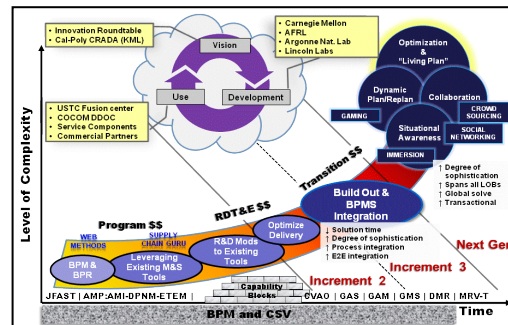
Humanitarian Airdrop Over Populated Areas



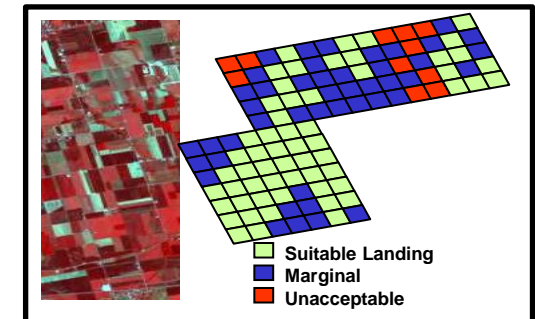
Sense and Respond Logistics



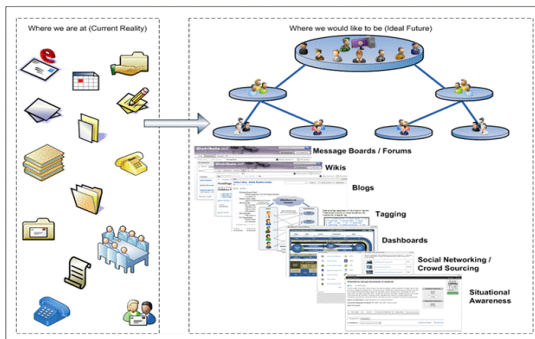
Improved Accuracy at Point of Need



Optimization



Rapid/Automated Landing Site Detection



Collaboration and Integration



Port Efficiency Enhancements

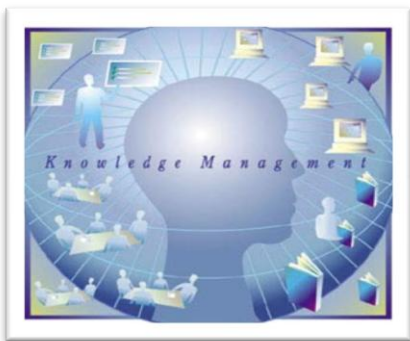


Sea Based Enablers



# USTRANSCOM Technology Transfer Activities

(Office of Research and Technology Applications)



**Knowledge Management--  
Service-Oriented Architectures**



**Airships and Hybrid Airships**



**Satellite RFID**



**Advanced Decision-making  
Tools for the Supply Chain**

**Over \$7.5M of Industry  
Investment**



**Cloud Computing and  
Data Quality**



**Wind Farm Effects on Radar  
Performance**



**Science, Technology  
Engineering & Mathematics**



**Remotely Piloted Vehicles  
For Cargo Transport**



*We Measure Success Through the Eyes of the Warfighter & the Taxpayer!*



# Backups



# Selected Benefits (completed efforts)



- **End to End Distribution Model**
  - Halved MCRS-16 simulation run-times; simulate all portions of deployment & distribution
  - Provided the data to support USAF decision to retire 22 C-5A
- **Joint Modular Intermodal Container: \$16M/yr savings w/cardboard uni-pack**
- **Defense Distribution Expeditionary Depot**
  - Significant reduction in military inter-theater airlift for DLA managed items
  - Customer Wait Time reduced from 19.8 days to 10.8 days
- **Coalition Mobility System: 100% ROI within 2 years and \$2.3M/yr thereafter**
- **Common Operating Picture (Deployment and Distribution)**
  - ID of top 100 heaviest airlifted items saving \$54M annually in transportation costs
  - Delivered initial iDistribute.mil capabilities (i.e., workspace mgmt, collaboration, etc.)
- **En Route Patient Care Module**
  - Less people managing more patients/continued intervention in absence of skilled caregiver
  - Closed loop system provides ~40% reduction in O2 use over current manual methods
- **JPADS – Mission Planner: 80% reduction in recovery ops/cost & saves lives**
- **JPADS Next Generation Guidance, Navigation & Control**
  - Enhanced accuracy (< 50 meters) integrated into 2K JPADS assets; Reduce DZ by 20%
  - Reduce IED exposed convoys, safer recovery ops, increased personnel survivability
- **Low Cost Low Altitude: Reduce airdrop asset recovery/improves safety (less grnd convoys)**



# Selected Benefits (completed efforts)



- **Wireless Gate Release System**
  - Doubles C-130 delivery capacity (FOC 4QFY11) (saving fuel/acft wear & tear/assoc costs)
  - Eliminates bundle damage due leap frogging (effects 20% of airdropped bundles)
- **Joint Recovery and Distribution System**
  - 101<sup>st</sup> Sustainment Brigade employing three 40T vehicles - completed < dozen missions in Afghanistan to date
  - USMC to deploy four 34T vehicles (per HQMC current trailer is unsuited for Afghan rugged off road conditions-- looking to purchase another 10 to fill Urgent Universal Needs Statement)
- **Seabasing**
  - Joint Universal Causeway Interface Module: Universal connector (vice spending \$246M to replace Army Modular Causeway System and Improved Navy Lighterage System)
  - Commercial Roll-on/Roll-off Interface Platform: Provide non-existent capability to off-load commercial RO/ROs at sea – enhanced operational flexibility/could reduce sealift recap bill
  - Shipboard Selective Access and Retrieval System
    - 67% reduction in manpower required to move vehicles and containers (typically 6 to 2)
    - Improved storage (omni-directional access/movement) of mission assets
    - MHE fuel usage is cut by 67% for RO/RO operations and 100% eliminated for flat-deck operations (due use of battery/hybrid diesel/electro-hydraulic drives)
- **Next Generation Autonomic Logistics/Predictive Analysis: Will improve**



# Selected Benefits (ongoing efforts)



- **Cyber**
  - Computer Adaptive Network Defense-in-Depth: Provided DOD the ability to continue critical network operations in a contested NIPR/SIPR network environments via secure enclaves
  - Cross Domain Collaborative Information Exchange: Provide bi-directional transfer across NIPR/SIPR domain for the Joint Deployment & Distribution Enterprise
- **Humanitarian Assistance Visibility Experiment/Humanitarian Expeditionary Log Project**
  - Qualified ROI is a cost savings of \$147,000 (\$15.00/hr x 35 hours x 70 operating days x 4 sites) and a twelfold improvement in data visibility (from once every 12 hours to once every hour)
  - Historical example from 2008 Hurricane Ike - capability would have resulted in a cost avoidance of \$5M to the taxpayer in one incident in which 450 truckloads of ice were procured and destroyed because resource visibility was nil)
- **Next Generation Wireless Communications: Army G4 draft BCA determined break even point in 2 years and ~33% out-year lower costs over current \$619M-10 yr aRFID solution**
- **Support Planning for Air Refueling: Potential \$265M/yr savings at \$3/gal**



# Selected Benefits (ongoing efforts)



- **AT21/Living Plan: Combined (TWCF/RDT&E) \$884M (FY07-26) cost savings**
  - Movement Requirements Visibility-Theater: Better utilization of common user movement assets in theater is expected to provide at least a \$16.7M annual cost avoidance
  - Distribution Process Nodal Model: Improve Time Definite Delivery by 10 – 15%
  - End to End Distribution Modeling: Reduce model setup and runtime by 20%; Economic Analysis states breakeven year to be FY17 (AT21 enabler)
  - Global Mission Scheduling: TACC tool to dynamically re-plan (est. cost avoidance of \$6.38M/yr due more efficient use of assets/fuel savings/reduced mission support requirements/etc.)
  - Cognitive Visualization, Alerting and Optimization: Reduces time to generate multiple COAs and develop optimized solution among multiple stakeholders
  - Situational Awareness & Collaboration: Better warfighter support via improved organizational unity of effort and efficiencies thru common operational SA and networked collaborative capabilities for JDDE stakeholders
  - Enterprise Integration Lab: Mitigate technical risk and accelerated capability fielding via comprehensive functional and certification/accreditation testing
  - Dynamic Re-planning Nodal Management Air
    - Provide standard, objective, repeatable method to assess airport capacity and flow requirements
    - \$0.9M/yr savings/cost avoidance (conservative estimate)
    - Could realize similar savings from seaport – providing additional \$400K in FY13 to explore/assess





# Selected Benefits (ongoing efforts)



- **Point of Need Delivery: No costs savings/just better warfighting capability**
  - JPADS Helicopter Sling Load: Increased operational flexibility/agility – enhanced safety (crew/helo as well as reduction in ground convoys)
  - High Speed Container Delivery System: Enhanced aircrew/aircraft survivability (70% reduction in exposure to ground threat due fast ingress/egress) while increasing accuracy of resupply (due delivery at lower altitude and higher airspeed) as well as volume (from < 2200 lbs to > 16,000 lbs)
  - Autonomous Technologies for Unmanned Air Systems: Ability to provide precision delivery (via sling load) in anti-access/austere/urban environments (minimizes risk to ground troops, eliminates pilot/aircrew from resupply equation, provides field retrograde capability). Hand-held beacon to eliminate need for forward air controllers/ground stations.

**Minimum 7:1 ROI – Program Pays for Itself**

