



# End-to-End through the Materiel Readiness Lens

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David V. Pauling

-- ADUSD (Materiel Readiness & Maintenance Policy)

Joe Angello

-- Director, Readiness Programming & Assessment, OUSD(P&R)

Robert Skalamera

-- Deputy Director Enterprise Development, OUSD(AT&L)

Alan Estevez

-- ADUSD (Supply Chain Integration)

Krystyna Kolesar

-- Director, Force & Infrastructure Cost Analysis, OSD(PA&E)

Debra Walker

-- Deputy Assistant Secretary of the Air Force for Logistics, Office of the Assistant Secretary of the Air Force for Installations, Environment and Logistics



# Sustained Materiel Readiness



***The Warfighter Needs. . . . .***

***Available, Technically Superior Weapon Systems that Enable:***

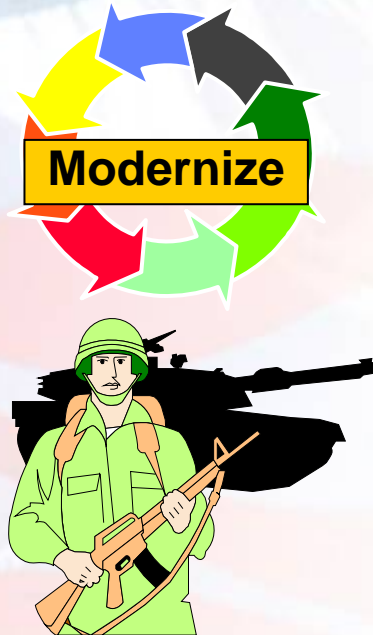
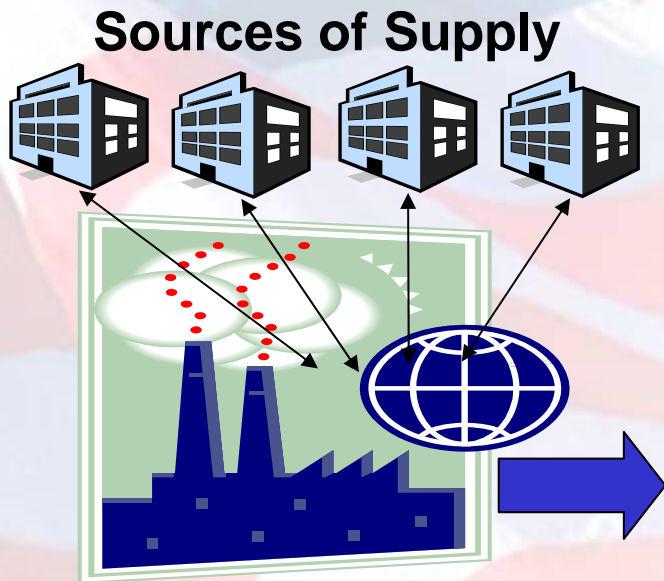
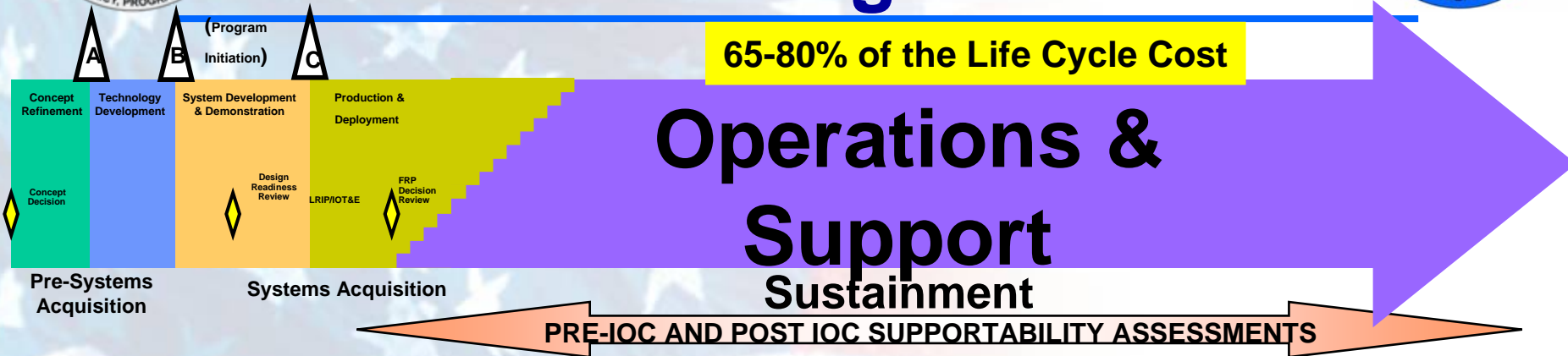
- ◆ ***Successful Completion of the Mission***
- ◆ ***Return Home Safely***

**2006 DoD Maintenance Symposium  
Reno, NV  
October 2006**

**Mr. David Pauling  
ADUSD (MR&MP)**



# Material Readiness Life Cycle Framework from the Warfighter View

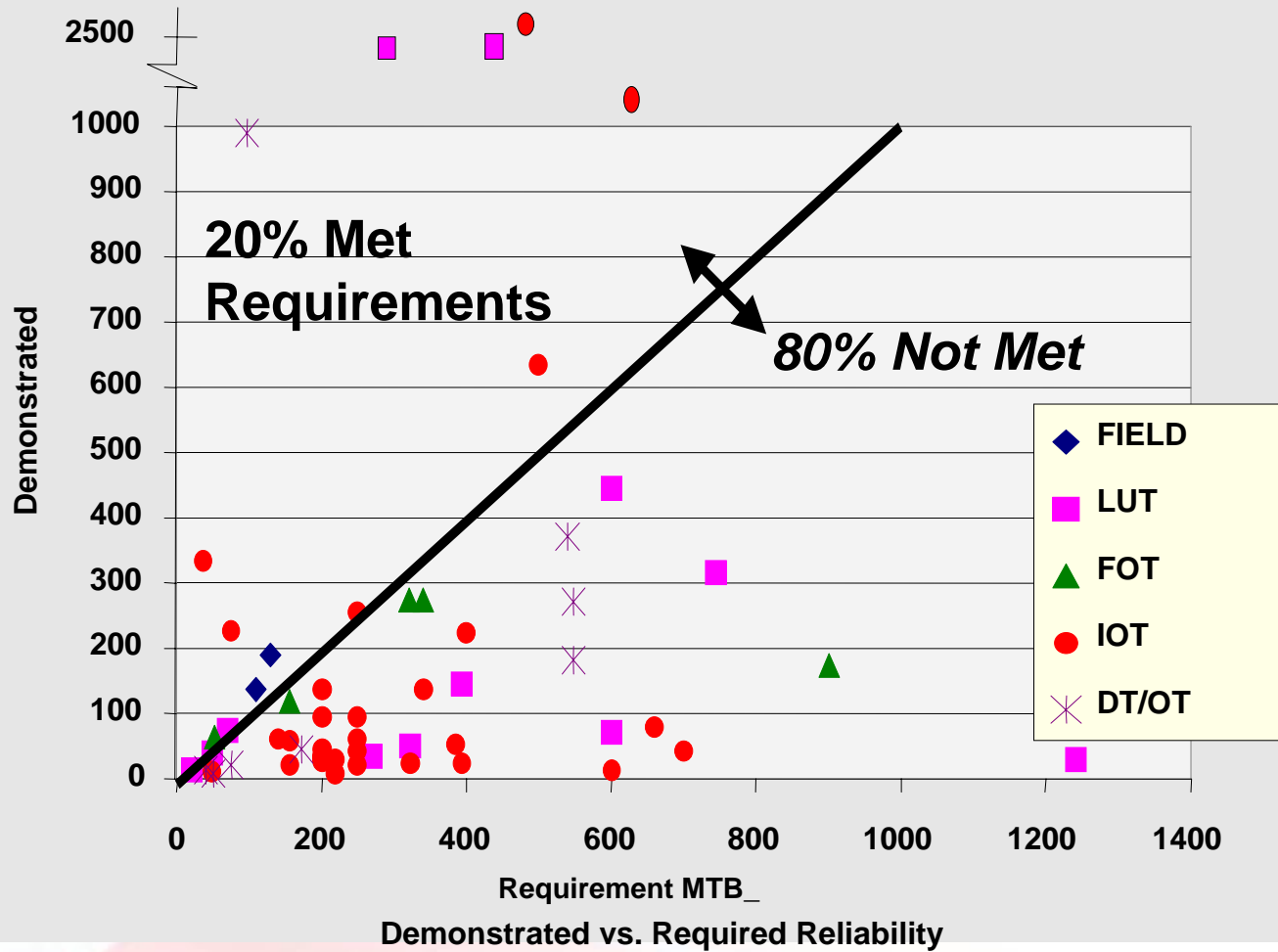


## Sustaining the System

- Ready Available Safe Assets
- 24/7 Availability
- Reliability & Maintainability
- Affordable Weapon Systems
- Obsolescence/Tech Refresh
- Reduced Footprint
- Logistics Chain Reliability
- Logistics Chain Effectiveness
- Logistics Chain Cycle Time
- Retrograde Management
- Production Flexibility



# Reliability Trends 1996-2000





# Performance Driven Outcomes (PDO)

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## Moving to an Enterprise-wide, Life Cycle Alignment of Resources and Outputs to Achieve Top-Down Performance Driven Outcomes

“...not drive lots of activity, but drive outcomes.”

Mr. Kenneth Krieg

USD(AT&L)

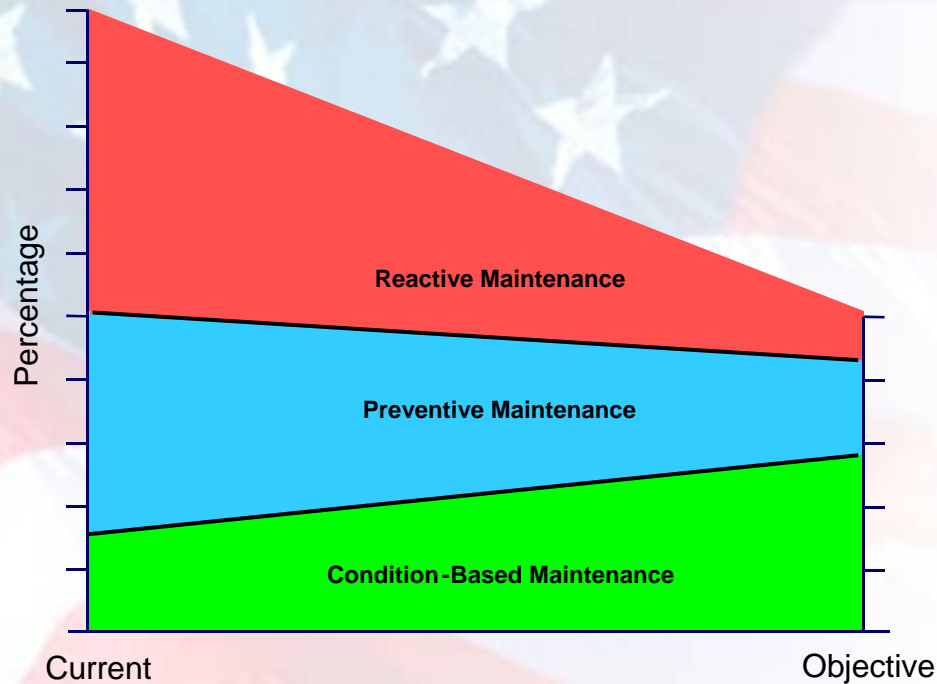
October 4, 2006



# When is DoD's Maintenance Accomplished?

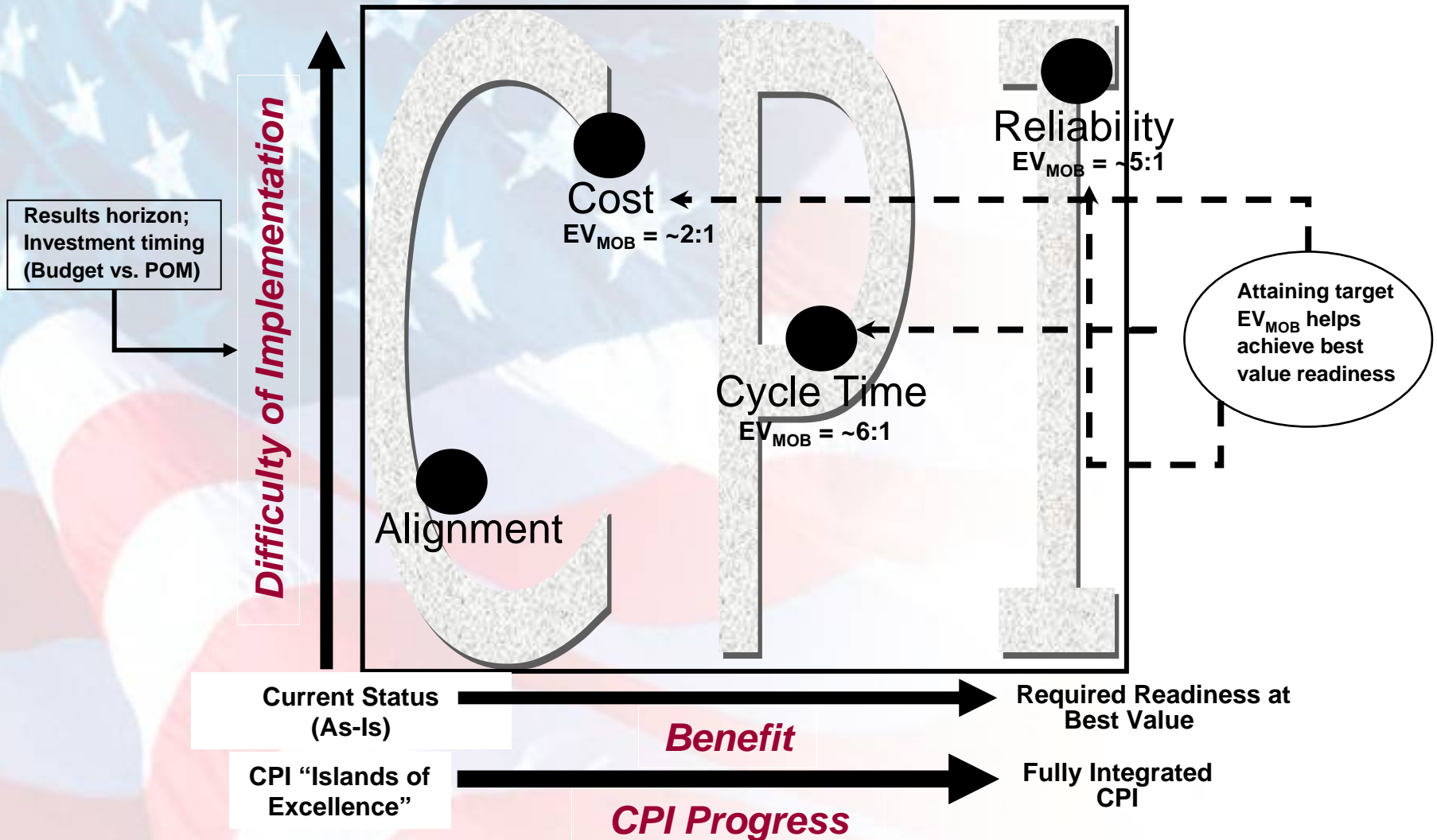


- ◆ A well-designed PM Program can reduce total maintenance required



- ◆ When should PM be scheduled?

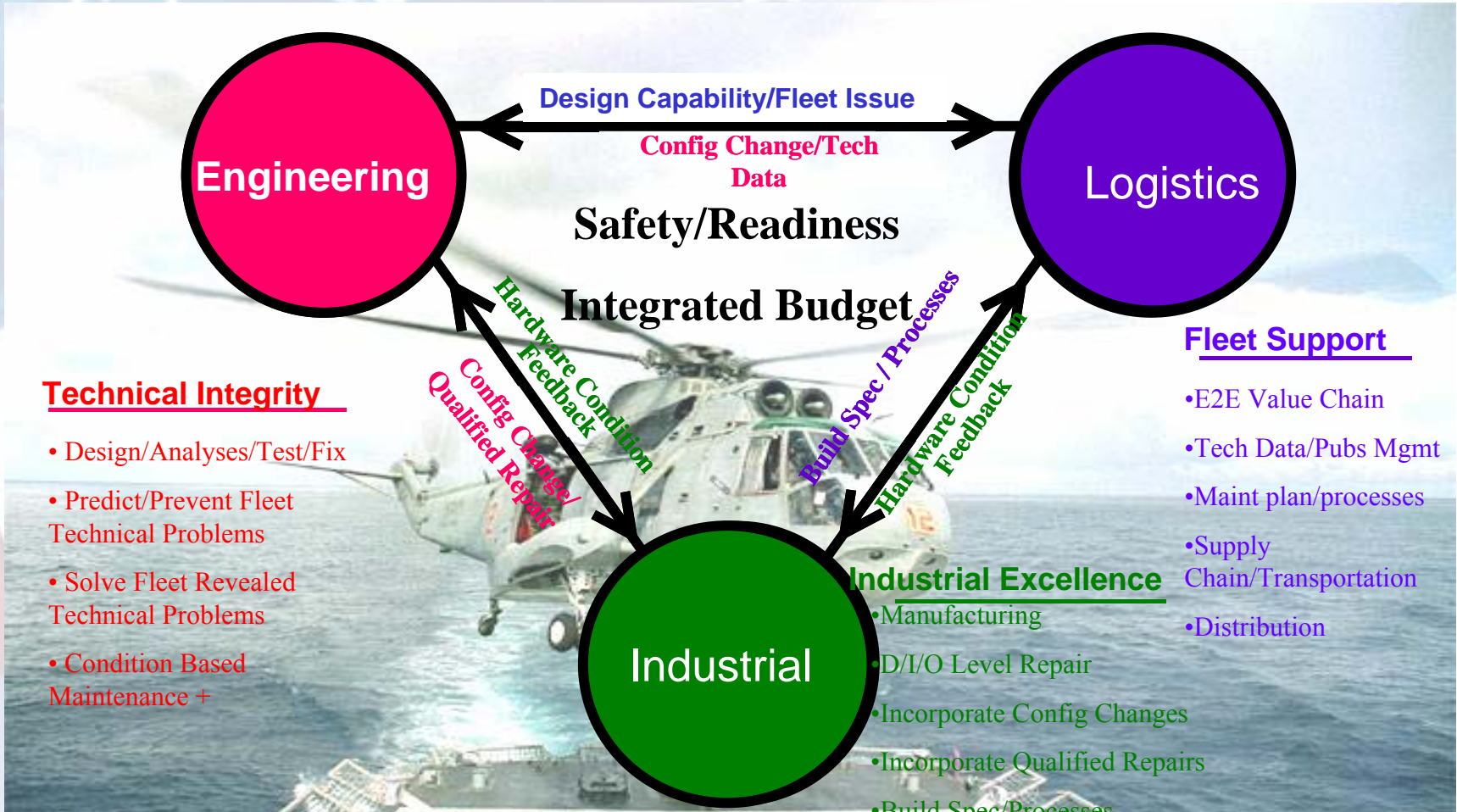
# Applying Continuous Process Improvement (CPI) in each area in an integrated manner achieves best performance driven outcomes



$EV_{MOB}$  = Expected value for magnitude of benefit



# Material Readiness Integrated Management (E2E)



## Technical Integrity

- Design/Analyses/Test/Fix
- Predict/Prevent Fleet Technical Problems
- Solve Fleet Revealed Technical Problems
- Condition Based Maintenance +

**Integrated Approach Achieves Readiness Goals  
at Reduced Cost**



# Approved Sustainment KPP and Mandatory KSAs



## Single KPP:

- ◆ Materiel Availability

## Mandatory KSAs:

- ◆ Materiel Reliability
- ◆ Ownership Cost

To achieve mission success, Combatant Commander needs:

- ◆ Correct number of operational end items capable of performing the mission when needed
- ◆ Confidence that systems will perform the mission and return home safely without failure

Ownership Cost provides balance; solutions cannot result in availability and reliability “at any cost.”



# Proposed DAES-S Metrics



## Part A – Narrative

- ◆ Overall Program Health
- ◆ Any Operational Impacts
- ◆ Implementing Program Strategy
- ◆ Addresses TLCSM and PBL

## Part B – Outcome Based Assessment Focused on Goals and Variance from Goals

	Goal	Forecast/ Actual	Rating
Material Availability	—	—	—
Material Reliability	—	—	—
Mean Down Time	—	—	—
Program Funding Status	—	—	—
Cost per Unit of Usage	—	—	—
Reduction in TOC	—	—	—
Safety	—	—	—

7 Indicators  
Outcome based  
Report issues by exception  
Relevant to warfighter

- Goals determined by Services for legacy systems
- Established as KPPs for new systems



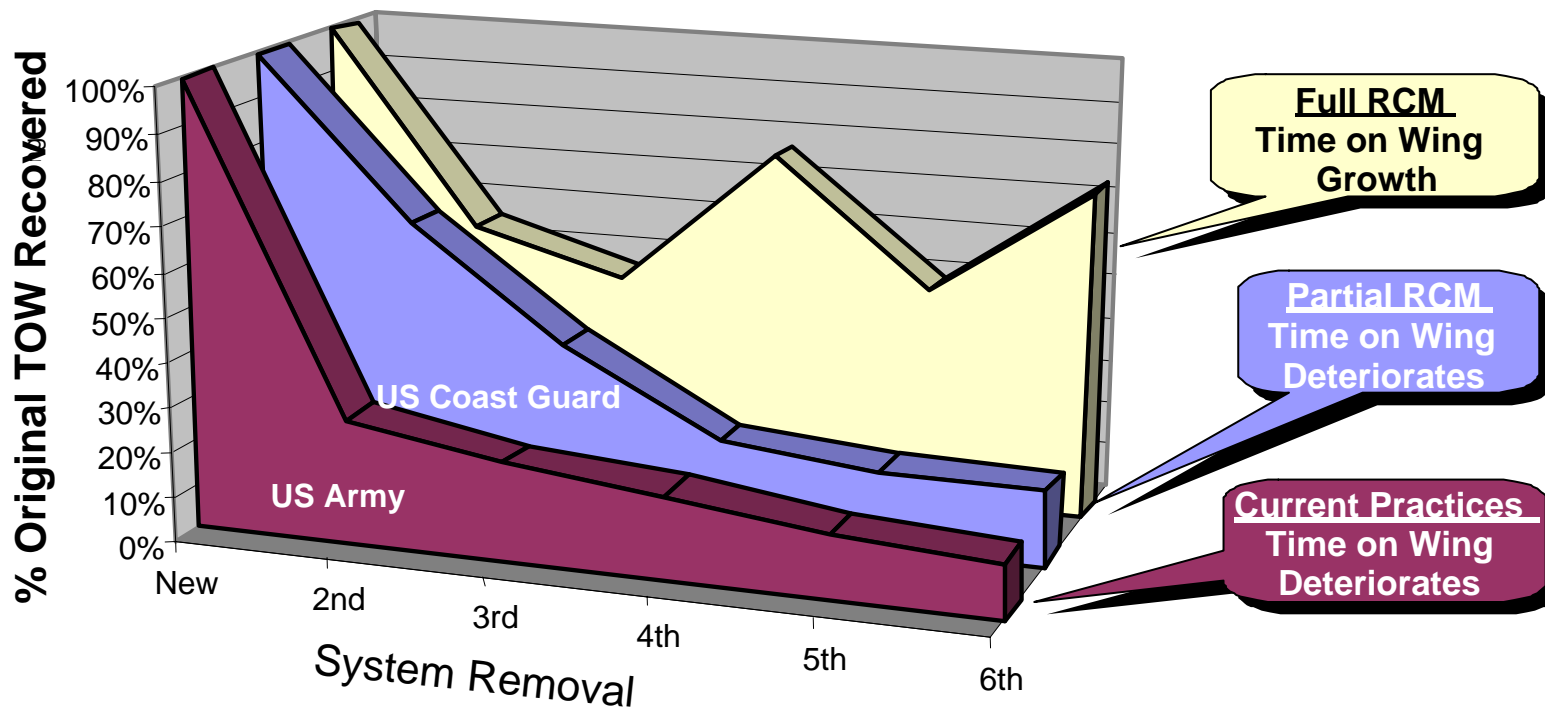
# System Life Recovered After Repair



## System Life Recovered After Repair

Reliability Centered Maintenance vs. Current On-Condition Practices

**RCM** =  
Reliability  
Centered  
Maintenance



3X+ Improvement in Time on Wing (TOW) with Comprehensive Reliability Centered Maintenance vs. Current OnCondition Practices



# CPI Is A Success



- ◆ Primarily Addresses Processes
- ◆ Outcomes Need to be Established and Understood
- ◆ Processes Have to be Aligned to Higher Level Outcomes

Expanding Use Across the DoD Enterprise





# CPI Successes Facilitate Achievement of Outcomes



## NAV AIR Summer Hire Process NAVAIR AIRSpeed Type Study: KAIZEN

Goal: Streamline and reduce costs of summer hire program

### Current State Analysis

- 4,000 man hours expended to execute process
- 24 Process Steps
- 70 day Process Cycle Time
- \$12.8K per recruit
- Voice of Customer not identified



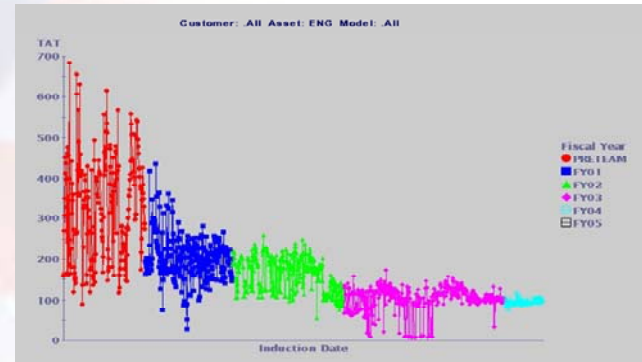
### Solution

- 1,000 man hours expended to execute process
- 4 process Steps
- 45 day Process Cycle Time
- \$2.4K per recruit
- Voice of Customer integrated

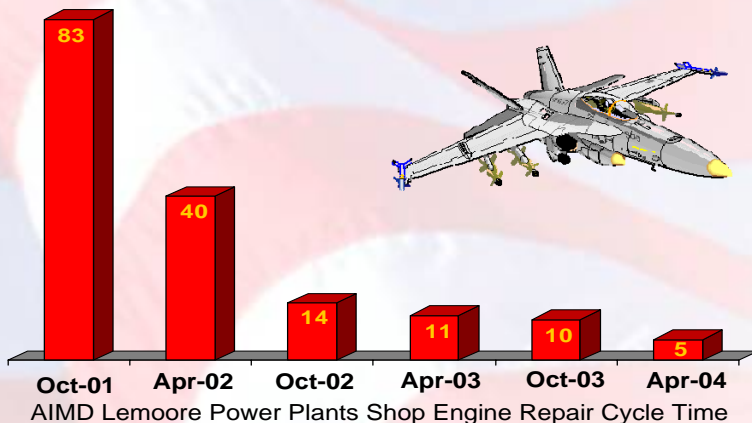
Savings: One man-year in labor, faster, simpler, customer friendly



## CCAD Engine Turn Around Time Run Chart



## Focus on Continuous Improvement (Maintenance Cycle Time)



## Justification and Approval (J&A) Process Rapid Improvement Event

Goal: Reduce J&A flow time and rework; increase review time flexibility

### Current State Analysis

- 41 day average flow time
- 51 Hand offs
- 1% first pass yield
- 40% submitted electronically
- Five serial reviews



### Solution

- 5.4 day average flow time
- 11 Hand offs
- 74% first pass yield
- 100% submitted electronically
- Three serial reviews

- Streamlined process
- Increased automation -all reviews electronic --instant receipt notification
- Reduced serial reviews / rework
- Content requirements communicated to SYSCOM; submittal templates created

Effective CPI application to both transactional and industrial processes



# Department of Defense CPI Facts



- ◆ Top DOD leadership supportive and engaged
  - **11 May 2006 DEPSECDEF memo directed accelerated application of CPI tools to further improve Warfighter effectiveness**
  - **Each Military Service implementing a top-driven CPI program – with Secretary-level endorsement and participation**
  - **DOD CPI Senior Steering Committee established in Aug 2006 to support DOD-wide CPI culture and results**
    - Converging on DOD-wide CPI Training/Education/Certification and Forums/Best Practices
    - Reaching increasing number of organizations – DIA, OSD, Health Affairs
  
- ◆ Significant results to date
  - **Active CPI training programs in place across DoD (~6K personnel trained at various belts/levels)**
    - Leveraging growing public and private sector CPI training and certification capabilities
  - **Hundreds to thousands of CPI projects underway/accomplished**
    - Linkage to performance objectives with clear outcome-based results
  - **Tangible results attained**
    - Improvement metrics established for individual CPI projects linked to enterprise and customer requirements
  
- ◆ Aggressive Way Ahead
  - **Leveraging CPI achievements to develop enterprise-wide performance driven outcome-based management framework**
    - Aggressively implement performance outcomes in both the public and private support base
  - **Will apply across the weapons system life cycle**
    - Standardized outcome-based metrics
      - **Define early in the acquisition process**
      - **Facilitate cross-functional integration**



# PBL Is A Success... But It Doesn't Go Far Enough



- ◆ Mostly aligned with contract support
- ◆ Hasn't Achieved Enterprise-Wide Life Cycle Focus and Accountability
  - Emphasis on the Operations and Support (sustainment) life cycle phase
  - Not everything is PBL
  - Few weapon system level PBLs
  - Most PBLs don't cover all support functions



**BUT: Performance Based “Works” -  
We Need to Expand Beyond PBL**



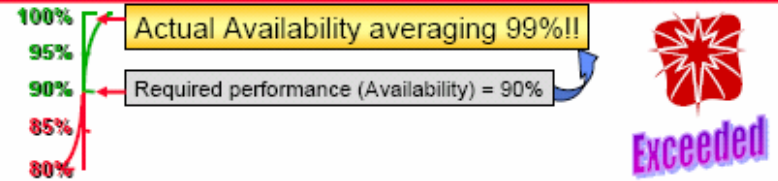
# Army PBL Performance Successes

**Army** **HIMARS**  
HIGH MOBILITY ARTILLERY ROCKET SYSTEM

METRICS	Minimum Requirement	Achieved <i>Exceeded!</i>
System Status Readiness (SSR)	92%	99%
Mission Capable Deliveries	24 hour avg. – CONUS 96 hour avg. - OCONUS	12.5 hour avg – CONUS N/A OCONUS
Repair Turnaround Time	5 day avg: On-site 45 day avg.: Vendor	3.5 day avg.: On-site 24.4 day avg.: Vendor

**EXCEEDED ALL PBL PERFORMANCE METRICS**

**Army** **TOW-ITAS PBL Results**



**TOW Improved Target Acquisition System (ITAS) (FY01C\$M)**

**Cost Avoidance**

Prior \$/Yr	FY04	FY05	FY06	FY07
\$36.8	\$5.6	\$6.4	\$8.8	\$8.7

**Bottom Line: PBL Estimated to Provide Cost Avoidance of >\$300M**

**Winner of the 2006  
SECDEF PBL Award  
for System Level PBL**



# Proposed Path Ahead

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- ◆ Move to Enterprise-wide Outcome-based Framework
  - Aggressively implement performance outcomes in both the Public and Private support base
- ◆ Across the Life Cycle
  - Standardized Outcome-based Metrics
    - Defined early in the Acquisition Process
    - Facilitating cross-functional integration
  - Capabilities-based requirements (JCIDS)
    - Sustainment KPP / KSAs / DAES / DAES-S
- ◆ Build on Successes
  - Performance Based Acquisition (PBA) and Performance Based Logistics (PBL)
  - Continuous Process Improvement (CPI)