FTA Second State of Good Repair Roundtable

Presented by:
Ronald Humphrey President CRBS
July 2010
Contents

• Introduction
• DoD Supply Chain and Spares Support
• Air Force Strategy and Total System Integration
• Implications for Transit
Introduction

Mr. Humphrey is President and owner of CodeRed Business Solutions (CRBS), a certified Service Disabled Veteran Owned Small Business (SDVOSB) with more than twenty three years of active service in the USAF and eighteen years supporting DoD as a consultant.

CRBS has an extensive background in:

- Logistics Sustainment
- Logistics Modeling & Simulation
- Business Intelligence
- Analysis Support and Training
- IT Configuration Management
- Reengineering of electronic parts
- Real-time Surveillance using Intelligent Distributed Acoustic Sensors

Mission Success Through Enhanced Technology Solutions!
Supply Chain/Logistics Management
From the Department of Defense Perspective
Key Definitions

• Concept of Operation
  – Also called commander's concept, a verbal or graphic statement, in broad outline, of a commander's assumptions or intent in regard to an operation or series of operations. The concept is designed to give an overall picture of the operation and is included primarily for additional clarity of purpose.

• Performance Based Logistics
  – Performance-based logistics (PBL) is a strategy for system support. Instead of time and material, a supplier is paid for a guaranteed level of performance and system capability. The supplier often has to guarantee the performance at lesser costs but has more control over all logistics elements. The performance is declared in performance-based agreements.

• Integration
  – In engineering, system integration is the bringing together of the component subsystems into one system and ensuring that the subsystems function together as a system.
  – In information technology, systems integration is the process of linking together different computing systems and software applications physically or functionally.
DoD Spares Support

• USAF is Leading Improvement Efforts
  – **Organic Support**
    • Government Own Facilities providing Depot Maintenance
      – Warner Robins GA (WR-ALC)
      – Ogden UT
  – **Contractor Logistic Support (CLS)**
    • Performance Based Logistics (PBL)
      – Lockheed Martin (LM)
      – Boeing

• **Public Private Partnerships (PPP)**
  – LM & OC-ALC
    » TF-39 & TF-56 Aircraft Engines
The AF logistics vision is now focused on delivering sustainable capability to the Warfighter. Our Implementation of the logistics Concept of Operations focuses on three key elements:

1. Establishing a Customer-Focused Enterprise-Wide Perspective
2. Developing a lean, *fully Integrated* Logistics Enterprise
3. Data exploitation and predictive logistics awareness
Strategy

Success Through Enhanced Technology Solutions!
Strategy-Focused Planning

Mission of Logistics
- Get the Force to the Fight
- Keep the Force in the Fight
- Prepare for the Next Fight

Enabling = War-Winning Capability

Vision
- Expeditionary, Net-Centric Operations
- Enterprise Focused Business Systems and Processes
- Lean Operating Principles
- Performance-Based Management

Goals
- 20% Equipment Availability Improvement
- Reduce Annual Operating Support Cost by 10% NLT FY11

Objectives
- Ensured Mission Preparedness & Performance
- Improved Reliability of Support
- Lower Total Cost of Support
- Improved Cost/Req’ts Predictability
- Reduced Cycle Times—Lean Business Operating System
- High Performing, Flexible Workforce

Success Through Enhanced Technology Solutions!
USAF VISION

DELIVER AND SUSTAIN THE MOST ADVANCED, AFFORDABLE STRIKE FIGHTER AIRCRAFT TO PROTECT FUTURE GENERATIONS WORLDWIDE.
Integrated Maintenance Information System (IMIS)

- The F-22 Integrated Maintenance Information System (IMIS) integrates the Tech Order Data (TOD), maintenance forms, the aircraft itself to provide the maintainer a single source of maintenance information.

- There are three main components to the F-22's IMIS: the Portable Maintenance Aid (PMA); the deployable, squadron-level Maintenance Support Cluster (MSC), and its back shop counterpart, the Maintenance Work Station.

- Portable Maintenance Aid (PMA)
  - The Portable Maintenance Aid (PMA) is a ruggedized computer that a maintainer takes out to the aircraft. It serves as the primary maintenance interface with the aircraft and its systems.
  - The PMA displays Interactive Electronic Technical Manuals (IETMs), has the capability to order parts, and supports the recording of maintenance actions in maintenance forms.
Autonomic Logistics Information System

ALIS consists of the system, application and network infrastructures required to provide global integrated and autonomic support

- Single, Secure Information Environment
- Distributed Network Based on Web Technologies
- Capabilities Integrate Broad Range of Domains
  - Operations
  - Maintenance
  - Supply Chain
  - Customer Support Services
  - Training
  - Tech Data
  - External Interfaces

Functionality Focused on Enhancing Operations and Support

• Decision Support
• Autonomic Process Integration

"Provide All Information To Support Operations and Maintenance at Any Basing Location"
Supply Chain Management Infrastructure

Warfighter

ALIS

Local Supply

Forward Distribution Point

SE, Weapons, Fuel

Autonomic Logistics Operations

Sources of Repair / Supply

Commercial Transportation and Warehousing

JSF Industry Team

CRBS

Government Transportation Service

Supply Services Provider
Logistics Initiatives

ARCHITECTURE & GOVERNANCE

Logistics Enterprise Architecture (LogEA)
- Product Support and Engineering
  - Total Life Cycle System Management
  - Product Support Camp
  - Condition Based Maintenance+
  - Asset Marking and Tracking
  - Demand Management
  - Operations Safety Suitability & Effectiveness Tools
  - Product Life Cycle Mgmt

Portfolio Management
- Supply Chain Management
  - Integrated Planning System (IPS/APS)
  - Purchasing Supply Chain Management (PSCM)
  - Strategic Sourcing
  - Commodity Councils
  - Supplier Management Tools
  - Strategic Distribution
  - Weapon System Supply Chain Management

Air Force Data Strategy
- Expeditionary Operations and C²
  - WFHQ/ Agile Combat Support C²
    - Log Supt Centers
  - AF Common Operating Picture
    - I&L COP
  - Decision Support Tools

Performance Management
- Maintenance, Repair and Overhaul
  - Field MX & Regional Maintenance
    - CONUS CIRFs
  - Re-engineering Depot Maintenance (DMT)
  - AF Lean Maintenance Enterprise Integration

ENABLING PROCESSES AND TECHNOLOGY

Future Financials
- Agile Combat Support (ACS)/Assured Connectivity
- Workforce

Continuous Process Improvement (CPI)
- Change Management (CM)
- Capability-Based Programming (CBP)

IT Strategy/Expeditionary Combat Support System (ECSS)

Success Through Enhanced Technology Solutions!
Supply Chain Integration
Key to Weapon System Performance

Depart Partnering
MAJCONs & 433rd WS
Configuration Management
Material Management
Product Development
Reliability & Maintainability

Technical Order Directives
Diagnosis Health Management

AFGLSC
TAV, Acft Status System Interfaces
PBL, Ao, TNMCS Log Metrics
Deployment Spt FOT&E/Flt Tests
Fleet Modernization Early Notification
RAMMP Projects Class II Changes
MTBR/FRACAS Analysis
TO Analysis MX Alerts
PCOF Lists FRC Analysis
OTI’s/Safety of Flight Inspections
DO/TCTO/REDI Mod Mgmt

Quality Assurance
AR/DR/Risk Mgmt Design Changes
Leveraged Procurement
Quality Mngt for Products/Services

Engineering Support
Leveraged Procurement
PBL, Ao, TNMCS Log Metrics
Deployment/ MX Support
Spares/Repair/Mod Support Analysis

Production
Leveraged Procurement
PBL, Ao, TNMCS Log Metrics
Deployment/ MX Support
Spares/Repair/Mod Support Analysis

508th ASW/YF
Depot Maintenance and Repairs

Depot Partnering
MAJCONs & 433rd WS
Configuration Management
Material Management
Product Development
Reliability & Maintainability

Technical Order Directives
Diagnosis Health Management

AFGLSC
TAV, Acft Status System Interfaces
PBL, Ao, TNMCS Log Metrics
Deployment Spt FOT&E/Flt Tests
Fleet Modernization Early Notification
RAMMP Projects Class II Changes
MTBR/FRACAS Analysis
TO Analysis MX Alerts
PCOF Lists FRC Analysis
OTI’s/Safety of Flight Inspections
DO/TCTO/REDI Mod Mgmt
Affordability – Total Ownership Cost Reduction

KPPs

<table>
<thead>
<tr>
<th>Owner</th>
<th>Key Performance Parameter</th>
<th>USMC</th>
<th>USAF</th>
<th>USN</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint</td>
<td>Radio Frequency Signature</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Joint</td>
<td>Combat Radius</td>
<td>450 nm</td>
<td>590 nm</td>
<td>600 nm</td>
<td>450 nm</td>
</tr>
<tr>
<td>Joint</td>
<td>Sortie Generation (surge)</td>
<td>6.5 (4)</td>
<td>3.7 (3)</td>
<td>4.4 (3)</td>
<td>4.3 (3)</td>
</tr>
<tr>
<td>Joint</td>
<td>Logistics Footprint</td>
<td>4.6 (+8) C-17s</td>
<td>5.0 (+8) C-17s</td>
<td>101 (+243) ST</td>
<td>101 (+102) ST</td>
</tr>
<tr>
<td>Joint</td>
<td>Mission Reliability</td>
<td>99 (95) %</td>
<td>98.5 (93) %</td>
<td>98.6 (95) %</td>
<td>98.5 (95) %</td>
</tr>
<tr>
<td>Joint</td>
<td>Interoperability</td>
<td>Secure Voice and Data Connectivity</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>USMC/UK</td>
<td>Vertical Lift Bring Back</td>
<td>2 x 1K JDAM + 2 x AIM 120 + fuel</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>USN</td>
<td>Maximum Approach Speed</td>
<td>N/A</td>
<td>N/A</td>
<td>145 knots</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Commonality Is Key to Affordability in SDD, URF, O&S

Avionics System ~100% Common

Airframe: 80-90% Common or Cousin Parts

Design AV to Minimize Resource Demands

Sustainment

Joint Training

Support

Performance and Price Based Contract

Drive Desired Behaviors

Reduced Total Ownership Costs

Joint Operations

ALIS

Design Autolog to Sense & Respond
F-15/F-22 Comparison

• As two examples, the slings used to hoist the canopy into position on the assembly line is the exact same sling design that will be used in the field. The same sling used to place the wing leading edge flap is also be used to hoist the flaps and flaperons.

• The F-22 will provide significantly more sorties each day than current fighters.
  – It can be flown on twice as many consecutive sorties,
  – Is twice as reliable, requiring 1/2 the direct maintenance man-hours per flight hour, and 2/3 the turnaround time for its next combat sortie as the F-15C.
  – Also, a 24-aircraft F-22 squadron will require less than 1/2 the C-17 airlift support to deploy for 30 days than is presently required by a comparable F-15 unit (about 7.8 C-17 loads to deploy an F-22 squadron versus the 16 C-17 loads for an F-15C).
  – Additionally, to deploy an F-22 unit, there will be fewer shops required (such as wheel and tires, ejection seat, and pilot equipment), and reduced spares as well.
Logistics Process Flow
USAF Logistics
Architecture Construct

Operational

Tactical

Network Ops Shared Services
- Regional Supply
- Regional Repair
- Regional Distro
- Shared Contracting

Enhanced Collaboration
- Central Planning/Synchronization
- Demand–Supply–Repair–Distro
- Performance Agreements

Transaction Processing
- Inventory Management
- Technical Services
- Back Shop / Support Ops

Strategic

Air & Space Ops

Wing
- Sharp Focus on Fight & Fix
- Integrate FTF

Above Wing
- Region/Global Expeditionary Focus
- Fused Intel/ops Collaboration
- Real Time C2 (MAJCOM & AFFOR)
- Integrate TF

AFMC
- Enterprise Combat Support Focus
- Enterprise Planning Sourcing
- Network Integration
- Predictive Logistics
- Sharpen Tech Focus
- Performance Driven

Industry
- Fulfillment Agents
- Performance Based & Strategic Sources

Integrated, Streamlined, Value-added Processes
Tighter Integration + Synchronization
Actionable Business Intelligence

- Increased Availability
- Decreased Cost
- Duty Day Reduction
Air Force Logistics

Integrated Planning Initiative (APS) improves the ability for comprehensive Supply Chain Planning across the AF Supply Network, What if capability & Capacity Management

PBL and Acquisition & Sourcing is streamlined through Commodity Councils, ECSS visibility and integration

Inventory Management is streamlined (time-compressed) through ECSS integration, visibility, and dynamic inventory management

Logistics Architecture

Strategic Top Down Plan

Acquisition & Sourcing
Inventory Management

Repair & Maintenance

Facilities
Equipment
Configuration Management
Distribution
Finance
Human Resource

Tactical Bottom Up Plan

Warfighter
Order

ECSS provides streamlined ordering across the Supply operations

ECSS, DEAMS, DPHRMS provide integrated capabilities to support processes so that exception processing is reduced

Integrated Planning Initiative (APS) provides the ability for Local Plan Management & Execution

Future Financials streamline financial processes

Repair & Maintenance through-put increases (through CBM+ and various Process Improvement Initiatives) increasing Repair productivity and capacity

Cross functional integrated processes replace stovepipe departmental capabilities, reducing rework, incomplete repairs and unplanned changes

Success Through Enhanced Technology Solutions!
Delivering Capability to the Enterprise

Developing an Integrated Set of Capabilities (Business Rules, Processes, Infrastructure/Tools, Compliance) Required to Support Program Operations and the Warfighter

- Effectively Integrate Supply Chain
- Efficiently manage inventory
- Effectively deploy optimal business approach, infrastructure, processes, and capabilities

Providing an Integrated Global Supply Network
Lessons Learn from DoD

• To create an AFFORDABLE solution, for the LIFE CYCLE, you need to refocus the way you approach Railcar and Bus system design
  – Requires the organization to focus on engineering processes and Reliability (State of Good Repair)

• To have total Asset Visibility you must fully integrate your data systems
  – Turn that data into information to drive engineering decisions which lead to increase reliability and vehicle availability
  – Utilize DoD developed Decision Support Tool and Data Systems already paid for by US tax payers (They are FREE DoD paid R&D)
  – DARPA Has partnered with FTA before.

• Consider a Joint Procurement and Performance Base Logistics Strategy
  – This will Reduce LCC and O&M Cost which is each organization responsibility
Implications for Transit

• Direct transferability to transit for integrated inventory and maintenance systems
• Less reliance on stored parts and costly spare ratios
• “Right” part at the “right” time for continuity of operations
• Readily available from DoD
Questions