

# ***Department of the Air Force***

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*Integrity - Service - Excellence*

## ***Department of the Air Force Digital Transformation***



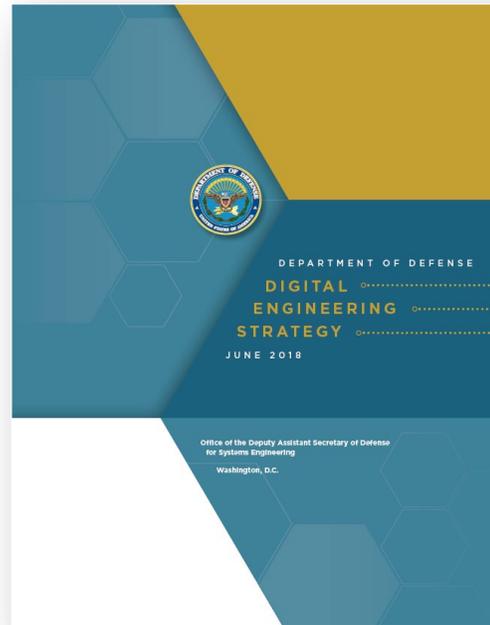
**Kristen Baldwin**

**Deputy Assistant Secretary of the Air Force,  
Science, Technology & Engineering**

**24 Oct 2023**



# DAF Digital Acceleration Strategic Foundation



- 1 Formalize the **development, integration and use of models** to inform enterprise and program decision making
- 2 Provide an enduring **authoritative source of truth**
- 3 Incorporate **technological innovation** to link digital models of the actual system with the physical system in the real world
- 4 Establish supporting **infrastructure and environments** to perform activities, collaborate, and communicate across stakeholders
- 5 Transform a **culture and workforce** that adopts and supports Digital across the lifecycle

**Department of the Air Force Implementation:** A digitally-empowered Department equipped with an *agile workforce*, *state-of-the-art technologies*, and *intuitive processes* that *drive model-based enterprise decision-making*, *enable automation*, *institutionalize open architectures*, and *leverage authoritative models and data* to ensure *seamless stakeholder collaboration across the lifecycle*.



# ***Strategic Priorities Digital Transformation***

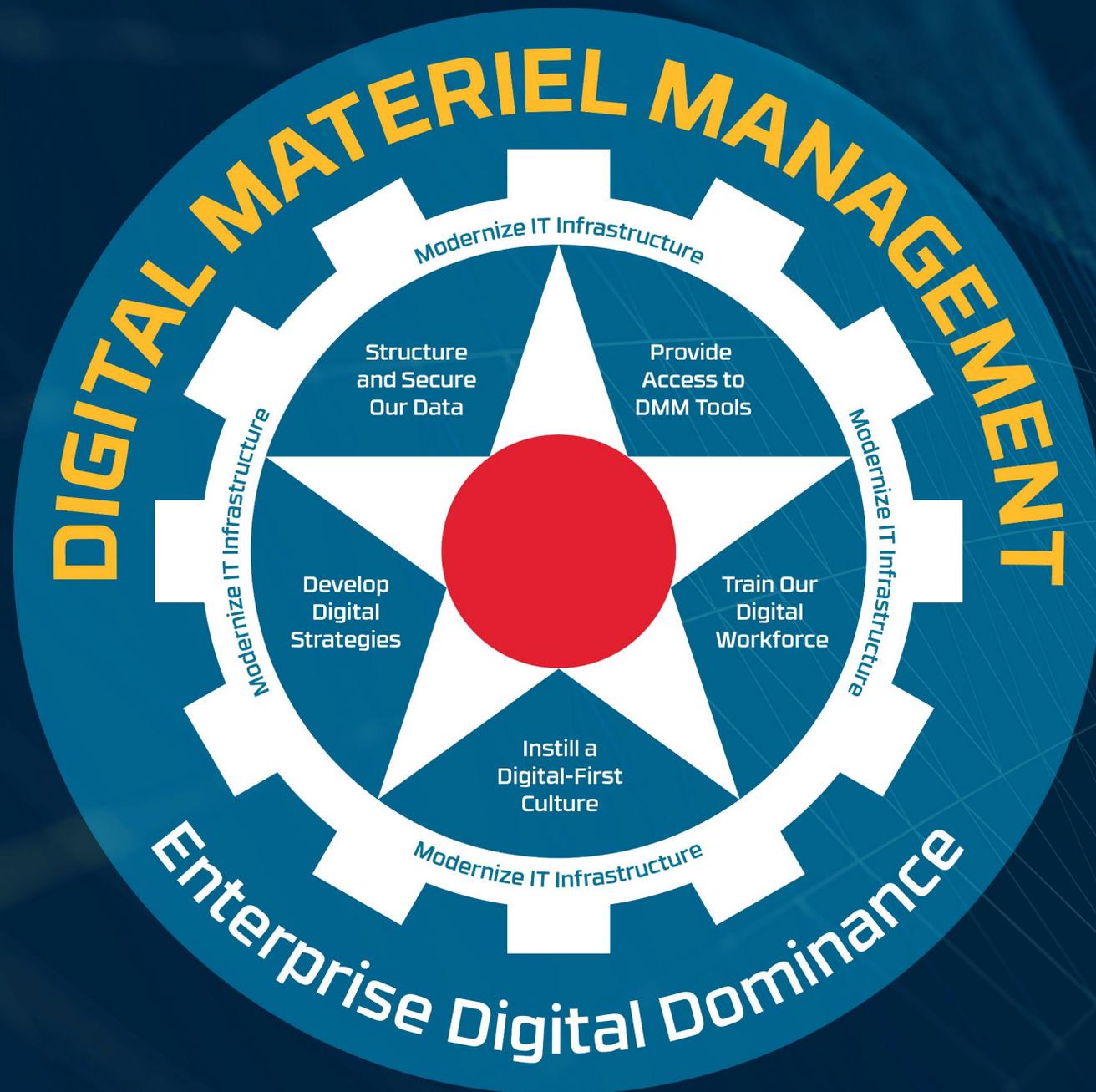
## **AQ Digital Acquisition Priorities**

- 1. Implement Open Systems Standards and Reference Architectures**
- 2. Ensure Programs Are "Born Digital" or Digitally Adapt over the Lifecycle**
- 3. Expand Enterprise Solutions and Embrace Cloud-based Collaborative Environments**
- 4. Institutionalize Processes for Agile Software Development and Software-Intensive Systems**

## **AFMC Digital Materiel Management (DMM) Priority**

- 1. Structure and Secure our Data**
- 2. Train our Digital Workforce**
- 3. Provide Access to DMM Tools**
- 4. Develop Digital strategies**
- 5. Instill a digital-first culture**
- 6. Modernize IT infrastructure**

**Aligned for Enterprise Digital Dominance**



[DMM: Whitepaper](#)



[Video OV-1](#)



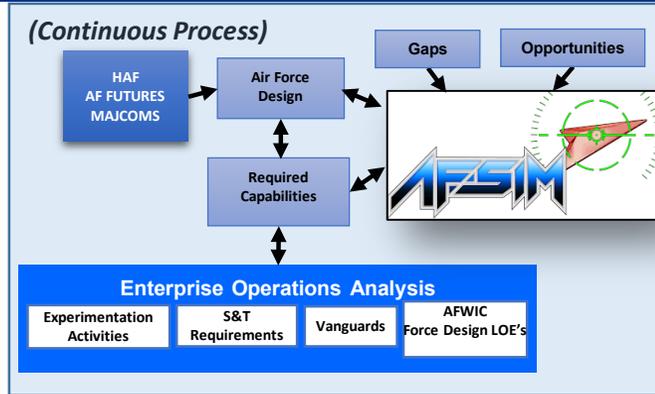
# ***DAF Digital Transformation Vision***

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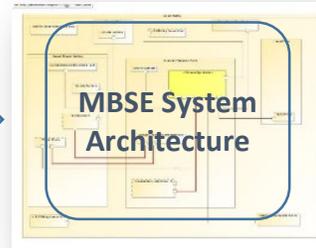
- **A transformative digital ecosystem, coordinated across the USAF & USSF, where tools and authoritative data are used to rapidly inform decisions**
- **Unprecedented Government and Industry collaboration where we can quickly achieve objectives and optimize cost, schedule and performance while maintaining a healthy respect for our shared interests**
- **Digital Materiel Management lifecycle connecting research, development, test, sustainment through a digital thread - from the concept to end of design life**
- **Knowledge is no longer “disposed”; it is enduring and evolves, informs, and translates to new opportunities and capabilities**



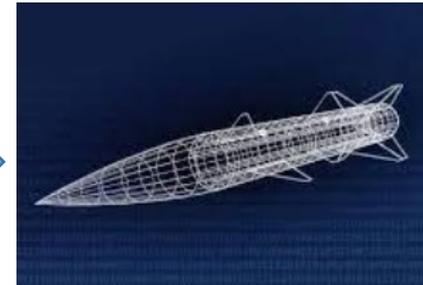
# Digital Lifecycle Ecosystem



Produce Digital CDD Model



Own the reference architecture and model in modern tools



Use Government or contractor IDE for Continuous Review



Link Model with LogRA for PLM Integration

Tradespace & Operations Analysis



Contracting Language



System Development



System Lifecycle



Standards

Reference Architecture Models

Training

Tools

Data Architecture

Digital Ecosystem Enabled By

PLM / FENCES / CLOUDONE / PLATFORMONE

*Integrity - Service - Excellence*



# ***DAF Accomplishments Toward this Vision***

- **Established a Digital Campaign and developed a “Digital Guide” to provide programs and practitioners with resources and best practices**
- **Published a Digital Building Code to set expectations that programs should plan for and incorporate digital acquisition practices in their programs**
- **Implemented a Digital Maturity Assessment tool to baseline organizations’ digital capabilities; developing goals and objectives for transforming processes and measuring return**
- **Stood up Digital Transformation Office (DTO) to serve as a focal point for acquisition transformation and collaboration**
- **Initiated Digital Acceleration Task Force (DATF) to deliver the most urgent and high priority Digital Materiel Management (DMM) needs**

**Department of the Air Force Digital Guide  
(Public facing)**





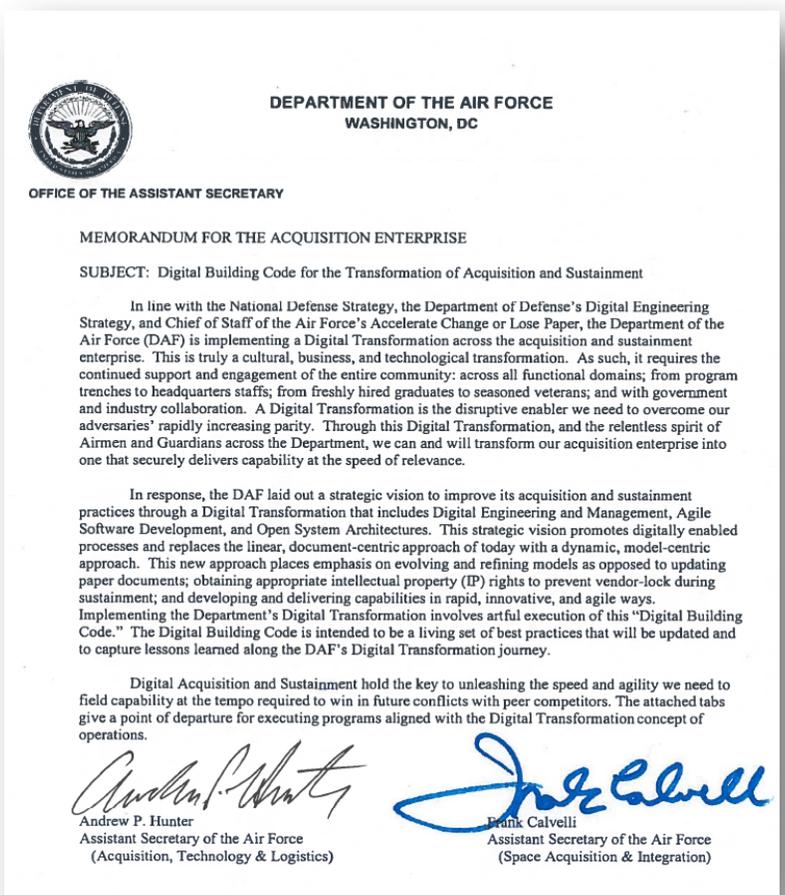
# DAF Digital Building Code

The Digital Building Code is a living set of practices that guide USAF and USSF programs to implement Digital Transformation:

- Digital Engineering
- Open Systems Architecture
- Agile Software Practices

## DIGITAL ENGINEERING AND MANAGEMENT

1. Develop digital models of systems
2. Develop a digital twin and digital thread
3. Implement an integrated digital environment
4. Employ a tailored digital strategy for contracting with industry
5. Ensure organizational readiness for Digital Engineering
6. Implement Digital Acquisition
7. Track Digital Maturity



*New programs are "born" digital while existing or legacy programs implement practices that can provide value*



# Digital Transformation Deliver Better Capability, Faster



Prototype

Requirements

Analysis

DT & OT

SLEP

Modernize

DMSMS



- First flight in 36 mo from concept dev.
- Modularity enables >10 variations
- Digital models enables rapid design/test/validate cycles w/warfighter feedback



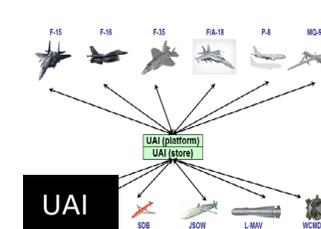
- >6B design variants analyzed to optimize performance
- ~6 month reduction in time to SRR
- VR based training for operators/MX



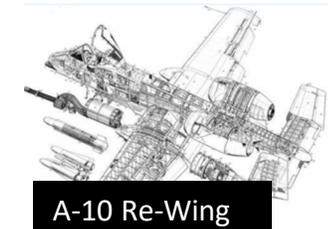
- Months → Days for software development & release
- 1000's of high fidelity design iterations
- Months → Weeks prep time for acq. reviews
- Pivot w/evolving threat



- >60 day reduction in time to PDR w/shared digital tool environment
- Months saved in virtual validation of assembly & MX
- Virtual training opportunities for crews/MX



- >2 yrs, \$2M saved in ICD dev't and SIL testing for F-15/SDB II integration
- For NATO munitions: 19 & 15 months saved on wpn integration compared to 5 year nominal avg



- ~1 yr saved in design qualification
- ~60% reduction in sustainment eng response time
- 2000 hrs or A/C downtime reduced to 700 hrs

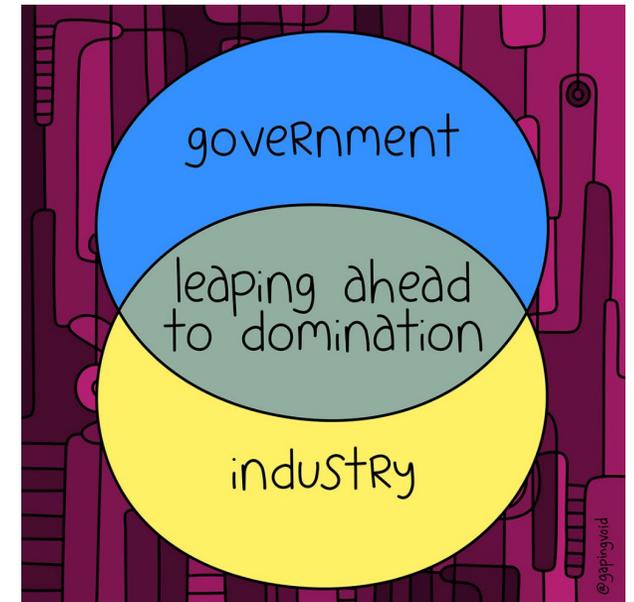


Overcoming silo's and enabling enterprise scale requires enterprise investment



# Digital Challenges

- Enterprise **Resourcing** to establish enterprise solutions
- Workforce education, **training**, and adoption
- **Tool interoperability** and SW **vendor lock**
- SW testing, approval, and deployment processes
- Data **Standards, formats**, modeling style guides
- USAF vs. USSF vs. DAF integration and **commonality**
- IT Infrastructure, tools, **enterprise digital environments**
- **Scaling** enterprise solutions to across programs, DoD, & Industry
- **Transitioning** legacy artifacts, processes, & **best practices**; model curation/V&V
- Data item Descriptions, Contract Data Requirements Lists, **Contract language, IP/data rights** considerations, data *access vs data ownership*
- Real-time government/contractor **access to data** vice traditional time-phased delivery
- **Cross-domain solutions / multi-level security (CDS/MLS) scalability** and standardization





# DAF Digital Industry Consortia

## Objectives:

- Collaborate on DMM demos & solutions
- Update DMM playbooks & Digital Guide
- Input to DAF level Digital Building Code

## Outputs:

- Outcomes inform DAC scope and provide best practices
- Information dissemination path for DAC products

### Industry Association Consortium (IAC)

DAF, DoD & Govt partners, FFRDCs/UARCs, Int. Defense partners, industry (primes, small biz, tool developers, & SW vendors)

### Digital Acceleration Consortium (DAC)

A focused OTA industry consortium with a limited number of primes & cloud service providers

## Objectives:

- Recommend solutions for modernizing IT infrastructure, compatible Integrated Digital Environments, secure access to data, common data standards & formats, policy & contracting language

## Outputs:

- Standardized digital deliverables
- Standardized IP data tagging / formatting

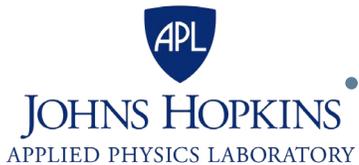


# DAF Digital Industry Consortia

FFRDC/UARC Coalition on DMM/Digital Engineering

Six Thematic Focus Areas Identified as Enablers

Industry Association Consortium (IAC) Kickoff – Nov 2 & 3, 2023



Carnegie Mellon University  
Software Engineering Institute

- Data Definition, Integration, and Sharing
- Policy and Enforcement for DMM
- Integration of Acquisition Functions
- DMM/DE Infrastructure and Environment
- Workforce Development and Training for DMM (Impacting Culture)
- Long-Term Leadership Engagement and Support

Please join us for this discussion.





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***Questions?***