



“BEACON PROJECTS”

COL George Cushman V

Branch Head, MDFD / MSLT

Modelling & Simulations and Learning Technology

SACT GUIDANCE ON BEACON PROJECTS:

“They should allow not only to close today’s gaps, but also anticipate tomorrow’s challenges by both addressing short term requirements and accelerating warfare adaptation”

Admiral Pierre Vandier
Supreme Allied Commander Transformation

Beacon Projects: Accelerating Transformation

- **The Challenge**

- Identify
- Prioritize
- Focus

- **The Purpose**

- Accelerate
- Demonstrate
- Inform



Selecting Our Beacon Projects The Adoption Board

- **Assess – Select – Agree**
 - Relevant?
 - Transformational?
 - Ready?
 - Adoptable?
 - Aligned?
- **Agile by Design**
 - No consensus @32 required to begin



Select → Accelerate → Assess

■ Select

- Identify – Prioritize – Choose
- Selection ≠ commitment to adoption

■ Accelerate

- Collaborate – Experiment – Demonstrate

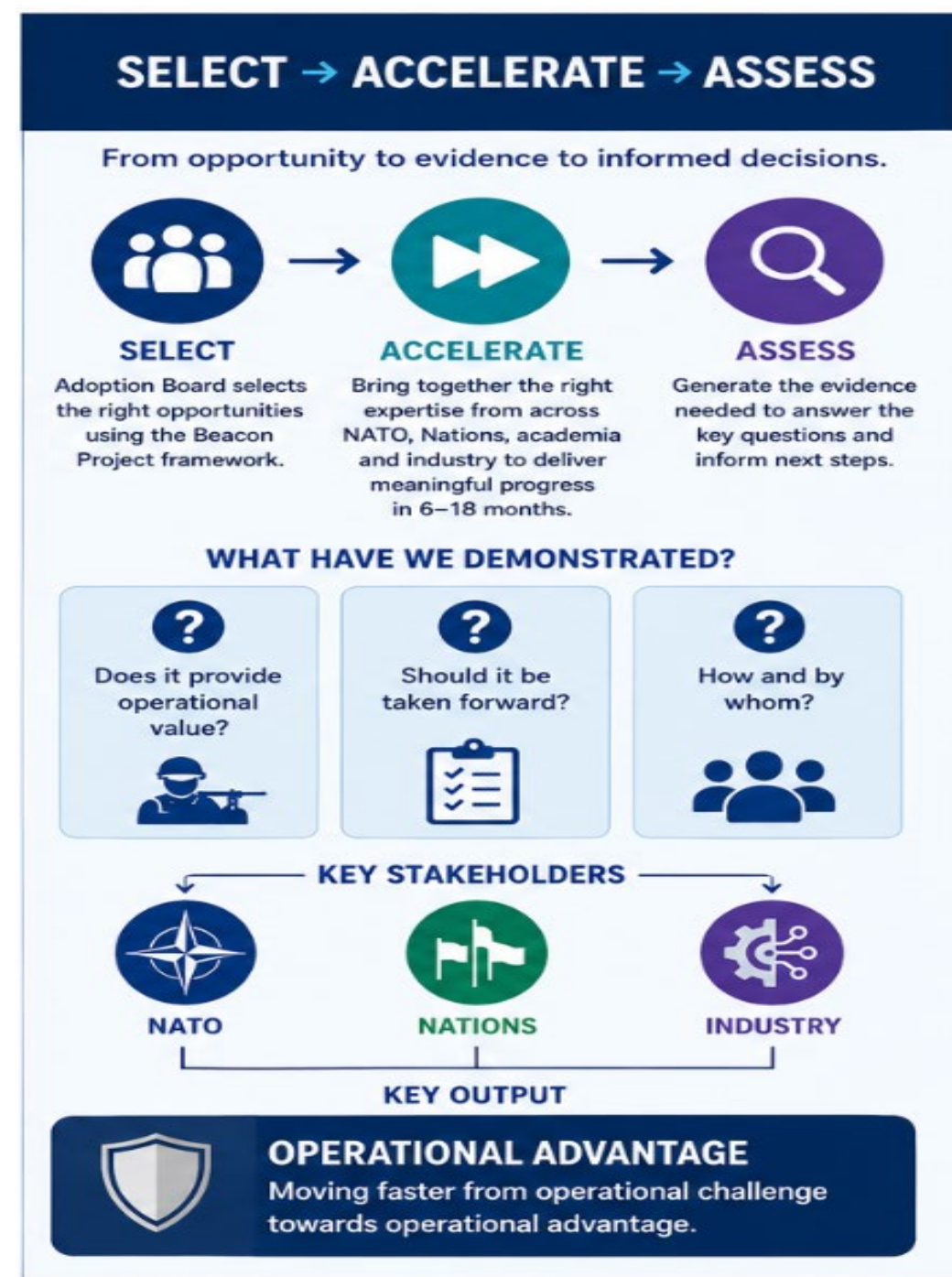
■ Assess

- Value – Viability – Way Ahead
- Should it be taken forward?

Operational Challenge



Operational Advantage



BEACON PROJECTS

Key Date: September 10th, 2025 — ACT launched the Adoption Board, initiating the Beacon Projects.

What's Different: The Adoption Board isn't a traditional committee. It's a “pitch forum” where SMEs present bold, innovating solutions directly to SACT, Admiral Pierre Vandier, and senior leadership.

Why It Matters: This model accelerates capability development by focusing on three priorities:

- ❖ Needs of our “customers” - warfighters and nations
- ❖ Integration readiness
- ❖ Alignment with NATO common-funded programmes

The goal: Faster concept-to-adoption timelines.



<https://www.act.nato.int/opportunities/contracting/>

2026 BEACON PROJECTS



Layered Counter-UAS Initiative LCI-X



Next Gen Targeting (NGT)



AI in Audacious Training



METIS

MACHINE-ENABLED TACTICS,
INTENT & STRATEGY

Key Drivers for Developing Doctrine-Based AI

- **Reduce Labor-Intensive Simulation Processes:** Reduce manpower and scripting needs for realistic military behaviors.
- **Replicate Doctrine-Driven Decision-Making:** Enable AI to follow military doctrine, minimizing reliance on SMEs.
- **Enhance Efficiency:** Simplify scenario creation, enhance OPFOR realism, and improve decision-making.
- **Achieve Cost and Time Savings:** Cut redundancy, optimize resources, and lower operational expenses with scalable AI.



Challenges in Current Conflict Simulation Systems

- **High Manpower and Resource Demands:** Simulations require extensive scripting and domain-specific SMEs to ensure realism.
- **Lack of Doctrine-Adherent Entities:** Simulated entities and scripts often fail to follow military doctrine, causing inconsistent behaviors.
- **Time-Intensive Scenario Creation:** Developing and adjusting scenarios is labor-intensive and limits scalability.
- **Unrealistic Opposing Forces (OPFOR):** OPFOR agents often mimic U.S. doctrine instead of adversarial strategies.
- **Fixed Behaviors:** Entities rely on human intervention to adjust behaviors to the operational environment



User Story

Exercises and battlefield complexity has grown in size over the past 10 years

Combined Resolve IX (~FY17)



~50,000+ Entities

Comprising of a Constructive Wrap to a Live Exercise. It involved more that 4000 soldiers consisting of three (3) Brigades and 12 Nations spread across three (3) different locations

**(14 Response Cells ~ 40 Pucksters at Company Level)
PTA 1ABCT / 1st CAV Division, LTU Griffen Brigade
STA 9 BNs**

Avenger Triad 24



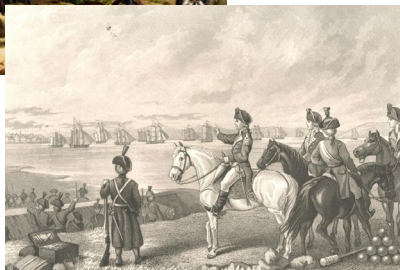
1,000,000+ Entities

Comprising of a Constructive (Simulated) Readiness Exercise, Integration Event and 2030 Experimentation. It involved more that 4000 soldiers consisting of seven(7) Corps and eight (8) Nations spread across nine(9) different locations

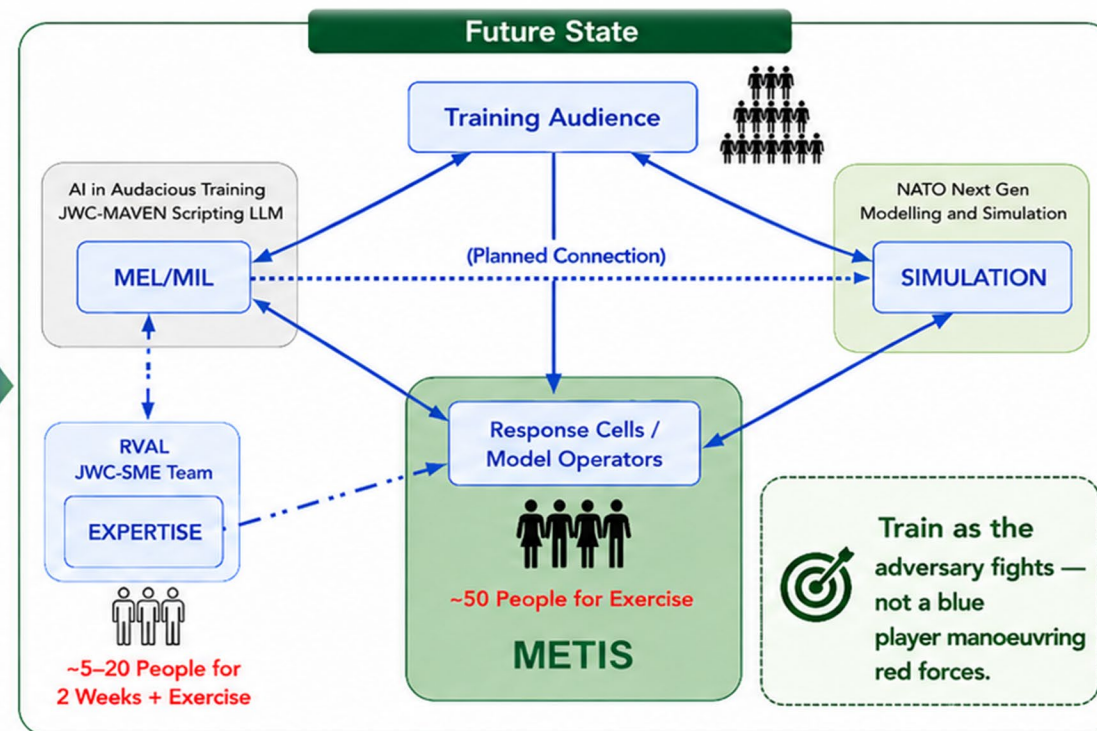
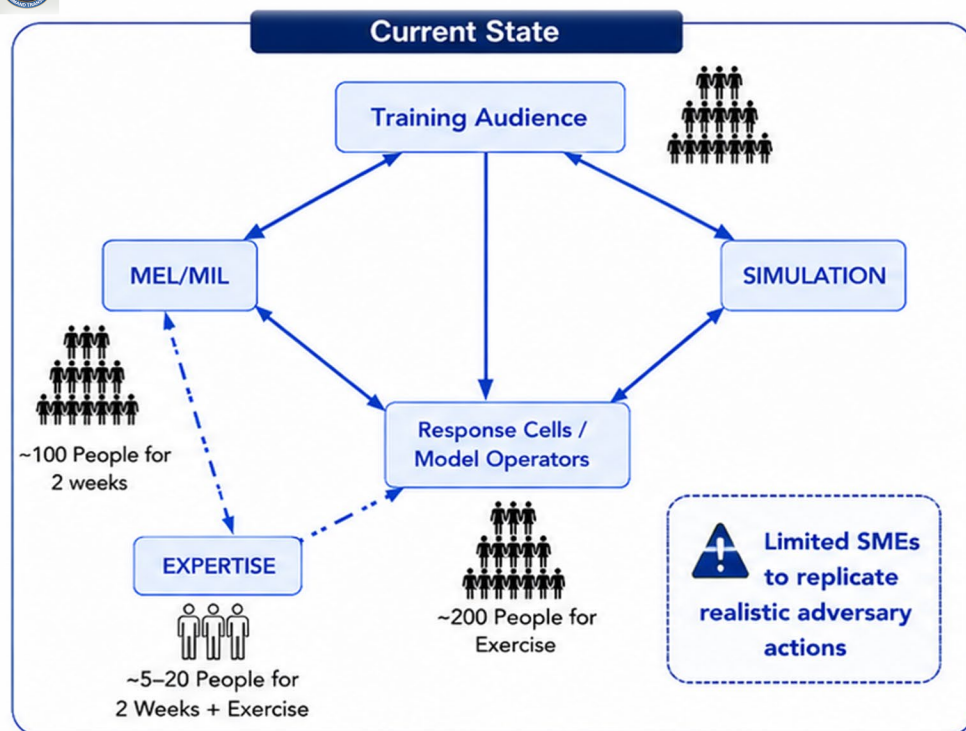
**(47 Response Cells 1100 Pucksters at BN (Actual Provided = 450 at BDE)
PTA USAREUR Staff, 96 Artillery Command Staff
STA 5 Corps and ~ 10 Divisions**

What is a Puckster?

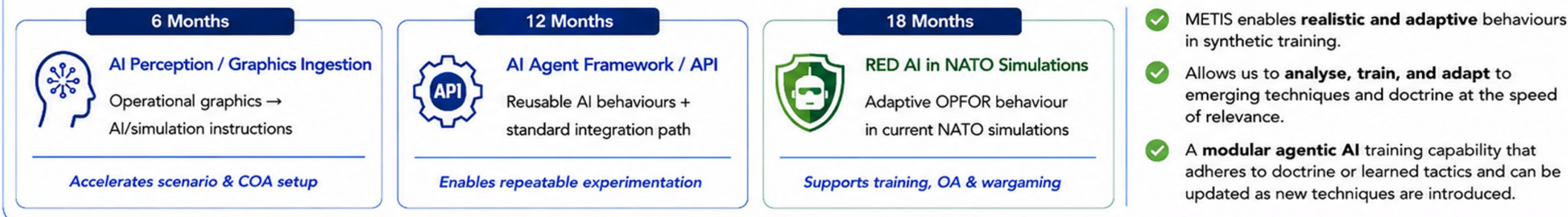
“Puckster” is the name given to the Simulation Model Operators who move the units around a simulated battlefield;



This project was designed to lessen the manpower requirements, the individual cognitive load, and the need for Subject matter expertise at the lower echelons.



METIS Capability Growth Path: Training → Experimentation → Wargaming



Purpose: METIS facilitates automated replication of realistic OPFOR actions through modular AI behaviours aligned to doctrine and learned tactics.

TRADOC

Doctrine
Translator
LLM-GPT-RAG

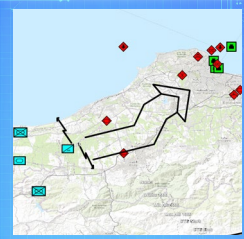


Input: Doctrine,
LL Reports,
OPS Graphics

Output:
Rules for AI Agents

OPS Graphics Translator

ACETATE



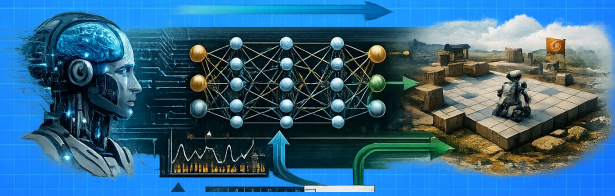
Input: C2iS, FAS
Graphics, MILSTD
25-25, STANAG
2019

Output:
User Intent,
Behaviour,
Objectives

LUDUS

DRL Agent Training

TRADOC>>> Provides Rules:
(Constraints, Limitations, Restrictions, Preferred employment of forces)
This is the bounding box of the Agent



METT_TC Provides the Weighted Reward Criteria:
The desired factors that increase likelihood of agents acting in accordance with desired COAs

MUSTER

Agent Identification Assignment
Pairs Agent to Unit or entity



INPUT: Sim unit Identifier/ UICs / PUCKSTER ID#
Output: DB Identification connection

ASE

Agent Synthetic Environment

Simplified Limited Environments for Agents to evaluate COAs at a regular pace or when orders change

PUCKSTER

TRAINED AGENTS

Agents will have a bounded ASE to conduct COA Choice



INPUT: Adjusted Orders from User or higher agent, Change in Status
Event requiring new orders
Output: Simulation Commands for controlled units

INPUT: Snap shot of current Simulation Status / Orders
Output: representative environment for Agents to think about their next COA



METIS Project | Work Sharing

Roles and responsibilities across NATO ACT, the M&S COE, Academia, Industry and the Project Office

