

AVIATION WEEK 
**MILITARY AVIATION
LOGISTICS AND
MAINTENANCE**
SYMPOSIUM


April 9-11, 2024
Chicago, IL

DIGITAL ENGINEERING:

What it is
and

Why it is **CRITICAL** to National Defense

militarylogistics.aviationweek.com

#MALMS  

AVIATION WEEK 
NETWORK

A&D Macro Realities in 2024

“Cut R&D costs”

R&D



Efficiency everywhere

Value extraction from enterprise systems

“Make more now”

Munitions Shortage



Friend Shoring / Global Collaboration

BOM integration / Global IDEs

“Make new things”

‘Mass’ Problem



‘Replicator’ AI Enabled UAS / USVs

IIoT / Manu Engineering / CBM+

“To the COCOMs”

DE Extension



IT being used by COCOMs, not just acquisition

PLM for operations / sustainment

“Software first”

Disruptors Rising



‘Software first’, hardware second

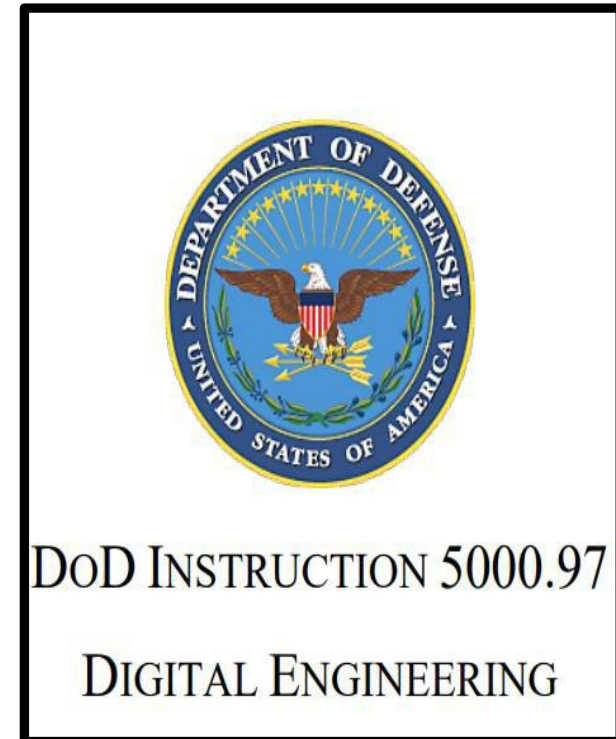
ALM

Digital Engineering Defined and Goals

- OSD Definition: *integrated digital approach that uses authoritative sources of systems' data and models as a continuum across disciplines to support lifecycle activities from concept through disposal.*
- 5 OSD Goals of Digital Engineering
 1. Formalize development, integration, and use of models to inform enterprise and program decision making
 2. Provide an enduring, authoritative source of truth (ASOT)
 3. Incorporate technological innovation to improve the engineering practice
 4. Establish a supporting infrastructure and environments to perform activities, collaborate, and communicate across stakeholders
 5. Transform the culture and workforce to adopt and support digital engineering across the lifecycle

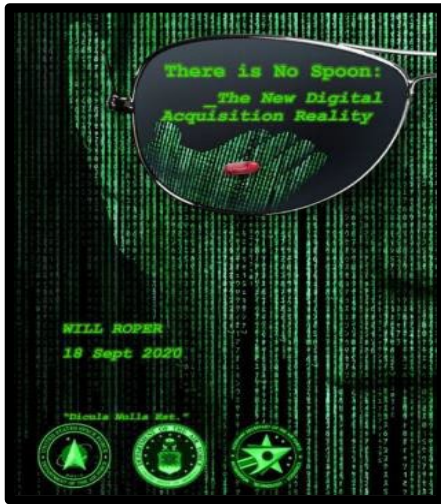
DOD Instruction 5000.97 on Digital Engineering

- New guidance on Digital Engineering (DE) in DoD (dated 12/21/2023)
 - Program Focused
 - Models Based Systems Engineering (MBSE)
 - Modular Open Systems Approach (MOSA)
- Existing Programs: Implement DE “as early as possible”
- Required for all new DoD programs from 12/21/23
 - DE Strategy key part of acquisition plan
 - Reporting metrics at each Program Milestone by PM
 - Digital models/artifacts/data required
 - DE specific DIDs and CDRLs on each program



Services creating 'the how' for implementing DE

Air Force



'There is no Spoon' / 'Bending the Spoon'

'Digital Trinity' ...Digital Engineering + Agile + Open Architecture.

'system's lifecycle matrix'

Programs (eSeries): T-X, NGAD, GBS

Space Force

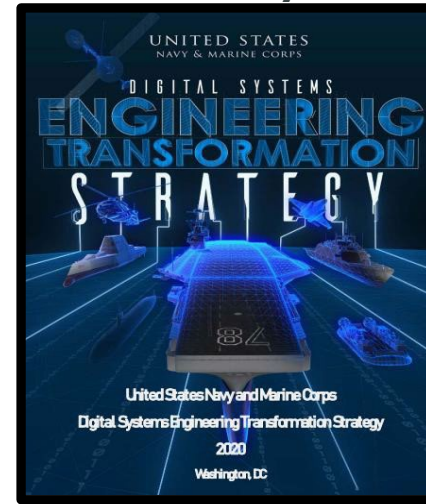


'First Digital Service'

Sharing the models used in simulations.

'Combat Development Teams' will have digital twins for every new system.

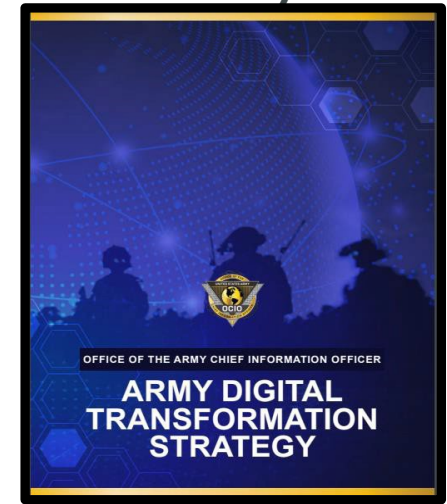
Navy



Use of models, ASoT, Establish Environments, Transform culture

Programs: MBPS, DMDV

Army



'ADTS' (Army DT Strat).

'Digital Army' by 2028 through multi domain ops.

Programs: FVL, OMFV, cArmy

DOD Instruction 5000.97 on Digital Engineering

- **Navy on Surface Fleets** - "...having that digital representation and being able to share that info ... that's the key.. **seismic shift**" in modernizing...and breaking down cultural silos"
- **Ashley Holloway, Navy Chief Architect, Model Based Product Support**
- **Army on Ground Vehicles** - "We intend to use digital engineering in a model-based environment, ...we're going to award those contracts to design vehicles <using> **cloud-based tech stack**..."
- **James Schirmer, Dep Dir, PEO GCS**
- **Raytheon on Hypersonics** - "Digital design and engineering have the ability to **cut 30 percent or more** out of the development timeline and even potentially more out of the testing timeline."
- **Wes Kremer, EVP Raytheon Missiles and Defense**
- **Lockheed on Missile Defense** - "Digital One from Day One...We're implementing DE with the intent of **supporting our customers'** needs faster and more effectively."
- **Whitley Poyser, DE lead for NGI Program**
- **Northrop Grumman on Aircraft Platforms** - "With DE, we can quickly proceed through the design, testing, and manufacturing phases, **saving money and taking months or even years off** of typical development timelines for large systems,"
- **Chris Daughters, VP Engineering Northrop Grumman Aeronautics Systems**

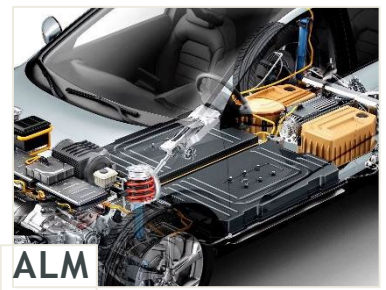
Capabilities critical in accelerating 5000.97 adoption

DoD Instruction 5000.97 Capability Elements

- 1. **DIGITAL Eng Ecosystem**
- 2. **DIGITAL Model / Twin**
- 3. **DIGITAL Thread**
- 4. **DIGITAL Artifacts**



CAD



ALM



PLM



SLM



IOT



AR



Thank you for your time.

Q&A

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*Thank you for attending –
Tell us how we did*

