

# HIMARS:

# A High Performance PBL

### William Lucyshyn

Senior Research Scholar and Director of Research, Center of Public Policy and Private Enterprise

> School of Public Policy University of Maryland May 14, 2014



# **Overview**

Introduction

Performance Based Logistics

The HIMARS Program

Conclusions and Recommendations



# **Trends in Defense Appropriations**

- Since 1948, the nation spent an <u>average</u> of \$489 billion per year on defense as measured in constant FY 2014 dollars.
- During times of crisis, the nation increased the DoD's spending to defend the nation's interests.
- These defense build-ups peaked at:
  - \$658B in FY 1952 for Korea
  - \$562B in FY 1968 for Vietnam
  - 605B in FY 1986 for the Cold War buildup
  - \$754B in FY 2008 for the wars in Iraq and Afghanistan
- We can anticipate continued pressure as the involvement in Afghanistan ends (and the continued threat of sequestration) -- but our equipment is worn out; so repairs and modernization are required



### **Additional Cuts are Possible**

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May 14, 2014 4



# At the Same Time O&M Costs are Rising

- The O&M budget includes costs of operating and maintaining major weapon systems--these costs also have increased faster than base inflation.
- A large share of the O&M budget also goes to pay civilian DoD personnel.
  - In FY 2009 base budget, civilian pay was projected to be about 30% of total O&M funding.
  - Salaries have outpaced inflation compensation of federal civilian workers has grown in real terms over time.



CBO Projection of Base-Budget Costs of DoD's Plans, by Appropriation Category

Source: Congressional Budget Office

Notes: Base-budget data include supplemental and emergency funding before 2002.

FYDP = Future Years Defense Program; FYDP period = 2013 to 2017, the years for which the Department of Defense's (DoD's) plans are fully specified.

Source: CBO, Long-term Implications of the 2013 Future Years Defense Program, July 2012

#### **Rising O&M costs are squeezing out other investments**

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May 14, 2014 4



# **DoD Logistics Today**

- Spend over \$178 billion annually (FY2012); employ approx. 1 million government people; have an inventory of approx. \$95 billion
- The commercial world has <u>integrated</u> logistics data systems; DoD still has numerous non-interoperable logistics systems (and few links to the rest of the enterprise)
- DoD Logistics has little cost visibility or performance accountability
- Unlike world-class systems, DoD lacks total asset visibility

Total Logistics Costs: \$178B \$ 74B in supply \$ 112B in maintenance \$ 24B in transportation	Operational Resources 100,000 suppliers 1000+ legacy logistics systems 103,000+ requisitions per day \$95B inventory/4.6M items (SKUs)
Assets: \$595B	Logistics Operating locations:
• 283 ships	• 17 Maintenance depots
• 15,000 aircraft	• 25 distribution depots (global)
• 30,000 combat vehicles	• 49,000 customer sites
• 330,000 ground vehicles	• Worldwide air and seaports

#### The potential for <u>dramatic improvements in performance</u> with tens of <u>billions of dollars of annual savings</u> must be realized -- and soon.



# <u>Why Must Product Support be Improved?</u>

- A smaller force increases the value of every platform and weapons system available to the warfighter.
- Federal budget-reduction pressures limit the number and scope of new platforms and systems for foreseeable future
  - We cannot afford the costs of an inefficient logistics system
  - More important, high levels of availability for platforms and weapons systems will be essential
- Improvements in military logistics offer an opportunity for large-scale savings
- Savings could be reinvested in DoD's strapped modernization accounts
- Even a modest 5% savings would translate to approximately \$9 billion

### The need to improve efficiency has never been greater

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# **<u>Performance Based Logistics (PBL)</u>**

- Historically, logistics has focused on how to efficiently and effectively deliver our warfighting capability at acceptable readiness levels.
- With traditional transactional sustainment arrangements, companies have little incentive to reduce their costs or improve equipment reliability.
  - Frequent failures result in more sales
  - The supplier does not benefit from increasing efficiencies in the product sustainment.
- Numerous initiatives were introduced in the late 1990s to improve the way the DoD supports weapon systems.
- One of these, Performance Based Logistics (PBL), fundamentally changed the way we structured logistics support.
  - It directly tied the delivery and support of products and services to Warfighter product support outcomes to enable Warfighter effectiveness
  - Performance based strategies have continued to evolve since that time.
  - In an era of shrinking budgets and increasing costs, support solutions must balance warfighter outcomes with the cost of delivery.



## PBL Basics

Roughly 70% of life cycle costs are incurred during sustainment

- There are significant opportunities to reduce cost when both parties make investments in improvements
- However, traditional program management approaches emphasize conformance and compliance, while performance-based approaches incentivize entrepreneurial behavior and innovation
- Contracting for performance (as defined by the users) aligns the military Services' and PBL providers' interests, altering the providers' incentives

• This results in increased performance at a decreased price

 Inherent with PBLs is the transfer of some program risk from the military Service to the PBL provider



### PBL Challenges

### Critics contend that PBLs

- stifle competition
- that savings are not passed on to the government
- that DoD flexibility is limited due to PBL contract lengths
- that PBLs outsource logistics and, therefore, degrade organic DoD sustainment capabilities
- Legacy sustainment culture. PBLs often involve the transfer of workload to the commercial sector, creating a perception of loss of control
- Full costing. The full price of commercially provided sustainment is clearly known, however the full cost of organic sustainment is difficult, if not impossible to determine
- ➡ It takes time to realize savings. With transactional sustainment, savings can be achieved with a budget cut



# **HIMARS – The System**

- Wheeled rocket and guided missile system that is a lighter, transportable version of the M-270 MLRS.
- HIMARS can be easily deployed to areas previously inaccessible to heavier launchers.
- System is fitted with a fully enclosed and armored cab and a launcher pod of 6 rockets.
- Equipped with 6 MLRS series rockets or 1 ATACMS missile.
- System incorporates self-loading, autonomous features.
- All fire control systems, electronics, and communication units are interchangeable with existing MRLS launcher.





## Life Cycle Launcher Support (LCLS) Overview

#### ➡ LCCS I (\$96 M)

- Period of Performance: Feb 2004 – Dec 2007
- Customer: US Army
- Type: FFP/CPFF

#### ➡ LCCS II / LCLS (\$248 M)

- Services Period of Performance: Jan 2008 – December 2013
- Hardware Pop: Jan 2008 December 2014
- Customer: U.S. Army and USMC
- Type: FFP/CPFF

#### SCOPE

- ➡ Supports 620 Fielded Systems
  - 396 HIMARS
  - 224 M270A1
- Performance Based Logistics (Service)
  - Repairs and Spares for Fielded Systems
  - ~1600 Field Replaceable Line items
  - Performance Metrics
- ➡ 26 Field Service Representatives (FSR)
  - Providing Onsite and Geographic Support
  - 22 Locations (8 Overseas)
- Spares Deliveries (Hardware Deliveries)
  - Unit/Management Reserve Spares
  - Pipeline replenishment
  - FMS Spares
- Current Deployments: Afghanistan, Kuwait



# **LCCS Supported Hardware**

LRUs Covered for Both Systems

















The Supported Inventory Includes Over 1600 Line Items

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May 14, 2014 12



# **LCCS Support Concept Overview**

- The LCCS Program is run out of Dallas
  - PM, Depot Repairs, Inventory Control Point, Contracting with Suppliers, Design Interface, Database with all LCCS information.
- The database provides total asset visibility
  - Lockheed knows the status of: each launcher, down to each spare part-where they are, whether the part is functional, where they stand in the repair process, how many are on hand, how many are on order, etc.
- Lockheed also manages all depot level repairs and the supply of products to the field.
- Support concept also has one field support representative (FSR) at each Battalion of launchers (HIMARs or M270A1).



### **Depot Repair**



# **FSR Roles and Responsibilities**

#### Facilitates Supply Process

- Receipt, Storage, Issue, Receiving, Inspecting, Packaging, Shipping
- On-Site Repair of LRU
- Data Collecting/Recording (Web-based comprehensive database)
  - Maintenance Action
  - Supply Transactions
  - Operating Hours
  - Munitions Data (Deployment and Garrison)
  - Fault Isolates (BIT/BITE/IETM/Test Equipment)
  - Removes/Replaces Assemblies (Cables, Hoist, Hydraulics, etc.)
- Technical Assistance/Support (Launcher and Automotive)
- Engineering Interface for Rapid Problem Resolution





#### FSRs repair over 50% of System Faults Within 24 Hours

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## Fire Control System was Designed to Enable t<u>he "Fix Forward" Capability</u>

### **Capability to Fix Forward**

- Depot level repair capability at each battalion via the FSR
- 50% of PBL Repairs Done By FSR; No Evidence of Failures (NEOFs) significantly lower
- Circuit Card Assemblies (CCAs) spared and replaced in field; CCAs shipped instead of LRUs
- Significant Impact on Deployed Launcher Availability, with a cost savings



 Launcher Fault Detected; LRU R&R'd



- FSR Verifies LRU Fault w/MST
- LRU Fault Isolated to Specific SRU



- FSR Removes & Replaces Faulty CCA
- LRU is Confirmed Operational w/MST
- LRU is returned to Spares Stock (ASL)
- Faulty CCA is Returned to Depot for Repair

May 14, 2014 15

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# Data & System Analyses

- The Contractor collects and tracks an extensive amount of data on the operations and maintenance of each launcher, that includes:
  - Launcher Status, Unit Data, Spares Status, Repair History, Procurement Status, System Reliability System Updates
- This data is used to:
  - Identify trends, cost drivers, and items that are affecting launcher availability.
  - Make improvements that increase reliability.
  - Provide visibility across MLRS Battalions, informing recommendations to improve preventative maintenance, training, sparing levels, etc.





# HIMARS Reliability Improvements

LCLS Program uses analyzes data to proactively identify failure trends and develop methods to eliminate or manage those failures



Improved Reliability Results in Improved System Readiness, Reduced Support Costs and a Reduced Logistics Footprint

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## SecDef Awards

### Secretary of Defense System Level PBL of the year

▶ 2006

- Achieved a system readiness over 99%, against a goal of 92%
- Customer wait Time averaged:
  - 17 hours for CONUS, goal 24 hours
  - 1 hour for OCONUS, goal 96 hours
- Repair Turnaround times:
  - Field 2 days, goal 5 days
  - Depot 34 days, goal 45 days
- Life cycle cost savings projected by Army to be \$412 million over traditional organic support
- ▶ 2009
  - Achieved a system readiness well over a goal of 90%
  - Material Availability over 95%, against a goal of 90%
  - The Army reported a cost savings of \$8.6 M for the reporting timeframe compared to the LCCS I contract



### **HIMARS Reliability Improvements - Results**



May 14, 2014 19



# HIMARS Field Reliability - Results

#### IFCS & UFCS HIMARS "LLM & FCS MTBFs" - US Army



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May 14, 2014 20



## **Reasons for HIMARS PBL Success**

- True Teaming Relationship
  - Contractor and suppliers work very well together
  - Trust level high among team and increasing
  - Team's focus on the soldier and mission above all other factors
- System Reliability
  - Much higher than system requirement; reducing support requirements overall and enhancing mission success
- Supply Chain Management
  - Repairs at subcontractors managed daily turnaround time 30 days or less at majority of repair sites
  - Single inventory control point located/managed in Dallas; major transportation hub; significantly reduced pipeline spares saves \$ millions per year (trade less spares with faster delivery speed)
  - As a result parts are delivered in less than 14 hours (CONUS)



## **Reasons for HIMARS PBL Success**

- FSR Knowledge and Experience with Systems
  - Former MLRS technicians, with added training and tool sets
  - Provide support to PBL sustained hardware and remainder of M270A1 or HIMARS, including chassis
  - Instant access to Dallas design team worldwide
  - Weekly telecons share status, problems, exchange proven solutions
  - FSR inputs highly accurate field data in system database
- System Knowledge/Analysis
  - Early design issues noted quickly; production cut-ins made, retrofit via spares implemented; system reliability significantly enhanced
  - Trends evaluated with extensive data collection and analyses
- Investments in the Program
  - The contractors have invested heavily in design improvements, process changes, equipment and facilities to improve reliability and reduce cost



### Conclusion

- Partnering is, unquestionably, a critical element of PBL sustainment strategies
- PBLs can improve sustainment performance
  - As measured by warfighter metrics, e.g., customer wait time, operational availability, mission capability
- PBLs can decrease total customer ownership cost
  - Improved system reliability reduces costs by eliminating/reducing sustainment transactions
  - Significant reduction compared with traditional approach
- Performance contracts empower providers to make decisions to optimize performance and reduce costs
  - Contractors must be incentivized with financial rewards for additional risks associated with being the product sustainment integrator



# **Recommendation**

- Work to overcome the remaining resistance and expand the use of appropriately structured PBL sustainment strategies
- Ensure contractor incentives are aligned with performance requirements
- Maintain a total life-cycle systems management perspective
- Foster collaborative relationships, and/or public private partnerships
- Use competition appropriately