NATO OTAN

Allied Command Transformation

Norfolk, Virginia | USA

“BEACON PROJECTS”

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Modelling & Simulations and Learning Technology

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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

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Beacon Projects: Accelerating Transformaiton

- **The Challenge**
  - Identify
  - Prioritize
  - Focus
- **The Purpose**
  - Accelerate
  - Demonstrate
  - Inform

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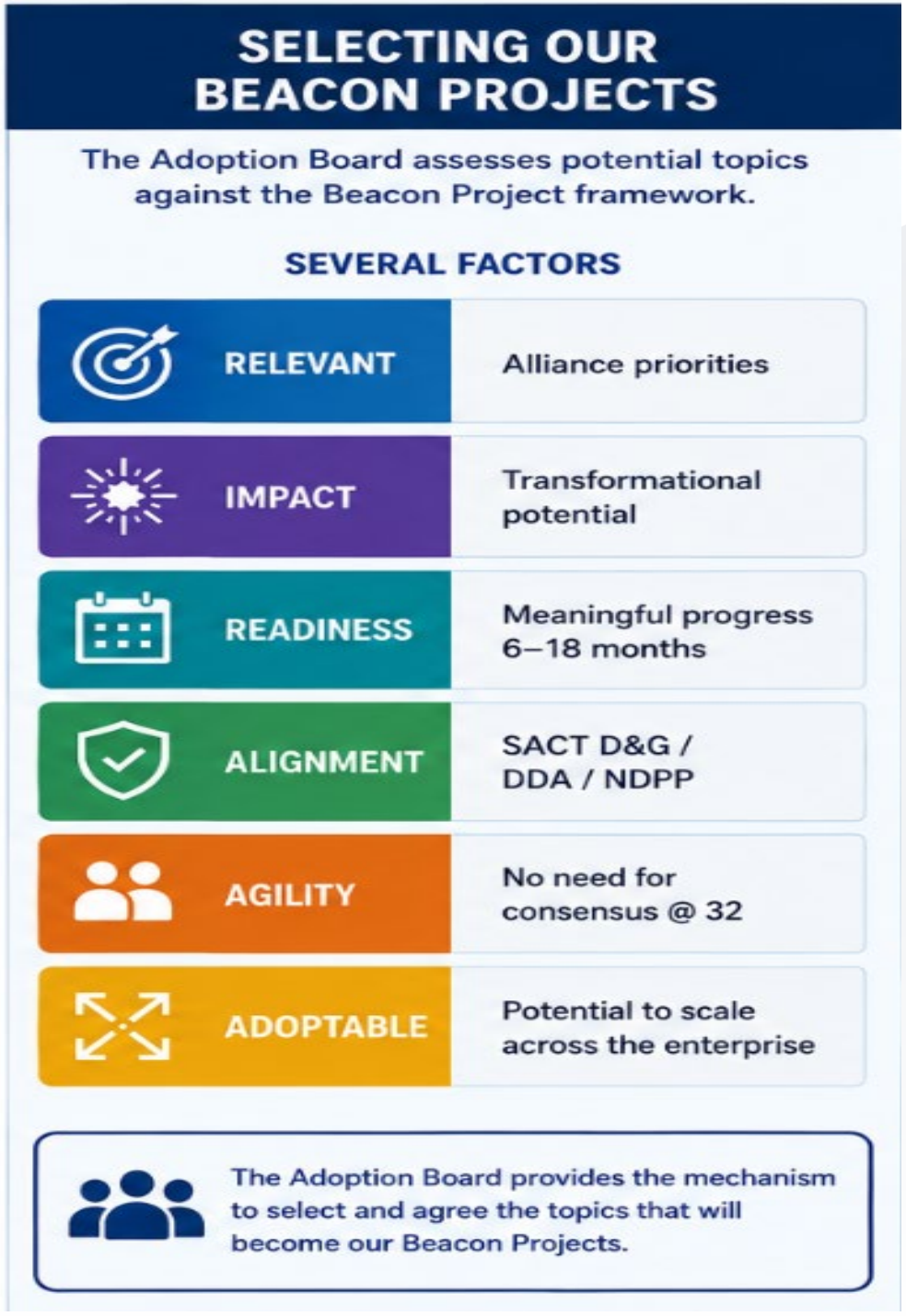
Selecting Our Beacon Projects
The Adoption Board

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



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Select → Accelerate → Assess

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

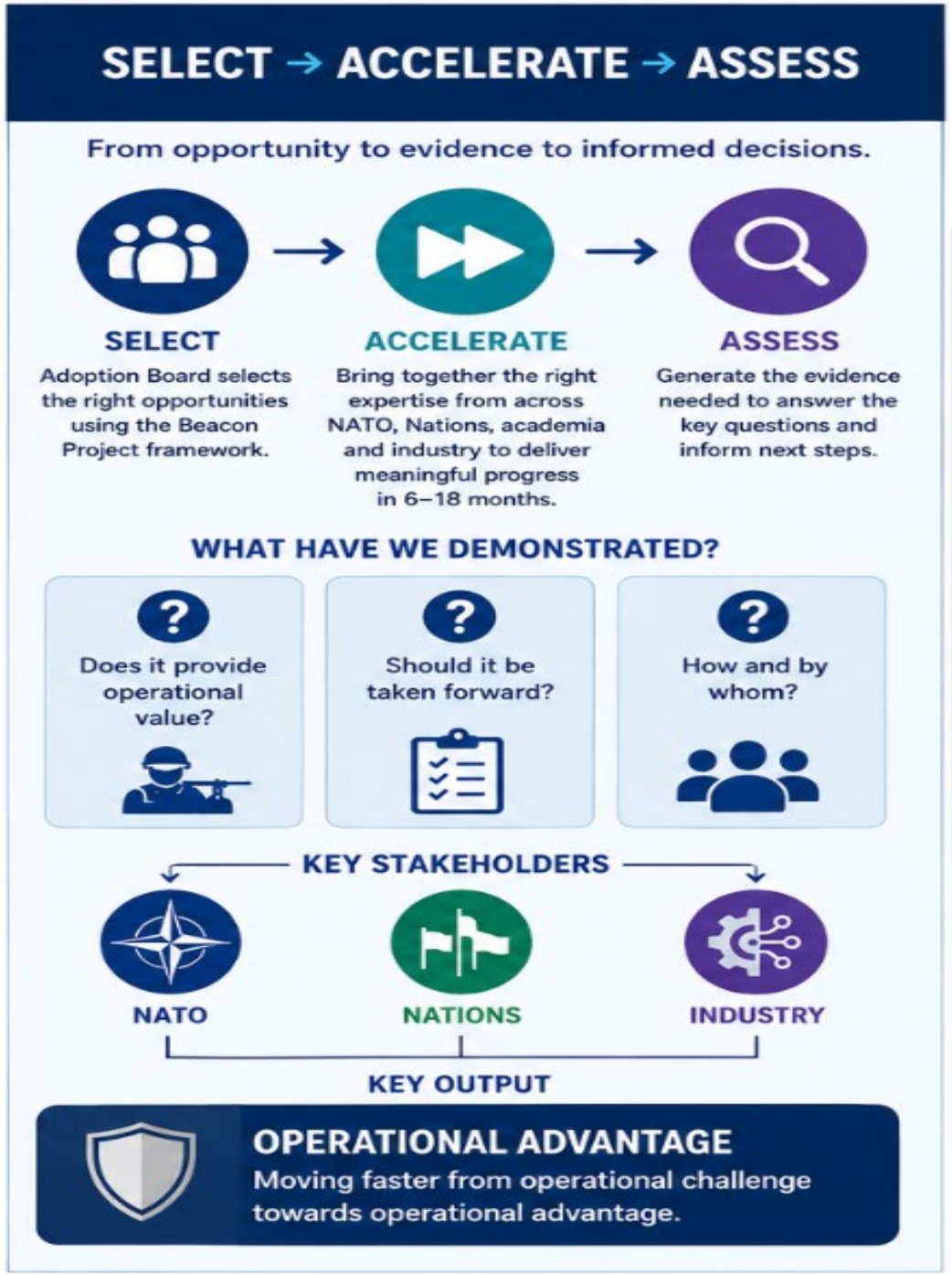
- **Accelerate**
  - Collaborate – Experiment – Demonstrate

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

Operational Challenge

⬇

Operational Advantage



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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.

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

2026 BEACON PROJECTS

Layered Counter-UAS Initiative
LCI-X

Next Gen Targeting (NGT)

AI in Audacious Training

AI IN AUDACIOUS TRAINING
METIS
MACHINE-ENABLED TACTICS,
INTENT & STRATEGY
INTEGRATE • AUTOMATE • ACCELERATE

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

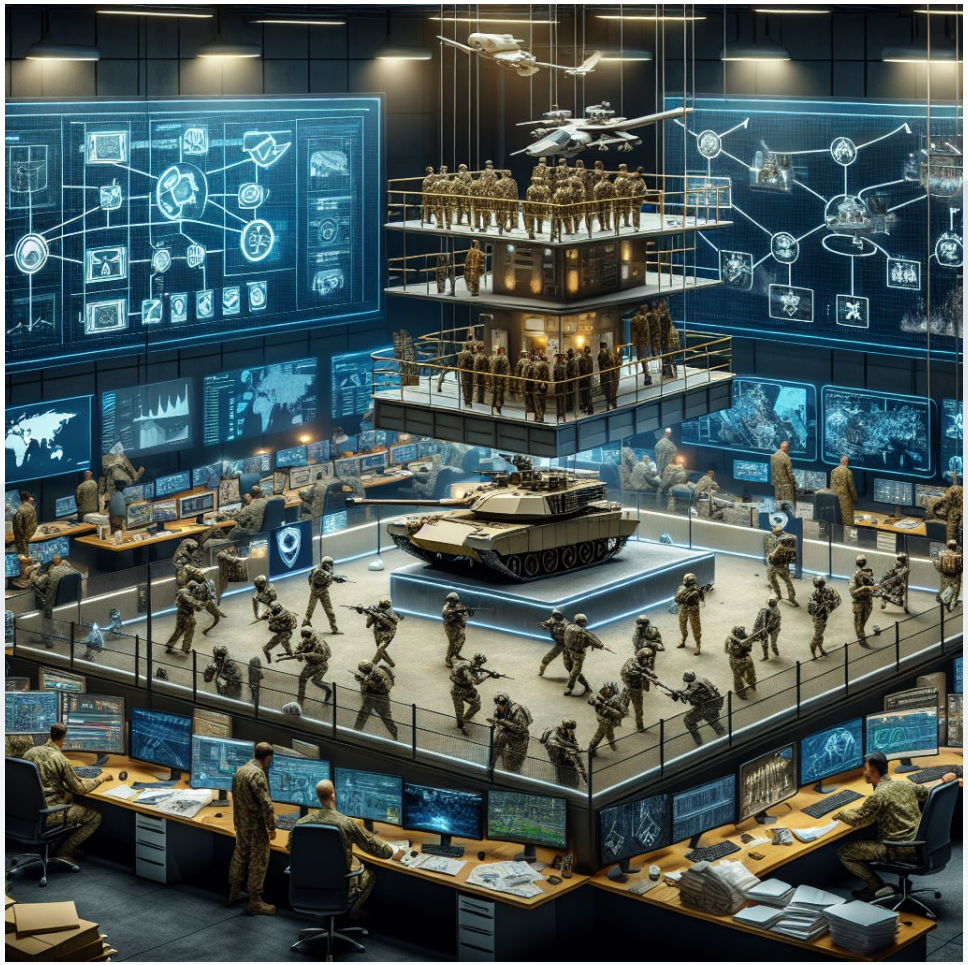
- **High Manpower and Resource Demands:** Simulations require extensive scripting and domain-specific SMEs to ensure realism.

- **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

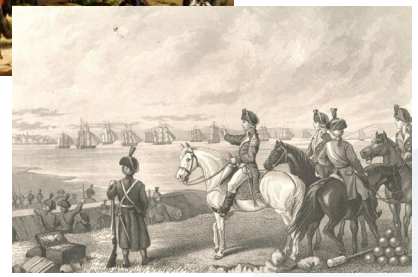
1,000,000+ Entities

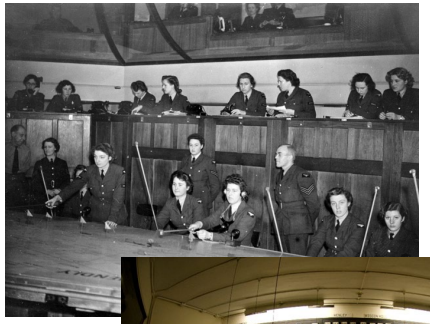
Comprising of a Constructive (Simulated) Readiness Exercise, Integration Event and 2030 Experimentation. It involved more that 4000 soldiers consisting of seven(7) Corps and eight (8) Nations spread across nine(9) different locations

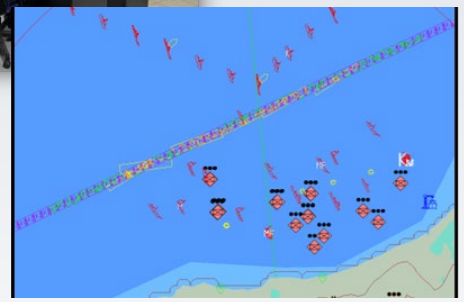
(47 Response Cells 1100 Pucksters at BN (Actual Provided = 450 at BDE)
PTA USAREUR Staff, 96 Artillery Command Staff
STA 5 Corps and ~ 10 Divisions

What is a Puckster?

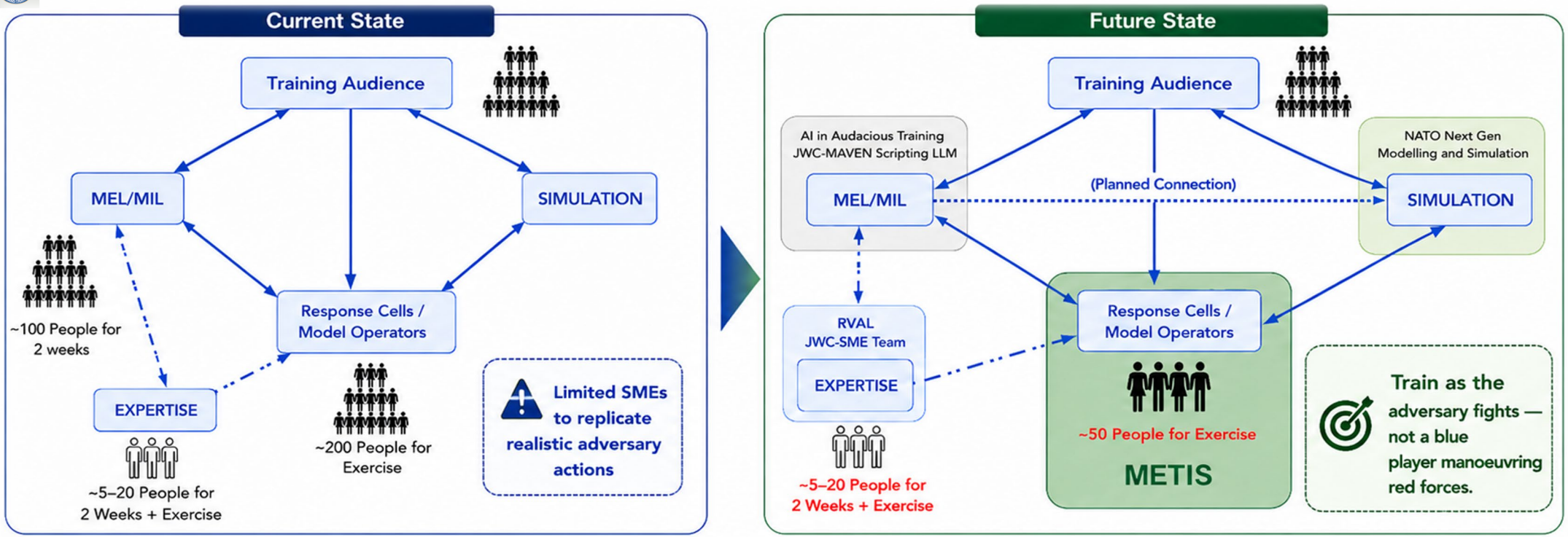
“Puckster” is the name given to the Simulation Model Operators who move the units around a simulated battlefield;







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

6 Months

AI Perception / Graphics Ingestion

Operational graphics → AI/simulation instructions

Accelerates scenario & COA setup

12 Months

AI Agent Framework / API

Reusable AI behaviours + standard integration path

Enables repeatable experimentation

18 Months

RED AI in NATO Simulations

Adaptive OPFOR behaviour in current NATO simulations

Supports training, OA & wargaming

- METIS enables **realistic and adaptive** behaviours in synthetic training.
- Allows us to **analyse, train, and adapt** to emerging techniques and doctrine at the speed of relevance.
- A **modular agentic AI** training capability that adheres to doctrine or learned tactics and can be updated as new techniques are introduced.

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

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TRADOC

Doctrine Translator
LLM-GPT-RAG

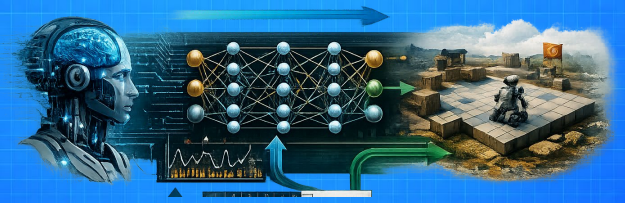
Input: Doctrine, LL Reports, OPS Graphics

Output:
Rules for AI Agents

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

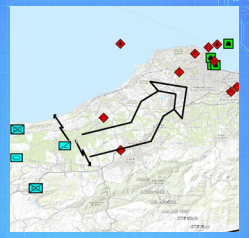
Agent Identification Assignment

Pairs Agent to Unit or entity

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

ACETATE

OPS Graphics Translator



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

Output:
User Intent, Behaviour, Objectives

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

NATO
Next Generation Modelling & Simulation

JTLS GO

JCATS

METIS Project | Work Sharing

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

NATO ACT Beacon Project
Project Manager — overall direction, requirements and governance

M&S COE
Key Partner & Lead Integrator with Academia and Industry

Academia
Multiple universities in parallel development of the sub-systems

Industry
Participation through the Framework for Framework For Collaborative Interaction (FFCI)

Project Office
Integration with NNG / JCATS / JTLS routed through the Project Office