Program Executive Office, Aviation

Tri Service Interoperability Conference
Army Aviation – Leading with MOSA Transformation

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Our Mission Worldwide

Serve Soldiers and Our Nation by *Designing, Developing, Delivering & Supporting* **Advanced Aviation Capabilities for Operational Commanders and Our Allies**

Breadth of the PEO Aviation Portfolio

Worldwide Responsibility: 15,328+ Platforms

Cargo Helicopters

APO: 538
- CH-47F: 465
- MH-47G: 73

Apache Helicopters

APO: 791
- AH-64E: 791

Future Vertical Lift

APO: TBD
- FARA
- FLRAA

Utility Helicopters

UH APO: 2,135
- UH-60M: 1,375
- UH-60V: 760

UH-72A APO: 477

Unmanned Aircraft Systems

APO: 10,718*
- MQ-1C: 15
- RQ-7B: 110
- LRR: 1,409
- MRR: 2,450
- SRR: 6,734

* UAS APO Shown is Number of Systems. Actual number of Aircraft > 17,791

Fixed Wing Aircraft

APO/Systems: 278
- ARL-E, GRCS, QRC, C-12 Variants, C-23, C-26, UC-35, EMARSS

MASPO

Aircraft/CLS/FSR: 391

PC-12: 18 AC CLS, Mi-17: 95 AC CLS, MD-530: 78, Bell Huey II: 27, OH-58D: 124 CFSR, OH-58: 9 CLS, I-407: 30 CLS, Bell 206: 10 CLS

Supporting Our Forces and Our Allies
With Worldwide Strength and Diversity

APEO FMS International

70 Countries
503 Active Cases
$54.3B (Case Value)

PEO Aviation – Future Focused Army Objectives

Objectives

PEO Aviation Strategic Plan 2018

MDO

FORGE THE FUTURE

LSCO

JADC2

2021 PEO Guidance

United States Army Program Executive Office Aviation
Forging the Future of Army Aviation

FY22

Build the Future Vertical Lift Ecosystem

Ensure Readiness & Relevance of the Enduring Fleet

Build Partner Nation Capacity

Army 2030 and Beyond Force Structure

PEO Aviation Is

*Defending Our Nation, Taking Care of our People, and Ensuring Success through Teamwork*

Why the Urgency for MOSA Now?

FVL Platforms

Aerial Network Layer
Air Unmanned System Network
Artemis
Gray Eagle
Shadow
ARES
ALE
Mounted
Mobile Hand-held
Command Post
Command Post

Unique Inflection Point

- **Mandate for Rapid Capabilities to Pace Threat Evolution**
- **Must Accelerate Program Execution at the Speed of Technology**
- **Affordability Paramount in Current Fiscal Environment**
- **Opportunity to Leverage Across Future and Enduring Fleet is**
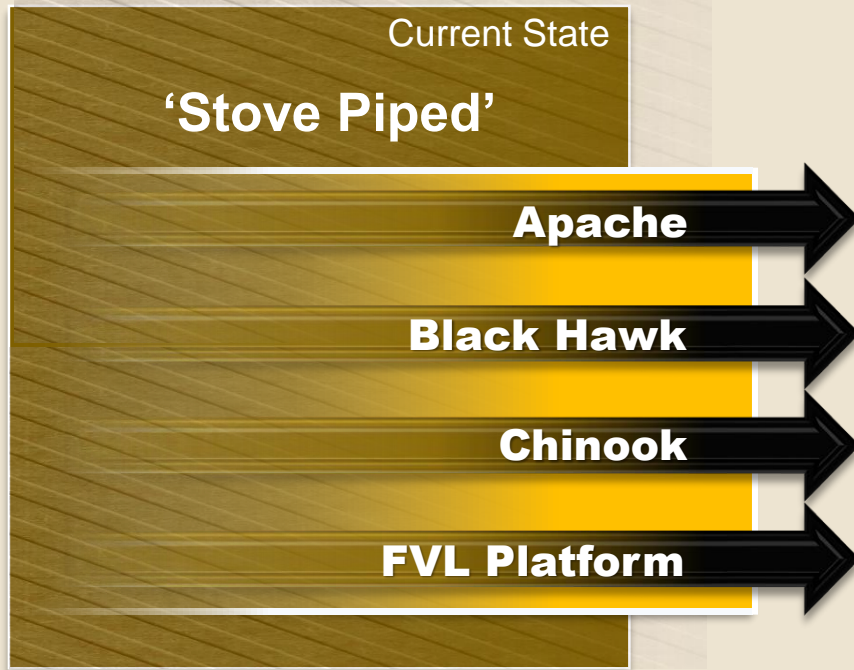
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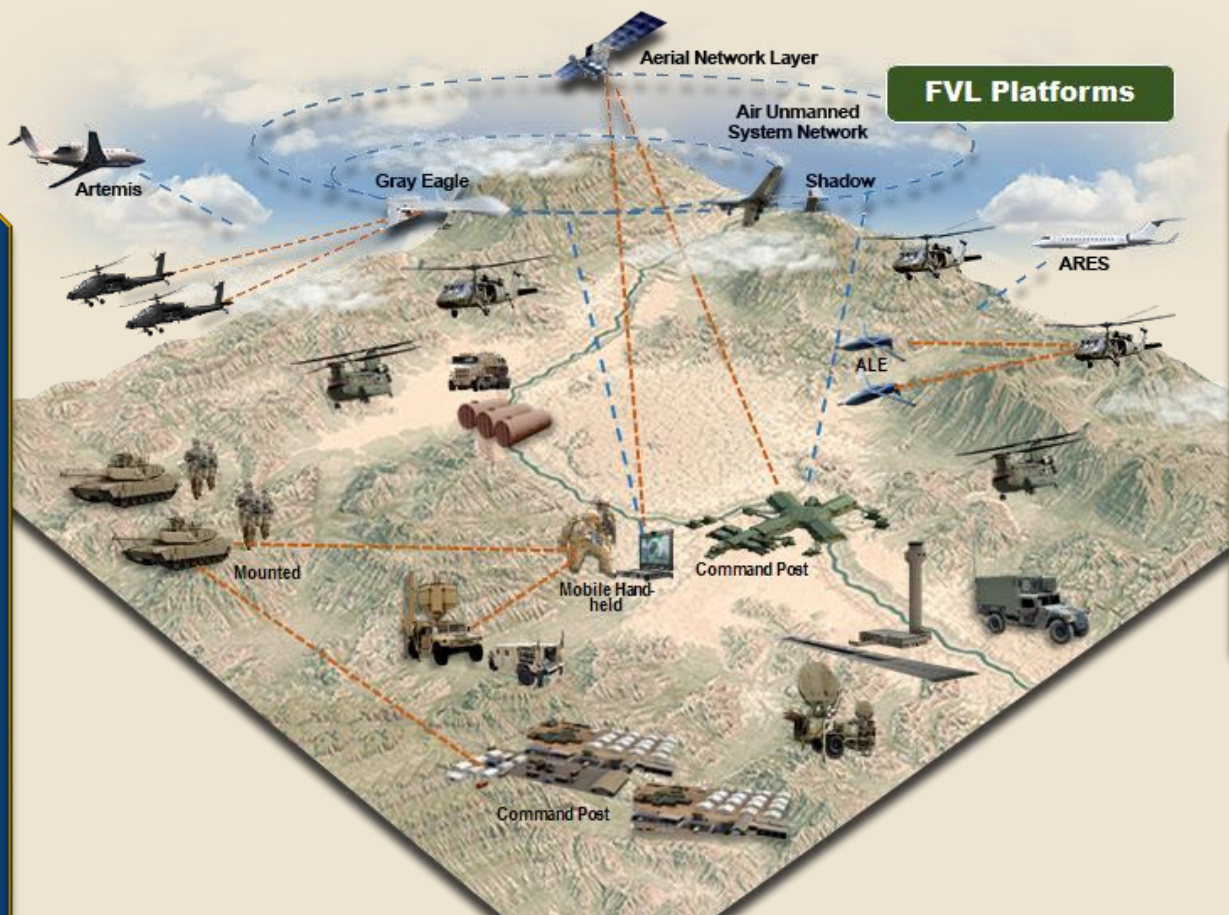
PEO Aviation MOSA Objectives

- Improved Affordability
- Increased Readiness
- Enhanced Capabilities
- Reduced Schedule Pressure
- Reduced Supply Chain Risk

Must Engage Both the Technical and Business Processes Throughout the Aviation Life Cycle to Optimize Impact of MOSA

The Problem Set That MOSA Can Resolve

Current State

'Stove Piped'

- Apache
- Black Hawk
- Chinook
- FVL Platform

Future State

Enterprise Focused

Enterprise Architecture

Modularity & Openness Decisions

Reference Architectures

Governance

- Apache
- Black Hawk
- Chinook
- FVL Platform

- Monolithic, Unique, Single-use Solutions
- Platform/Vendor Locked
- Costly In Terms of Cost/Schedule for Upgrades
- Overall Lifecycle Costs High
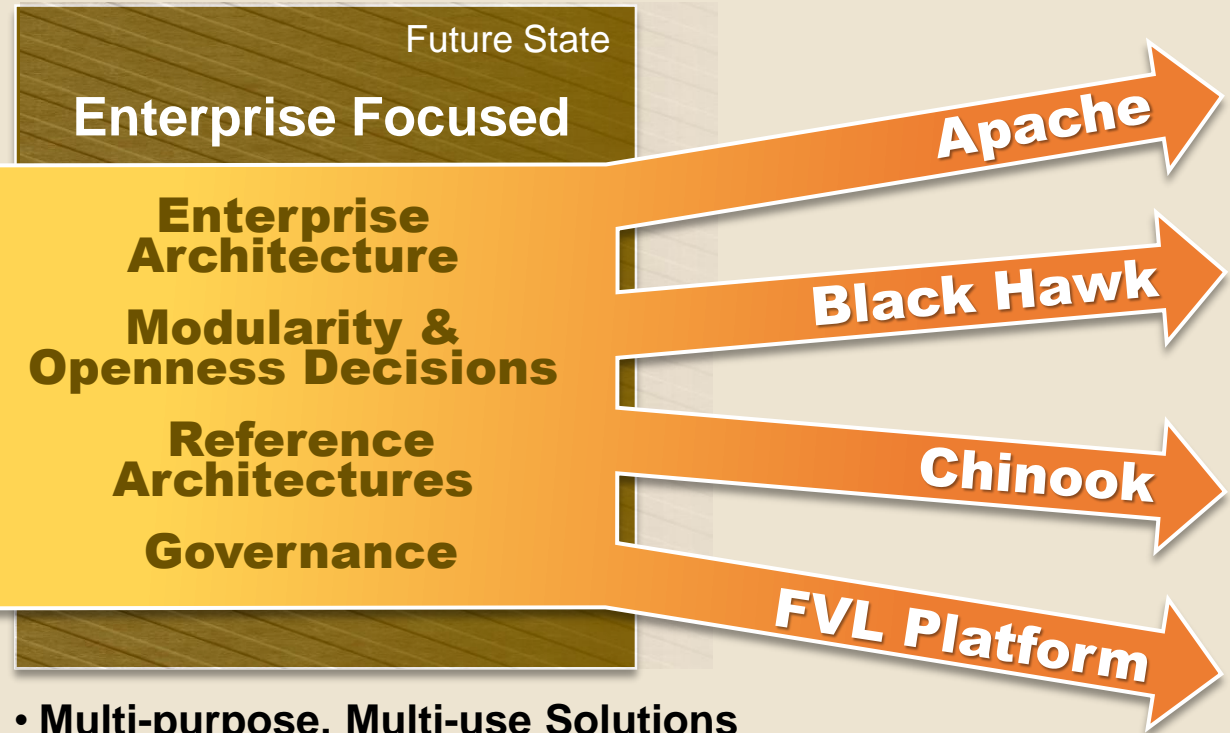
- Multi-purpose, Multi-use Solutions
- Reusable Open Architectures Solutions – Increased Competition
- More Optimal in Terms of Cost/Schedule for Upgrades
- Reduced Lifecycle Costs in All Phases of the Weapon System

Develop Once, Field Many…….
MOSA Enables Critical Modernization for Army Aviation Enduring & Future Fleets

Open Standards Evolving Across the DoD Enterprise

- Multiple PEOs addressing the need for OSA

- A number of standards do exist with varying degrees of maturity

- **PEO Aviation** – Started with FVL Architecture Framework (FAF), Enterprise Architecture (EA), synchronized with industry via Architecture Working Group (ACWG) and multiple CRADAs

- Cross-PEO standards collaboration underway – example of C3T and Aviation with *CMOSS Mounted Form Factor* (CMFF)
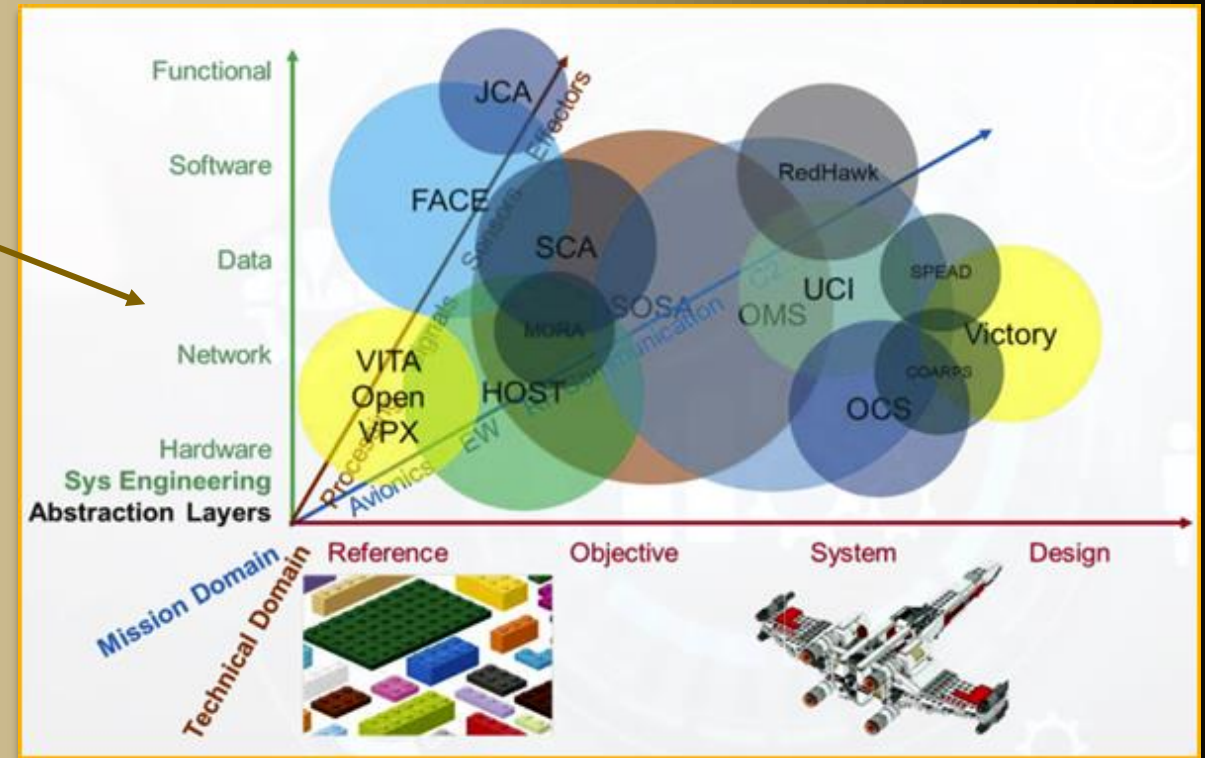
How do we proceed with clarity and demonstrable value when applying MOSA?

PEO Aviation MOSA – Driving Forward

- **MOSA Transformation Office (TO)** Represents the Enterprise Perspective
- Targeting Major System Components (MSC)

Published Internal PEO Aviation MOSA Policy

- ☑ Implementation Guide
- ☑ Reference Architecture Design Document (RADD)
- ☑ Identified Initial Major System Components

Initial MSC Priorities for PEO Aviation

- **Aviation Mission Computing Environment**
- **Comms/Datalinks/Control**
- **Navigation**
- **Aircraft Survivability Equipment (ASE)**
- **Dynamic Airspace & Mission Planning Environment (DAMPE)**
- **Common Pilot Vehicle Interface (PVI)**
- **Degraded Visual Environment (DVE)**
- **Electrical Power Systems**
- **Unmanned Vehicle Control**

Initial MSC Priorities Are Based on Existing Common Components and/or Functions

Future MSCs Will be Prioritized Based on PEO Investment Strategy

Driving Use of Modern Tools & Methodologies

Digital Ecosystem

- MBSE(SysML)
- Digital Thread
- Infrastructure
- Product Life Cycle Management
- Modeling and Simulation

Key Enablers

MOSA

- Architecture & Standards
- Governance & Policy
- Business Practices
- Contracting Efficiencies
- Affordability & Savings

Agile Development

- DevSecOps
- Software Factory
- Continuous Integration/Continuous Delivery (CI/CD) Pipeline
- Infrastructure
- Partitioning
- Qualification Material Release

MOSA Transformation Office
MOSA TO
Transforming the Future

Modular Open Systems Approach

Cloud Based Environment

Digital Thread → AFSIM/ATCOM/OneSaf → CAMEO EA w/Plug-ins → Matlab/Simulink/Helios/etc. → Windchill

Seamlessly Integrated Tool Chain

PEO Aviation MOSA Transformation is Synchronizing Modernization

Specific Example - Aviation Mission Computing Environment

Fundamentally Different Approach to Capability Introduction

- **AMCE Introduces Modular/Configurable Processing to Aviation**
  - Provides *Scalable*, *Configurable*, and *Modular* Processing Resources
- **AMCE Introduces Open Software Architecture**
  - Breaks Vendor Lock; 1 Capability $\neq$ 1 LRU
  - Enables ® Approach

Specific Example – Communications/Datalinks/Control

CMOSS Mounted Form Factor (CMFF) Modular Communications

- **Convergence** of Multiple LRUs Into Radio Cards - Open Standards Modular Environment
  - 1 Capability $\neq$ 1 LRU

- Aligns with Army's CMFF A-CDD Modular Communications Effort

- **Scalable** Form Factors – Ease of Integration

- Universal Control Through Aviation Radio Control Manager (**ARCM**)
 - Avoids Opening Platform OFP for New Radio Technology

KOR ARC 231 CXP ARC 220 BFT-2 AGNR

Common Modular Communications

Convergence of RF LRUs & Waveforms into Single RF Chassis

Collective Path Forward

- **Tough Challenge** of Critical Modernization in a Fiscally Constrained Environment

- Challenge Can be Resolved Through **Joint Efforts** With Cross-PEO and Industry Collaboration

- How can government and industry better collaborate?
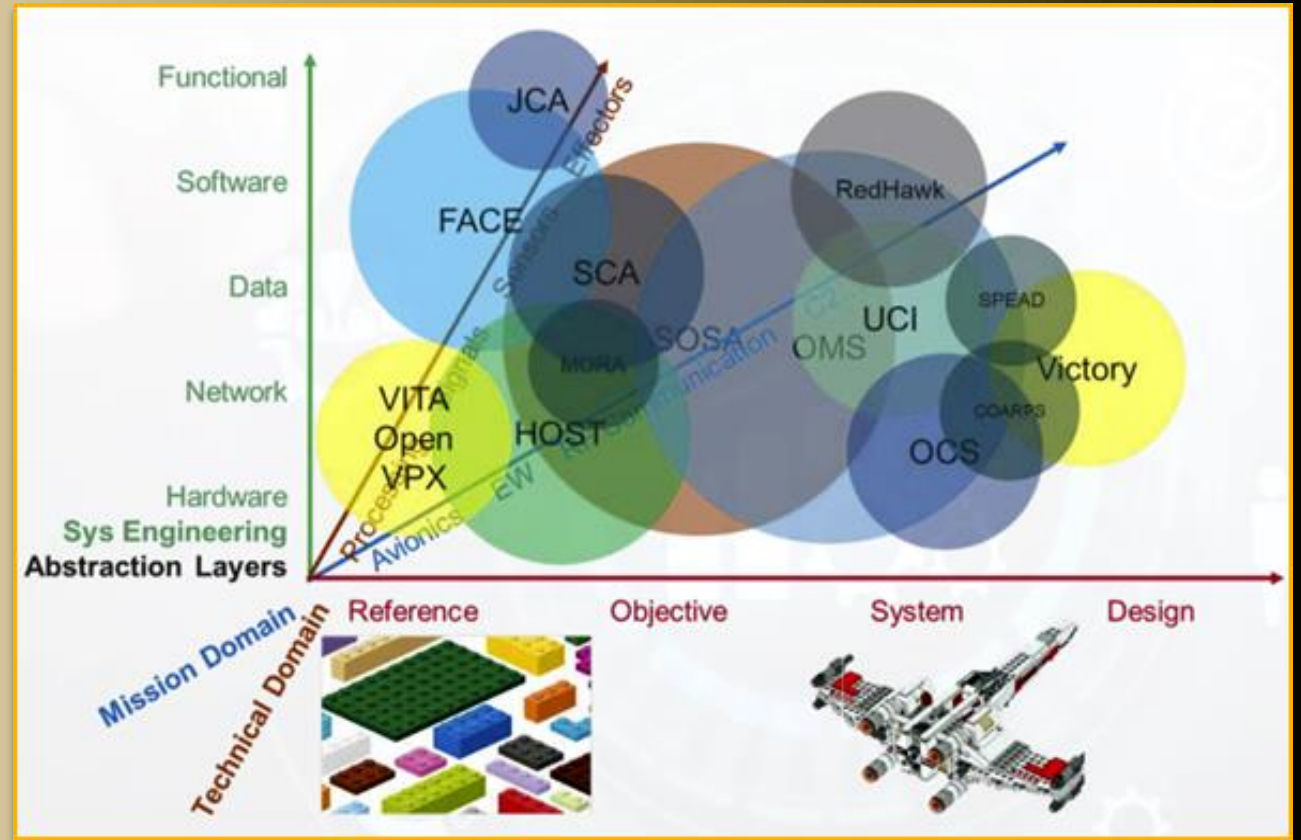
PEO Aviation Is Leaning Forward to Confirm Appropriate Standards for Aviation Materiel Development, Qualification, and Sustainment

Closing Comments and Questions

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