PM Aviation Systems
Automated Logistics

Presented To:
DoD Maintenance Symposium, CBM Panel

Presented By:
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Aviation Systems

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PM-AS Overview

**FIXED WING**
- 8 Systems

**SCOUT/ATTACK**
- 5 Systems

**AME**
- 14 Systems

**ATC**
- 15 Systems

**AGSE**
- 15 Systems

**AUTOMATED SYSTEMS**

**CBM**
- A10G

**FUTURE CARGO**
- 1 System
PM Aviation Systems Automated Logistics Systems Overview

Responsible for the development, coordination and implementation of future PEO-AVN Logistics automation requirements and the interface into the Single Army Logistics Enterprise (SALE) related programs/solutions.

Data Enablers

- CH-47
- ARH
- AH-64
- LUH
- UH-60
- OH-58D

Interim STAMIS System

ULLS-A SCP 6

Products:

- US Army Combat Readiness Center requirements
  ADEC/DCD, MFOQA, CBM, & DSC requirements
  Common ICD/CDD
- CBM Future Implementation & requirements
- PMA W/GUI
  Common Platform Interface
- MFOQA
- DSC Spec
- Common IETM
- Work with AMCOM G-3 to identify CBM data elements for CBM Data Base Development

Army Logistics Enterprise

- Master Data Management
  Information Exchange
  CLOE PoE

Seamless Data Flow from A/C
**Mission**

“Develop a single path ahead to define and implement a common AVN Automated Logistics System to be implemented across Army AVN platforms and systems.”

**Guidance**

Near Term: All PMs develop and field an IETM for their assigned aviation system; Implement ULLS-A SCP 6 across Army Aviation. Mid-Long Term: Define and develop a common Aviation Platform Maintenance Application/Platform Maintenance Environment for all Aviation systems.

**Purpose/Priority**

Reduce the burden on the soldier, increase operational readiness, and decrease O & S costs

1. Ensure PMA is common, non-pro proprietary, and government controlled

2. Implement CBM ASAP

3. Leverage existing applications to minimize training and cost
Aircraft Data Exploitation Capability (ADEC)

ADEC Requirement DCD Ft. Rucker

Military Flight Operations Quality Assurance (MFOQA)

Condition Based Maintenance (CBM)

Combining DSC/HUMS, MFOQA and CBM into one ICD/CDD

Safety is Primary participant

PM-AS as “Champion”

Working with the ADEC community to resolve issues from User perspective

Working with Platform PMs to identify constraints and funding requirements
**PoE Objectives**

- **Obj 1**: Enhance Employment of Mobile Maintenance Teams
- **Obj 2**: Use FBCB2 for Self-reporting
- **Obj 3**: Standardize Platform Devices
- **Obj 4**: Reduce/Elim Platform Laptops
- **Obj 5**: Exploit Sat Commo
- **Obj 6**: Auto Update Docs/Software
- **Obj 7**: Enhance Platform Self-reporting
- **Obj 8**: Wireless Platform Downloading
- **Obj 9**: Enhance C3 for MMTs
- **Obj 10**: Connect While Detached/ Relocated
- **Obj 11**: Remote Data Download Sites
- **Obj 12**: Integrate Stand Alone SW/Systems
- **Obj 13**: Fleet Database Repository
- **Obj 14**: E2E Spt Above & Outside Bde
- **Obj 15**: Demonstrate Common PME
- **Obj 16**: Demonstrate Benefits
- **Obj 17**: Enhance Data Analysis-Other
- **Obj 18**: Use Advanced Supply Concepts

**Functional**

**Non-Functional**

**Doctrinal**

**Original Objective**

**IPT Objective**

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**Improve Management of Documentation, Software, Data Transfer**

**Platform Data Transfer and Download**

**Optimize Use of Platform Data Interface Devices**

**Enable End to End Logistics Support Above and Outside the Brigade**

**Demonstrate Common PME for Aircraft Platforms**

**Employ Remote or Forward Deployed Operational Sites as Data Download Site**
Core Enablers

- Two Level Maintenance
- Condition Based/Predictive Maintenance (CBM)
- ED/EP – DSC, HUMS, SUMS and VMEP
- Common Aviation Platform Maintenance Environment (PME)
- Automated/Integrated Maintenance Management System
- Digital Aviation Logistics
- Technical Data Management and Delivery
- Automated Identification Technology (AIT)/Unique Identification (UID)
- Tactical Logistics Data Digitization (TLDD)
- Military Flight Operations Quality Assurance (MFOQA)
- Centralized Automated Flight Records System (CAFRS)

Looking at all the Enablers to Enhance Army Transformation
Aviation PoE Development & Function

• **PMA Specification Development**
  - Fills the requirement between GCSS-A and the aircraft platforms
    > Connects the soldier to SALE
    > Required for data extraction from platform (DSC) & passing data to applicable systems
      < Systems include CBM, MFOQA, CAFRS, IETM, Flight Ops and Fleet Management
  - Commonality required based on CAB force structure
  - Evaluation of software alternatives being reviewed
    ➢ PMA RFI released 10/4/05 with two week turn around by offers

• **PMA software development**
  - Will use prototype software for the PoE
  - Develop common user interface

• **PMA hardware evaluation**
  - Looking at multiple devices to fulfill environmental & user requirements

• **Systems Engineering Plan for PoE & PMA**
  - Configuration management
  - Document management
  - Risk management

• **SED SIL Test Bed for FY06**
  - Servers, routers, switches, cables, computers, HUMS, storage devices, Movement Tracking System (MTS), BFT, programming tools, FBCB2, modeling tools, CAISI, VSAT connections

• **Aviation PoE Demonstration**
  - Demonstrating 13 Use Cases
  - Systems Demonstrating: CBM, CAISI, MTS and RFID tags, BFT, DSC, MFOQA, Data

• **Warehouse & common Formatted IETM**
  - Prototype of Common PMA
Aviation PoE Development Process

Phase 1
Concept Analysis

Program Plan
PoE Concept
PoE Concept System
Develop/Modify Products
SIL Integrate & Test
PoE Test & Demo

Phase 2
Integration & SIL Test

Phase 3
Test & Demo

IPT
IPT
IPT
PDR
CDR
4/06
IPT

• Scope
• Objectives
• Key Functionalities
• Candidate Capabilities

• Technical Capabilities
• Prelim Scenarios
• Functional Decomposition
• Functional Candidates/Gaps
• Technical Concept

• Preliminary Architectures
• Platform Configurations
• Gap Alternatives
• Concept System Alternatives
• Requirements Definition

• Select Contractors
• Develop ROMs
• Allocate Funding
• Place Contracts
• Prepare/Approve Development Plans
• Design Reviews
• Developer Testing

• Integration
  - Node
  - Node to node
  - End to end

• Test
  - Node
  - Node to node
  - End to end

• Test System Configuration
• Conduct AWR

• Test & Demo
  - Node
  - Node to node
  - End to end

• Communication Simulations
• Results & Recommendations
Platform Maintenance Environment (PME) Platform Maintenance Application (PMA)

CBM Implementation

Need a Common PMA

On - Platform

Embedded Data Capture ED/EP
Analysis Software
Common DSC
CVR/FDR
Health Usage Monitoring system

At - Platform

PMA

Common IETM
MFOQA Data
- Training
- Safety
CAFRS Data
CBM Data
MMS/Logbook

Aircrew Input
Debrief Interface
AIL – Parts Marking

GSAB MFAB
- Drive a Common IETM
IAW MIL-STD-40051-B/-1

Data Warehouse

AMPS Flight Viz 2-D Simulation
Crew Chief
PC Back Shop

VSAT CAISI

VMED MAST IMD HUMS IVHMS CVR/FDR MSPU

Contact Memory Button
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Aviation PoE Status

• PMA Specification development
  - Requirements analysis ongoing
  - Evaluation of ULLS-A SCP 6 and CPME completed
  - Will begin further offers software review in about two weeks

• Systems Engineering Plan
  - Working Con Ops
  - Architecture group formed

• PMA software development
  - Modeling tools in place
  - Additional COTS software coming in from offers

• Technical Interchange meetings
  - 13 use cases completed and agreed to by all platforms for Aviation PoE Demonstration
  - Blue Force Tracker (BFT) and Movement Tracking System (MTS) in process of obtaining
  - CAISI SED DITSCAP certification in process

• CBM
  - UH-60M SIL being updated with IVHMS (HUMS device)
  - Data warehouse participation/discussions on-going

• MFOQA
  - Initial meeting with MFOQA at Ft. Rucker/DCD
  - Initial Proof of Concept demonstration completed
  - Need additional use cases developed for the MFOQA PoE effort
  - Next meeting scheduled with MFOQA in two weeks
Summary

ELIMINATE THE NEED FOR COSTLY, SOPHISTICATED & CUMBERSOME ATE

ALLOW MAINTENANCE TO BE PERFORMED AT THE LOWEST POSSIBLE LEVEL THROUGH A POSITIVE INFLUENCE ON THE STAMIS ARCHITECTURE

MOBILITY ON THE BATTLEFIELD

REDUCE THE LOGISTICS BURDEN BY SIZE/COST OF THE PLL, ASL & USER TOOL REQUIREMENTS

LIMIT THE SKILL LEVELS REQUIRED TO OPERATE & MAINTAIN ARMY AIRCRAFT

Our Focus is on the Soldier

DSC HUMS VMEP
ELAS AMPS MDR
CVR/FDR IDM ED/EP

2 - Level CBM
Backups
Automated Logistics Tenant
Single Army Logistics Enterprise (SALE)

“Factory”

Army Logistics Enterprise

LMP

PLM+

Legacy Systems

GCSS Army

External Interfaces to PLM+

Transportation Command (TRANSCOM)

Defense Logistics Agency (DLA)

Defense Automatic Addressing System Center (DAASC)

Defense Finance & Accounting Service (DFAS)

Personnel Systems

Other Services

“Foxhole”

- **LMP**: Logistics Modernization Program
- **GCSS-Army**: Global Combat Spt System-Army
- **PLM+**: Product Lifecycle Mgt Plus

Capturing the data flow Process to use with CBM analysis & data base build
# Program Element Schedules

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What can be done today based on limited funding available

We can not show an alternative that is unaffordable

Problem Statement: **Fielding a DSC to support the transformation of Army Aviation to CBM within dollars available.** Each HUMS system (HUMS + CVR/FDR) cost between $75K - $200K. Total required for fleet $264M - $705M and does not include infrastructure or F/W requirement.

This is Best Case based on funding remaining as scheduled

**Funded Programs**

- 64D BLK III = FY10 – FY15
- ARH = FY06 – FY11
- CH47F = FY06 – FY20
- UH60M = FY05 – FY24
- LUH = FY06 – FY13

- AH64D BLK III: MSPU (currently equipped w/MDR)
- ARH: Smiths CSMU & DTS
- CH-47F: L3Com CVR/FDR
- UH-60M: IVHMS

**Unfunded Programs**

- AH64A = $7.9M
- CH47D = $20.4M
- UH60L = $112M
- LUH = $14.5M

- AH-64A
- AH-64D: (currently equipped w/MDR, requires MSPU)
- CH-47D
- UH-60A/L

- DSC Demonstrations ongoing w/congressional plus up funds include IMD-HUMS, VMEP, MAST
- Platform PMs must leverage as much as possible on congressional plus ups
Problem Statement: Current STAMIS system (ULLS-A SCP6) as well as Future System (GCSS-A) does not meet all PEO AVN Requirements for a Maintenance Management System (MMS)/Life Cycle Management (LCM) Command

CBM

• Must enable CBM by having the capability to move data from Platform to data warehouse
  - STAMIS systems not responsible for any data transactions other than actionable data in the form of some Maintenance and Supply transactions in a connected Ops only

MFOQA

• Enabling MFOQA includes a PMA device to draw data from Platform and uploading same to the AMPS
  - Data required for the Combat Readiness Center (CRC) and to recreate flights to show aircraft regime and pilots mission status

CAFRS

• Additional flight records required to be down loaded from aircraft to AMPS using a common PMA
  - Data required for tracking/updating pilots work load and capabilities for Safety

Maintenance/Supply/Split Ops

• Maintenance & Supply data (actionable) will transmit forward through STAMIS however, additional data is required to support LCM within each PM
  - During split operations the disconnected unit must have the PMA to perform maintenance and supply actions since G-Army is not fielding the capability when disconnected from home unit at the battalion level
Spiral Development - Modernized Fleet

CBM & MFOQA - w/DSC

Note: Only Modernized Fleet CBM Complaint
Spiral Development – Legacy Fleet

CBM & MFOQA - w/DSC

Decision point
Additional $80M Required to outfit the remaining Legacy Aircraft
For CVR/FDR - MFOQA

Decision point
Option
As older Fleet Retires – Remove A & B Kit
Reinstall A & B Kit on Remaining Legacy A/C

Note: No Full DSC procured for Legacy Aircraft
### Aviation Automated Logistics Acquisition Strategy Schedule

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* DSC systems in two CABs

![Diagram](image.png)