# Advancing Technology and Standardization in a Digital World

Mr. Thomas Simms Executive Director, Systems Engineering and Architecture Office of the Under Secretary of Defense for Research and Engineering DSP Conference 6 August 2024



Distribution Statement A. Approved for public release. Distribution is unlimited



# Advancing Standards in a Digital World





## Standards Are Foundational to Digital Transformation





# Standards Support Technology Advancements





Statute & Regulation

### **Policy and Guidance**

Title 10, USC Ch. 145, Sections 2451-2457 "Defense Cataloging and Standardization Act of 1952"

Paperwork Reduction Act of 1995 (44 USC 3501 et seq.) Requires Government to maximize the utility of Government information and promote dissemination in electronic format

ð

ssuanc

0

National Technology Transfer and Advancement Act (NTTAA), Public Law 104-113 Directs Federal agencies to

use non-government standards

OMB Circular A-119 Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities OMB Circular A-130 Management of Federal Information Resources

FAR Part 11 - Agencies shall use existing requirements documents...for DoD, use DoDM 4120.24 - Identifies ASSIST as source

DoDI 4245.15DiminishingManufacturingSources and MaterialShortagesManagement(DMSMS)Dobm 4245.15Management ofDMSMS

#### FAR Part 9.2 Qualification Requirements

- National Strategies:
  National Defense Strategy (NDS)
  - USG National Standards Strategy for Critical and Emerging Technology

#### **Samples of Application-Specific Direction**

#### NDAAs:

- FY 15, 17 & 18: MOSA
- FY21 MSI Repositories
- FY20 NDAA Trusted Supply Chain for Microelectronics

#### Reports/Letters:

- OMB Policy Letter 91-3, Reporting Nonconforming Products
- GAO 16-236: Counterfeit Parts

DoDI 4120.24 Defense Standardization Program

DoDM 4120.24 DSP Procedures

#### DoDI 5200.49 Oversight of the Collection and Exchange of Information

Exchange of Information Using the Government-Industry Data Exchange Program (GIDEP)

# Standards & Guidance

MIL-STD-961 Defense Specifications MIL-STD-962 Defense Standards

MIL-STD-963 Data Item Descriptions MIL-STD-967 Defense Handbooks Standardization Directory (SD)3 NATO Standardization Activities SD-6 Qualification (QPLs) SD-9 Non-Government Standards SD-19 Parts Management Guide SD-22 DMSMS Guidebook SD-26 PMM Contracting SD-25 GIDEP Operations

#### In Development Digital Standardization Strategy SD-27 ASSIST Guidance SD-28 Standardization for MOSA

**13**A



# **DODI 5000.97 Digital Engineering**

#### This policy directs:

- Programs started after the date of the policy will incorporate digital engineering during development unless the program's decision authority provides an exception.
- Programs started before the date of the policy should incorporate digital engineering, to the maximum extent possible, when it is practical, beneficial, and affordable.
- Digital engineering should be addressed in the Acquisition Strategy and in the Systems Engineering Plan.



Programs To Incorporate An Integrated, Digital, Model-Based Approach



### **Documents as Digital Data**





### Model-Based Data Item Descriptions



### (New) Data Item Description (DID):

• Model-based engineering failure modes, effects, and criticality analysis profile (SysML version)



# Modular Open System Approaches (MOSA) Enabling Standards

#### **DoD** Assist FY 21 NDAA: Establish Repositories (https://assist.dla.mil/) Comprehensive index of: interfaces syntax and properties ASSIST documentation communication implementations **Ongoing effort by MOSWG** to work with Services to Notional MOSA Standards/Information identify and adopt • Reference Designs, Architectures, Profiles **MOSA**-enabling **Standards** Interface Specifications Application Program Interfaces (API) Specifications **DoD Information** APIs (source code and executable code) Technology Information Technology (IT) Standards **Standards Registry** Software (DISR) Documentation



### **DoD Engaging in Non-Government Standards Activities**

#### **Value of DoD Participation** in Standards Development

- Gain access to the commercial industrial base
- Access the latest technologies and  $\checkmark$ dual-use products
- Meet national goals
- Maintain & develop expertise
- Influence how industry standards are shaped to meet DoD requirements
- Spur innovation & provide superior  $\checkmark$ product



August 2018 DSPO Guidance on Participation in the Development and Use of NGSs

November 2021 Ms. Possehl Memo "Participation in Activities of NGSBs"



Product

### **Standards Attributes the DoD Seeks** Performance-based (essential characteristics rather than detailed design) Terminology Testing Widely-supported (use across different areas/sectors including dual-use commercial/Defense) Service Avoid technical barriers (greater product availability) Uniformly describe data Interface (dual-use by commercial/Defense and reusability)

Ref. Section 12(d) of Public Law 104-113: "Utilization of Consensus Technical Standards by Federal Agencies"



### **Strengthening the Workforce**

### **Communities of Practice**

### Learning & Training

### **Scholarship for Service Programs**





### Talent Development



SCIENCE, MATHEMATICS, AND RESEARCH FOR TRANSFORMATION

PART OF THE NATIONAL DEFENSE EDUCATION PROGRAM

STEM SMART Scholar https://

<u>https://</u> www.smartscholarship.org/smart Defense Civilian Training Corps https://dctc.mil/index.html

LEADER

DCTC





CyberCorps® Defending America's Cyberspace

DoD Cyber Scholarship Program

https:// www.dodemergingtech.com/ cyber-scholarship-program-cysp CyberCorps®

https://sfs.opm.gov/



# Strengthening the Workforce (con't)



#### And many more topics, including.

- Digital Engineering, Modeling and Simulation
- Defense Standardization Program Office
- Systems Engineering
- Functional Communities

- Digital Engineering Instruction
- Joint Architectures for Capabilities and Systems
- Engineering and Technical Management
- Test and Evaluation
- Digital Engineering Shift Left

https://www.cto.mil/sea/info-sheets/

#### SE&A information sheets provide a summary of our major efforts



### **Call to Action**



Be an active participant in standards development



Resource, participate in, and apply standardization education and training



Engage in the evolution of standards and standardization tools and practices



Select standards to achieve program goals