



CDAO

Chief Digital & Artificial
Intelligence Office

Accelerating AI Adoption for DoD Decision Advantage: DOD's Technical Needs

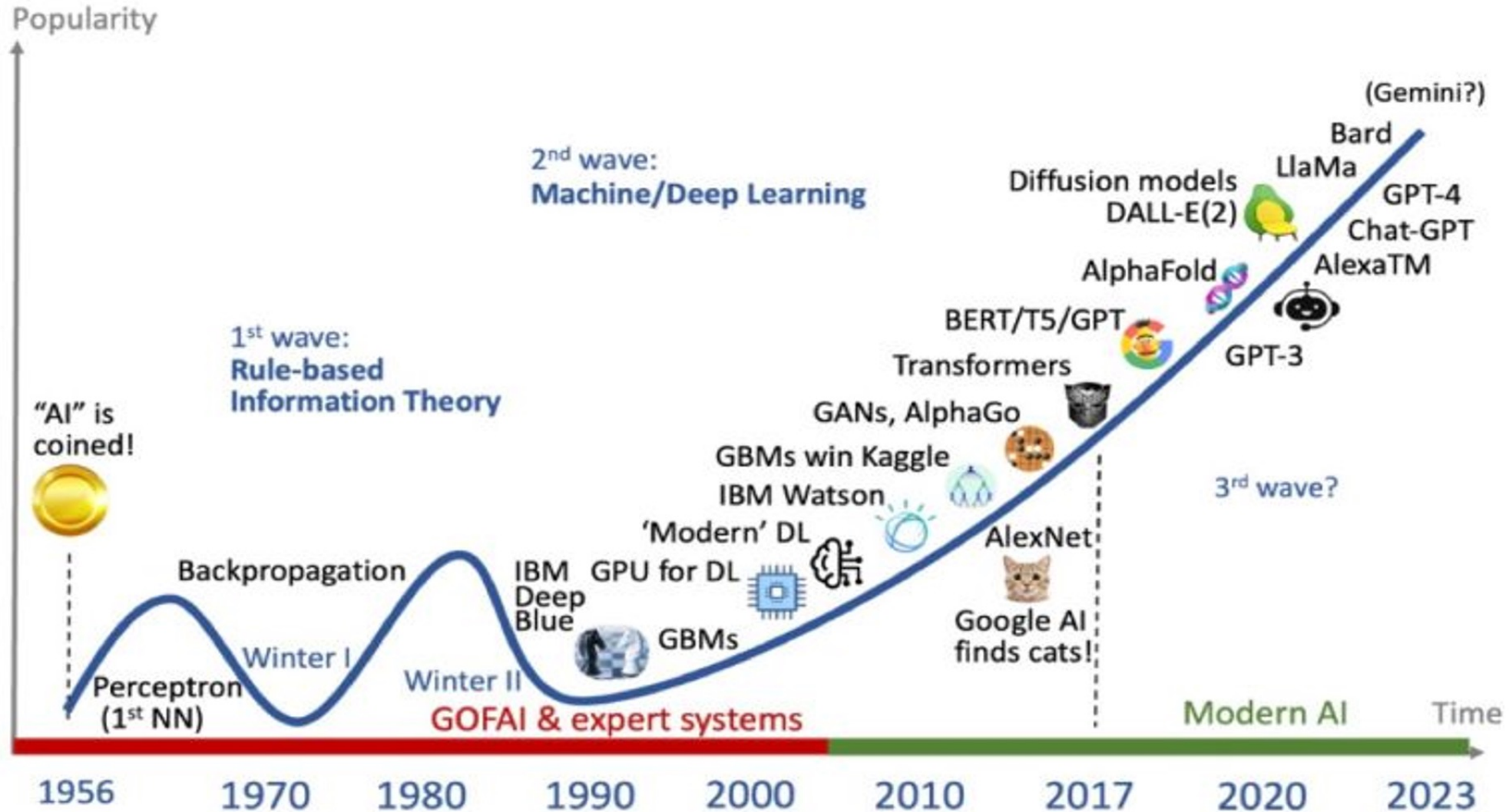
Dr. William Streilein, Chief Technology Officer

Which do you Agree with?

- **“AI is truly amazing.** Its potential to transform society and the world by automating tasks, making better decisions, personalizing experiences and generally making life better for all mankind make it the most important invention since the printing press.
- **“AI is nothing more than hype.** Recent advances in AI are narrow, only incremental and it is far from being as intelligent as humans. Progress is driven by corporate interests rather than societal benefit and rarely impact daily life in a positive way.



History of AI

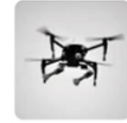


The Competitive Environment



top Washington Post

ISIS's killer drones are a threat, but the Pentagon is bracing to face more-advanced 'suicide' aircraft
ISIS's killer drones are a threat, but the Pentagon is bracing to face more-advanced 'suicide' aircraft. A drone carrying two ...



China's Plan To Challenge The USA's Tech Dominance

Tim Bajarin Contributor @
Consumer Tech
I write about tech industry's impact on the PC and CE

CNBC

Google CEO: A.I. is more important than fire or
"AI is one of the most important things humanity is working on
profound than, I dunno, electricity or fire," says Pichai, speak
Feb 1, 2018

RESEARCH 03.23.2023
CYBERSECURITY

HIDDENLAYER

THE DARK SIDE OF LARGE LANGUAGE MODELS

Putin says the new the ruler of the world'

The Russian president warned that artificial intelligence offers
'colossal opportunities' as well as dangers
By James Vincent | Sep 4, 2017, 4:53am EDT

Forbes

China Has Caught Up To U.S. In AI, Says AI Expert Kai-Fu Lee

It currently co-leads artificial intelligence with the United States. When AI
Superpowers came out in 2018, I think it was a bit surprising to people.
3 weeks ago



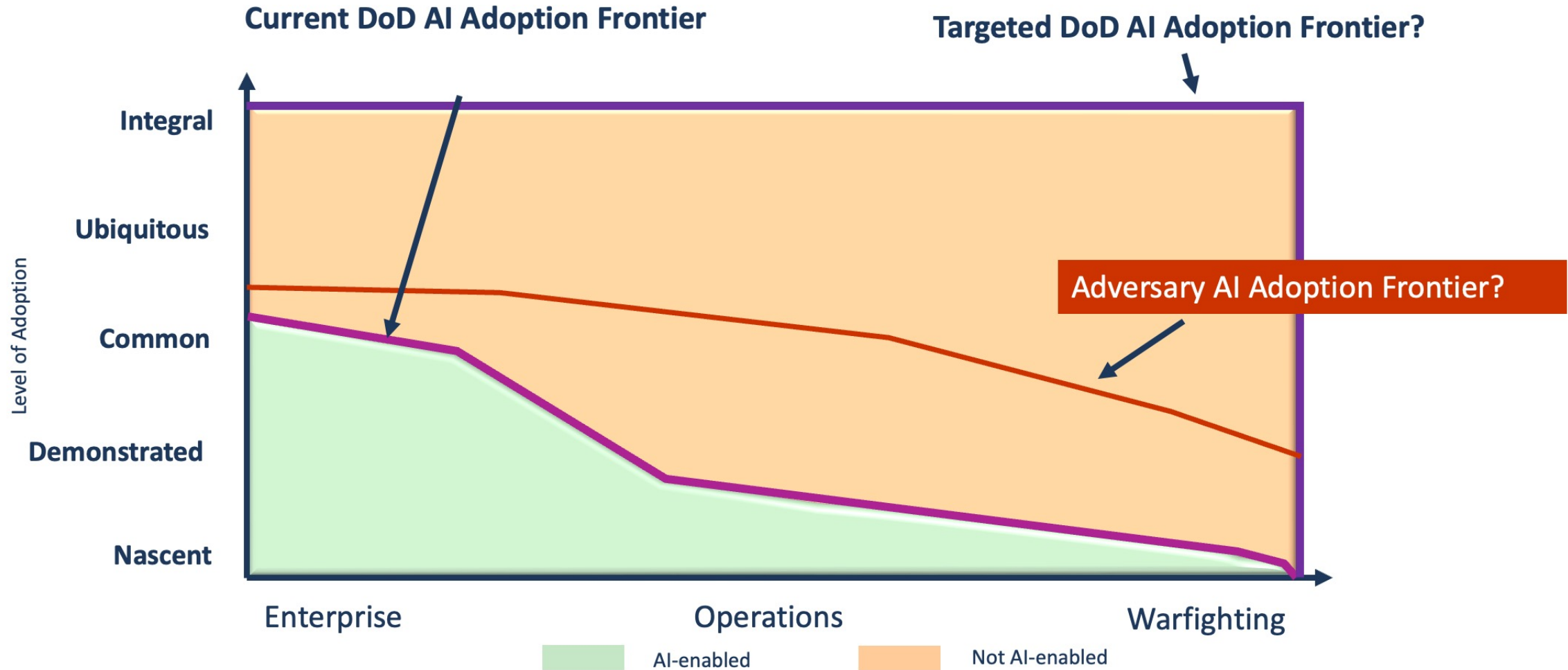
SCIENCE & TECH

SecDef: China Is Exporting Killer Robots to the Mideast

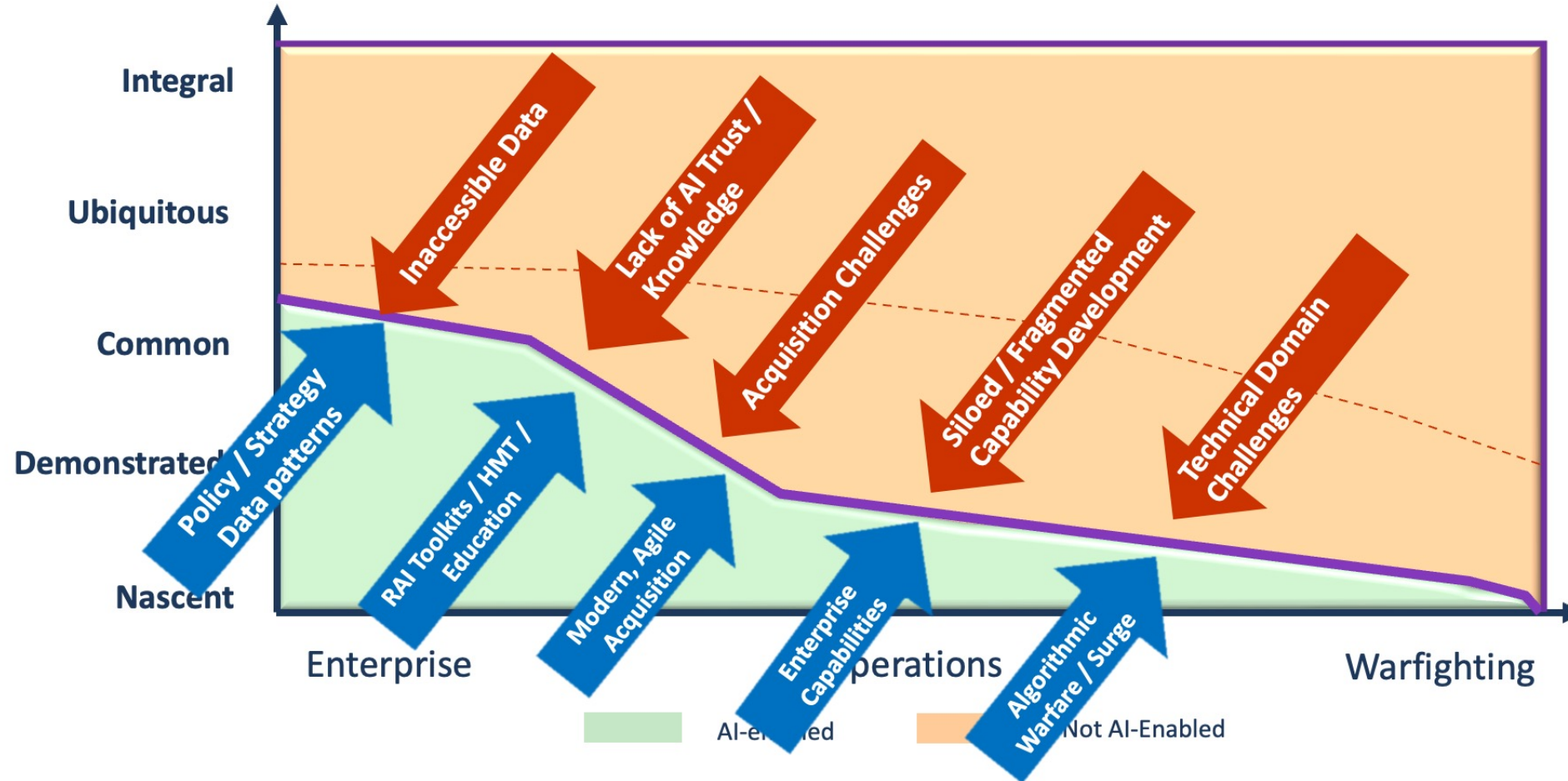
For the first time, a senior Defense official has called out Beijing for selling
lethal autonomy.



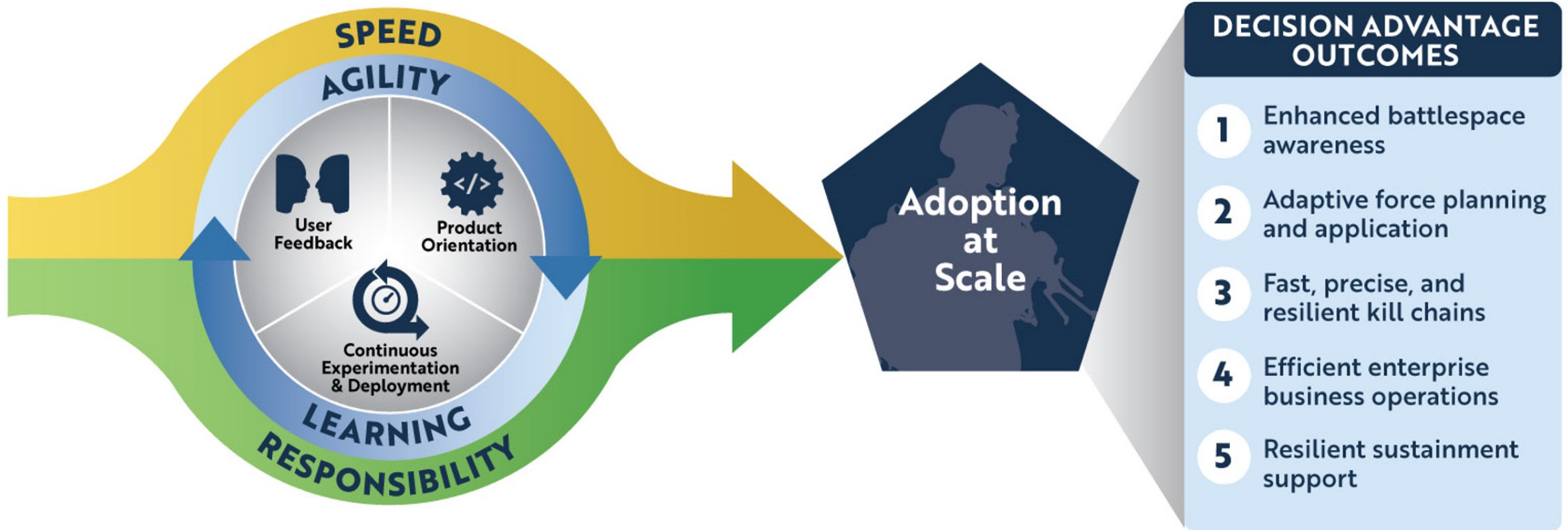
Race With Ramifications



Impediments to Adoption



An Agile Approach to Adoption at Scale



DoD AI Hierarchy of Needs

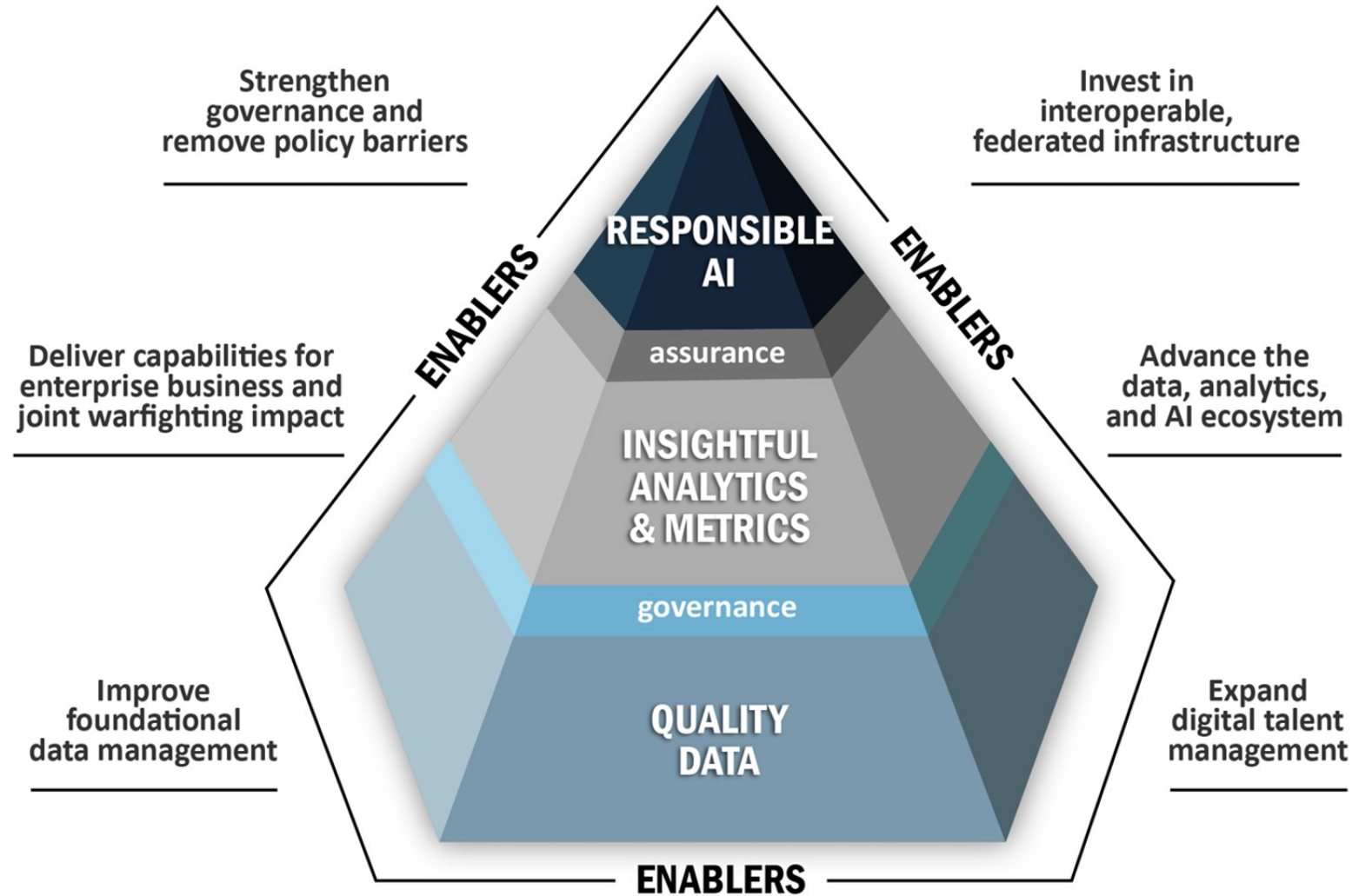
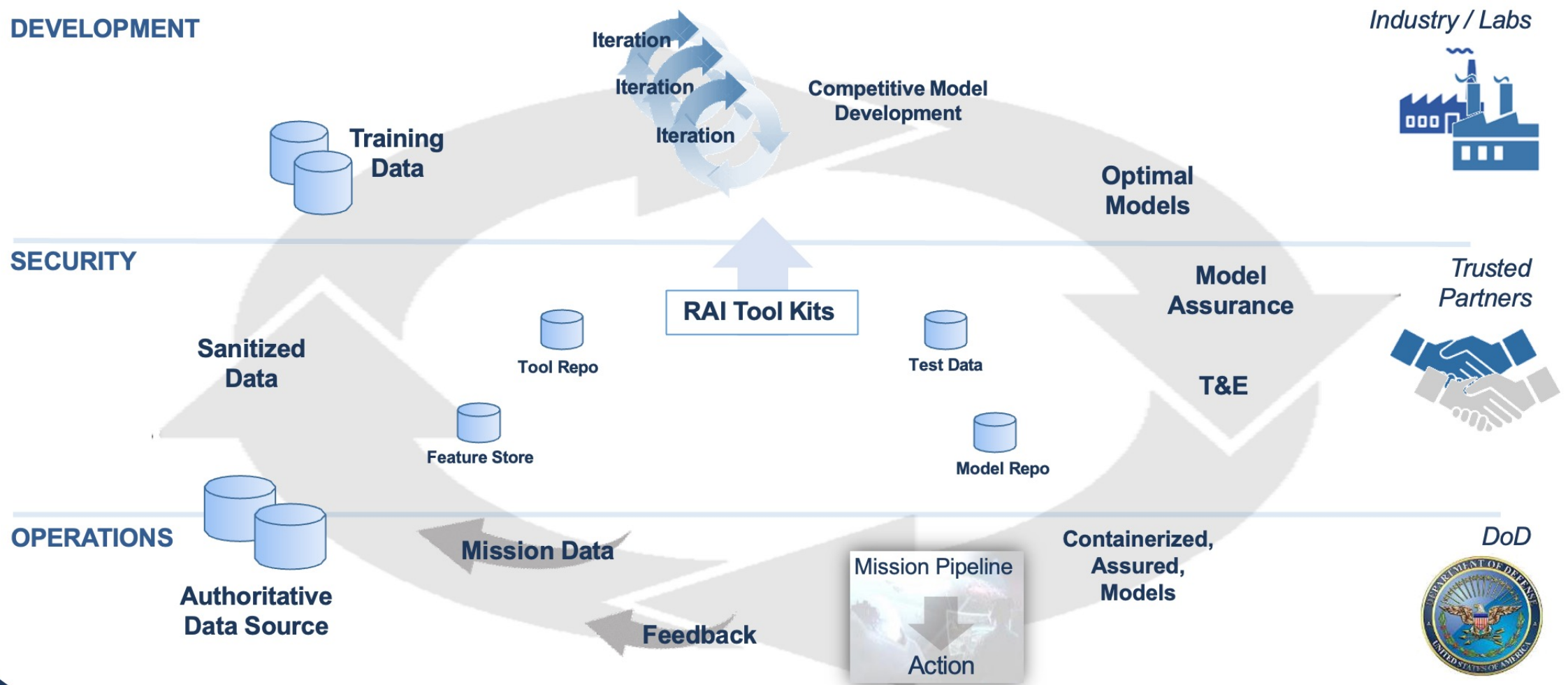
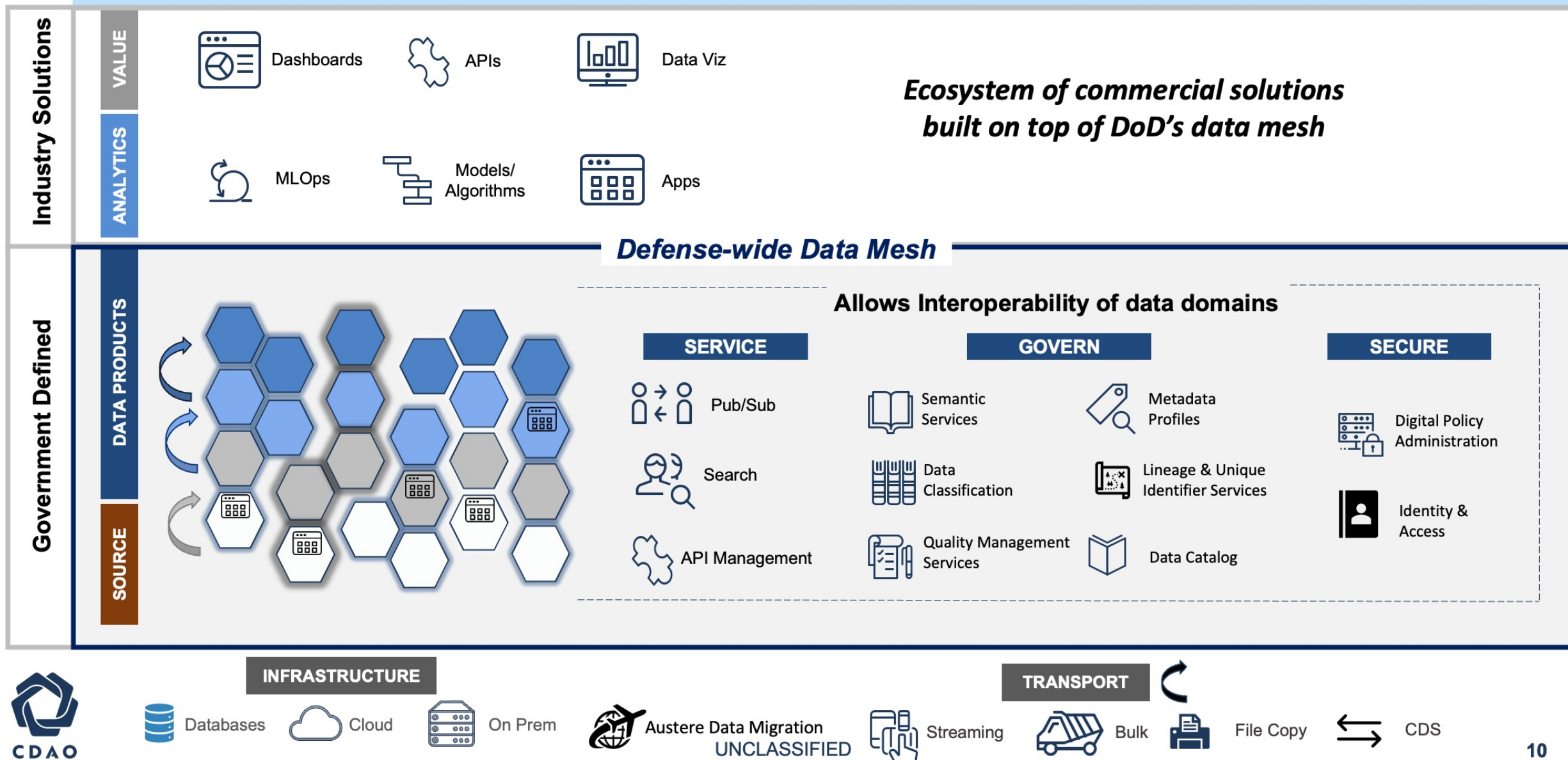


Figure 2: Strategic Goals and the AI Hierarchy of Needs

A Digital Ecosystem Supports DoD AI Goals



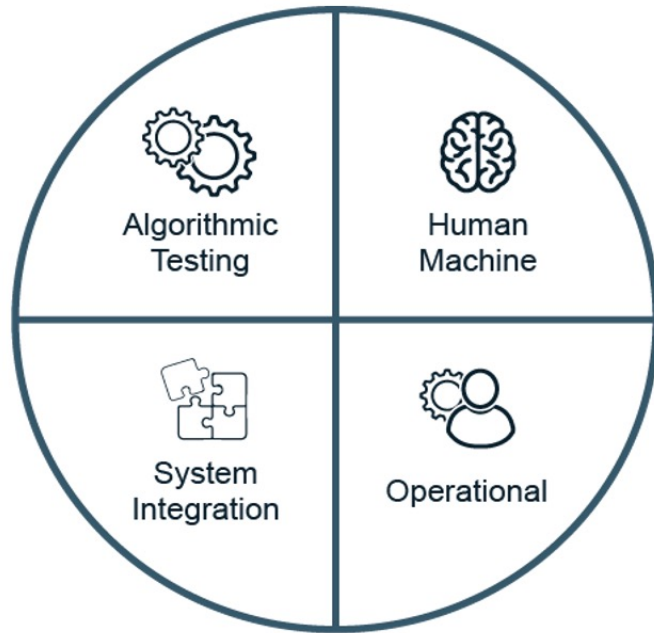
Data Mesh Architecture for Quality Data



DoD AI Ethical Principles

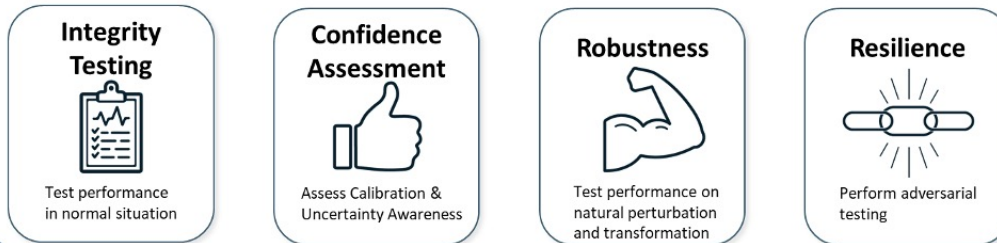
Principle	Description
Responsible	DoD personnel will exercise appropriate levels of judgment and care , while remaining responsible for the development, deployment, and use of AI capabilities.
Equitable	The Department will take deliberate steps to minimize unintended bias in AI capabilities.
Traceable	The Department's AI capabilities will be developed and deployed such that relevant personnel possess an appropriate understanding of the technology, development processes, and operational methods applicable to AI capabilities, including with transparent and auditable methodologies, data sources, and design procedure and documentation .
Reliable	The Department's AI capabilities will have explicit, well-defined uses, and the safety, security, and effectiveness of such capabilities will be subject to testing and assurance within those defined uses across their entire life-cycles.
Governable	The Department will design and engineer AI capabilities to fulfill their intended functions while possessing the ability to detect and avoid unintended consequences , and the ability to disengage or deactivate deployed systems that demonstrate unintended behavior.

CDAO AI T&E Process

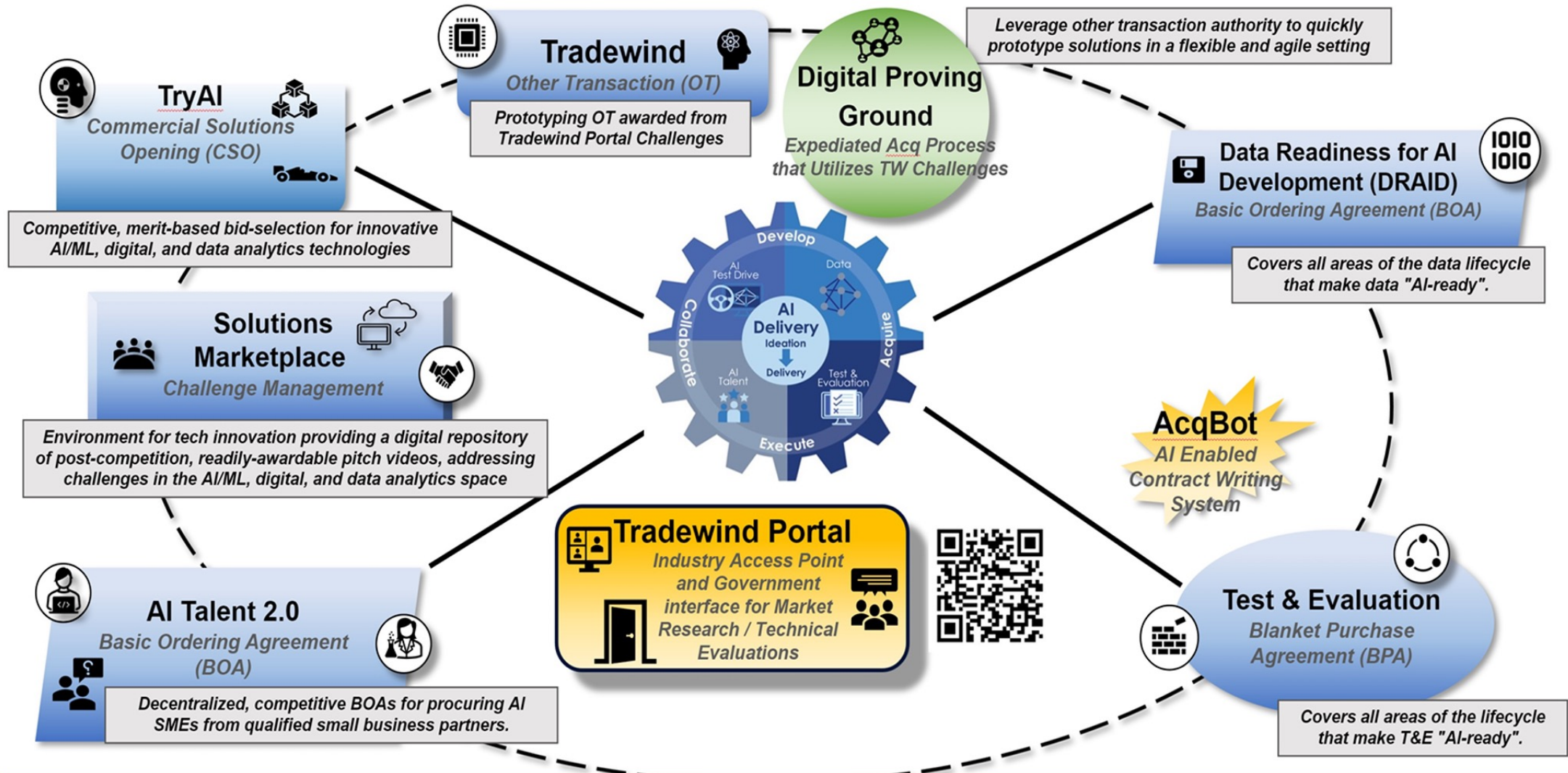


Areas of Interest

- **Human Systems Integration (HIS)**
- **Sequential Test Design**
- **Learning Systems**
- **Explainable AI (XAI)**
- **Responsible AI (RAI)**
- **Adversarial / Red Teaming**
- **T&E in Deployment / Sustainment**



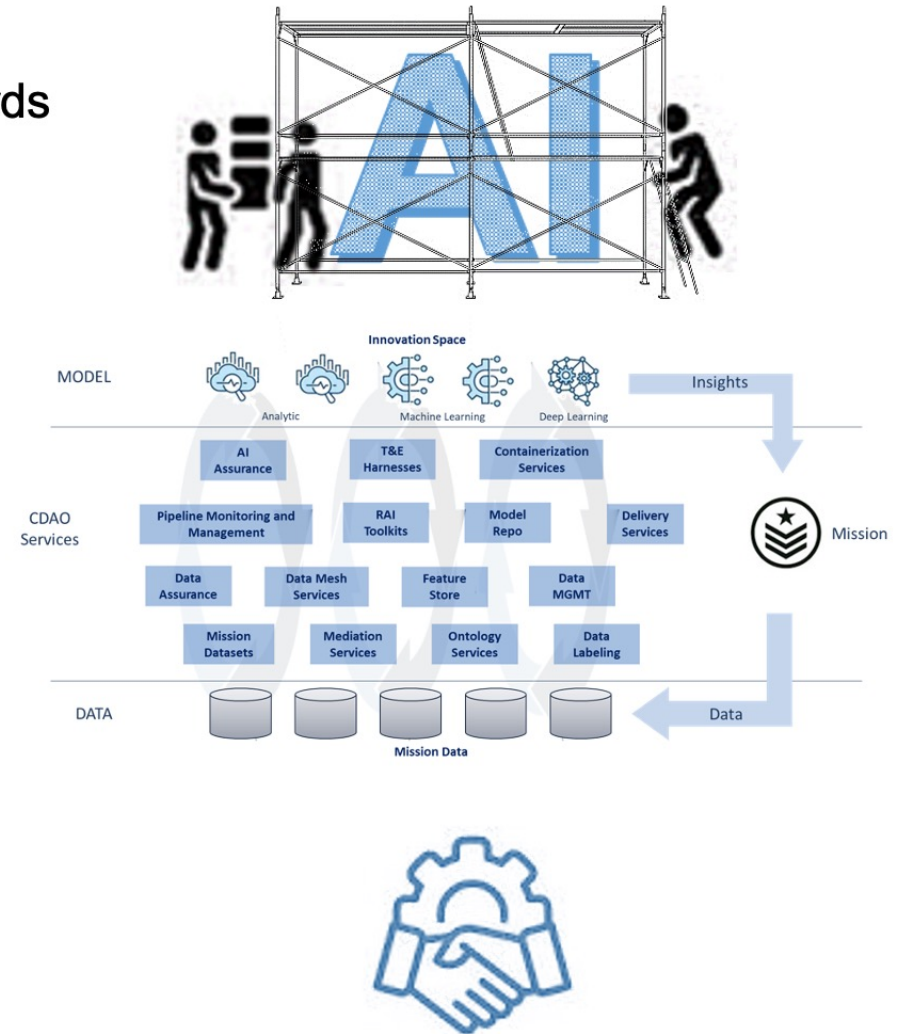
CDAO's Acquisitions



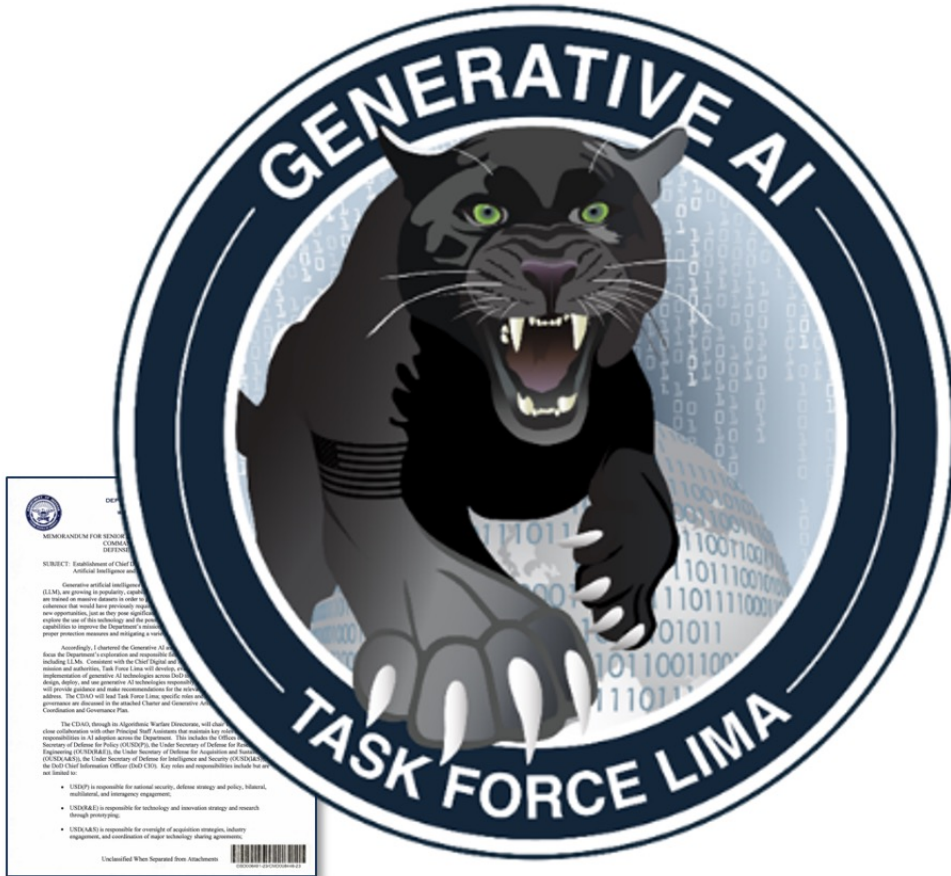
CDAO BOAs & BPAs are available for use by all government agencies and support both small and large businesses.

CDAO AI Scaffolding Services

- Data services
 - Discoverability, mesh, storage, labeling, ontologies, standards
- DevSecOps services
 - Dev environments, containerization, pre-approved code
- Instrumentation services
 - Model performance monitoring, user interactions
- AI Assurance services
 - T&E harnesses, methodologies, data partitioning
- Acquisitions services
 - Access to contract vehicles, contract language review
- Legal services
 - Data usage agreements, classification determinations
- AI Consulting



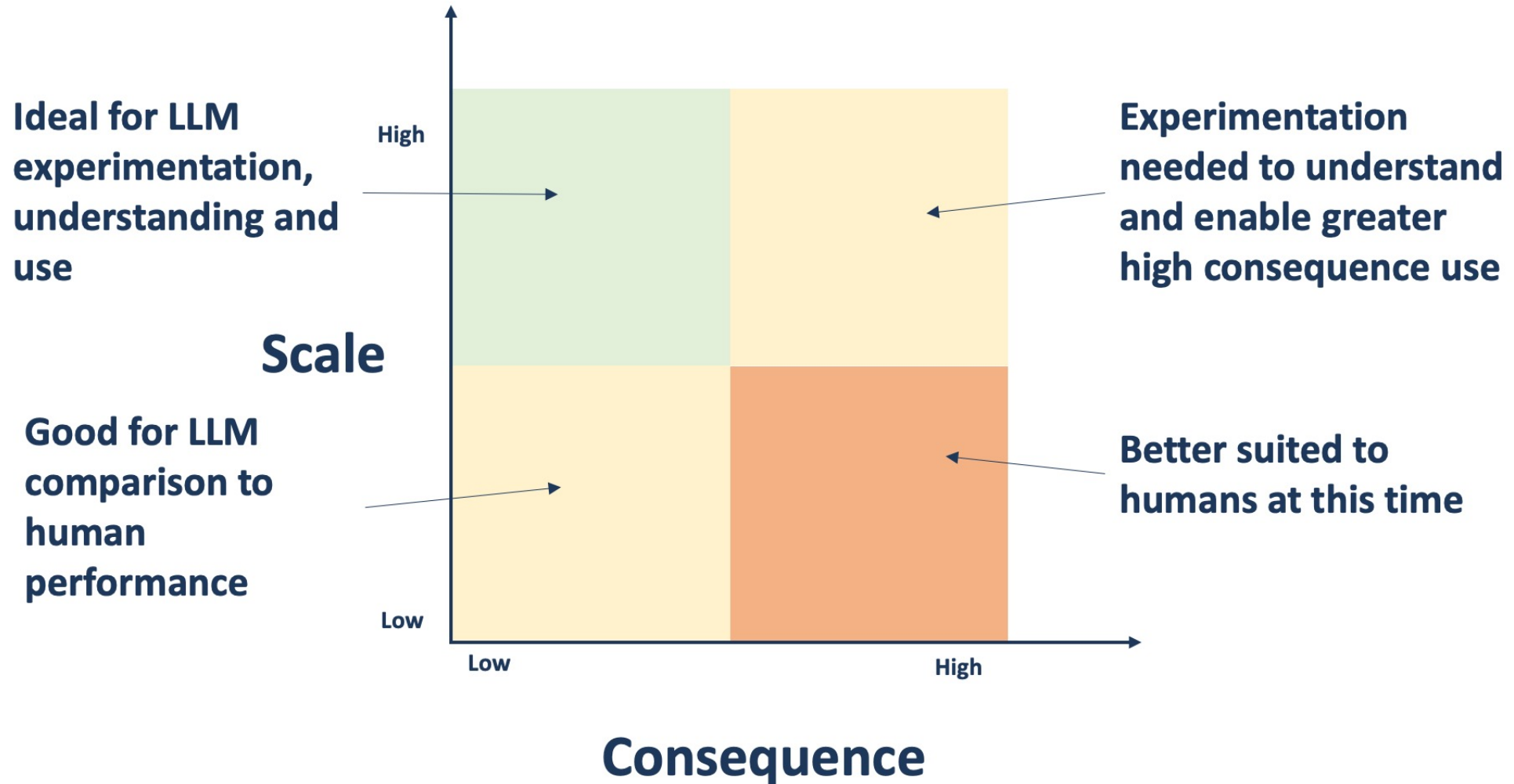
Task Force Lima



August 10, 2023

- **Accelerate** promising generative AI initiatives and joint solutions;
- **Federate** disparate developmental and research efforts into a DoD community of practice to accelerate innovation and implementation;
- **Evaluate** solutions across Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, and Policy;
- **Drive** education and build a culture of responsible implementation and use; and,
- **Ensure** coordinated DoD engagement with interagency, international, educational, civil society, and industry partners regarding responsible development and use of generative AI.

LLM Use Case Rubric



Towards an LLM Maturity Model

- ✓ **Understand potential LLM use cases and the level of capability required across several relevant LLM dimensions**
- ✓ **Help organizations assess the maturity of LLM solutions with respect to their application to mission use cases and workflows**
- ✓ **Identify areas where LLM capabilities need to improve to be useable in given mission use cases and workflows**

Use Case	Conversation / ChatBot	Summarization	Question / Answer	Analysis	Classification	Insight Generation
Governability						
Completeness						
Accuracy						
Equitability						
Consistency						
Traceability						
Novelty						
Fluency						
Interactivity						
...						

LLM Characteristics

Notional Maturity Model

Summary

- **U.S. is in a competitive race with pacing adversaries**
- **DoD Adoption requires Responsible Agility**
 - **AI Hierarchy of Needs**
- **Technology needs in support of Digital Ecosystem**
 - **AI Scaffolding and Data Mesh services**
- **We seek your partnership in our campaign of learning**

Thank You!



CDAO

