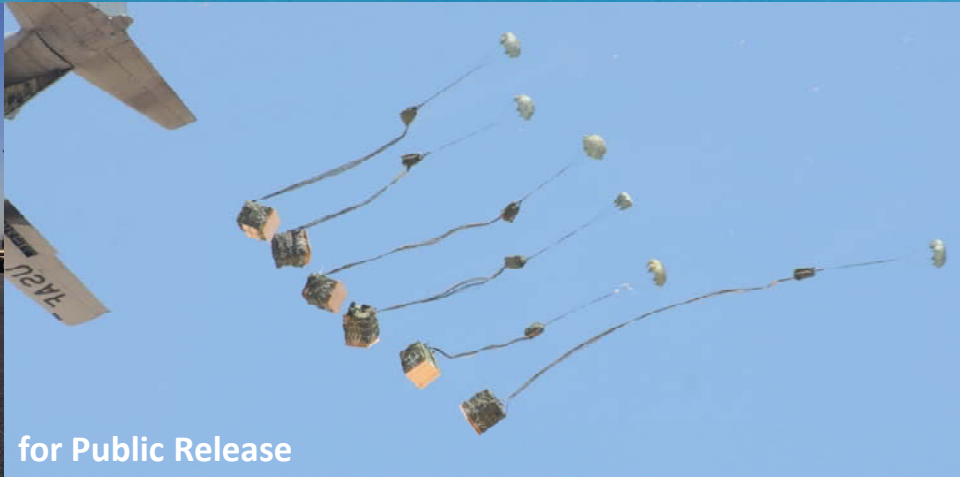


United States Transportation Command Operational and Technology Challenges Brief

Mr. Lou Bernstein



Approved for Public Release



Overview

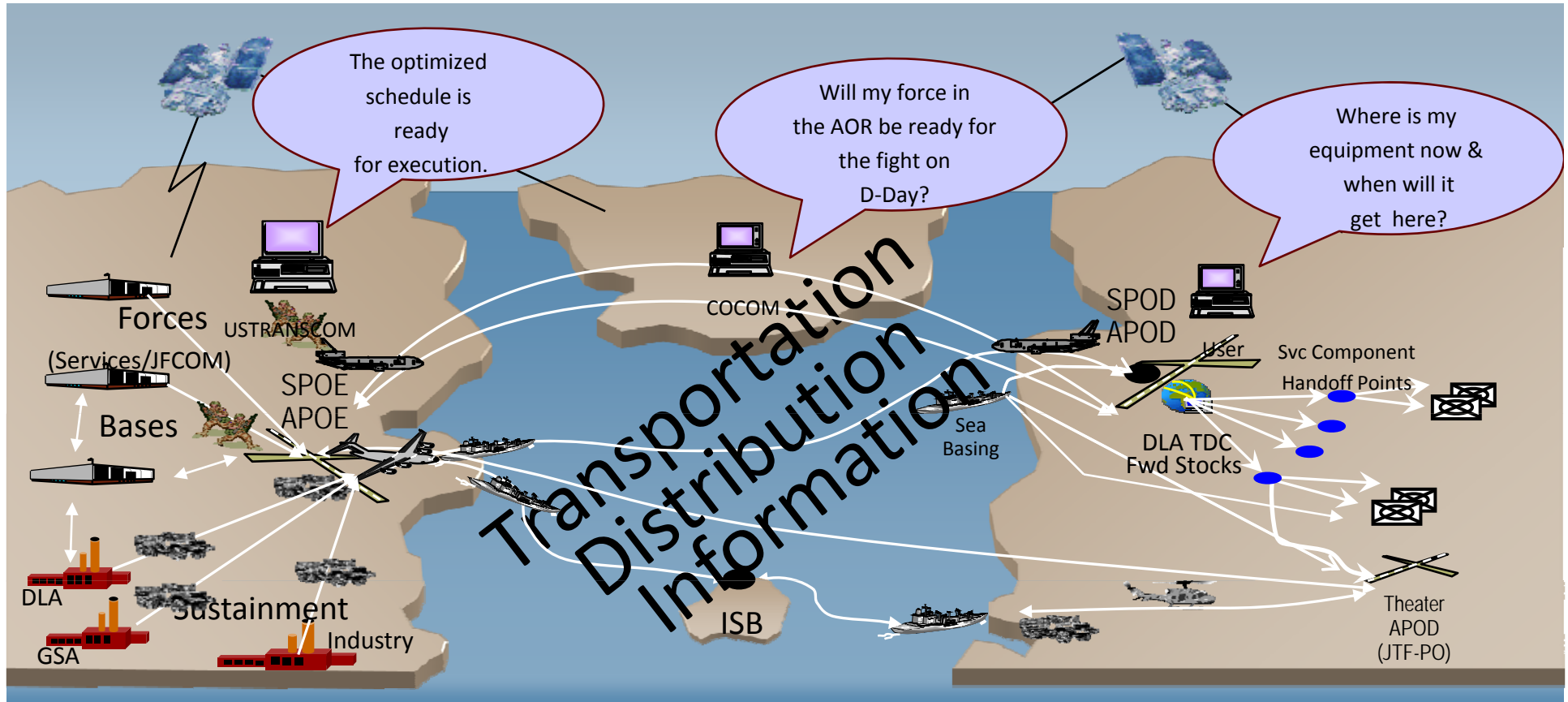


- **Mission**
- **Technology Development Objectives**
- **Technology Thrusts**
- **Sample Capabilities Delivered**
- **Leveraging USTRANSCOM RDT&E Funds**
- **Take Aways**

OSD Acquisition, Technology, and Logistics (AT&L) identified as “model program” and #1 in DOD for transitioning new capabilities to the Warfighter



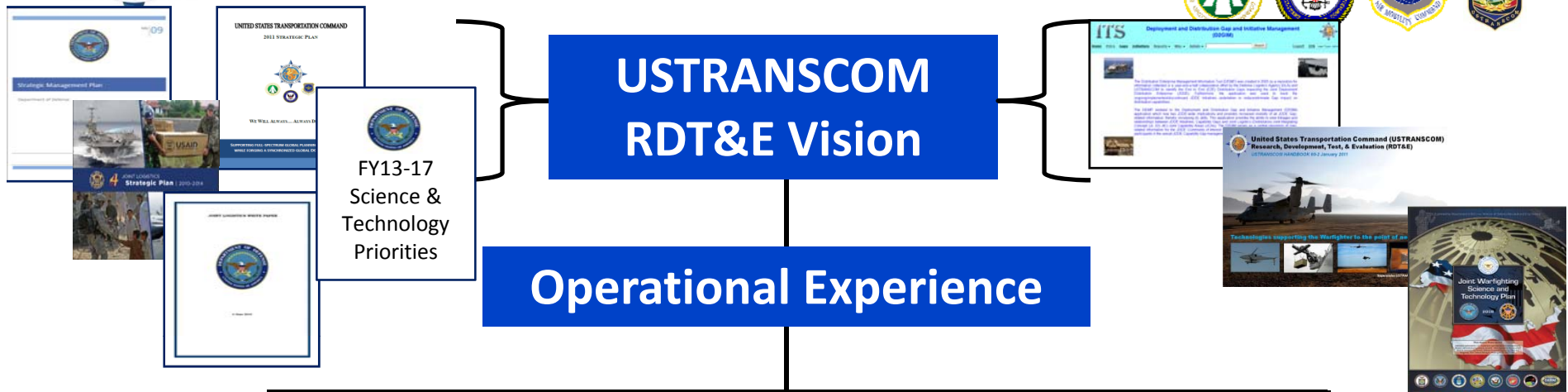
USTRANSCOM's End-to-End Mission



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



Technology Development Objectives



- ### Near-Term (0-3 yrs)
- Improved Aerial Delivery
 - Integrated Computing Environment
 - Cargo Unmanned Air System
 - AT21 Optimization/Mode Determination
 - Situational Awareness & Collaboration
 - Meshed Networks/Enhanced Visibility
 - End-to-End Modeling
 - Hybrid Lift

- ### Mid-Term (3-5 yrs)
- Deployment & Distribution COP/Networked JDDE
 - Common Computing Environment
 - Integrated Distribution to Point of Consumption
 - Adaptive Planning
 - Joint Sea Base Enablers
 - Living Plan
 - Energy Conservation

- ### Far-Term (5+ yrs)
- Sense & Respond Logistics
 - Humanitarian Airdrop
 - Integrated Egress/Port Efficiencies
 - Cargo Threat Detection/Protection
 - Virtual Intermediate Staging Base
 - Rapid/Automated Landing Sites
 - Fuel/Water Alternatives



Technology Thrusts



RDT&E Project Areas

- Command and Control, Optimization, Modeling & Simulation
- End to End Visibility
- Cyber
- Global Access



Future Joint Force Missions

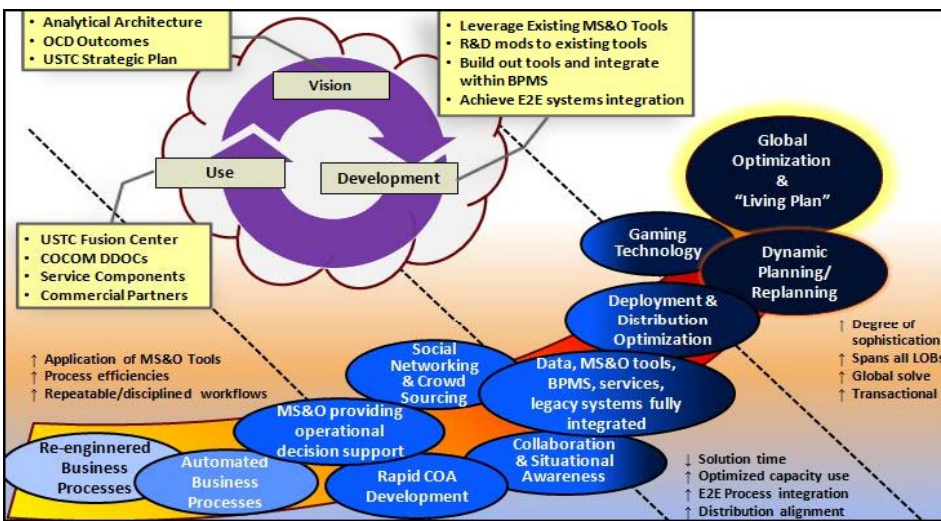
- Counter Terrorism
- Deter and Defeat Aggression
- Project Power Despite Anti-Access/Area Denial Challenges
- Counter Weapons of Mass Destruction
- Operate Effectively in Cyberspace and Space
- Maintain a Safe, Secure, and Effective Nuclear Deterrent
- Defend the Homeland and Provide Support to Civil Authorities
- Provide a Stabilizing Presence
- Conduct Stability and Counterinsurgency Operations
- Conduct Humanitarian, Disaster Relief, and Other Operations



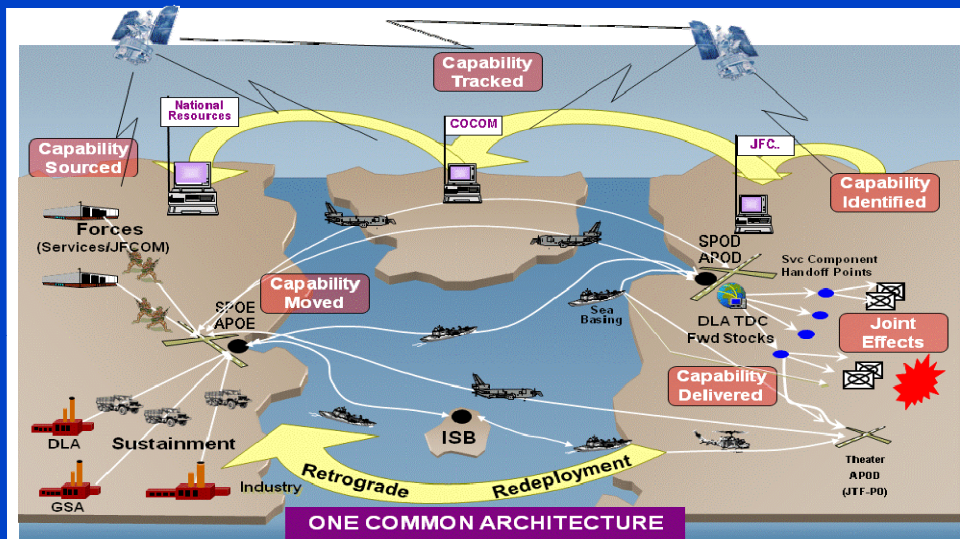
RDT&E Roadmap



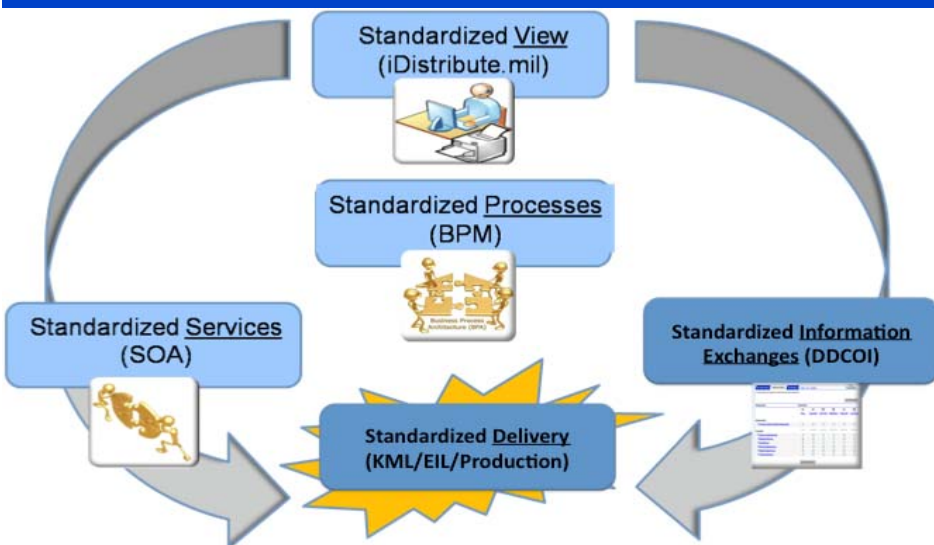
Command & Control/AT21



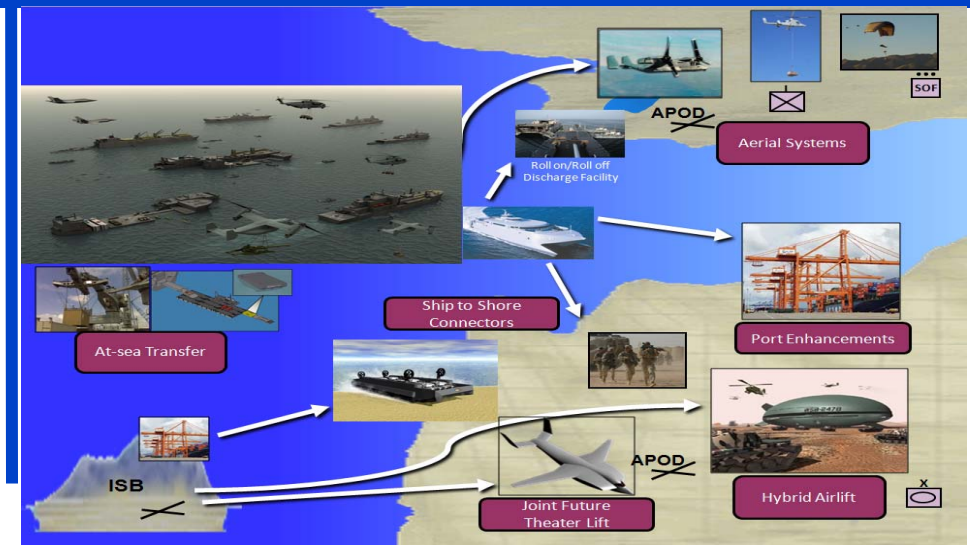
End-to-End Visibility



Cyber



Global Access





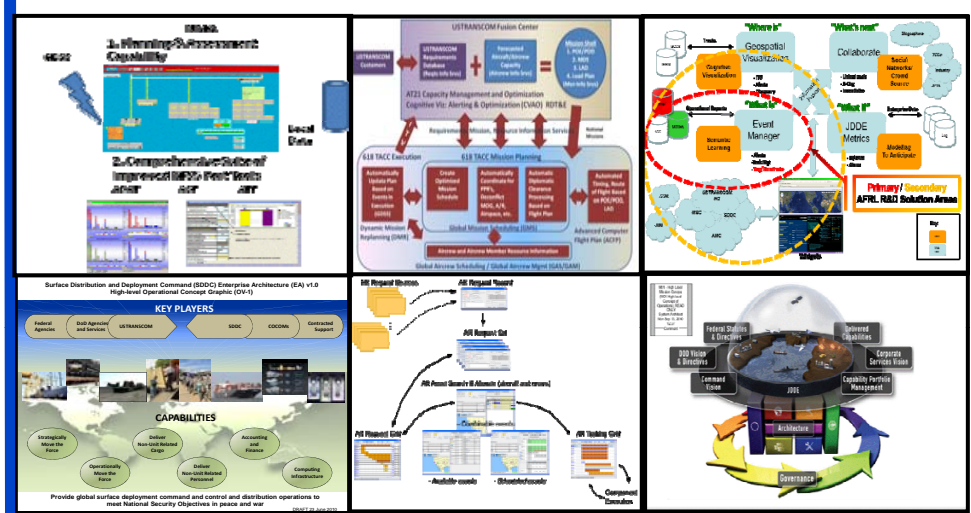
C2/Optimization/Modeling & Simulation



MOTIVATION

- **GAO designated DOD supply chain mgmt as a high-risk area w/3 areas for improvement**
 - Requirements Forecasting
 - Asset Visibility
 - Materiel Distribution
- **Need to reduce fuel consumption**
- **Address these deficiencies**
 - Per USTCH 60-2, Integrated Priority List, S&T IPL, AT21 ICD, and JDDE gaps

PICTURE



TECHNICAL IDEAS

- **Key Technical Ideas**
 - Through predictive analysis, provide enterprise insight regarding customer logistics needs
 - Permit collaborative, integrated load planning
 - Support mode optimization and determination
 - Optimized/networked enterprise
 - Reduce fuel consumption via improved planning
- **Program leveraging Service/Agency efforts and invests in proven technologies**

PAYOFF

- Provide objective/repeatable method to assess airport capacity and flow requirements (cost avoidance \$0.9M/yr)
- Field airlift mission scheduling tool (cost avoidance \$6.38M/yr)
- Common operational situational awareness/enterprise networked collaborative capabilities (better support via improved unity of effort)
- Transform surface transportation enterprise into SOA environment (reduce development/integration/fielding time by ~50%/consolidate application functionality & data silos by ~30%)
- Optimize air refueling execution (cost avoidance <\$125M/yr)
- Standardized/secure computing and production environment (20% reduction in System Admin/80% reduction in hardware refresh costs)
- Optimize theater distribution (cost avoidance \$16.7M/yr)

Together, we deliver.



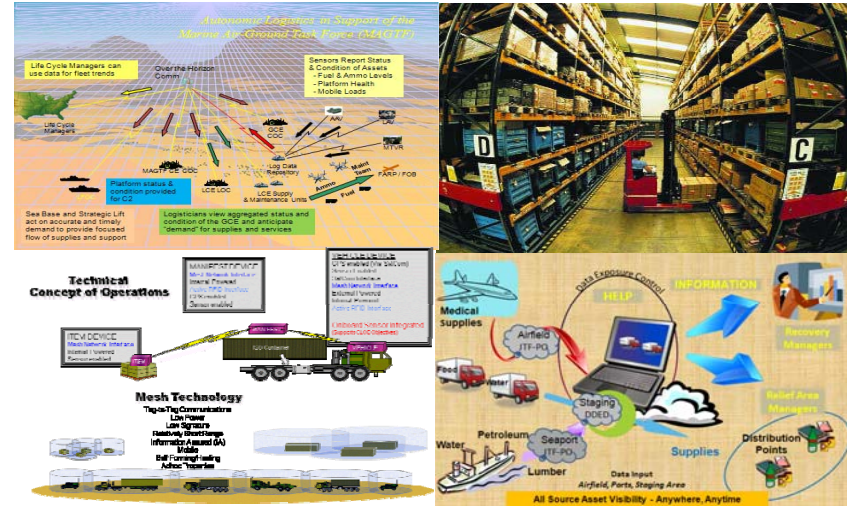
End-to-End Visibility



MOTIVATION

- **GAO designated DOD supply chain mgmt as a high-risk area w/3 areas for improvement**
 - Requirements Forecasting
 - *Asset Visibility*
 - Materiel Distribution
- **Efficient humanitarian relief operations**
- **Address following deficiencies**
 - USTRANSCOM Handbook 60-2/Integrated Priority List (IPL)/Science & Technology IPL/AT21 Initial Capability Document (ICD)/Joint Deployment & Distribution (JDDE) gaps

PICTURE



TECHNICAL IDEAS

- **Key Technical Ideas**
 - Enable cost effective global end-to-end visibility
 - Information-sharing system of non-standard relief supplies
 - Leverage sense & respond logistics to facilitate best cost transportation solutions/warfighter support
- **Program leveraging Service/Agency efforts and invests in proven technologies**

PAYOFF

- Determine parts failure/usage patterns and use data to initiate sustainment support actions (fulfill demand using best cost transportation solution)
- More accurate read at a greater distance of passive RFID tags (lower infrastructure costs/reduced system maintenance)
- Mature wireless networking protocols/distribution enterprise-wide asset visibility (\$23.6M/13 yr; sensor ROI TBD)
- Flexible, dynamic, web-based, simple-to-use humanitarian aid/disaster relief asset visibility system

Together, we deliver.



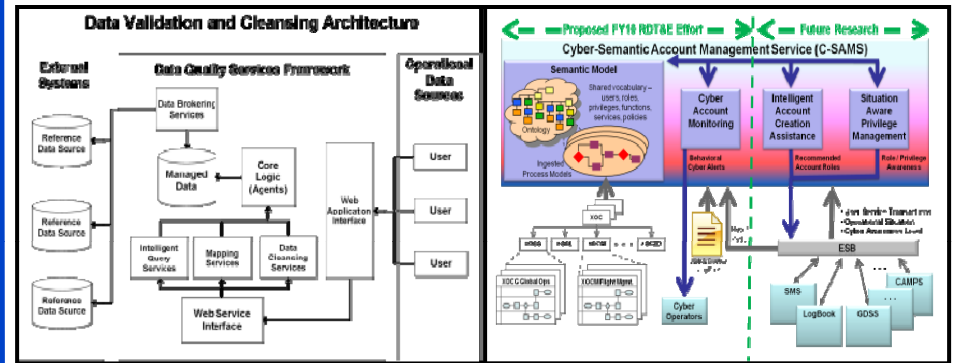
Cyber



MOTIVATION

- **Secure cyber operations**
 - Very capable/persistent threat actors daily compromise DOD information
 - Require assured capability to operate in cyber space
 - Detection intrusion analysis & response
- **USTRANSCOM's R&D investments explore technologies to address these deficiencies**
 - USTCH 60-2, IPL, STIPL, and JDDE gaps

PICTURE



TECHNICAL IDEAS

- **Key Technical Ideas**
 - Differentiate between valid & unauthorized users
 - Determine hardware/software trustworthiness
 - Protect info/detect anomalies
 - Ability to operate despite cyber attack
 - Rapidly analyze networks/ID & react to attacks
 - Ability to rapidly restore operations
- **Program leveraging Service/Agency efforts and invests in proven technologies**

PAYOFF

- Employ reusable web services utilizing ontology-based intelligent collaborative agent technology for data validation/correction = time/cost savings via improved operational effectiveness across the JDDE
- Reduction of man-hours to manually review log data and identify unauthorized user access
- Ability to continue critical network operations in a contested unclassified/classified network environments via secure enclaves

Together, we deliver.



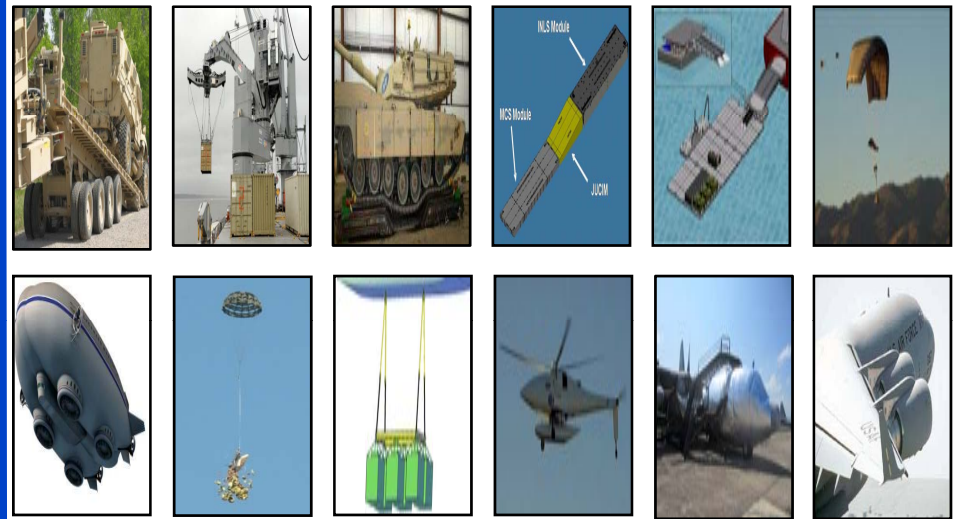
Global Access



MOTIVATION

- **Investment to provide integrated global access and point of need delivery capabilities**
 - Limited ability to deliver/support the warfighter at the point of effect in austere/anti-access/urban environments
- **Enhance joint sea based sustainment operations and integrated ingress/egress**
 - Current projection/sustainment capabilities rely almost exclusively on fixed infrastructure & host nation support assets
- **USTRANSCOM IPL/STIPL, Service S&T Master Vision/Strategy, Sea Basing Cost Benefit Analysis, Joint Urgent Operational Need Statement (JUONS)**

PICTURE



TECHNICAL IDEAS

- **Key Technical Ideas**
 - Enhance inter-modal transfer
 - Transfer fully loaded containers at sea
 - Enhanced sea base connectors/interfaces
 - Improved accuracy/lower costs of air drop operations
 - High speed, low level, robust, precision resupply
 - Alternative air delivery (unmanned systems/hybrid)
 - Ability to continue mobility operations in an asymmetric (chemical/biological) environment
- **Program invests in proven technologies and leverages Service efforts to address JDDE validated gaps/need**

PAYOFF

- Safely move/recover aircraft, vehicles & containers
 - Transfer 20ft containers in Sea State 4 (key sea base enabler)
 - Optimize causeway systems (cost avoidance \$246M to procure replacement capability)
 - Offload com'l cargo vessels at sea (reduced sealift recap bill)
 - Enhanced airdrop accuracy (reduction in ground recovery ops; minimizes troop exposure)
 - Hybrid airlift - risk reduction efforts to support future demonstration
 - High speed container aerial delivery (70% reduction in exposure to ground threat due fast ingress/egress)
 - Helo delivery of airdrop bundles (increased agility/enhanced aircrew/helo safety and reduction in ground convoys)
 - Unmanned aerial cargo delivery (enhanced support at point of need)
- Together, we deliver. 10



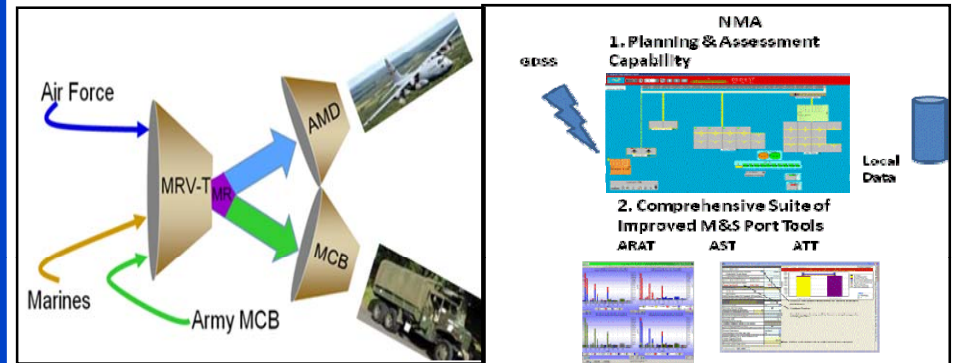
Agile Transportation for 21st Century Theater (PE0603264S)



MOTIVATION

- **Provide the JDDE the capability to**
 - Optimize end-to-end delivery of forces/other discrete movement requirements to ensure on-time delivery at lowest transportation cost
 - Optimize end-to-end delivery of sustainment/other capacity-based movement demands maximizing time-definite delivery at lowest overall supply chain cost
- **Address following deficiencies**
 - USTCH 60-2, IPL, STIPL, Joint Logistics Distribution Joint Integrating Concept , Theater Enterprise Deployment & Distribution (TED2), and JDDE gaps

PICTURE



TECHNICAL IDEAS

- **Key Technical Ideas**
 - Leverage commercial off-the-shelf optimization and rules software to provide the Geographic Combatant Commander (GCC) a single theater movement system
 - Provide a highly-configurable, agile capability to model, simulate, analyze, and report metrics for the complex and detailed business processes within a distribution center
 - Adapt current Airport Simulation Tool to support detailed airport ops modeling to optimize daily as well as future ops

PAYOFF

- Provide configuration/implementation of commercial business process management system and Optimization tools in targeted GCCs (FY12/13)
 - Expand capability implementation across all GCCs (FY14/15)
 - Improved decision making for resource acquisition and allocation, stock placement, nodal infrastructure requirements, and sustainment policies
 - >\$16.7M annual cost avoidance from improved use of joint theater common user conveyances
 - Provide objective/repeatable method to assess airport capacity and flow requirements (cost avoidance \$0.9M/yr)
- Together, we deliver. 11



Sample Capabilities Delivered



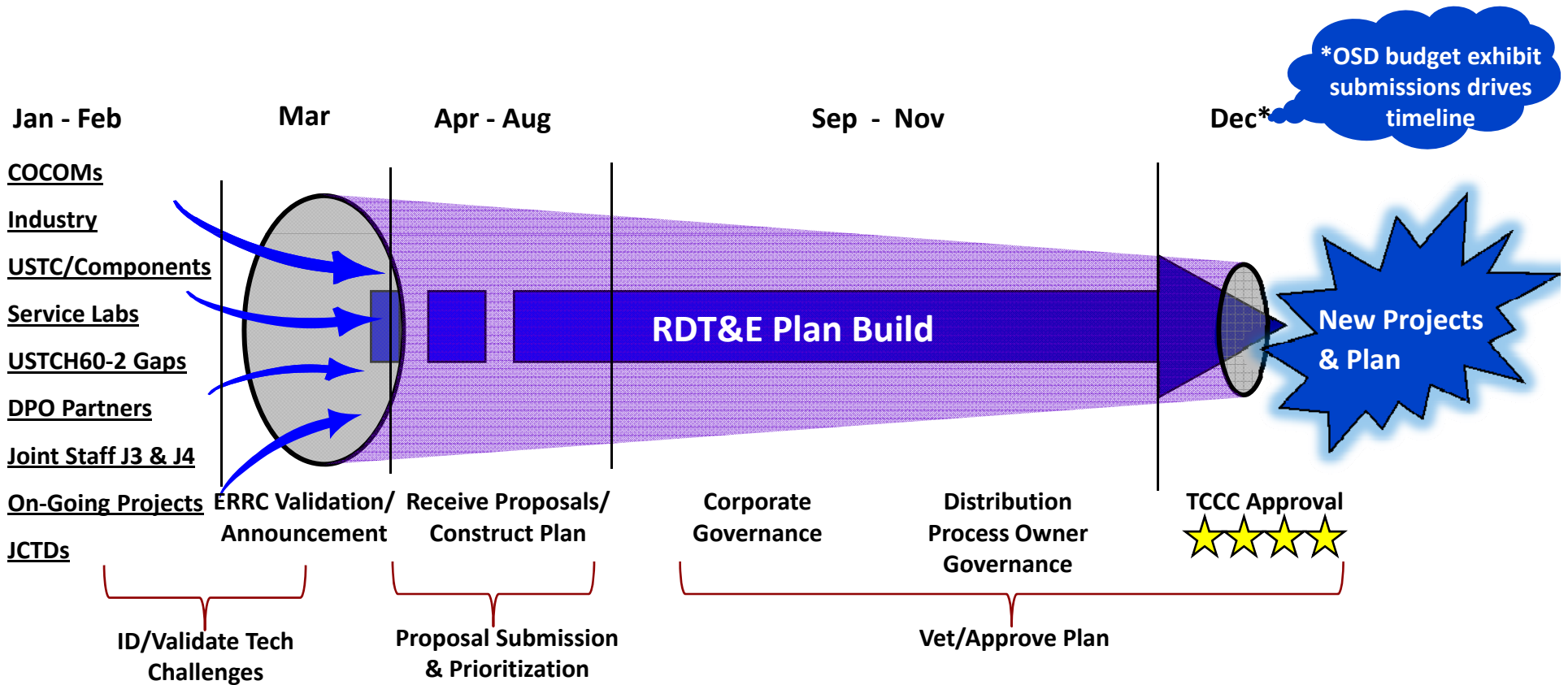
- **Joint Modular Intermodal Container:** \$16M/yr cost avoidance in cardboard uni-pack
- **Defense Distribution Expeditionary Depot**
 - Significant reduction in military inter-theater airlift for Defense Logistics Agency managed items
 - Customer Wait Time reduced from 19.8 days to 10.8 days
- **Coalition Mobility System:** 100% return on investment within 2 years; \$2.3M/yr thereafter
- **Common Operating Picture (Deployment and Distribution)**
 - Identified top 100 heaviest airlifted items saving \$54M annually in transportation costs
 - Delivered initial Distribute.mil capabilities (i.e., workspace mgmt, collaboration, etc.)
- **Joint Precision Air Drop System**
 - Mission Planner: Dramatically improved accuracy/operationalized capability (>200Mlbs delivered since Aug 06)
 - 80% reduction in recovery operations
 - Reduce improvised explosive device exposed convoys, safer recovery ops, increased personnel survivability
- **Low Cost Low Altitude:** Reduce airdrop asset recovery/improve safety (fewer grnd convoys)
- **Joint Recovery and Distribution System:** Dozens of missions completed in Afghanistan
- **Enterprise Integration Lab:** Mitigating technical risk/accelerating capability fielding via comprehensive functional and certification & accreditation testing
- **Wireless Gate Release System**
 - Doubles C-130 delivery capacity (cost avoidance in lower fuel and aircraft wear/tear associated costs)
 - Eliminates bundle damage due leap-frogging (effects 20% of airdropped bundles)

Transition Rate >90%

Together, we deliver.



RDT&E Solicitation Process





Take Aways



- Collaborative joint efforts – transitioning militarily relevant capabilities
- Commercial entities seeking USTRANSCOM dollars should have a government sponsor
- Aggressively leverage Small Business
- Identification of transition path/strategy is critical
- Funds 100% obligated & expensed in two years

2009 House Armed Services Committee: “extremely impressed for finding efficiencies ... allowing for cost savings that can be passed back to the DOD...should be commended for functioning in a manner consistent with the best interests of the DOD and the nation.”



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