Department of the Air Force

Integrity - Service - Excellence

Standardization Executive Panel

Kristen J Baldwin, SES

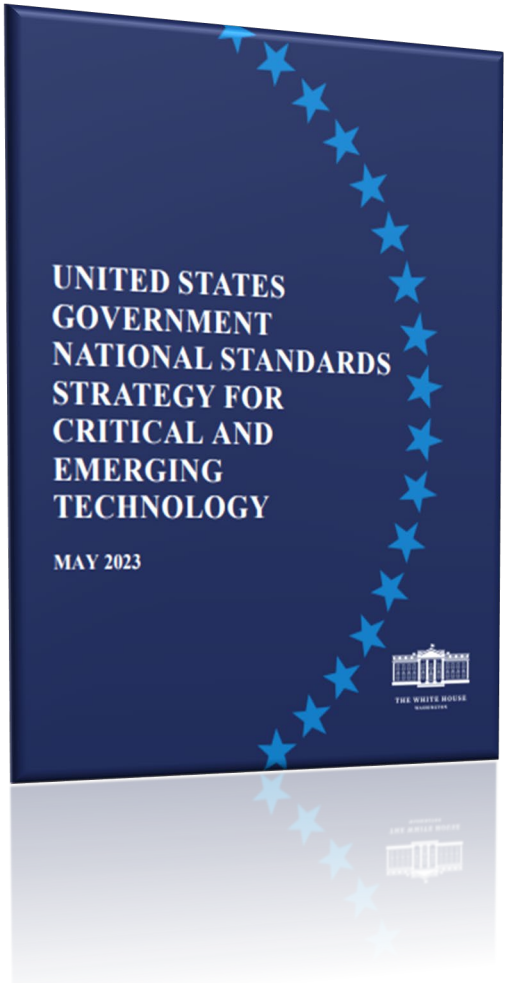
Deputy Assistant Secretary of the Air Force for Science, Technology, and Engineering

Distribution A. Approved for public release: distribution unlimited. (PAIRS Case #2024-0759) 5 August 2024

Accomplishments, Challenges and Opportunities of the Department of the Air Force

Q: How is the Department of the Air Force (DAF) supporting the implementation of the National Standards Strategy for Critical and Emerging Technologies?

1. Accomplishments
2. Challenges
3. Opportunities
4. Digital Innovation & Integration Center of Excellence (DIICE)



https://www.whitehouse.gov/wp-content/uploads/2023/05/US-Gov-National-Standards-Strategy-2023.pdf

Accomplishments

Air Force Material Command

- ✓ Published **MIL-STD-882E(C1)** "DoD Standard Practice System Safety" in ~5 months to meet Secretary of Defense deadline

A5/8/9 - Directorate of Plans, Programs and Requirements

- ✓ AF Joint Interoperability of Tactical Command and Control Systems (JINTACCS) Message Standards Engineering Office (AF JMSEO) represents the USAF at 2 separate Configuration Control Boards (CCBs) that manage DSP standards for interoperability

SAF/AQR

- ✓ Developing a comprehensive way-ahead for maintaining concurrency with AF MOSA-enabling standards
- ✓ Supporting the Defense Standardization Council in development and adoption of AM standards as they navigate the ANSI/America Makes published road map (v2 of June 2018 & v3 of July 2023)
- ✓ Initial release of Digital Building Code in 2023

Challenges

Air Force Flight Standards Agency

- ❑ With the recent promulgation of the revised HAFI 60-106 and HAFPD 60-1, (Standardization Directory) SD-1 and SD-3 may need to be looked at for revision

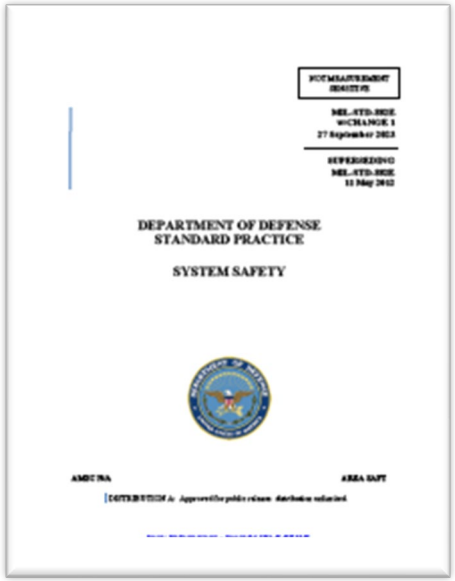
Air Force Material Command

- ❑ Future revision work on MIL-STD-882E(C1) continues with completing due diligence with industry to explore non-governmental standardization bodies and gap analyses

Opportunities

SAF/AQR

- ✓ Outreach with academia and others to understand state of the art in AM and understand opportunities for standardization
- ✓ Second iteration of DAF DBC by end of 2024; this reinforces open standards, open architectures and digital practices
- ✓ Asked Digital Innovation & Integration Center of Excellence (DIICE) to model MIL-STD-882…


DEPARTMENT OF DEFENSE
STANDARD PRACTICE

SYSTEM SAFETY

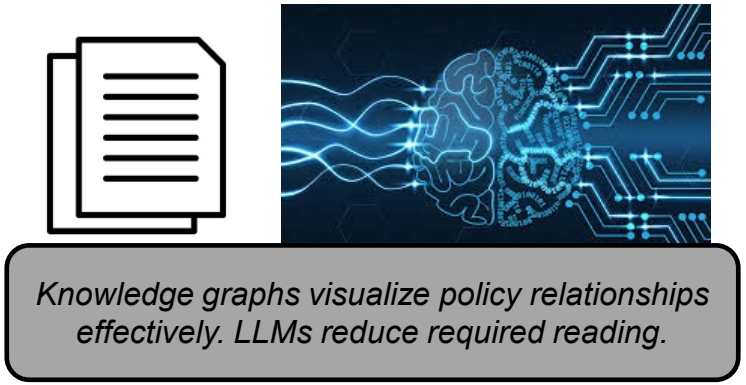
Policy Standardization – The What

- The DAF is in its digital transformation journey to fully embrace a complete digital ecosystem of DoD standards, handbooks, specs, artifacts, etc.
  - Envision a complete digital acquisition ecosystem
- The DAF will require the capability to ingest PDFs and documents into models; i.e.
  - Certification artifacts
  - Program Protection Plans
- The digital approach can evolve the capability to perform policy traces to understand how document-based policies are dependent upon each other

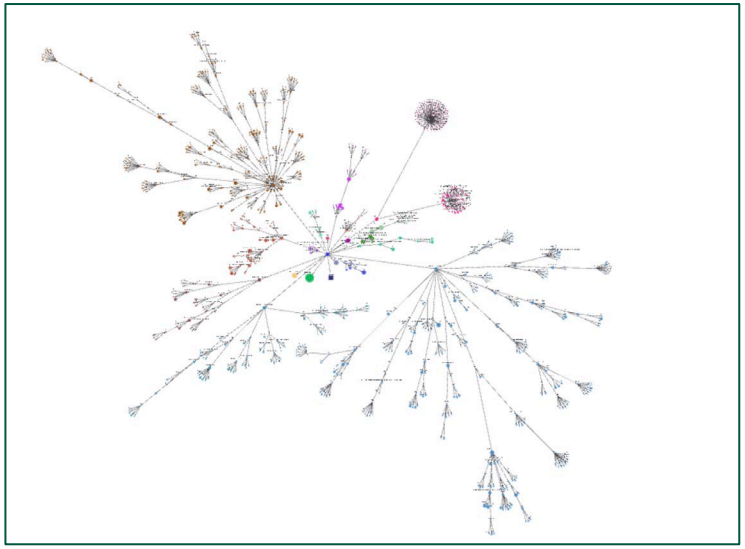
The DAF has a need to push to digital acquisition which must be driven by standards ingestion to create digital twins supported by policies on creation, accreditation, maintenance, and use of digital standards.

Policy Standardization – The How

- Asked to model MIL-STD-882
  - Scripts written for ASSIST and EPUBS to extract policy document references
  - MeTRA API and Large Language Model (LLM) used to generate models showing document relationships & content
  - Around 100 policy document models generated – on order of 30 min each
  - Models are searchable and filterable



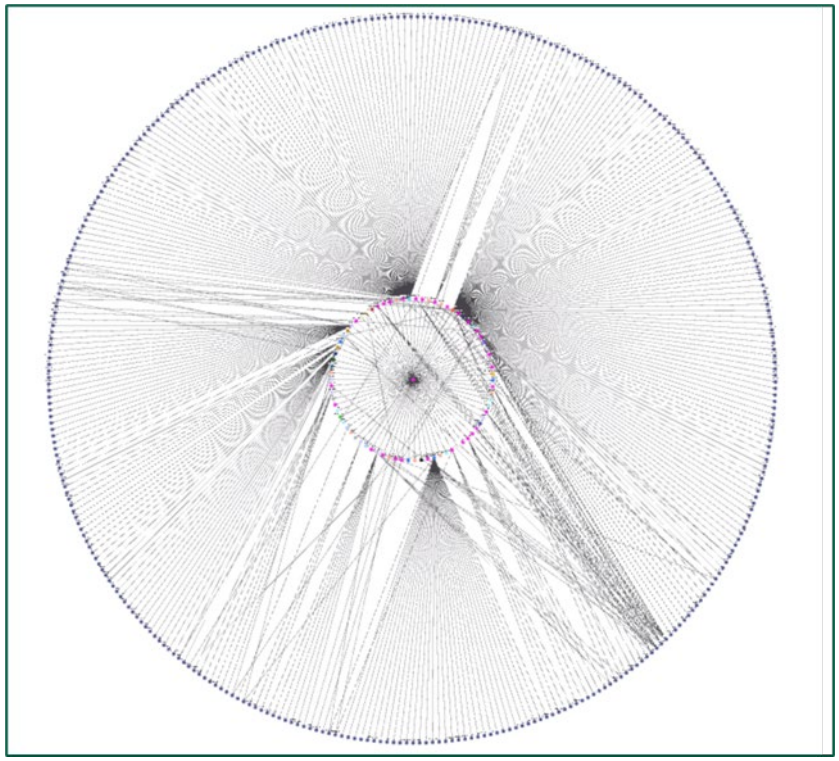
Knowledge graphs visualize policy relationships effectively. LLMs reduce required reading.



MIL-STD-882 Model

Policy Maker Implementation

- When making a change to policy, visualize the downstream effects to other policy documents
- Enables real-time analysis of policy changes and effects to resolve gaps on tight turn-arounds in a war-gaming environment



Model showing direct and secondary references to MIL-STD-882

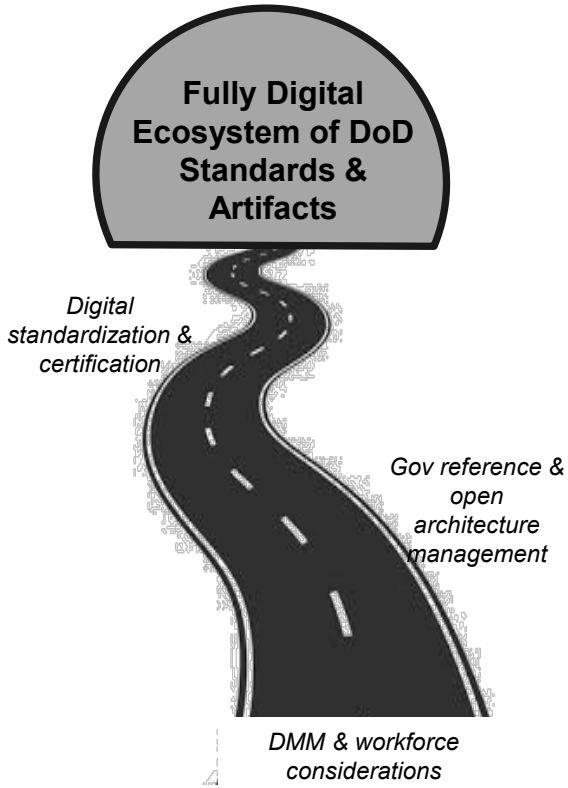
Policy Standardization – The When

Current State

- Robust repository of human readable standards
- Capability to ingest PDFs into model – DIICE feasibility study on MIL-STD-882E
- First fully digital DID (DI-SESS-82426, *"Model-Based Engineering Failure Modes, Effects, and Criticality Analysis Profile"*, SysML Version) – USAF pilot program

Future Desired State

- Fully digital ecosystem of DoD standards, handbooks, specs, artifacts
- Cohesive, Department-wide strategy for document update/evolution
  - Configuration management
  - Accommodates acquisition and non-acquisition documents
- Minimal to no need for maintaining human-consumable products
- Fully trained and receptive workforce



Engagement with Air Force Research and Engineering, AFIT and OSD

Policy Standardization – The Who

Digital Innovation & Integration Center of Excellence (DIICE) - https://www.afit.edu/DIICE/index.cfm

Sponsored by the Air Force Materiel Command (AFMC), the Air Force Institute of Technology established the Digital Innovation & Integration Center of Excellence (DIICE) in October 2023. The Center directly supports AFMC's Digital Materiel Management (DMM) goals to accelerate integrated capability delivery across the materiel lifecycle and functional disciplines.

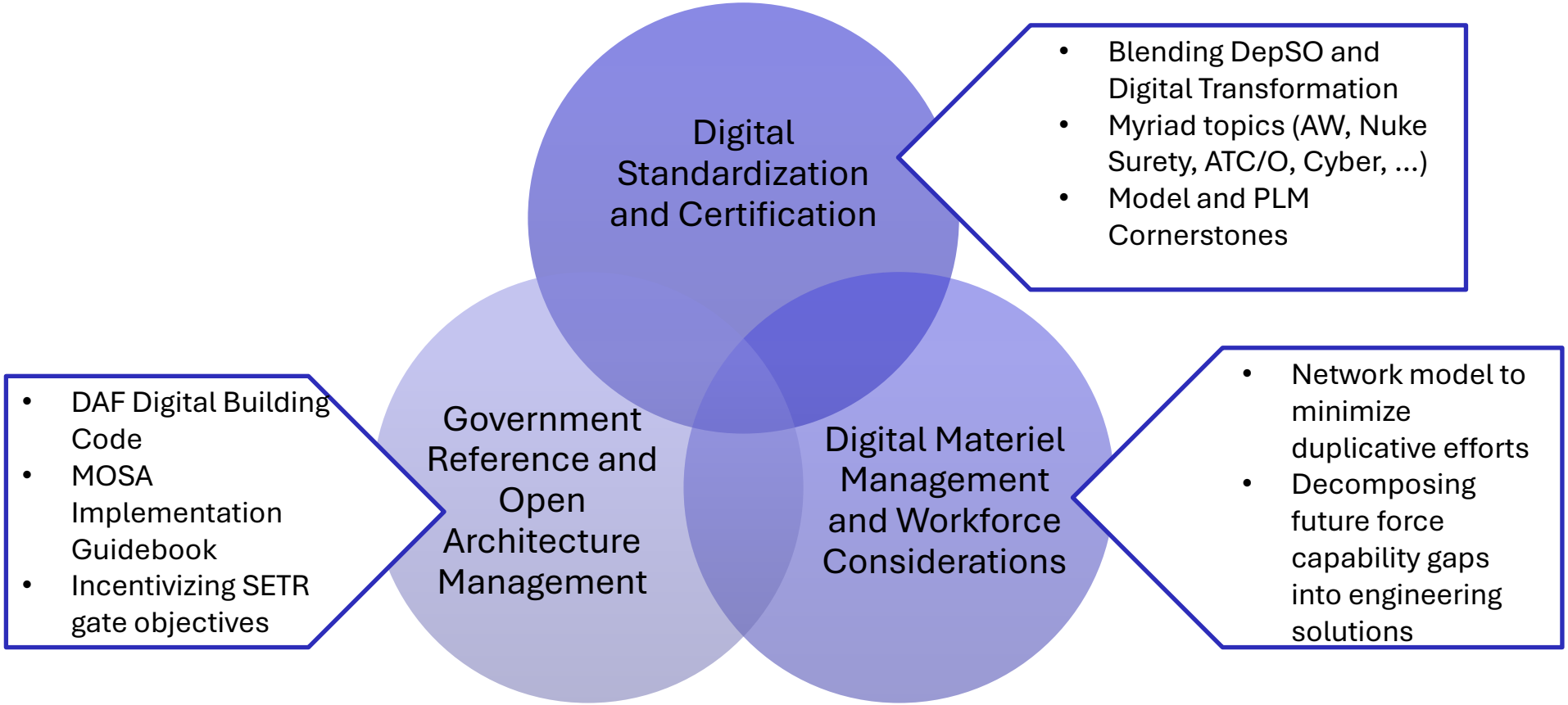
DIICE will generate digital solutions centered on model-based systems integration efforts that result in improved execution of weapon acquisitions and support across the AFMC enterprise in support of the warfighter.

DIICE focuses on four lines of effort: education excellence, research and technology transfer, consulting, and best practices.

For more information, please contact:

- Col Ian M Slazinik, Director, DIICE
  - ian.slazinik@us.af.mil
- Richard J Ott, Technical Director, DIICE
  - richard.ott.6@us.af.mil

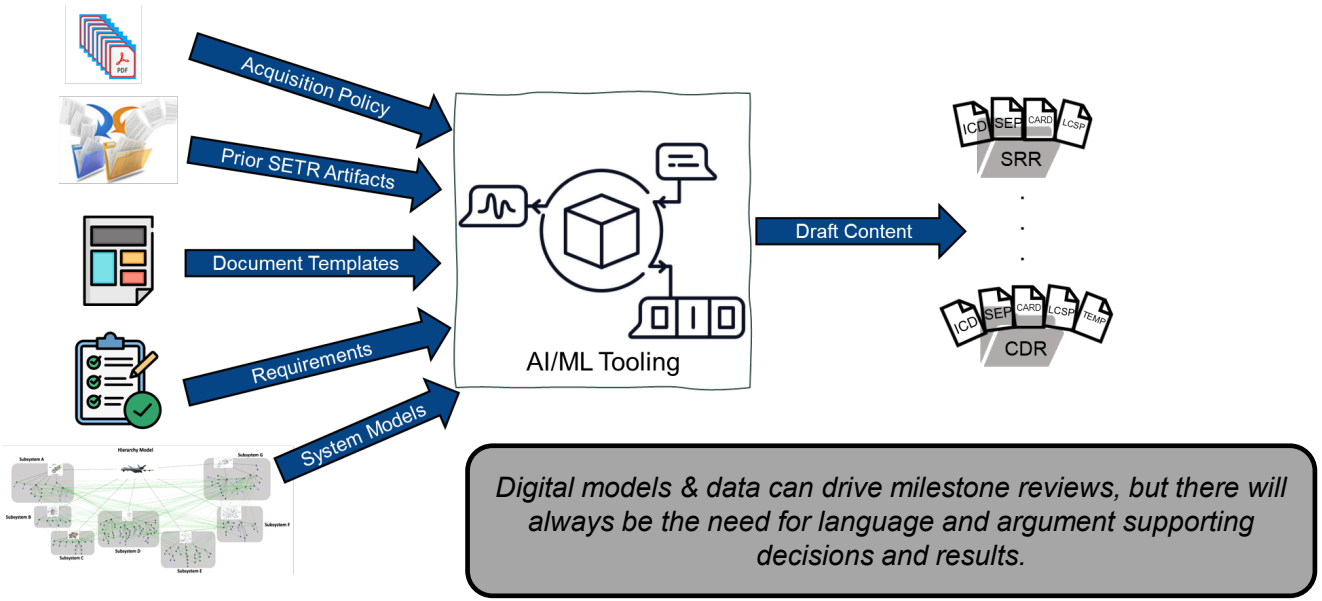
Policy Standardization – The Why



Co-Maturation of Digital Efforts Means Becoming Less Ad Hoc and More Intentional

Policy Standardization – Use Cases

- AI/ML agent can rapidly create draft content for human review, prioritizing time for strategic thought & decision making
- Milestone reviews based on "point in time" documentation aligned to requirements, showing compliance, and building an argument around current state of program – why not use tools to help?



Digital models & data can drive milestone reviews, but there will always be the need for language and argument supporting decisions and results.