AI @ Speed & Scale

Evolving with AI and within the Army's Digital Transformation

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DASA(DES)

Our Mission

ASA(ALT)

Continuously **modernize** the Army, as part of the Joint Force, through rapid and timely delivery of Soldier capabilities that deter adversaries and win our nation's wars.

DASA(DES)

We **engineer** pathways for digital transformation, so programs can deliver overmatch capabilities.

We have embarked on a Digital Odyssey…

…underpinned by Digital Transformation, towards equipping and delivering the Army of 2030 and beyond, with a comprehensive set of initiatives focused on elevating our people, transforming our solutions and accelerating our tools with the most technologically advanced capabilities.

- Implementing and scaling Modern Software Practices
- Evolving open architecture towards a Modular Open Systems Approach (MOSA)
- Developing a Digital Engineering Strategy
- Implementing Data Mesh underpinning a Unified Data Reference Architecture (UDRA)
- **Scaling and maturing Artificial Intelligence / Machine Learning**
- Incorporating Cybersecurity for both offensive and defensive mindset
- Empowering Army community of Soldiers, civilians and contractors with the training needed to support the Digital Transformation initiatives

Guiding Principles for Digital Transformation

Stabilize, Simplify and Flatten

- Appetite suppressant – reduce technical/legacy debt – reduce cost
- Reduce dependency - Light, mobile, flexible
- Stop adding to the problem – take something/remove or at least make it less complex

Low signature

- Hide in Plain sight
- Electronic signature

Constant Iterations

- Software defined
- Data Mesh enabled
- Material Release

Open – Interoperability

- Technical – technology, weapons systems, innovations
  - *Abstract Hardware and Network (Dynamic v Static)
  - *Abstract Software
  - *Abstract Data
- Reference Architectures
- Replace and plug-and-play components

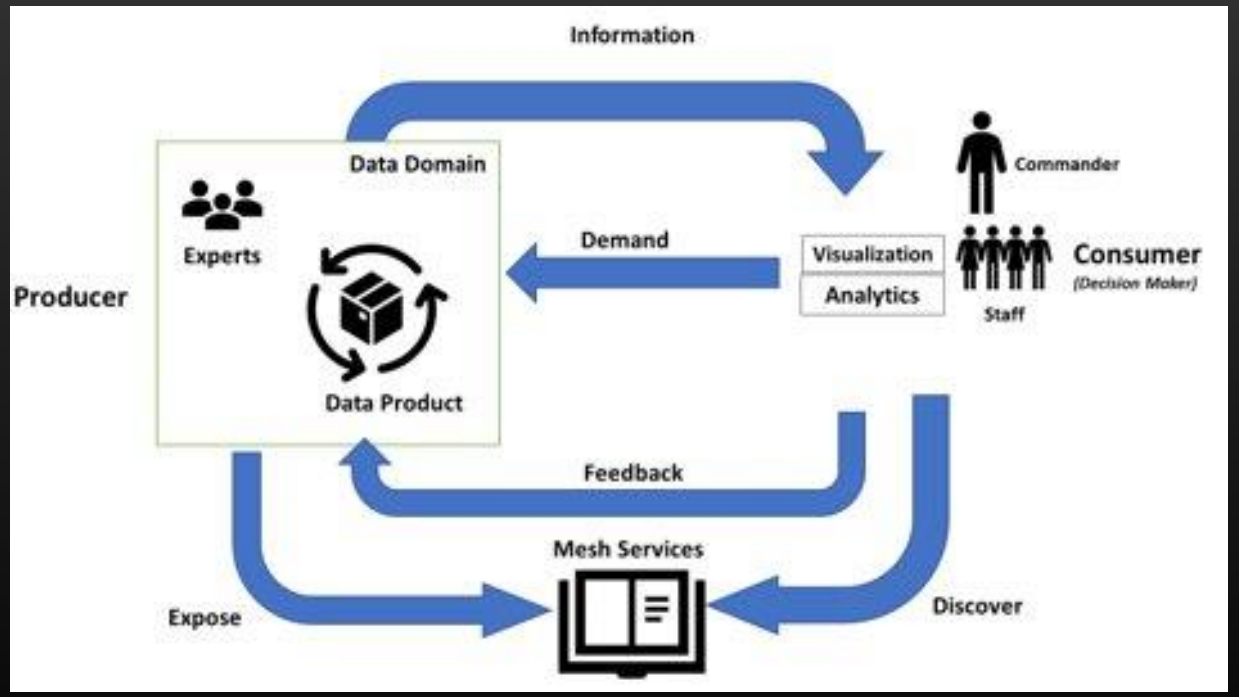
True Transformation Requires People, Process & Systems

Data is Foundational for AI

The data ecosystem is founded on the Data Mesh concept and can be explained through data product, producer, consumer relationship.

The key elements of the data ecosystem are:

- Decision Makers
- Data Domains
- Mesh Services
- Data Platforms
- Analytic Layer
- Visualization Layer



Decision Makers drive the demand for data products. Data products are produced by data domain experts to satisfy this demand.

Data products answer Commander's Questions

Where are My Units?

Where are my Joint Partners?

Where (&Who) are my Allies?

What are US Forces doing?

What are Joint & Coalition Partners doing?

What is the enemy doing?

Where are we at Risk?

Where is the Enemy at Risk?

What/Where can we exploit?

Follow on Actions? (8–24–48 hours)

Partnering with Industry through RFIs to build the reference architecture

RFI #1 (Data Product)

Defines the Data Product segment of the data architecture.

Released to Industry 28 October 2023.

Included both text and digital model-based representations of the architecture.

35 responses received.

RFI #2 (Mesh Services)

Defines the Mesh Services segment of the data architecture.

Released to Industry 28 March 2023

Follow-on RFIs will address the Data Domain, and computational Governance segments.

Included text and digital model-based representations of the architecture.
60 responses received.

RFI #3 (Data Doman and Governance)

Defines the Data Domain, Data Domain
Services, and Governance, segment of the data architecture.

Included text document describing the architecture.

Release targeted for 15 September 2023.
Responses due 30 October 2023.

Coming your way!

- Deliver ASA(ALT) UDRA v. 1.0 - 1QFY24
- UDRA Industry Day, 3 October
- Deliver UDRA Implementation Guidance – by 4QFY24 and updated quarterly
- Incorporate UDRA contracting language in program RFPs for conformance and/or compliance to the UDRA – by 4QFY24

U.S. ARMY

PEO IEW&S OV

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Delivering trusted AI through Secure MLOps Environment

Traceability, Observability / Orchestration, Replaceability, automated Consumption

AIDP – Army Intelligence Data Platform
ALE – Air Launched Effects
ABIS – Automated Biometric Identification System
BAT-A – Biometrics Automated Toolset– Army
BCT – Brigade Combat Team
CIRCM– Common Infrared Countermeasure
CMOSS – Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance, Reconnaissance (C5ISR)/ Electronic Warfare Modular Open Suite of Standards
CMWS – Common Missile Warning System
EAB – Echelons Above Brigade
EW – Electromagnetic Warfare
EWPMT – Electronic Warfare Planning & Management Tool
FLOT – Forward Line of Troops
GLE – Ground Launched Effect
HADES – High Accuracy Detection and Exploitation System
ITDS – Improved Threat Detection System
JCAP – Joint Common Access Platform
LDS – Laser Detection System
LIMWS – Limited Interim Missile Warning System
MEMSS – Modular Electromagnetic Spectrum System
MFEW – Multi-Function Electronic Warfare
MRL – Multiple Rocket Launcher
NESO – NAVWAR EW Systems Overhead
PNT – Position Navigation Timing
RWR – Radar Warning Receiver
S2AS – Spectrum Situational Awareness System
SAM – Surface to Air Missile
TITAN – Tactical Intelligence Targeting Access Node
TCE – Tactical Cyber Equipment
TLS – Terrestrial Layer System
TRAC – Tactical RF Application Chassis
UAV – Unmanned Aerial Vehicle

MULTI DOMAIN INTELLIGENCE - FOUNDATIONAL

Project Linchpin
TITAN
Intel Apps
AIDP

OFFENSIVE CYBER

TRAC

TCE

JCAP

APNT / NAVWAR

CMOSS PNT Card

Mounted APNT

Dismounted APNT

RCDN

BIOMETRICS

DoD ABIS

BAT-A

Project Linchpin – Contracting, Scope & Schedule

Objectives

- Deliver trusted AI through a secure trusted MLOPs environment
- Maximize DoD Investments and Commercial Technologies with a Best of Breed Approach
- Establish continuous competitive yet collaborative ecosystem of Industry and Government partners
- Incentivize the use of Small Businesses; integrate Non-Traditional(s); Leverage Traditional(s) to scale and more
- Establish multiple contract opportunities to allow maximum participation across the AI ecosystem

Industry Outreach and Feedback

- 2x RFIs, 170+ Industry Engagements – Overwhelming support
- Initial RFI shifted TOR → TORC – Learning w/Industry as we go
- TORC BAA Announcement in June 2023 (AI & ML Research for Expeditionary Maneuver & Air/Ground Reconnaissance)
  - Competitive Contract Award planned within next two weeks

Next Steps

- Partner with DoD / IC / Services; near term collaborative prototyping
- Small contract award(s) expected next spring – Follow Sam.gov
- Multiple contracting opportunities forthcoming FY24+

Steps to Developing & Deploying Models

MODEL DEVELOPMENT

- GOTS
- COTS

PROJECT LINCHPIN

Infrastructure will be managed at the enterprise level, in hybrid cloud-based environments

7x Key Functional Components

1 Secure Trusted Hosting Environment

Shares DoD Environments and Components

DATA HOLDINGS
- Extensible to support various sensor modalities
- Secure, trusted Secure, accessible, trusted Govt data

2

DATA LABELING
- Trusted labeling resources
- Innovative tools
- Automation
- Synthetic data

3

MODEL TRAINING
- Innovative / Secure training environment
- Optimization, test and evaluation for industry and government
- Collaborative/ Competitive Model Training

4

VERIFICATION & VALIDATION
- Measurement of model performance
- Confirmation with UI/UX
- Adversarial AI / Trojan management

5

DEPLOYMENT
- Incorporates model sender and orchestrator
- Cloud and tactical networks
- Decoupled from SW
- System and User Feedback Loop

6

7 Run-time Environment

EMPLOYMENT
- SW in each Tactical Computing Environment
- Inference engines run deployed models
- Models optimized for each sensor and sensor system and user need

- AERIAL
- TERRESTRIAL
- GROUND STATION
- FOUNDATIONAL

Machine Learning Operationalization (MLOPS) is a disciplined approach - including people, tools/technologies, process, and governance - to manage the entire lifecycle of a machine learning model from 1) initial data collection through 2) data labeling, 3) model training, 4) test & evaluation, validation & verification, and 5) deployment, including post-deployment model monitoring and feedback of operational data to improve the next

AI Risk Framework (DRAFT in Progress)

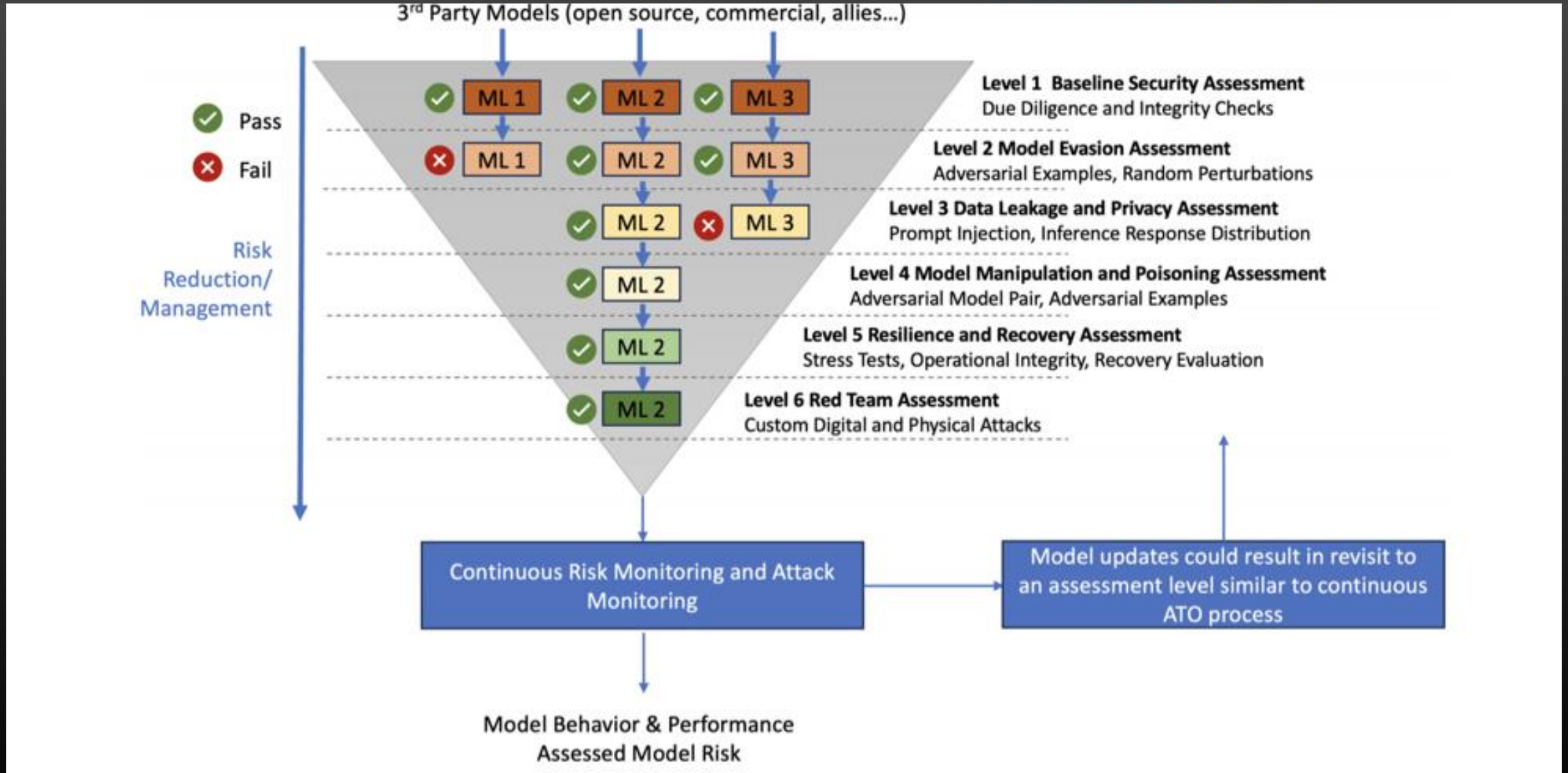
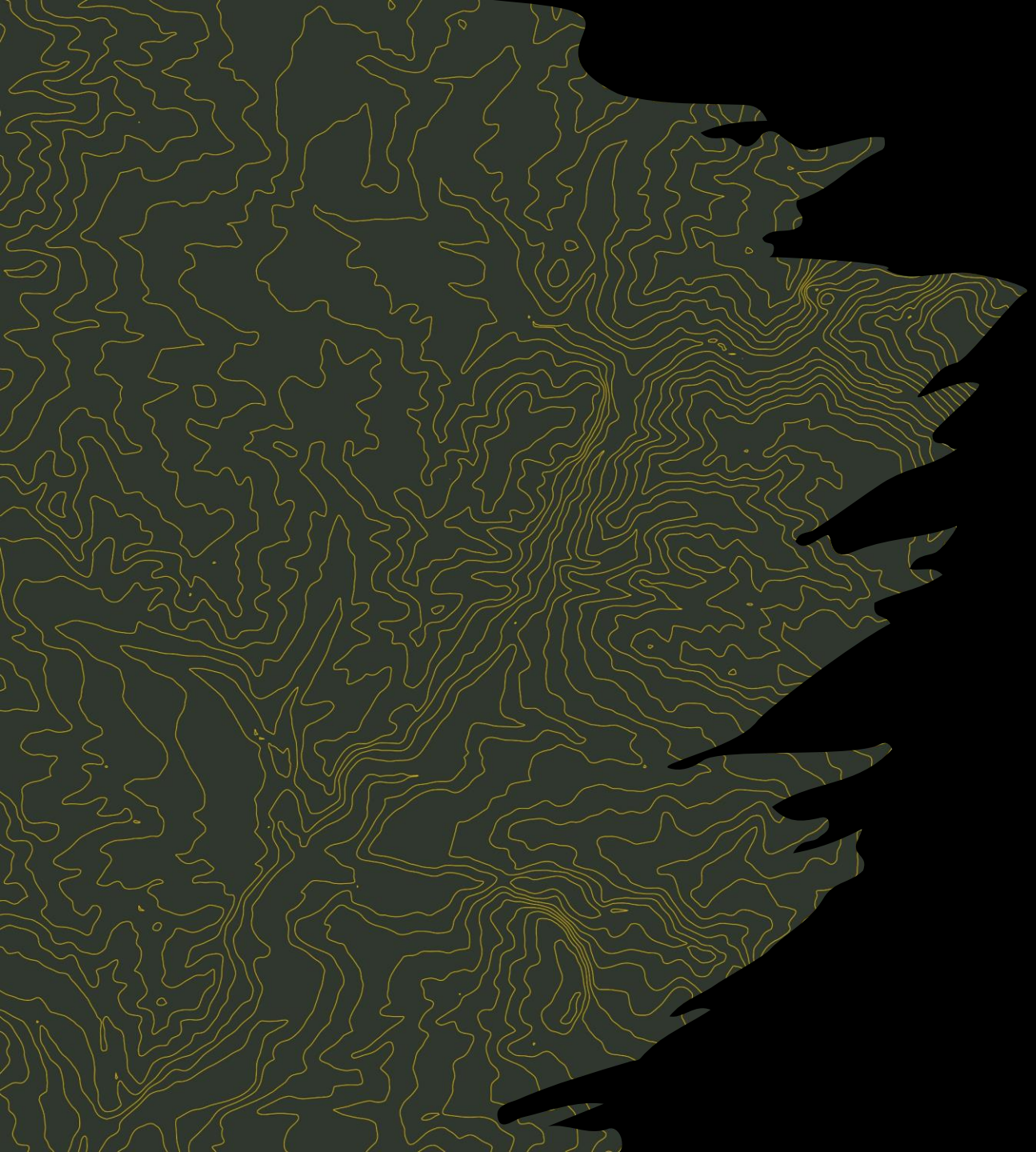


Figure 1: Proposed AI Risk Framework



Questions for YOU

How does your AI Strategy interact with data as it evolves over time and across systems?

How will you combat the constantly growing security risks?

How will you build for efficiency at scale?

Join Us.

#ArmyDigitalOdyssey

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