National Defense Industrial Association Systems and Mission Engineering Conference

November 2022

Modular Open Systems Approach Implementation Guidebook

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CLEARED
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Agenda

- **Background**

- **Congressional Interest**

- **MOSA Vision**

- **Policy and Guidance… Where Is MOSA?**

- **Working Groups and Industry Engagements.. Bringing the Information Together**

- **MOSA Implementation Guidance**
  - Why a Guidebook?
  - Scope
  - Overview

- **What's Next?**

Modular Open Systems Approach (MOSA) requirements are codified in law (10 United States Code (U.S.C) §4401 – §4403) for Department of Defense (DoD) acquisition weapon systems

- All program managers can benefit from considering the requirements for modularity and open standards

  - DoD program sponsors and their associated Milestone Decision Authority (MDA) need consistent, quantitative, and repeatable measures to assess their program's compliance with statute

  - These measurements in turn will better enable them to continuously support DoD missions within a rapidly evolving battlespace

Congressional Interest: MOSA in Development of Weapon Systems

- **2016:** OUSD(R&E) established MOSWG to address standards and architectures (FY15 NDAA Sec. 801)

- **2017:** Congressional requirement for MOSA in Major Defense Acquisition Programs (MDAPs) (FY17 NDAA Sec. 805)

- **2018**: MOSWG Tri-Service MOSA Tiger Teams spearheaded Service-specific guidance

- **2019:** Congressional direction to deliver MOSA Implementation guidance (FY20 NDAA Sec. 840)

- **2020:** OUSD(R&E) MOSWG identified, ranked, prioritized DoD MOSA pain points, and established Tiger Teams

- **2021:** Congressional requirement for establish a MOSA-enabled interface repository to access interfaces and relevant documentation (FY21 NDAA Sec. 804)

> MOSA is consistently an RDT&E item of interest for both the HASC and SASC with numerous references in law mandating the enforcement of MOSA Implementation in DoD weapon systems

MOSA Vision

Ensure DoD architectures are modular and open to enhance competition, incorporate innovation, and support interoperability and rapid insertion of technology in DoD acquisitions

- Acquire systems that can be upgraded or modified to incorporate new technologies and respond to emerging threats

- Rely on architectures accessed from authoritative sources of truth that identify system components, component capabilities, the interfaces and standards used between components to identify upgradeable systems and reusable components.

- Identify standards which facilitate modularity and openness to enable consistent component replacement and interoperability

- Use relevant technology forecasts to field systems using tailorable modular and open system approaches for technology insertion that contribute to system success

Policy and Guidance... Where Is MOSA?

Office of the Secretary of Defense

- Modular Open Systems Approach (MOSA) Reference Frameworks in Defense Acquisition Programs – *May 2020*

- DoDI 5000.88 Engineering of Defense Systems – *November 2020*

- Engineering of Defense Systems Guidebook – *February 2022*

- Systems Engineering Guidebook – *February 2022*

United States Air Force

- Air Force Data Rights Guidebook – *July 2019*

- Air Force AFI-63-101/20-101 Integrated Life Cycle Management – *June 2020*

- Air Force Material Command (AFMC) Guidebook for Implementing Modular Open Systems Approaches in Weapon Systems – *September 2022*

- PEO Specific Guidance

Policy and Guidance... Where is MOSA?

United States Army

- Modular Opens Systems Approach Implementation Guide, Office of the Chief Systems Engineer – *June 2020*

- PEO Specific Guidance

    - PEO IEW&S

    - PEO GCS

    - PEO AVN

United States Navy

- Navy NAVSEA 9040.3A Acquisition and Management of Product Model and other Technical Data – *March 2013*

- PEO-Specific Guidance

Modular Open Systems Working Group

MOSWG Pain Points

MOSWG developed a set of pain points with input from the industrial base and Military Department to address challenges in implementing MOSA in defense acquisition.

MOSWG Tiger Teams

MOSWG formed set of tiger teams to address each pain point and to develop deliverables that will support MOSA implementation in defense acquisition. Deliverables include a MOSA lexicon, recommendations to enable MOSA in acquisition, and an updated approach to assessing MOSA implementations.

Enabling MOSA

- <u>Need addressed</u>: Common method to describe MOSA in architectures
- <u>Products</u>: Architecture functional decomposition guidance for MOSA

Implementing MOSA

- <u>Need addressed</u>: Common examples and target architectures to aid modular and open system architecture
- <u>Products</u>: Supplemental reference architecture and interface repository ~~guidance~~ for developing MOSA reference implementations

Contracting for MOSA

- <u>Need addressed</u>: Access to updated contracting requirements & processes for implementing MOSA
- <u>Products</u>: Contracting guidance for implementing MOSA

Assessing MOSA

- <u>Need addressed</u>: Quantitatively evaluate of MOSA
- <u>Products</u>: Method and assessment criteria to quantitatively evaluate MOSA in designs, tech approach and business strategies

Defining MOSA

- <u>Need addressed</u>: Codify common definitions to guide MOSA design
- <u>Products</u>: Instructional Guidance with a taxonomy and lexicon for the implementation of MOSA

Access and Discovery of Standards to Enable MOSA

- <u>Need addressed</u>: Access to MOSA related standards and specifications
- <u>Products</u>: Solutions for identifying and accessing both government and industry standards that enable MOSA

Training and the MOSA Community of Practice

- <u>Need addressed</u>: Advance the state of MOSA training and MOSA Community of Practice
- <u>Products</u>: Modernized MOSA Community of Practice (CoP) site and updated DAU MOSA Training

Community Outreach

- <u>Need addressed</u>: Provide community of interest with regular MOSA-related updates
- <u>Products</u>: MOSA Newsletter and a curated MOSWG repository

Working Groups and Industry Engagements.. Bringing it all Together

Executive Director of Systems Engineering & Architecture

Office of the Under Secretary of Defense
- United States Navy
- United States Army
- United States Air Force

OSD Assistance

Industry & Academia Engagement encouraged

Implementation
- Team Member(s) n, Org

Assessments
- Team Member(s) n, Org

Enabling
- Team Member(s) n, Org

Contracting
- Team Member(s) n, Org

Outreach
- Team Member(s) n, Org

Standards
- Team Member(s) n, Org

Define MOSA
- Team Member(s) n, Org

Cybersecurity
- Team Member(s) n, Org
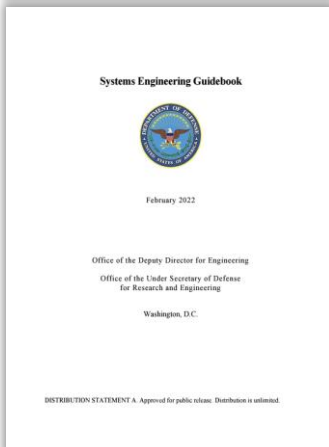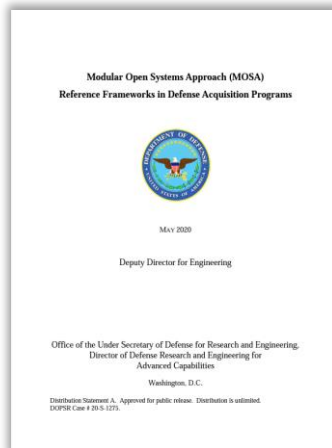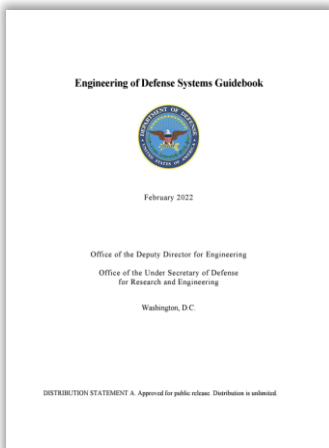
MOSWG Other Focus Interests
MOSA Business Case
MOSA Conformance
MOSA Training
Reference Architectures
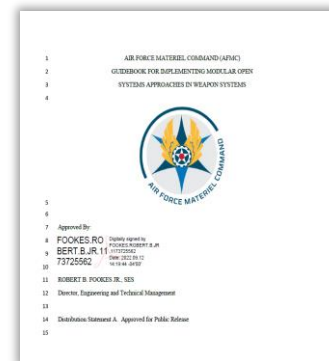
Future Pain Point
Tiger Teams, TBD

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Distribution Statement A. Approved for public release. Distribution is unlimited. (# 23-S-0001)

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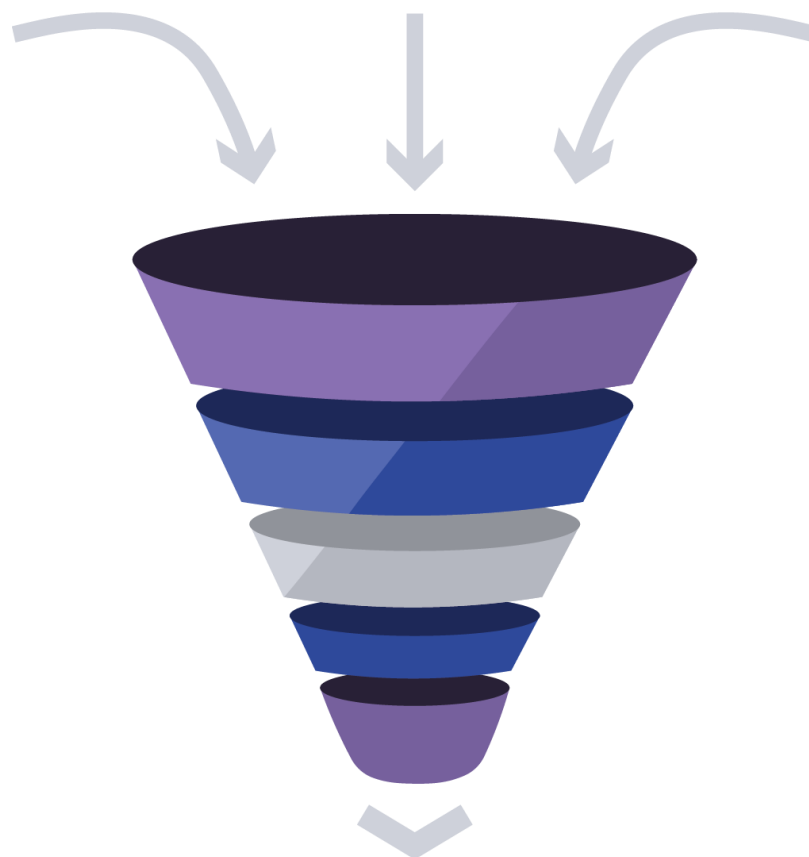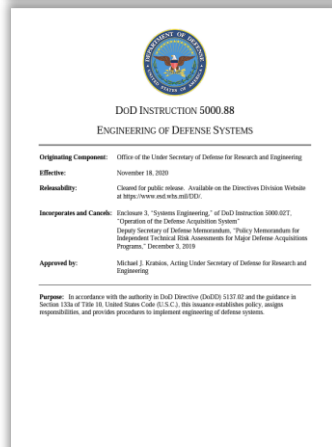
Synergistic guidance for MOSA Implementation

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MOSA

- Standards
- Contracting
- Prototyping & Experiments/Software
- Manufacturing
- Developmental Test, Evaluation, Assessments
- DE/M&S
- Architectures
- System Interfaces
- Policy & Systems
- System Components
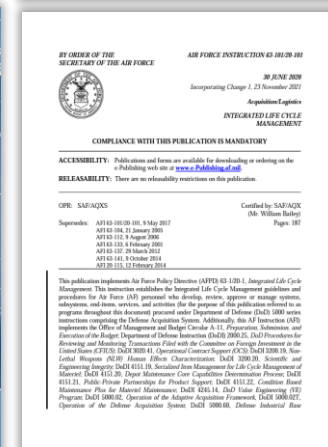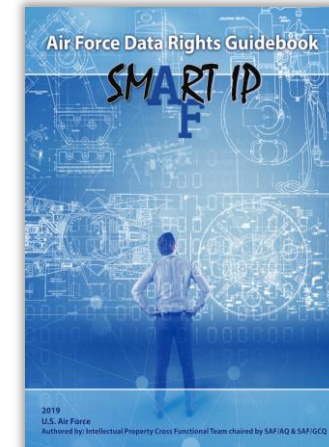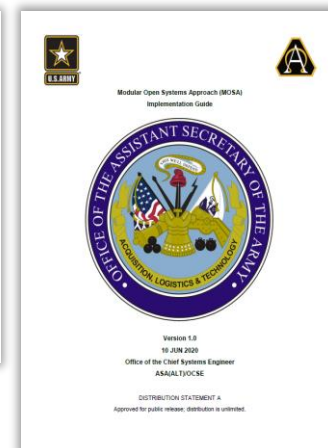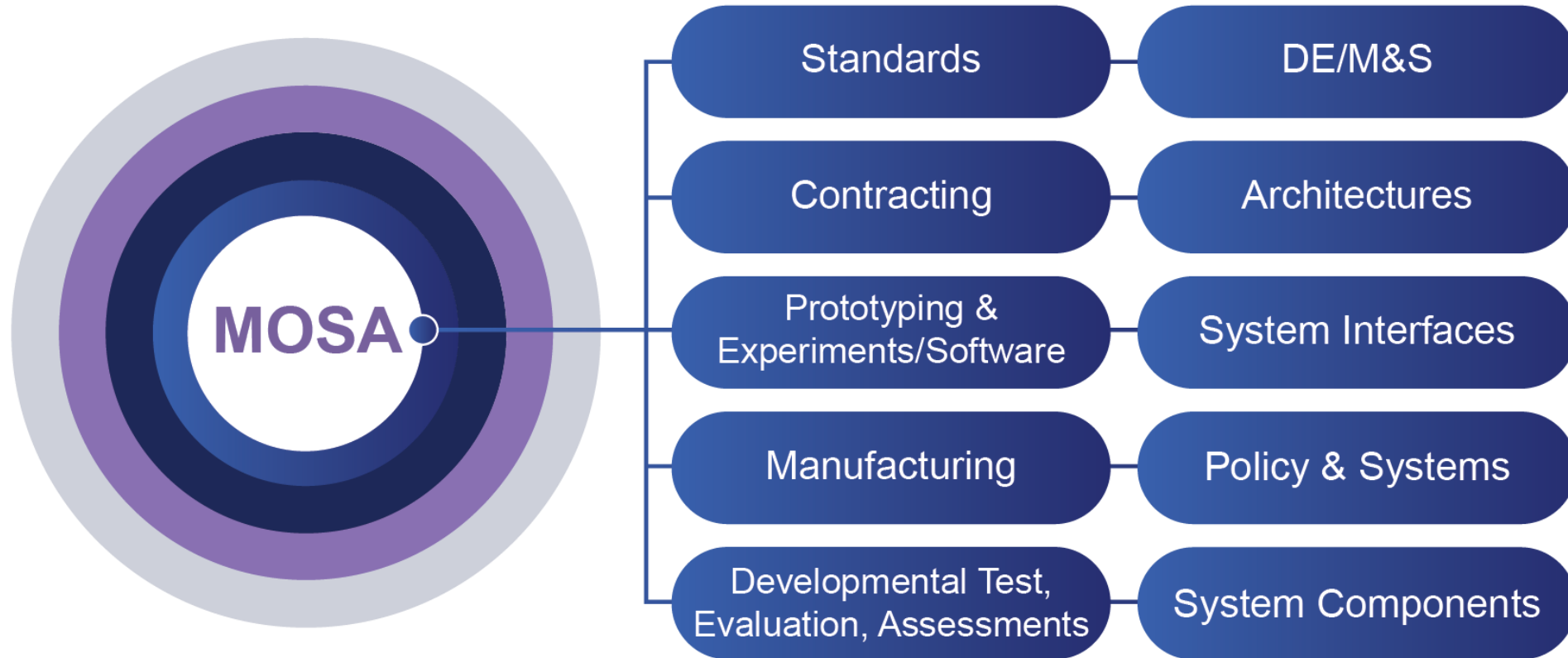
Coalesce MOSWG Tiger Team products, Military Department (MILDEP) MOSA exemplars and industry recommendations for MOSA implementation

Topics
MOSA-enabling Standards and Specifications
Contracting
Lexicon
Exemplars
Industry Recommendations
Architectures
Training and Education
Designated Interfaces

- **Phase 1 – June 2022**
  - Kickoff meeting
  - Assigning writing sections of Implementation Guidebook

- **Phase 2 – August 2022**
  - Status meeting #1
  - Review of status of sections

- **Phase 3 – September 2022**
  - Status meeting #2
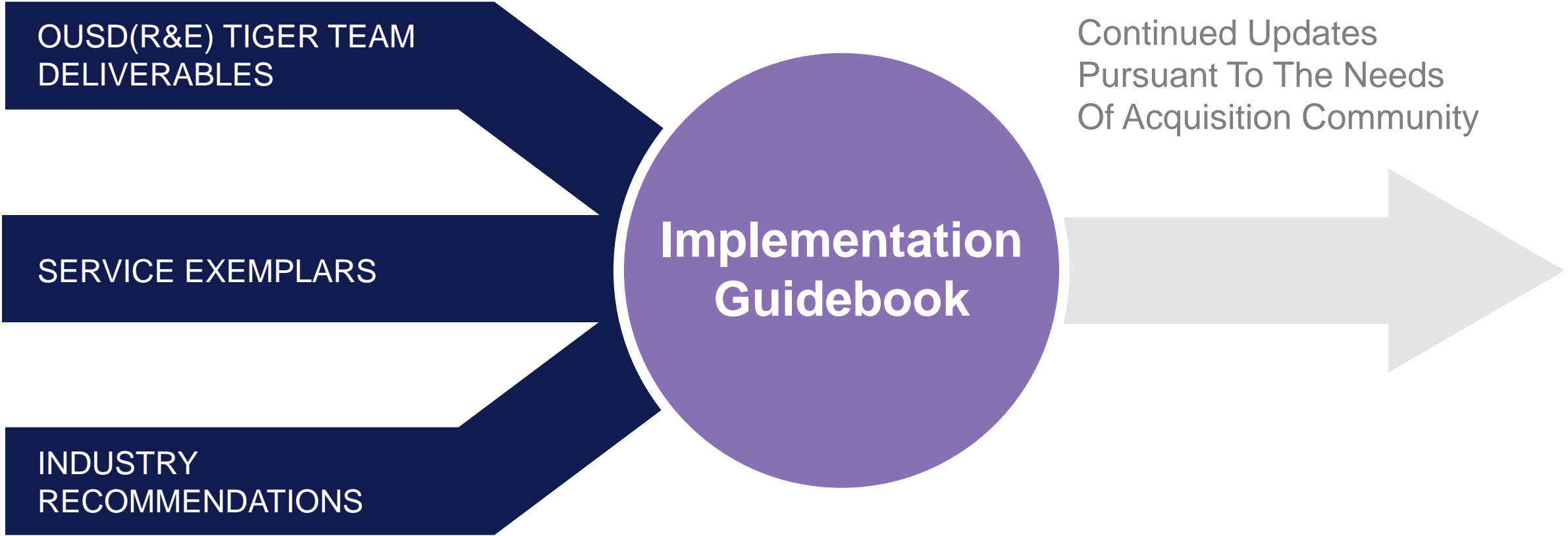 - Submission of draft sections for consolidation and comment/review

- **Phase 4 – October/November 2022**
  - Status meeting #3
  - Discussion/Adjudication of comments and edits

- **Phase 5 – December 2022/January 2023**
  - Status meeting #4
  - Discussion/Adjudication of comments and edits

- **Phase 6 – December 2022/January 2023**
  - Final submission of assigned guidebook sections
  - Technical Edit review
  - Public Affairs Submission
  - Release to https://cto.mil

What's Next?

OUSD(R&E) TIGER TEAM DELIVERABLES

SERVICE EXEMPLARS

INDUSTRY RECOMMENDATIONS

Implementation Guidebook

Continued Updates Pursuant To The Needs Of Acquisition Community

Collaboration Opportunities

- **Bi-monthly MOSWG**
  - Third Wednesday of every other month
  - https://intelshare.intelink.gov/sites/moswg/_layouts/15/start.aspx#/

- **Monthly Tiger Teams**
  - Implementing MOSA Tiger Team
  - Contracting for MOSA Tiger Team
  - MOSA Training/CoP Tiger Team

- **DAU hosted Community of Practice**
  - https://www.dau.edu/cop/mosa/Pages/Default.aspx

- **SE Modernization Body of Knowledge – MOSA section *(forthcoming)***

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https://www.cto.mil

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